



DHL WAREHOUSE 1 & 2

Part Lot 1 DP1306448, 1953-2109

Elizabeth Drive, Badgerys Creek

Erosion & Sediment Control Plan

SSD-70817958

DHL Supply Chain (Australia) Pty Ltd

23/10/2024

22-993

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Document Registration

Document Title	DHL WAREHOUSE 1 & 2 – Erosion and Sediment Control Plan
Document File Name	R03-01-22-993-ESCP DHL
Section	Civil Engineering
Document Author	Tim Michel (AT&L) BE BA DipEngPrac, MIEAust, CPEng NER (Civil / Environmental) CPESC (11555)
Certification	I, Tim Michel (CPESC No. 11555) of AT&L, certify that this ESCP has been prepared in accordance with the principles of the Blue Book (Landcom, 2004) and the Technical Guidance for Achieving Wianamatta-South Creek Stormwater Management Targets (NSW DPE, 2022). This ESCP does not include all details required for ESCPs – further details will not be available until a Contractor has been appointed and construction sequencing and methods have been confirmed. The Civil Contractor appointed to construct the project will be responsible for preparation of compliant Progressive ESCPs

Issue	Description	Date	Author	Checked	Approved
01	Issue for DA	23/10/24	Tim Michel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
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1. Introduction

This report supports a State Significant Development Application (SSDA) (SSD-70817958) submitted to the NSW Department of Planning, Housing and Industry (DPHI) on behalf of DHL Supply Chain (Australia) Pty Ltd (DHL).

The SSDA constitutes a detailed development application (DA) insofar that it is linked to and is consistent with concept plan (SSD-70316465) by seeking consent for the construction and operation of two singular storey industrial buildings for use as a warehouse and logistics facility with 24 hour/ seven day a week operation plus car parking and associated landscaping within part (25 hectares) of Lot 1 in Deposited Plan 1306448 at 1953-2109 Elizabeth Drive, Badgerys Creek known as the DHL Masterplan site.

This SSDA represents the second of two (2) SSDAs proposed by DHL and will apply to the northern half of the DHL Masterplan site, known as “the site” (the Site) refer to Figure 3. Stage 1 relates to the southern half of the DHL Masterplan site, known as the DHL Stage 1 site and is subject to separate SSDA (SSD-70817958).

The project vision is to develop a world class warehouse and logistics facility which is fully integrated with its green infrastructure and Connection to Country. Having been informed by key landscape and Connecting to Country themes, the development of the site can deliver on the objectives that contribute to the Aerotropolis Vision which is to:

- Achieve a landscape led approach and starting with Country- the project has been guided by Cultural Design Principals and local leaders in the Aboriginal community.
- Create a new global gateway which will be a regionally and nationally significant employment area by providing for warehouse and logistics land uses in a highly sought-after location adjacent to the new Western Sydney Airport.
- Design a cool, green new city with a landscape approach that increases urban tree canopy, provides useable open space areas throughout and restores key riparian corridors on the site.
- Transitioning to an Aerotropolis through a sustainable, orderly and transformational development in the Western Sydney Aerotropolis,
- Retaining a green, biodiverse landscape informed by Country and an indigenous lens on maintenance and land management.

1.1. Background

The DHL Masterplan site occupies approximately 25-hectares (ha) of the larger 171.84ha site at 1953-2109 Elizabeth Drive, Badgerys Creek. The wider site is currently the subject of an existing SSDA (SSD-70316465).

SSD-70316465: 1953-2109 Elizabeth Drive ‘Burrah Park’

SSD-70316465 is an SSDA which was issued SEARs on the 22 May 2024 and is currently in the process of finalising the application for lodgement following Test of Adequacy with the DPHI in September 2024.

SSD- 70316465 is seeking development consent for a concept plan including future development lots and building footprints. The development also seeks consent for the Stage 1 works which will include bulk earthworks across the site, infrastructure delivery, road access/intersections, internal road construction, civil infrastructure and utilities, stormwater infrastructure works and the construction of three (3) warehouse buildings.

The applicant for SSD-70316465 is the trustee for Burrah Park Prop Trust 1 which is a joint venture entity, with ISPT Core Fund and UniSuper each holding an equal share.

DHL intend to develop part of the site for a logistics facility, the subject of this SSDA. The DHL Masterplan Site is known as Super lot 4a and 4b within the wider concept plan. Super lot 5B to the north of the DHL Logistics Facility SSDA lots have been sold to Canberra Data Centres (CDC) refer to Figure 3.

1.2. Site Description

The subject site is located within part of Lot 1 in Deposited Plan 1306448, at 1953-2109 Elizabeth Drive, Badgerys Creek. The site is approximately 25 hectares in size and situated north of the new Western Sydney Airport. It is located within the Penrith local government area (LGA) and is approximately 12.5km from Penrith Central Business District (CBD), 27km from Parramatta CBD, and 47km from Sydney CBD. The site is owned by a trustee for Burrah Park Prop Trust 1 which is a joint venture entity, with ISPT Core Fund and UniSuper each holding an equal share.

The site is currently used for agricultural purposes and is largely cleared of vegetation with areas of dispersed grass and scattered natural and/or planted tree growth. The site contains several farm dams, primarily within the central and southern areas. The location context and aerial plans are depicted in Figure 1 and Figure 2.

A map showing the site location is shown in Figure 1Error! Reference source not found..

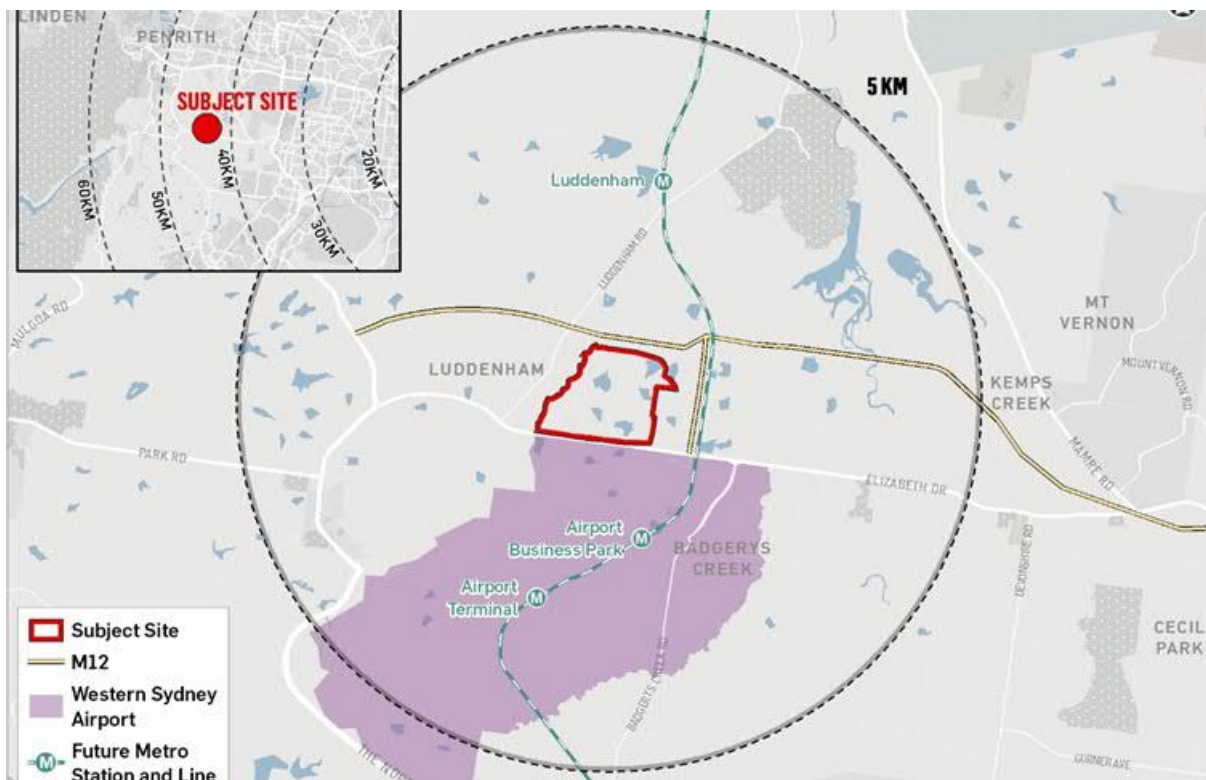


Figure 1- Location Context Area Plan

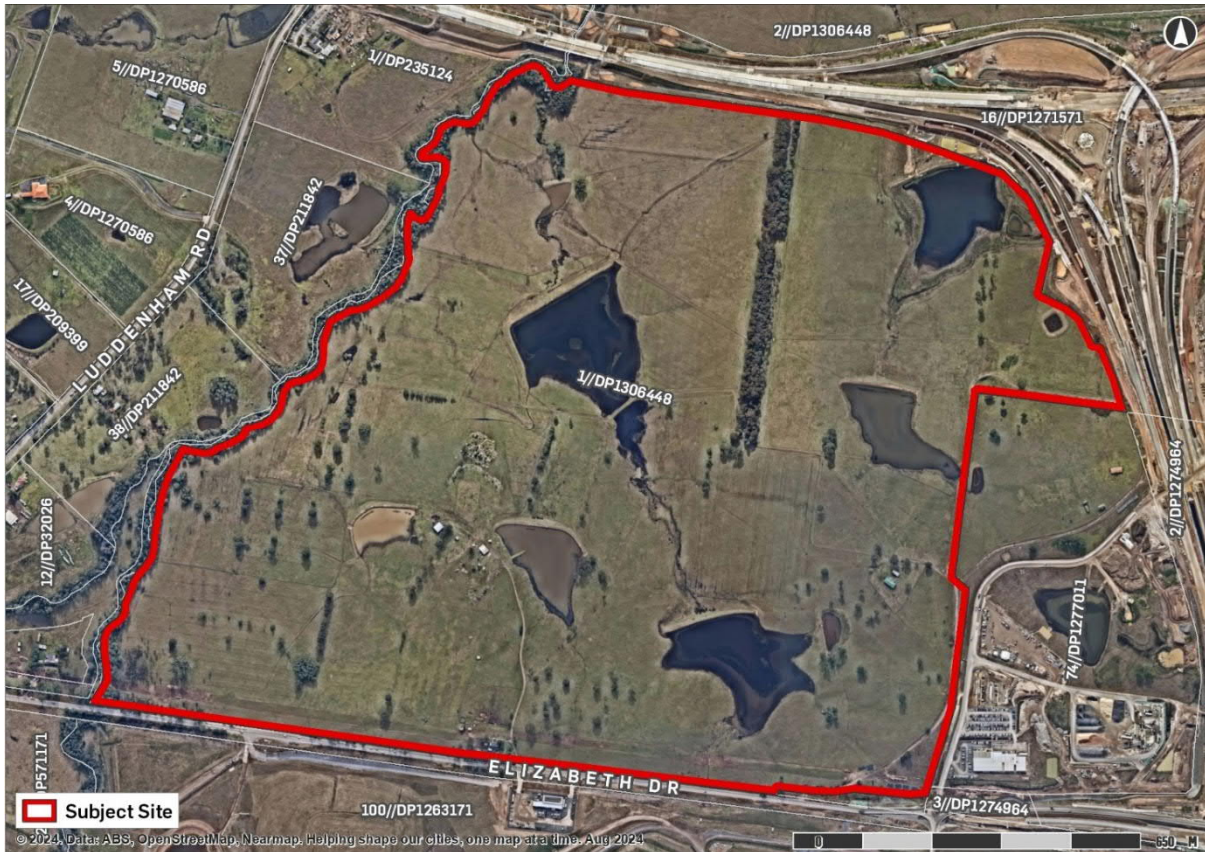


Figure 2 - Site Location Plan



Figure 3 - DHL Masterplan Site

1.3. Planning Approvals Strategy

Development consent is sought under Section 4.12(8) and Division 4.4. of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and Division 5 of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation) for the construction and operation of a warehouse and logistics facility (the Project) under Schedule 1 of *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP).

1.4. Project Description

Specifically, the SSDA seeks consent for:

Staged construction of warehouse buildings for use as a logistics centre with 24 hour/ day, seven days a week operation, comprising the following:

- Construction of two warehouses;
- Building fit out;
- Construction of hardstand, loading and carparking;
- Landscaping works; and
- Signage.

The two warehouses, designated as Warehouse 1 (WH01) and Warehouse 2 (WH02), are located in proposed lots 4.3 and 4.4 respectively within Superlot 4b in the new “Burrah Park” precinct proposed in SSD-70316465. The Site is bound by the proposed Estate Road 4 along the southern boundary, proposed Estate Road 1a along the western boundary, the future CDC site (super lot 5b) on the northern boundary and the vacant land owned by the University of Sydney along the eastern boundary.

Each warehouse has been designed as a completely separable facility with separate entry and exit driveways, stormwater drainage systems, car parks, and other amenities.

A plan of the proposed development is presented in Figure 4.

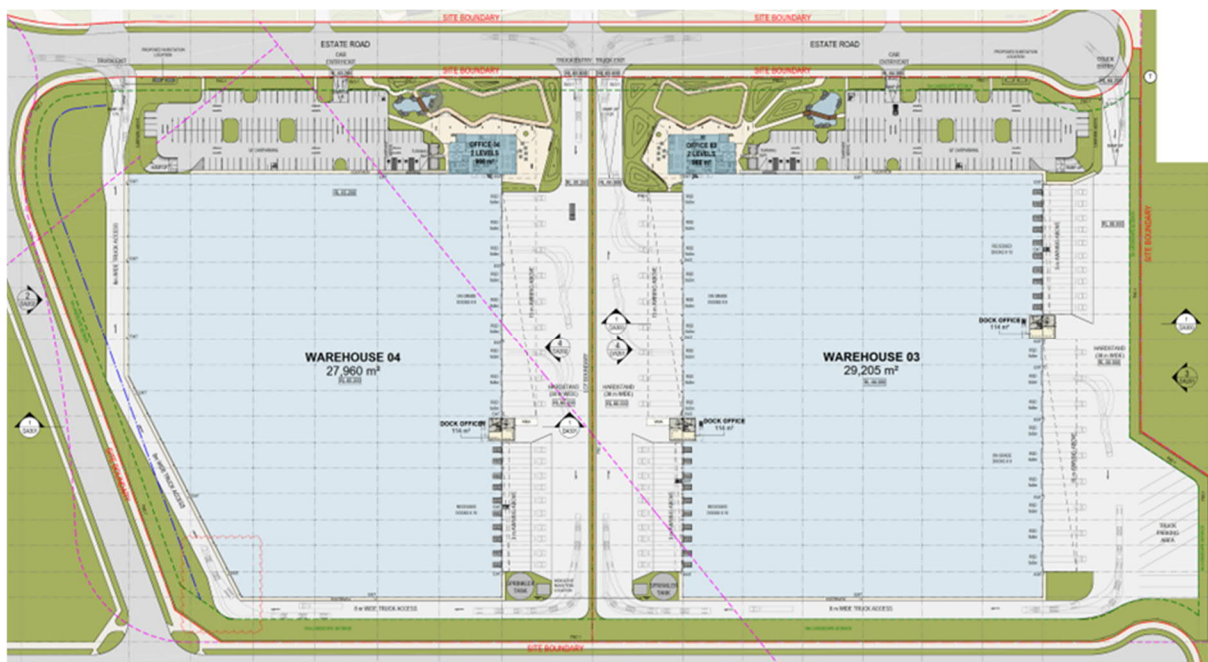


Figure 4: Warehouse 03 and 04

1.5. Relationship Between SSD-70316465 and SSD-70817958

The proposed Burrah Park estate development (SSD-70316465) will provide earthworks, road access, lead-in services, stormwater drainage, WSUD systems and other infrastructure, for the DHL detailed application (SSD-70817958). The proposed Estate Road 4 between DHL's WH01 & WH02 and WH03 & WH04 sites will connect DHL's sites with the rest of the Burrah Park estate. The primary access to the DHL site will be through Estate Road 1 which intersects with Elizabeth Drive at its southern end, allowing for all movements in and out of the estate. There is no expectation that the DHL SSDA will be approved in advance of the Burrah Park estate SSDA.

1.6. Scope of this ESCP

This ESCP has been prepared to describe the approach to construction phase soil and water management and to summarise the key standards and guidelines that will inform detailed design, implementation and operation of erosion and sediment control measures. It presents conceptual designs for a series of proposed measures that will need to be implemented upon handover of the Site by the estate developer to DHL. This includes measures to be implemented during the on-lot earthworks, civil works and site stabilisation phases of the development.

It is noted that the estate developer will implement the necessary ESCP measures during the demolition, site clearing and estate infrastructure works. Further information and details for these are provided in the Civil Engineering Report for SSD-70316465: 1953-2109 Elizabeth Drive 'Burrah Park'

The objectives of the proposed erosion and sediment control measures incorporated in this ESCP are to:

- Acknowledge the activities on a construction site which may contribute to erosion, sedimentation and water quality impacts.
- Conserve and protect soil resources.
- Minimise potential impacts on receiving land and waters from demolition, site clearing and construction activities.
- Describe industry best management practices to minimise adverse water quality and sedimentation impacts brought about through construction activities.
- Demonstrate compliance with relevant regulatory requirements.

The final sizing, location and sequencing of erosion and sediment control measures will be subject to the proposed construction sequencing, which will ultimately be determined by the principal civil contractor nominated by the Proponent. The principal civil contractor (or its representative) will be responsible for the preparation and implementation of detailed Progressive Erosion and Sediment Control Plans (PESCPs), which will be incorporated into an overarching Construction Environmental Management Plan (CEMP).

1.7. Key References

This ESCP references several guidelines that document minimum requirements and best practice for erosion and sediment control:

Document Title	Abbreviation
<ul style="list-style-type: none"> ■ International Erosion Control Association (IECA) Australasia, <i>Best Practice Erosion & Sediment Control</i>, November 2008 	IECA (2008)

- | | |
|---|--------------------------------------|
| <ul style="list-style-type: none"> ■ International Erosion Control Association (IECA) Australasia, <i>Appendix B; Sediment basin design and operation</i> (Revision – June 2018), www.austieca.com.au/documents/item/697 | <p>IECA Appendix B (2018)</p> |
| <ul style="list-style-type: none"> ■ Landcom, <i>Managing Urban Stormwater: Soils and Construction (Volume 1)</i>, 4th edition, March 2004 | <p>The Blue Book</p> |
| <ul style="list-style-type: none"> ■ NSW Department of Planning and Environment, <i>Technical guidance for achieving Wianamatta-South Creek stormwater management targets</i>, September 2022 | <p>DPE Technical Guidance (2022)</p> |

In addition to these documents, fact sheets prepared by [Catchments and Creeks Pty Ltd](#) have also been referred to throughout this ESCP.

1.8. Supporting and Reference Documentation

The following documentation is referred to throughout and should be read in conjunction with this report:

- Civil Drawings – C1300 series (AT&L)
- Civil Infrastructure Report (AT&L)
- Water and Stormwater Management Plan (AT&L)
- Report of Salinity Investigation and Preliminary Salinity Management Plan (Douglas Partners, June 2021)
- Primary erosion and sediment control plan (EMM, August 2023)

2. Pre-Development Site Conditions

2.1. Site Geology

A desktop study and geotechnical investigation of the Site was prepared by Douglas Partners. This study identified that the site is underlain by the Bringelly Shale formation. This typically comprising of shale, carbonaceous claystone, laminite, fine to medium grained lithic sandstone and some coal bands and tuff.

2.1.1. Groundwater

According to the ‘Detailed Site Investigation for Contamination’ report and the ‘Report on Salinity Investigation and Preliminary Salinity Management Plan’ (June 2021) prepared by Douglas Partners for the Burrah Park estate development, groundwater within the area is expected to be saline and shallow, ranging from 0.7 to 4.3 meters below ground level. Groundwater flows are likely to be very low (typically <1 L/s) owing to the very low permeability of the underlying shale layers. No free groundwater was observed during Douglas Partners’ site investigations. However, as noted in Douglas Partners’ report, groundwater levels are affected by climatic conditions and soil permeability and will therefore vary over time.

As discussed in Section Error! Reference source not found. of the Civil Infrastructure Report (October 2024) prepared by AT&L, the estate developer is expected carry out bulk earthworks for the Site and provide level pads suitable for large-scale industrial warehouse development. Further site trimming and detailed excavations shall be carried out by DHL’s appointed contractor to prepare the site for construction. It is understood that the estate developer will address groundwater impacts as part of the estate-wide earthworks prior to the Site being turned over to DHL.

2.1.2. Salinity

According to the ‘Report on Salinity Investigation and Preliminary Salinity Management Plan’ (June 2021) prepared by Douglas Partners for the Burra Park estate development, the site does not identify “to be within an area or close to an area of an identified risk for acid sulphate soils”.

2.3. Hydrology

2.3.1. Hydrological Soil Group

The Hydrological Soil Groups have been derived from eSPADEV2 DPE. The predominant soil groups in the area are Groups C and D and are described as follows:

- Group C – Soils having slow infiltration rates when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.
- Group D – soils having very slow infiltration rates when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a claypan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission.

2.3.2. Long-term Rainfall and Evaporation

Long term average rainfall and evapotranspiration data has been derived from the long-term monthly average rainfall data in the Bureau of Meteorology (BOM) data set, station 67068, and is summarised in Error! Reference source not found.. Evapotranspiration rates have been adopted from the Department of Planning and Environment (DPE) Technical Guidance on achieving the Wianamatta-south Creek Stormwater Management Targets 2022.

The table demonstrates that the period with the highest rainfall erosivity potential occurs during January to March.

Table 1: Rainfall and Evapotranspiration

Month	Rainfall (mm)	Potential Evapotranspiration (mm)
January	93.0	183
February	93.4	144
March	88.9	127
April	64.9	88
May	60.0	60
June	66.3	41
July	33.5	48
August	47.5	73
September	37.7	107
October	55.6	138
November	73.9	150
December	74.1	177
Long Term Average	789.0	-

2.3.3. Rainfall Erosivity

The Rainfall Erosivity Factor (R-Factor) is a measure of the ability of rainfall to cause erosion. It is the product of two components total energy (E) from the maximum 30-minute storm intensity (I30). Therefore, the total of EI for a year is equal to the R-Factor. The blue book provides a map for NSW with estimated R-Factors, where more detail is required, the following equation is used to calculate R-Factor.

$$R = 164.74(1.1177)^S S^{0.6444}$$

Where, S = 2-year ARI (0.5 Exceedances per year (EY)), 6 hour ARI rainfall event (mm).

Rainfall Erosivity at the site was calculated to be 1830.

3. Statutory and Development Control Requirements

3.1. Statutory Planning Controls

The proposed development site is subject to the controls outlined within the following planning instruments:

3.1.1. Environmental Planning and Assessment Act 1079

State Significant Development 70817958

The Ministers conditions of approval for the project have not currently been released, this ESC plan will be updated as required to satisfy the conditions of consent.

3.1.2. Protection of the Environment Operations Act 1994

The Protection of the environment Operations Act 1994 established offences related to polluting the environment and processes for granting license for environmental protection for:

- Waste pollution control
- Air pollution control
- Water pollution control
- Land and noise pollution control

Of relevance to this ESC is the prohibition of water pollution under section 120 of the Act.

3.2. Development Control Plans

3.2.1. Western Sydney Aerotropolis Development Control Plan 2022

The final version of the *Western Sydney Aerotropolis Development Control Plan Phase 2 (WSA DCP)* was adopted in November 2022. It presents the latest precinct planning principles, objectives, and performance outcomes expected across the various precincts around the Aerotropolis to allow precinct planning and individual lot developments to progress.

Table 2: DCP controls relating to Erosion and Sediment Control

DCP Reference	Requirement	Report Section
Section 2.4 Table 5	All exposed areas greater than 2500 square metres must be provided with sediment controls designed, implemented and maintained to a standard achieving at least 80% of the average annual runoff volume of the contributing catchment treated (i.e. 80% hydrological effectiveness) to 50mg/L TSS or less, and pH in the range 6.5–8.5	
Section 2.4 Table 5	Prior to completion of works for the development, and prior to removal of sediment controls, all site surfaces must be effectively stabilised including all drainage systems. An effectively stabilised surface is defined as one that does not or is not likely to result in visible evidence of soil loss caused by sheet, rill or gully erosion or lead to sedimentation water contamination.	

DCP Reference	Requirement	Report Section
Section 4.4.2	1. Development applications must include an Erosion and Sediment Control Plan (ESCP) prepared by a Certified Professional in Erosion and Sediment Control (CPESC).	
	2. The ESCP is to be implemented under the supervision of a CPESC. The relevant consent authority will require the CPESC to regularly audit and certify that the works are suitable to protect Wianamatta-South Creek and its tributaries, including audit reports.	
	3. Soil erosion and sediment control measures are to be provided on-site before the commencement of any earthworks or development activity, in accordance with the approved ESCP. These must be maintained throughout the course of construction until disturbed areas have been revegetated and the soil stabilised to the satisfaction of the relevant consent authority.	
	4. Development is to comply with the construction phase targets in Table 5.	
	5. Erosion and sediment control measures are to be installed in accordance with best practice (including Managing Urban Stormwater – Soils and Construction and Best Practice Erosion and Sediment Control, IECA).	
	<p>6. The ESCP is to consider the following measures:</p> <ul style="list-style-type: none"> ■ Identify all areas likely to cause pollution of waterways from stormwater run-off and implement appropriate devices to stop the risk of pollution. ■ Divert clean water around the construction site to prevent contamination. ■ Retain as much natural vegetation as possible and limit site disturbance. ■ Control stormwater that enters the construction site from upstream. ■ Divert stormwater from undisturbed upper slopes onto stable areas. ■ Retain and stockpile all excavated topsoil for future landscaping. ■ Prevent sediment/silt from entering adjoining property by installing sediment control devices at the low side of sites and wash down areas. ■ Install high efficiency sediments basins to ensure compliance with the water quality target throughout the construction and building phases. ■ Provide a single, stabilised entry/exit point to the site. ■ Prevent sediment, including building materials, from reaching the road or stormwater system. Sediment is to be removed by sweeping, shovelling, or sponging. Under no circumstances shall sediment be hosed. ■ Where a work zone permit over public property is applicable, debris control devices are to prevent spillage of building materials into stormwater drains. ■ Compact all drainage lines when backfilling. 	

DCP Reference	Requirement	Report Section
	<ul style="list-style-type: none"> ■ Connect downpipes to the stormwater system as early as possible. ■ Revegetate all disturbed areas, after on-site works are completed; and ■ Maintain all sediment control devices during earthworks and construction. 	

4. Potential erosion and sedimentation impacts

4.1. Summary of impacts

The major potential impacts on the riparian environment relate to erosion of distributed areas or stockpiles and sediment transportation. Potential adverse impacts from erosion and sediment transportation can include:

- Loss of topsoil.
- Increased water turbidity.
- Decreased levels of dissolved oxygen.
- Changed salinity levels.
- Changed pH levels.
- Smothering of stream beds and aquatic vegetation.
- Reduction in aquatic habitat diversity.
- Increased maintenance costs.
- Decrease in waterway capacity leading to increased flood levels and durations.

4.2. Sources of pollution

The activities and aspects of the works that have potential to lead to erosion, sediment transport, siltation and contamination of natural waters include:

- Earthworks undertaken immediately prior to rainfall periods.
- Work areas that have not been stabilised.
- Extraction of construction water from waterways during low rainfall periods.
- Clearing of vegetation and the methods adopted, particularly in advance of construction works.
- Stripping of topsoil, particularly in advance of construction works.
- Bulk earthworks and construction of pavements.
- Works within drainage paths, including depressions and waterways.
- Stockpiling of excavated materials.
- Storage and transfer of oils, fuels, fertilisers and chemicals.
- Maintenance of plant and equipment.
- Ineffective implementation of erosion and sediment control measures.
- Inadequate maintenance of environmental control measures; and
- Time taken for the rehabilitation / revegetation of disturbed areas.

4.3. Assessment of erosion hazard

The NSW Blue Book (Landcom 2004) outlines the process for the assessment of erosion hazards in NSW. This process relies on two steps to determine the overall erosion hazard through the consideration of catchment slopes and rainfall erosivity (R-Factor). The Soil Loss Class (SLC) assessment is then undertaken to determine

the annual soil loss through the Revised Universal Soil Loss Equation (RUSLE). The SLC determines the erosion management and mitigations measures to be utilized on site.

4.4. Soil Erosion Hazard Assessment

A site-specific soil sampling of the soil erodibility has not been undertaken for the site, i.e. soil erodibility factors (K-Factors). In the absence of this assessment AT&L have utilised eSPADE by DPE to determine soil erodibility factors (K-Factors). A analysis of the information indicates that the site has a high erosion potential as the K-Factor ranges between 0.07-0.08 and the threshold for high erosion potential being K-Factors > 0.04.

4.5. Slope and rainfall erosion hazard analysis

Given the high erosion potential at site, further assessment is required to determine the SLC. This is achieved by calculating the average erosion in tonnes per hectare using the annual average soil loss in RUSLE calculations. The R-Factor was calculated in Section 2.3.3. as 1830 MJ.mm.ha.h and the general slope of the proposed works is 0.5%-5%.

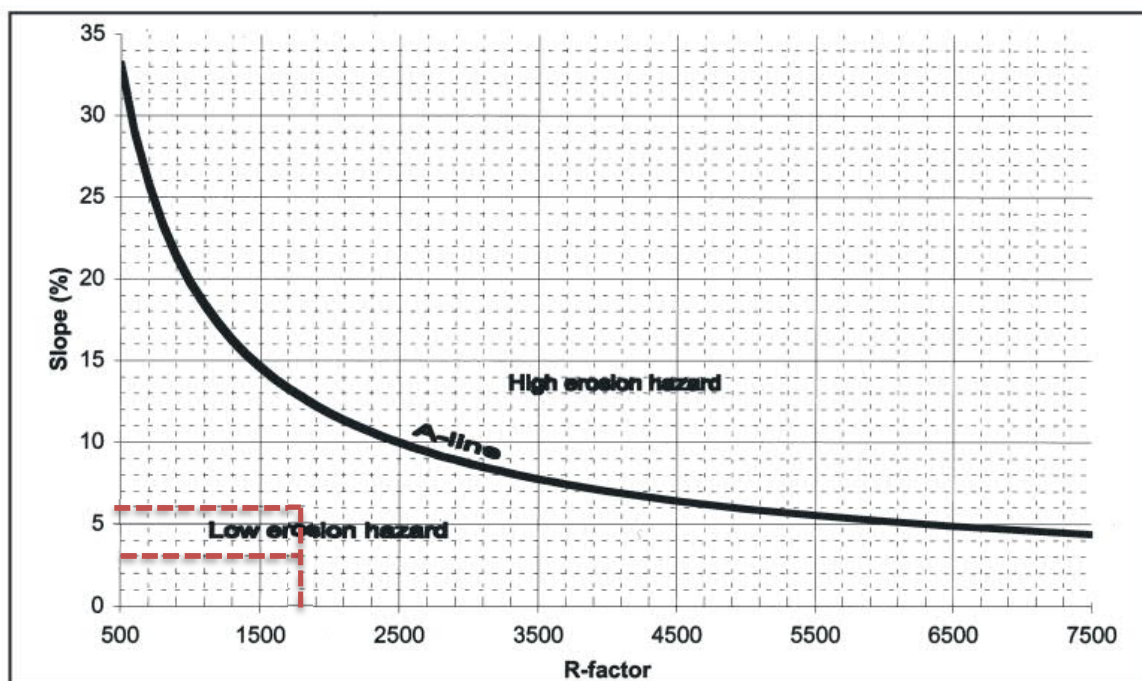


Figure 4.6 Assessment of potential erosion hazard

Figure 6: Bluebook Nomograph for Potential Erosion Hazard

Using the nomograph shown in Figure 6, the erosion hazard is low. No further calculations are required.

4.6. RUSLE Analysis

Prior to the design of the ESCP, a Revised Universal Soil Loss Equation (RUSLE) has been undertaken in accordance with the "Blue Book". This analysis has been undertaken to predict the long term, average and annual soil loss from sheet and rill flow from the Site under specified management conditions.

Estimating soil loss for a proposed development has four important applications to soil and water management. These are to:

1. Assess the erosion risk at a site.

2. Identify suitable measures to overcome the erosion risk.
3. Estimate the required capacity of sediment retarding basins.
4. Compare the effectiveness of various erosion control measures.

AT&L have calculated the soil loss per hectare utilising RUSLE equation to determine the soil loss class for a range of slopes in Table 3.

Table 3: Soil Loss Classification.

Slope gradient (%)	1	3	5	6	10	20	30
Rainfall erosivity (<i>R</i> -factor)	1830	1830	1830	1830	1830	1830	1830
Soil erodibility (<i>K</i> -factor)	0.075	0.075	0.075	0.075	0.075	0.075	0.075
Slope length (m)	80	80	80	80	80	80	80
Length/gradient (<i>LS</i> -factor)	0.019	0.65	1.19	1.47	2.81	7.32	11.6
Erosion control practice (<i>P</i> -factor)	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Ground cover (<i>C</i> -factor)	1	1	1	1	1	1	1
Soil Loss (t/ha/yr)	3	83	163	202	386	1005	1592
Soil Class (SLC)	1	1	2	2	4	6	7

The erosion hazard potential of the Site is considered low, due to the calculated soil loss lying in the range of 83 to 202 tonnes/ha/year as per Table 4.2 of the Blue Book.

5. Erosion and Sediment Control Measures

5.1. Summary of Measures

This section outlines the proposed erosion and sediment control measures that have been incorporated in this ESCP. An indicative layout and details of these proposed measures is presented on a series of concept erosion and sediment control plan drawings, included in Appendix A.

As a minimum, the following erosion and sediment control measures and construction methodology will be adopted to minimise the impact of sedimentation due to construction works:

- Minimising the extent and duration of land disturbance
- Diversion of surface runoff from undisturbed areas away from disturbed areas and discharge via suitable scour protection.
- Provision of hay bale type flow diverters to catch drainage and divert to “clean” water drains.
- Diversion of sediment-laden water into temporary sediment control basins to capture the design storm volume and undertake flocculation (if required).
- Provision of construction traffic shaker grids and vehicle / wheel wash facilities to prevent vehicles carrying soils beyond the Site, in particular onto the road network adjacent to the Site.
- Provision of catch drains to carry sediment-laden water to sediment basins.
- Provision of silt fences to filter and retain sediments at source.
- Rapid stabilisation of disturbed and exposed ground surfaces with hydro-seeding areas where future construction and building works are not currently proposed.
- All temporary sediment basins will be located clear of the 1% AEP flood extents from local overland flow.

5.2. Design Criteria

All design, documentation, installation and maintenance of sediment and erosion controls has been undertaken in accordance with the requirements of:

- *Protection of the Environment Operations Act*
- The Blue Book
- IECA (2008) and IECA Appendix B (2018)
- DPE Technical Guidance
- Penrith City Council's guidelines and specifications

5.3. Sediment Basins

As required by the DCP, TSS and volume management measures are required on site to achieve the Wianamatta-South Creek water quality targets.

The *Technical guidance for achieving Wianamatta-South Creek stormwater management targets* specifies that to achieve the adopted construction phase water quality targets, sediment basins need to be sized and operated as either a Type-A or Type-B basin as per IECA Appendix B (2018). Type A and Type B basins incorporate automated flocculant dosing systems and a suitable supply of flocculant or coagulant.

An indicative location of the proposed sediment basin is presented on AT&L drawings, refer to Appendix A. Ultimately, the final temporary sediment basin(s) locations and sizes will be provided to suit development staging requirements and will be sized and maintained in accordance with the requirements of the above-mentioned authority documents.

As noted in Section 1.6, the estate developer will implement the necessary ESCP measures during the demolition, site clearing and estate infrastructure works. This includes a sediment basin for each lot with associated catch drains and check dams to ensure that the earthworks pad for Lots 4.1 (WH04) and 4.2 (WH03) drains into their respective sediment basins. Further information and details for these are provided in the Civil Engineering Report for SSD-70316465: 1953-2109 Elizabeth Drive 'Burrah Park'

5.4. Site Stabilisation

As per The Blue Book (Landcom, 2004), site stabilisation will be achieved to protect disturbed surfaces from erosive forces. Maximum cover factors (C-factor) applicable to the Site are specified in Table 4.

Table 4: Target cover factor (C) during and after construction (Landcom, 2004)

Land	Nominated duration	Maximum C-factor	Comments
Waterways and other areas subject to concentrated flows (e.g., downstream of proposed detention basin)	Post-construction	0.05	Applies after 10 working days from completion of formation and before they are allowed to carry any concentrated flows.
Material stockpiles	Post-construction	0.10	Applies after 10 working days from completion of formation.
All lands, including waterways and stockpiles	During construction	0.15	Applies after 20 working days of inactivity, even though works might continue later.

Various stabilisation methods can be implemented (refer to Table A3 of The Blue Book), such as:

- Biodegradable mulches (e.g., wood chip, hydromulching, bonded fibre)
- Rolled Erosion Control Products (RECPs) (e.g., jute, coir, plastic fibre netting)
- Hydraulic soil stabilisers (bitumen emulsion)
- Temporary seeding
- Rolled turf

Construction activities within each lot will be limited to the minimum areas necessary to minimise erosion and silt and dust generation. Disturbed areas of the Site will be stabilised as soon as practicable.

5.5. Dispersive soil management

Management of dispersive (sodic) soils should be undertaken in accordance with IECA (2008). Specific advice regarding the management of problematic soils (including dispersive soils) and an overview of critical erosion and sediment control measures are outlined in Table 6.3 and Table 7.1 of IECA (2008). In summary:

- The effective use of flocculated sediment basins is critical for environmental protection where dispersive soils are present.
- Rilling is usually best managed through the appropriate treatment and/or placement of dispersive soils (rather than through the control of runoff velocity).
- Dispersive soils should be treated (e.g., with gypsum) or buried under a layer of non-dispersive soil before applying a final surface treatment, even if the final surface treatment is rock, gabions or concrete.

Where possible, catch drains and drainage channels should be avoided where they need to be cut into dispersive soils. If this cannot be avoided, appropriate sediment controls will be implemented such as:

- Addition of gypsum (or similar) to improve settlement properties or to minimise the risk of dispersion.
- Placement of sediment basins at locations that will maximise the capture of sediment-laden runoff in areas of dispersive soils.

6. Inspection, Maintenance and Monitoring

6.1. Site inspection and maintenance

The inspection and maintenance requirements outlined in this section must be carried out while earthworks are being conducted, and until all areas are re-established.

The Contractor will be required to inspect the Site after every rainfall event and at least weekly, and will:

- Inspect and assess the effectiveness of the ESCP and identify any inadequacies that may arise during normal work activities or from a revised construction methodology.
- Construct additional erosion and sediment control works as necessary to ensure the desired protection is given to downstream lands and waterways.
- Ensure that drains operate properly and to affect any repairs.
- Remove spilled sand or other materials from hazard areas, including lands closer than 5 metres from areas of likely concentrated or high velocity flows especially waterways and paved areas.
- Remove trapped sediment whenever less than design capacity remains within the structure.
- Ensure rehabilitated lands have affectively reduced the erosion hazard and to initiate upgrading or repair as appropriate.
- Maintain erosion and sediment control measures in a fully functioning condition until all construction activity is completed and the Site has been rehabilitated.
- Remove temporary soil conservation structures as the last activity in the rehabilitation.
- Inspect the sediment basin during the following periods:

- ▶ During construction to determine whether machinery, falling trees, or construction activity has damaged and components of the sediment basin. If damage has occurred, repair it.
- ▶ After each runoff event, inspect the erosion damage at flow entry and exit points. If damage has occurred, make the necessary repairs.
- ▶ At least weekly during the nominated wet season (if any), otherwise at least fortnightly; and
- ▶ Prior to, and immediately after, periods of 'stop work' or Site shutdown.
- Clean out accumulated sediment when it reaches the marker board/post and restore the original volume. Place sediment in a disposal area or, if appropriate, mix with dry soil on the Site.
- Do not dispose of sediment in a manner that will create an erosion or pollution hazard.
- Check all visible pipe connections for leaks, and repair as necessary.
- Check all embankments for excessive settlement, slumping of the slopes or piping between the conduit and the embankment, make all necessary repairs.
- Remove the trash and other debris from the basin and riser; and
- Submerged inflow pipes must be inspected and de-silted (as required) after each inflow event.

6.2. Sediment Basin Maintenance

Management and maintenance of the temporary on-lot basin will be the responsibility of the development proponent. In accordance with The Blue Book, the sediment basins will be managed and maintained until the works for which they were designed are completed and fully stabilised on more than 90% of the contributing catchment. Once the proposed estate-wide basins can be decommissioned as sediment basins, the permanent arrangement of the basins including bio-retention and hydraulic outlet controls (one or more concrete chambers with either pipe or orifice controls) will be completed.

The proposed development Site contains 'Type F' soils, or soils that contain a significant proportion of fine grained (33% or more of finer than 0.02mm) and require a much longer residence time to settle.

Stormwater within the settling zone should be drained or pumped out within 5 days (design time), if the nominated water quality targets can be met, to the satisfaction of the superintendent. Flocculation should be employed where extended settling is likely to fail to meet the objectives within the 5-day period.

Flocculation is when flocculating agents are applied to the sediment basins causing the colloidal particles to clump into larger units or 'floc' that can either settle in a reasonable time or be filtered.

Refer to Appendix E4 of the Blue Book for flocculation methodologies and manufacturer's instructions for application rates, regarding the proposed sediment basins.

6.3. Performance assessment

As required by IECA Appendix B (2018), ongoing review of sediment basin performance will need be carried out throughout the construction phase of the development. As noted in IECA Appendix B, '*sediment basins are not designed to achieve a specific water quality; rather, they are designed to either capture and treat a specific volume of runoff, or to treat discharges up to a specified peak flow*'. Considering this, site specific water quality management practices such as those suggested in IECA Appendix B will need to be implemented by the Contractor responsible for implementation of the ESCP. Demonstration of adaptive management practices and decision-making processes such as that presented in Figure 1Figure 7Error! Reference source not found. will provide greater certainty that all reasonable and practicable actions are being undertaken to minimise potential impacts associated with release of sediment laden water from the Site.

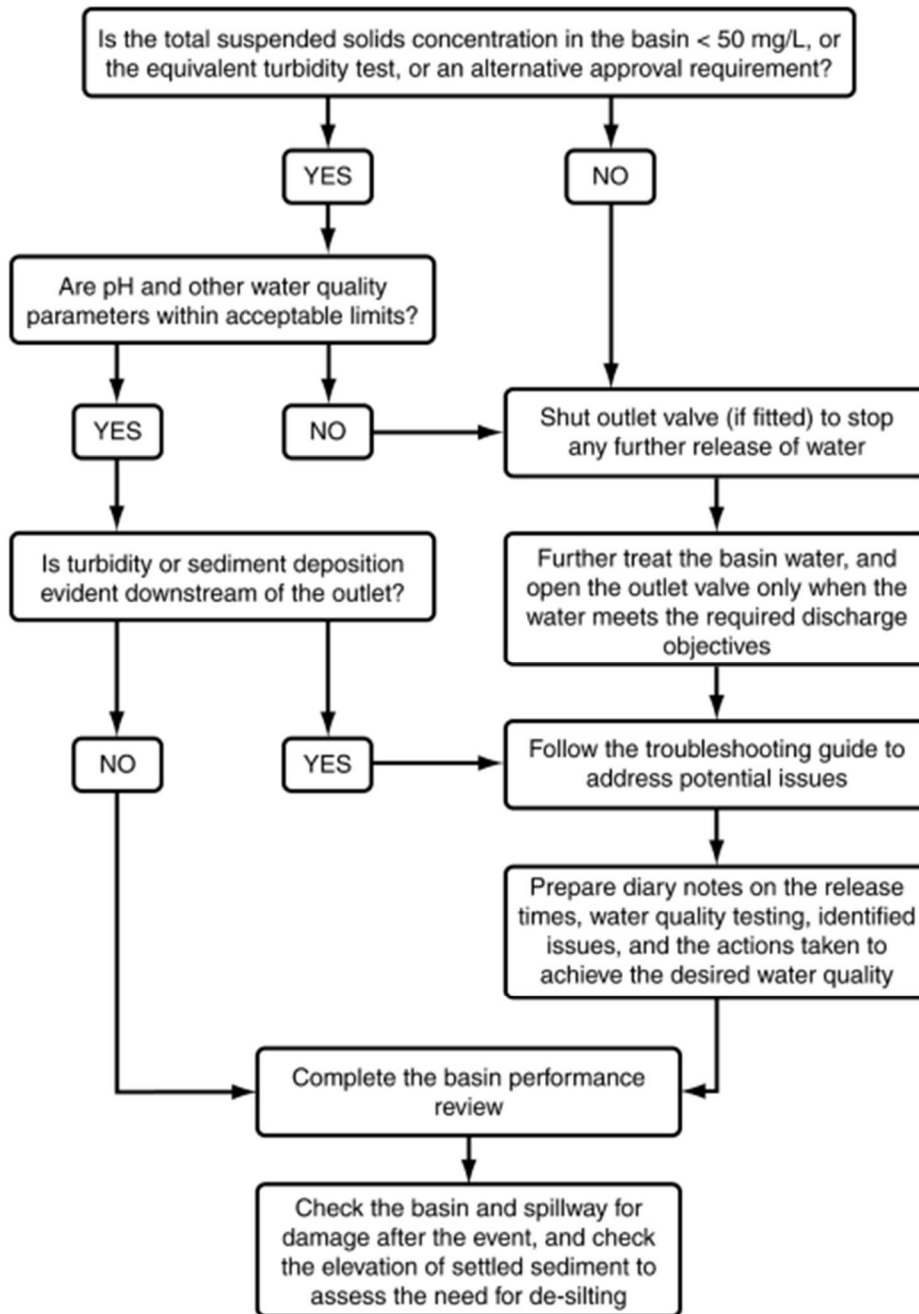


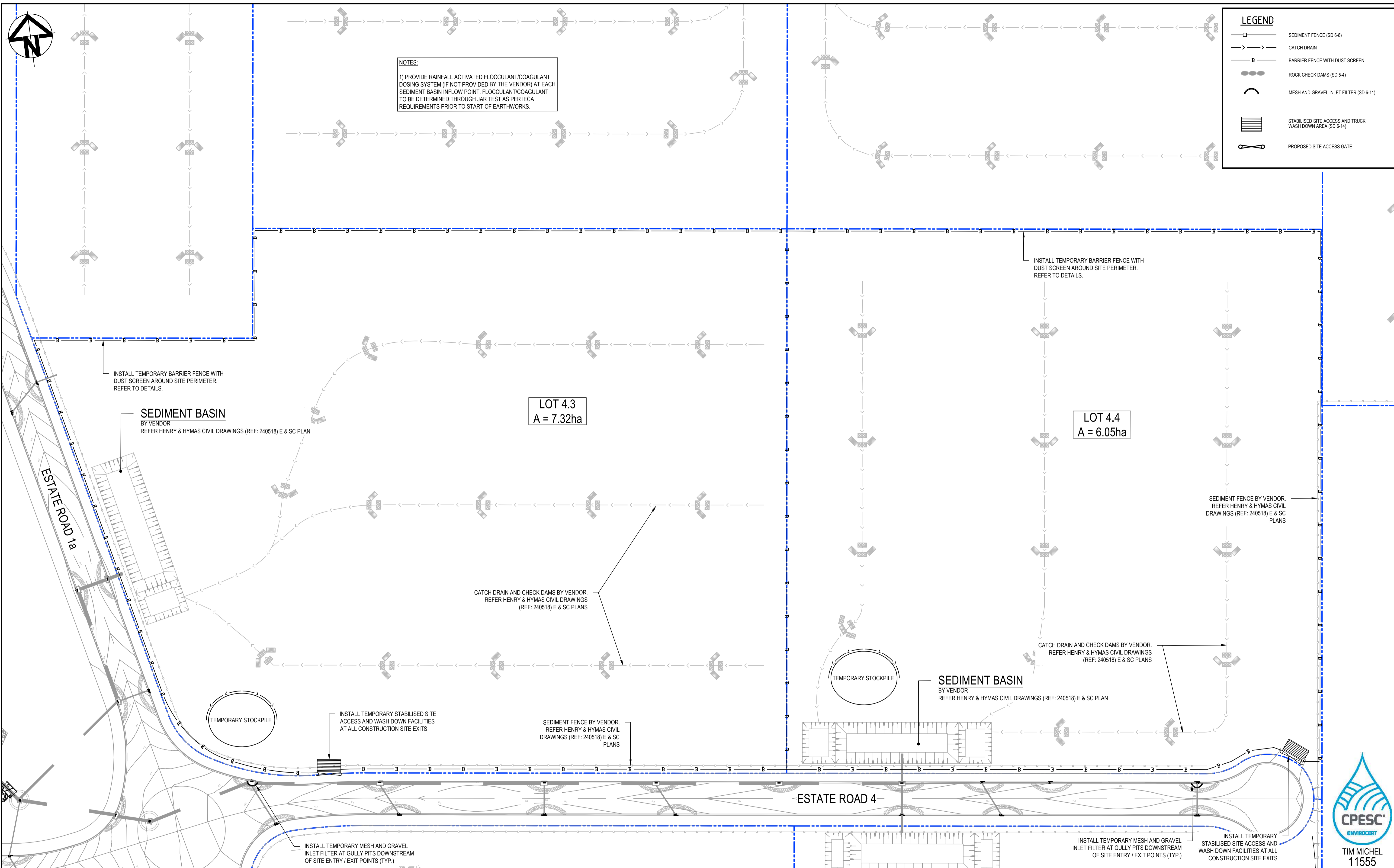
Figure 7: Sediment basin performance assessment process (IECA Appendix B, 2018)

7. Review and improvement

Continuous review and improvement of this ESCP will be achieved by ongoing evaluation of the performance of erosion and sediment control measures against the requirements of the standards and guidelines listed in Section 1.7 and the statutory and controls outlined in Section 3 .

This ESCP will be revised to address agency comments, monitoring outcomes, lessons learned and as otherwise necessary. The ESCP will also be revised whenever the construction programme, scope of work or work methods change to a degree that warrant amendments to the proposed erosion and sediment control measures.

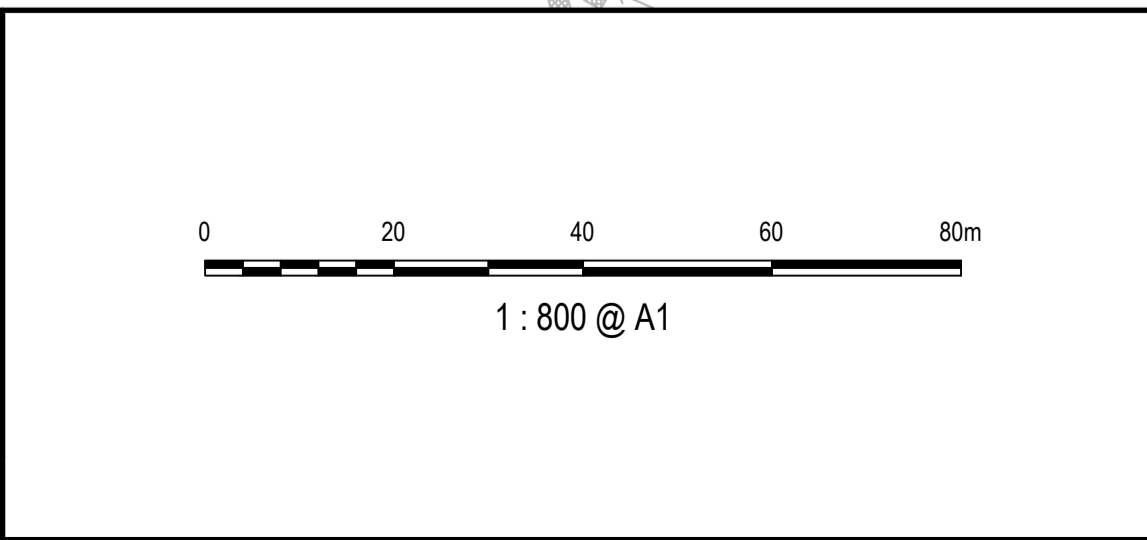
Appendix A – Concept Erosion and Sediment Control Plan Drawings



NOTES:
 1) PROVIDE RAINFALL ACTIVATED FLOCCULANT/COAGULANT DOSING SYSTEM (IF NOT PROVIDED BY THE VENDOR) AT EACH SEDIMENT BASIN INFLOW POINT. FLOCCULANT/COAGULANT TO BE DETERMINED THROUGH JAR TEST AS PER IECA REQUIREMENTS PRIOR TO START OF EARTHWORKS.

LEGEND	
	SEDIMENT FENCE (SD 6-8)
	CATCH DRAIN
	BARRIER FENCE WITH DUST SCREEN
	ROCK CHECK DAMS (SD 5-4)
	MESH AND GRAVEL INLET FILTER (SD 6-11)
	STABILISED SITE ACCESS AND TRUCK WASH DOWN AREA (SD 6-14)
	PROPOSED SITE ACCESS GATE

Issue	Description	Date
D	ISSUED FOR COORDINATION	15-10-24
WIP	ISSUED FOR COORDINATION	09-09-24
C	ISSUED FOR APPROVAL	14-06-23
B	ISSUED FOR COORDINATION	20-04-23
A	ISSUED FOR COORDINATION	22-12-22



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Client

Scale	1:800 @ A1	Drawn	CK
Grid	GDA2020	Designed	CK
Height Datum	AHD	Checked	CB
		Approved	

Project
INDUSTRIAL DEVELOPMENT BURRA PARK

Title
LOT 4.3 & 4.4 (WH 01 & 02) EROSION AND SEDIMENT CONTROL PLAN BULK EARTHWORKS PHASE

Civil Engineers and Project Managers

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Status	FOR COORDINATION NOT FOR CONSTRUCTION	A1
Project - Drawing No.	22-993-C2024	Issue
		D



NOTES:

- 1) THE SEDIMENT BASIN MAY BE MODIFIED AND/OR REDUCED ONCE THE ASSESSED SOIL LOSS RATE IS ≤ 75 t/ha/yr. ANY MODIFICATION AND/OR REDUCTION MUST BE RE-CERTIFIED BY A CPESC.
- 2) THE SEDIMENT BASIN MAY BE REMOVED ONCE ALL CONSTRUCTION ACTIVITIES ARE COMPLETED AND DISTURBED SURFACES ARE ADEQUATELY STABILISED.
- 3) THE STABILISED SITE ACCESS MUST BE RETAINED UNTIL COMPLETION OF CONSTRUCTION AND PAVING ACTIVITIES.

LEGEND

- SEDIMENT FENCE (SD 6-8)
- CATCH DRAIN
- BARRIER FENCE WITH DUST SCREEN
- ROCK CHECK DAMS (SD 5-4)
- MESH AND GRAVEL INLET FILTER (SD 6-11)
- GEOTEXTILE INLET (SD 6-12)
- STABILISED SITE ACCESS AND TRUCK WASH DOWN AREA (SD 6-14)
- PROPOSED SITE ACCESS GATE

LOT 4.3
A = 7.32ha

LOT 4.4
A = 6.05ha

SEDIMENT BASIN TO BE REMOVED AT COMPLETION OF PAVEMENT WORKS. MODIFY IF NECESSARY WITH SIZING TO SUIT REMAINING DISTURBED SITE. REFER TO NOTES 1 & 2.

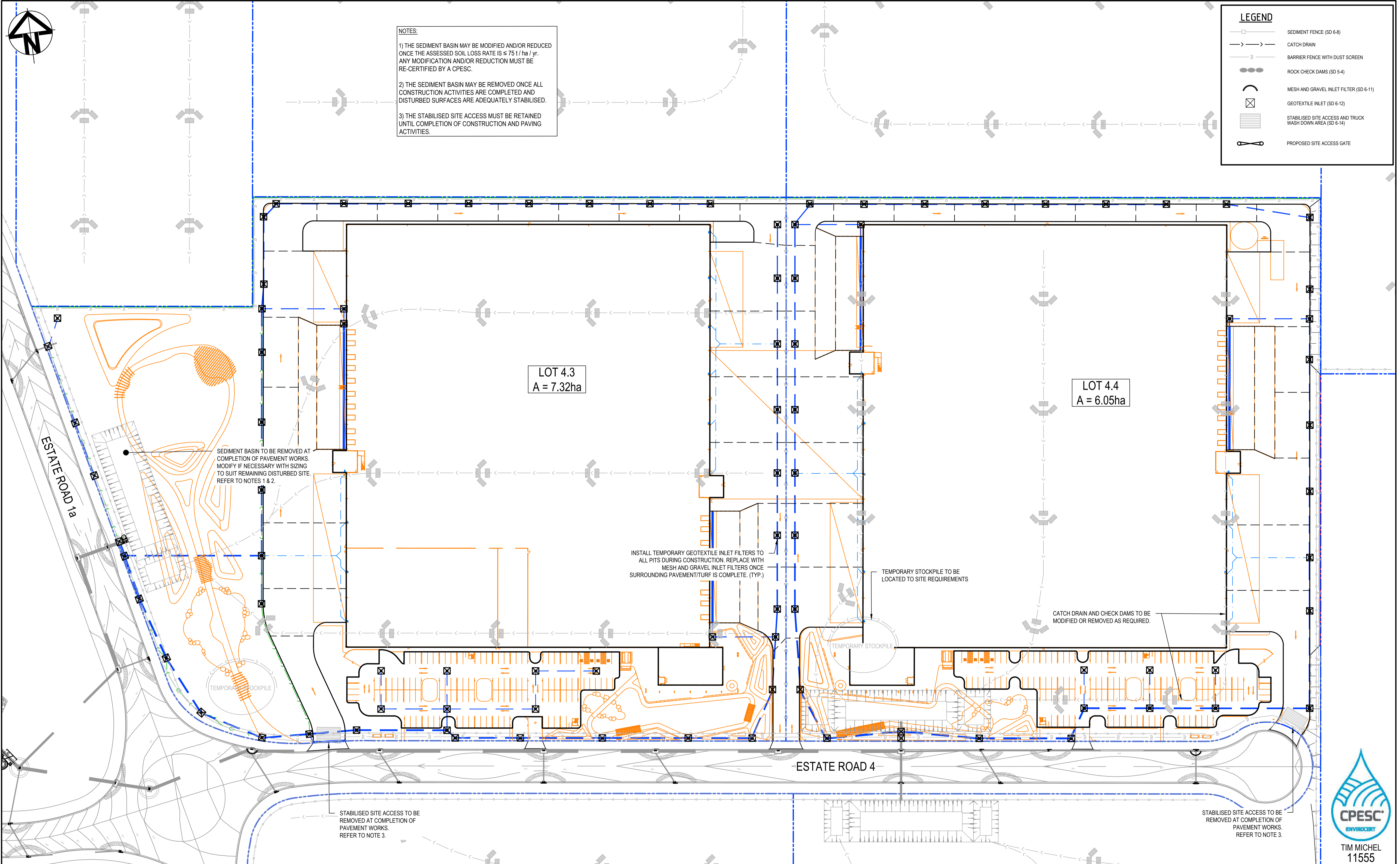
INSTALL TEMPORARY GEOTEXTILE INLET FILTERS TO ALL PITS DURING CONSTRUCTION. REPLACE WITH MESH AND GRAVEL INLET FILTERS ONCE SURROUNDING PAVEMENT/TURF IS COMPLETE. (TYP.)

TEMPORARY STOCKPILE TO BE LOCATED TO SITE REQUIREMENTS

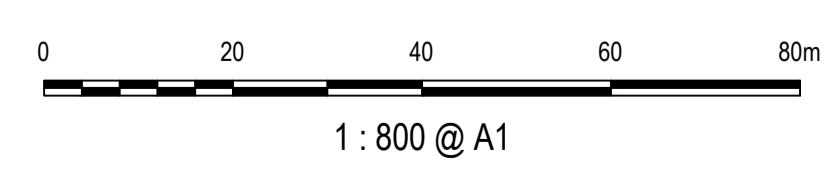
CATCH DRAIN AND CHECK DAMS TO BE MODIFIED OR REMOVED AS REQUIRED.

STABILISED SITE ACCESS TO BE REMOVED AT COMPLETION OF PAVEMENT WORKS. REFER TO NOTE 3.

STABILISED SITE ACCESS TO BE REMOVED AT COMPLETION OF PAVEMENT WORKS. REFER TO NOTE 3.



Issue	Description	Date
C	ISSUED FOR COORDINATION	15-10-24
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A	ISSUED FOR COORDINATION	20-04-23



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CK

Checked
CB

Approved

Project
INDUSTRIAL DEVELOPMENT
BURRA PARK

Title
LOT 4.3 & 4.4 (WH 01 & 02)
EROSION AND SEDIMENT
CONTROL PLAN
CIVIL WORKS PHASE

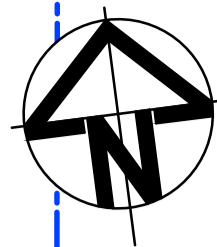
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22-993-C2025

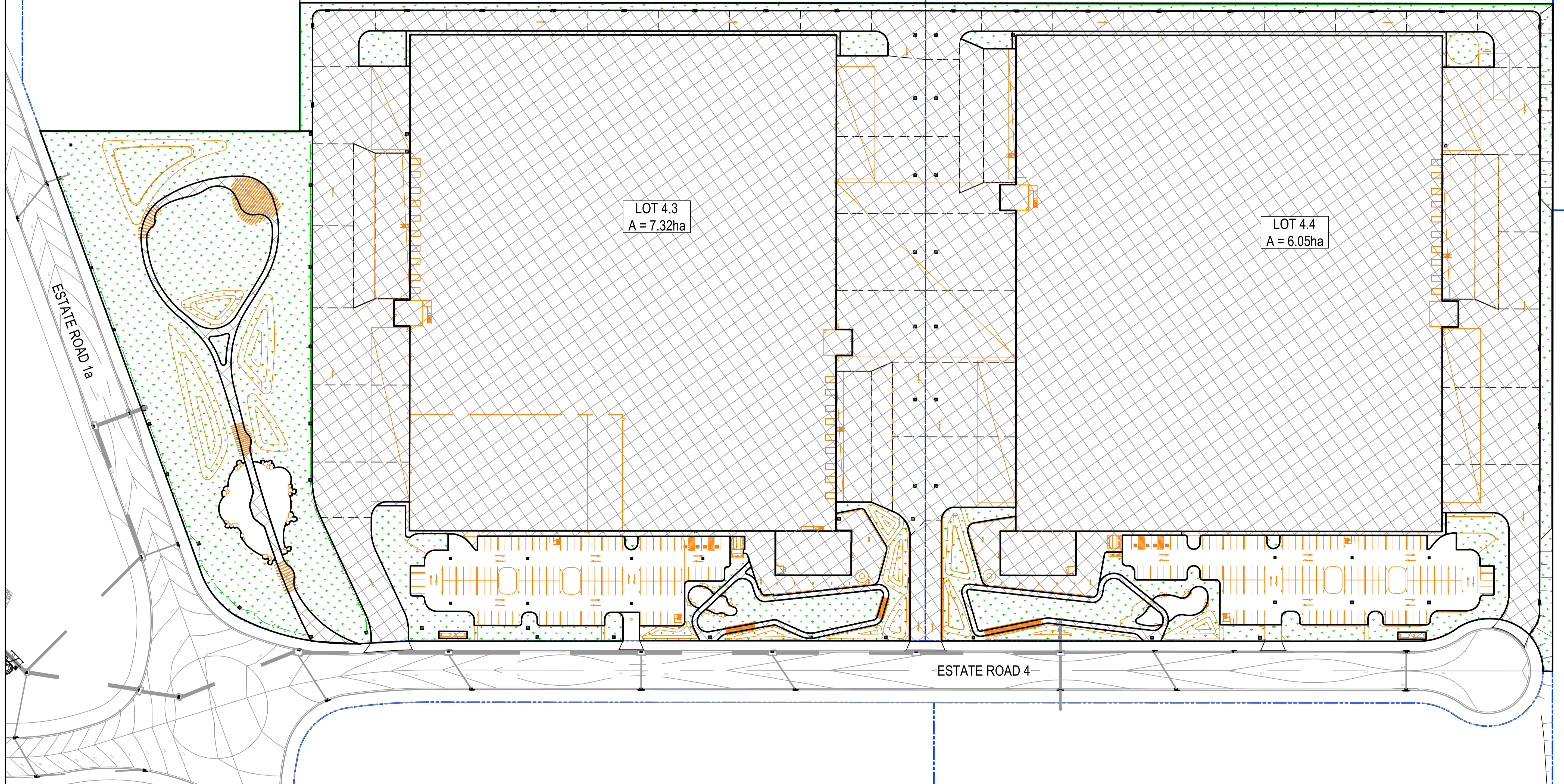
Issue
C



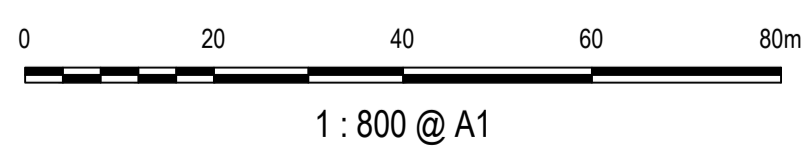
- NOTES:**
- 1) TURF, TREES AND PLANTS TO BE PLANTED AND PROTECTED AS EARLY AS POSSIBLE IN ACCORDANCE WITH THE LANDSCAPE ARCHITECT'S / SUPPLIER'S SPECIFICATIONS.
 - 2) CONTRACTOR TO MAINTAIN ALL TURF AND PLANTING THROUGHOUT THE MAINTENANCE PERIOD IN ACCORDANCE WITH THE LANDSCAPE ARCHITECT'S / SUPPLIER'S SPECIFICATIONS.
 - 3) ALL PAVED SURFACES SHALL BE SWEEPED CLEAN REGULARLY TO PREVENT LITTER AND SEDIMENT FROM ENTERING THE DRAINAGE SYSTEM.
 - 4) TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES MAY BE REMOVED AT COMPLETION OF ALL CONSTRUCTION AND STABILISATION WORKS.
 - 5) LANDSCAPE IRRIGATION SYSTEM TO BE INSTALLED AND OPERATIONAL PRIOR TO PLANTING. IRRIGATION SYSTEM IS TO BE SUPPLIED FROM RAINWATER HARVESTING TANKS WITH AUTOMATIC SWITCH TO RECYCLED WATER SUPPLY SYSTEM WHEN THE TANKS ARE EMPTY.
 - 6) TEMPORARY RAINWATER TANKS TO BE REMOVED WHEN PERMANENT RECYCLED WATER SUPPLY IS AVAILABLE TO THE SITE.

LEGEND

- SURFACES TO BE STABILISED WITH TURF/PLANTING. (REFER LANDSCAPE ARCHITECT'S DWGS)
- SURFACES TO BE STABILISED WITH PAVING AND STRUCTURES



Issue	Description	Date
C	ISSUED FOR COORDINATION	15-10-24
WIP	ISSUED FOR COORDINATION	09-09-24
B	ISSUED FOR APPROVAL	14-06-23
A	ISSUED FOR COORDINATION	20-04-23



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Client

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Height Datum: AHD

Drawn: CK

Designed: CK

Checked: CB

Approved:

Project: INDUSTRIAL DEVELOPMENT BURRA PARK

Title: LOT 4.3 & 4.4 (WH 01 & 02) EROSION AND SEDIMENT CONTROL PLAN STABILISATION PHASE

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Status: FOR COORDINATION NOT FOR CONSTRUCTION

Project - Drawing No. 22-993-C2026

Issue: C

EROSION AND SEDIMENT CONTROL

NOTES

GENERAL INSTRUCTIONS

- THE SITE SUPERINTENDENT/ENGINEER WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS DOCUMENTED.
- ALL WORK SHALL BE GENERALLY CARRIED OUT IN ACCORDANCE WITH
 - LOCAL AUTHORITY REQUIREMENTS
 - STATE REQUIREMENTS
 - LANDCOM'S "MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION", 4th EDITION, MARCH 2004.
- WHEN STORMWATER PITS ARE CONSTRUCTED, PREVENT SITE RUNOFF ENTERING UNLESS SEDIMENT FENCES ARE ERECTED AROUND PITS.
- CONTRACTOR IS TO ENSURE ALL EROSION & SEDIMENT CONTROL DEVICES ARE MAINTAINED IN GOOD WORKING ORDER AND OPERATE EFFECTIVELY. REPAIRS AND OR MAINTENANCE SHALL BE UNDERTAKEN, AS REQUIRED, PARTICULARLY FOLLOWING STORM EVENTS.

LAND DISTURBANCE

- WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE WILL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE:
 - INSTALL A WIND FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
 - INSTALL A SEDIMENT FENCE ALONG THE BOUNDARIES AS SHOWN ON PLAN. REFER DETAIL.
 - CONSTRUCT STABILISED CONSTRUCTION ENTRANCE TO LOCATION AS DETERMINED BY SUPERINTENDENT/ENGINEER. REFER DETAIL.
 - INSTALL SEDIMENT BASIN AS SHOWN ON PLANS.
 - INSTALL SEDIMENT TRAPS AS SHOWN ON PLANS.
 - UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

EROSION CONTROL

- DURING WINDY WEATHER, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
- FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 20 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.

SEDIMENT CONTROL

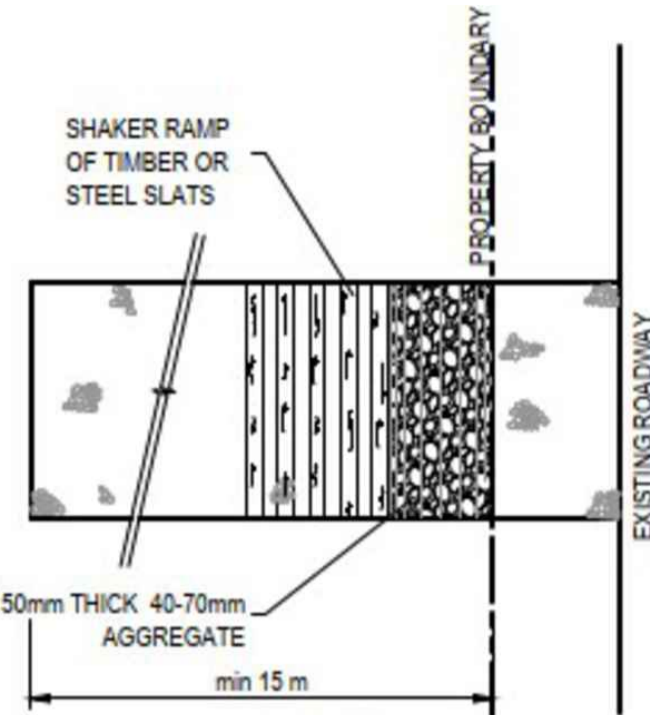
- STOCKPILES WILL NOT BE LOCATED WITHIN 2 METRES OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS. WHERE THEY ARE BETWEEN 2 AND 5 METRES FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.
- ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
- WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
- TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.

OTHER MATTERS

- ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
- ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY:
 - PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE
 - ENSURING THAT NOTHING IS NAILED TO THEM
 - PROHIBITING PAVING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS:
 - ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICH EVER IS THE GREATER
 - A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MILLIMETRES DEPTH
 - CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.

STAGING

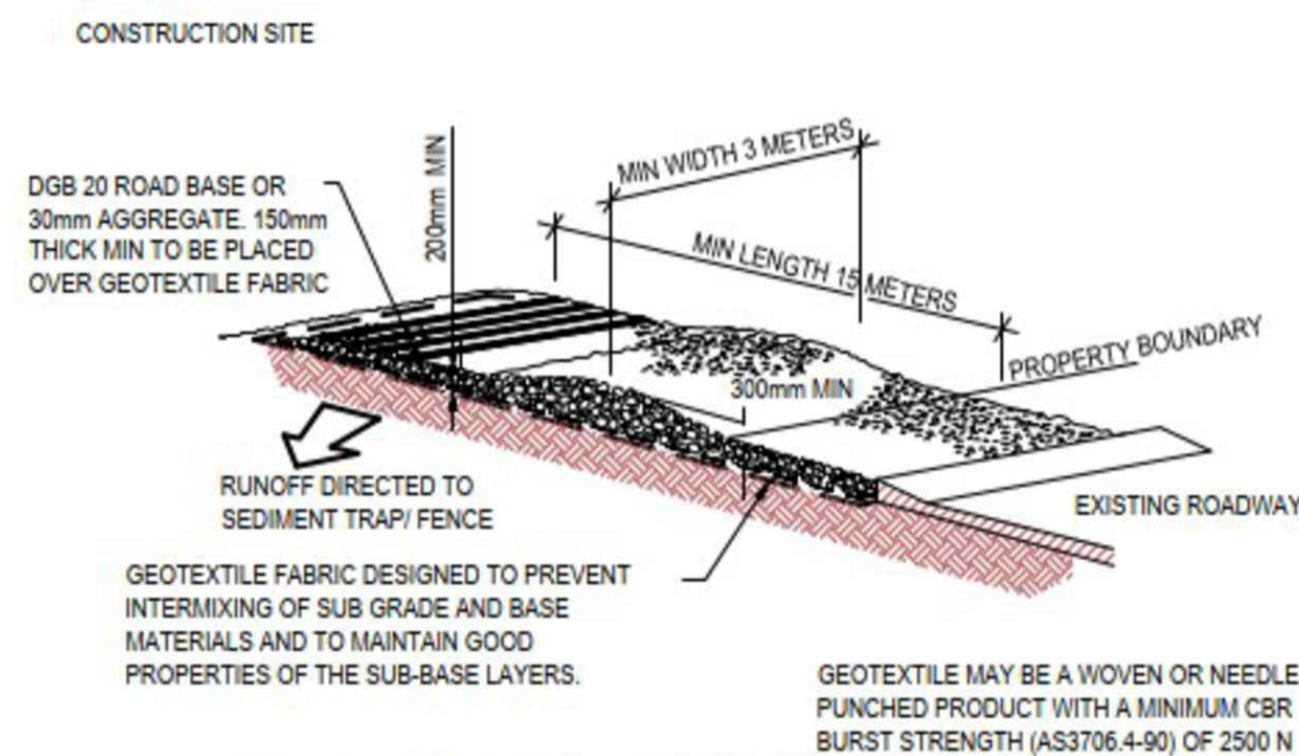
SUITABLE EROSION AND SEDIMENT CONTROLS SHALL BE DESIGNED, PROVIDED AND MAINTAINED BY THE CONTRACTOR THROUGHOUT ALL STAGES OF WORKS, INCLUDING AT COMPLETION OF THE BULK EARTHWORKS WHERE SHOWN ON AT&L DRAWINGS OR WHERE DIRECTED BY THE SUPERINTENDENT OR PENRITH CITY COUNCIL'S ENGINEERS. SEDIMENT AND EROSION CONTROLS ARE TO BE DESIGNED AND DOCUMENTED BY A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC) ENGAGED BY THE CONTRACTOR AND APPROVED AS PART OF THE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. SUCH CONTROLS SHALL BE IN ACCORDANCE WITH THE RELEVANT REQUIREMENTS IN THE LATEST VERSION OF THE MANAGING URBAN STORMWATER, SOILS AND CONSTRUCTION GUIDELINE (LANDCOM).



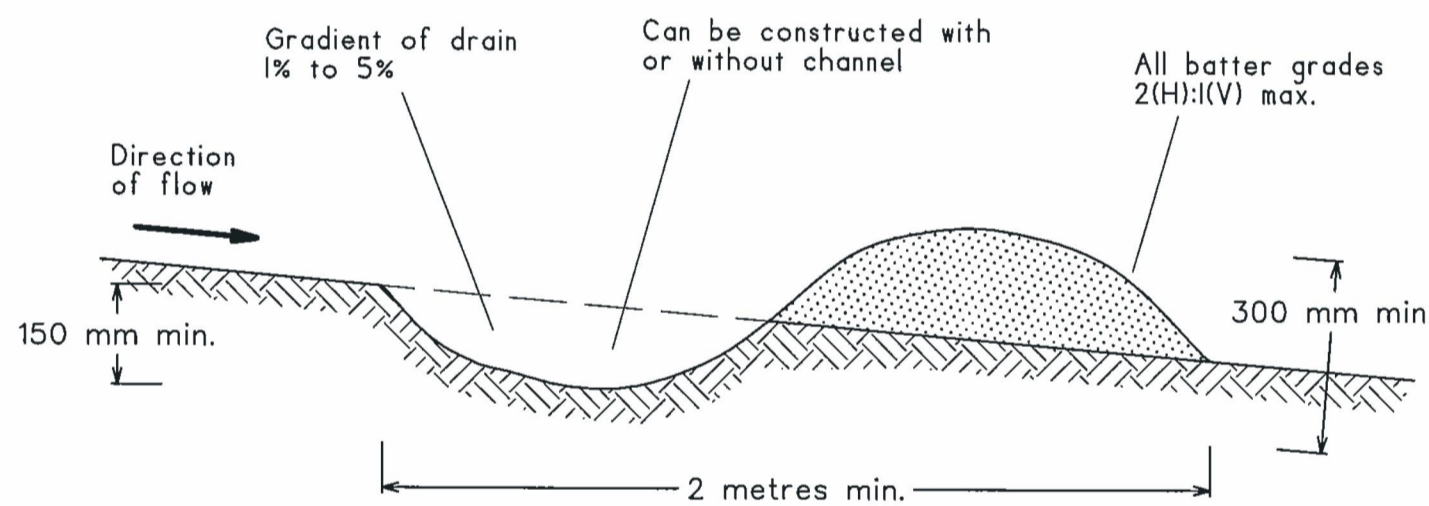
PLAN

STABILISED SITE ACCESS WITH SHAKER GRID

N.T.S.



STABILISED SITE ACCESS WITH SHAKER GRID

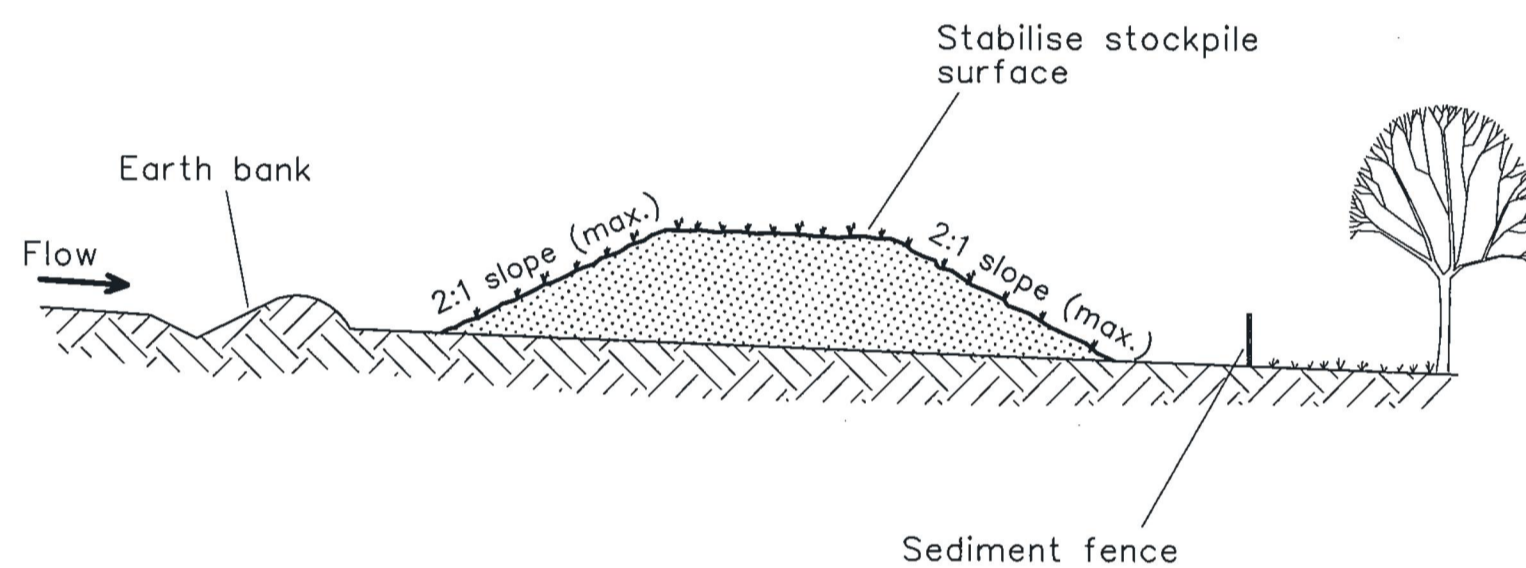


Construction Notes

- Build with gradients between 1 percent and 5 percent.
- Avoid removing trees and shrubs if possible - work around them.
- Ensure the structures are free of projections or other irregularities that could impede water flow.
- Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
- Ensure the banks are properly compacted to prevent failure.
- Complete permanent or temporary stabilisation within 10 days of construction.

EARTH BANK (LOW FLOW)

SD 5-5

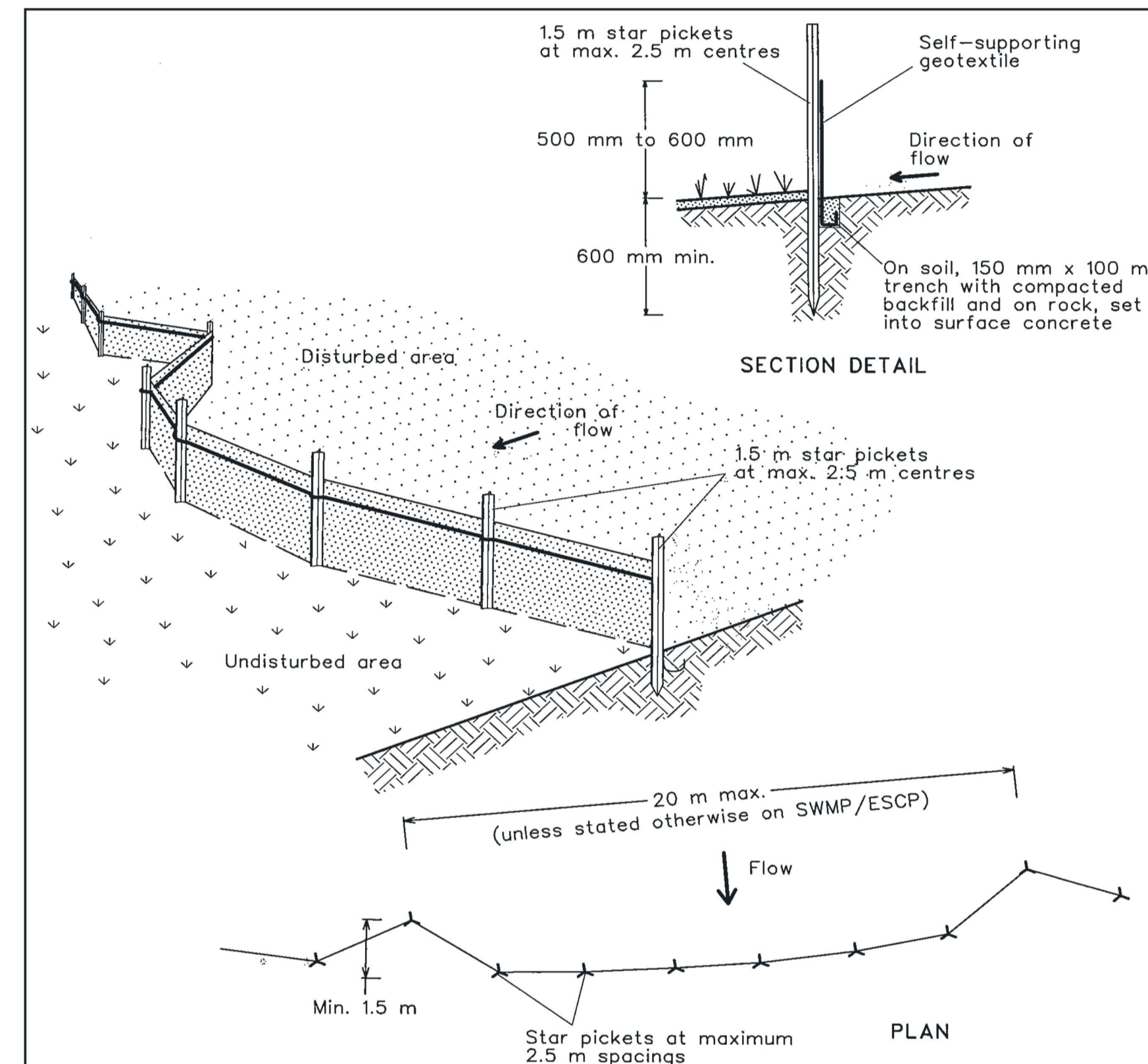


Construction Notes

- Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
- Construct on the contour as low, flat, elongated mounds.
- Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
- Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
- Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

STOCKPILES

SD 4-1



Construction Notes

- 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.
- Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
- 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.
- 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.
- Join sections of fabric at a support post with a 150-mm overlap.
- Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

SEDIMENT FENCE

SD 6-8



Issue	Description	Date
D	ISSUED FOR COORDINATION	15-10-24
WIP	ISSUED FOR COORDINATION	09-09-24
C	ISSUED FOR APPROVAL	14-06-23
B	ISSUED FOR COORDINATION	20-04-23
A	ISSUED FOR COORDINATION	22-12-22

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Client

Scales AS SHOWN

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Designed	CK
Grid	GDA2020
Checked	CB
Height Datum	AHD
Approved	

Project

INDUSTRIAL DEVELOPMENT BURRA PARK

Title

LOT 4.3 & 4.4 (WH 01 & 02) EROSION AND SEDIMENT CONTROL DETAILS SHEET 1

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Status	FOR COORDINATION NOT FOR CONSTRUCTION	A1
Project - Drawing No.	22-993-C2030	Issue
		D

EROSION AND SEDIMENT CONTROL

NOTES

PRELIMINARY BASIN SIZING - TYPE A SEDIMENT BASIN SIZING (REFER VENDOR WORKS CIVIL ENGINEERING PLANS BY HENRY & HYMAS FOR DETAILS)

THE SEDIMENT BASIN SHALL BE CONSTRUCTED ON A RATE PER HECTARE BASIS AND HAS BEEN IN ACCORDANCE WITH THE REQUIREMENTS OF THE INTERNATIONAL EROSION CONTROL ASSOCIATION (IECA) APPENDIX B SEDIMENT DESIGN AND OPERATION (REVISION - JUNE 2018). THE DISTURBED AREA WITHIN THIS CATCHMENT AT ANY ONE TIME SHOULD BE LIMITED TO AN AREA FOR WHICH EACH SEDIMENT BASIN HAS BEEN DESIGNED FOR. IF REQUIRED, EACH BASIN SHALL BE RE-SIZED IN ACCORDANCE WITH THE TABLE ADJACENT.

VALUES PRESENTED IN THE HENRY & HYMAS CIVIL DRAWINGS ARE BASED ON FULL SITE AREA. SUBJECT TO FUTURE DETAIL DESIGN, DISTRIBUTED SITE AREAS (AND THUS BASIN AREAS) MAY CHANGE OR BE DISTRIBUTED TO MULTIPLE BASINS AS SITE CONDITIONS DICTATE. A REVIEW OF SIZING (AND UPSIZING) TO BE UNDERTAKEN DURING DETAILED DESIGN PHASE USING THE INTERNATIONAL EROSION CONTROL ASSOCIATION (IECA) APPENDIX B SEDIMENT DESIGN AND OPERATION (REVISION - JUNE 2018). DETAILED DESIGN OF BASIN TO BE UNDERTAKEN WHEN SITE CONDITIONS, SOIL CONDITIONS AND FINAL CONTRIBUTING CATCHMENTS ARE KNOWN. FURTHERMORE, SITE CONDITIONS MAY VARY FROM THOSE DETAILED ABOVE IN THE TABLE ADJACENT.

JAR TESTING, IN ACCORDANCE WITH SECTION B3 OF THE INTERNATIONAL EROSION CONTROL ASSOCIATION (IECA) APPENDIX B SEDIMENT DESIGN AND OPERATION (REVISION - JUNE 2018) IS REQUIRED IN ORDER TO DETERMINE THE CHEMICAL DOSING RATES OF SEDIMENT. IT IS RECOMMENDED THAT THIS ANALYSIS IS UNDERTAKEN PRIOR TO BASIN CONSTRUCTION AS THE FINDINGS MAY POTENTIALLY IMPACT THE SEDIMENT AND EROSION CONTROL (BASIN SIZING ALSO) ADOPTED. IT SHOULD BE NOTED THAT THE MOST SUITABLE FLOCCULANT AND/OR COAGULANT IS LIKELY TO VARY WITH SOIL TYPE. CONSEQUENTLY, THERE IS A NEED TO REVIEW THE EFFICACY OF CERTAIN PRODUCTS OVER TIME AS SOIL CHARACTERISTICS CHANGE DURING THE VARIOUS STAGES OF CONSTRUCTION.

BASIN MANAGEMENT

IN ACCORDANCE WITH THE BLUE BOOK, THE SEDIMENT BASINS WILL BE MANAGED AND MAINTAINED UNTIL THE CONTRIBUTING CATCHMENT UPSTREAM IS COMPLETED AND FULLY STABILISED ON MORE THAN 90% OF THE TOTAL AREA. A GENERIC BASIN MAINTENANCE STRATEGY IS DETAILED BELOW - NOTE THIS STRATEGY WILL NEED TO BE TAILORED TO SITE CONDITIONS AND PARAMETERS:

- AN AUTOMATED SYSTEM OF FLOCCULANT DOSING IS REQUIRED AND A SUITABLE SUPPLY OF FLOCCULANT/COAGULANT, DOSER AND SUPPLY OF FLOCCULANT TO BE PROVIDED ON LEVEL PAD 4MX4M WITHIN 10M OF DOSING POINT. SELECTION OF AUTOMATIC DOSING SYSTEM IS BASED ON-SITE CHARACTERISTIC AND JAR TESTING OF PRODUCTS ON-SITE SPECIFIC TURBID WATER. AUTOMATIC DOSING SYSTEM MUST ACHIEVE PERFORMANCE TARGETS DETAILED BELOW.
- FURTHER DETAILS FOR BASIN MANAGEMENT ARE PROVIDED IN CHAPTER 6 AND APPENDIX E4 OF LONDON'S 'BLUE BOOK'.
- FURTHER DETAILED BASIN MANAGEMENT ARE PROVIDED IN IECA (INTERNATIONAL EROSION CONTROL ASSOCIATION) (2008) APPENDIX B SEDIMENT DESIGN AND OPERATION (REVISION - JUNE 2018), INTERNATIONAL EROSION CONTROL ASSOCIATION AUSTRALASIA.
- BASIN PERFORMANCE REQUIREMENTS AS FOLLOWS: AT LEAST 80% OF THE AVERAGE ANNUAL RUNOFF VOLUME (I.E. 80% HYDROLOGICAL EFFECTIVENESS) TO 50 MG/L TSS OR LESS, AND PH IN THE RANGE 6.5-8.5.
- JAR TESTING IS TO BE UNDERTAKEN TO SELECT THE APPROPRIATE COAGULANTS AND/OR FLOCCULANTS ALONG WITH DETERMINING THEIR OPTIMUM DOSE RATES. JAR TESTING IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE RECOMMENDATIONS AND TESTING PROCEDURE SPECIFIED IN THE CHAPTER 5 OF THE INTERNATIONAL EROSION CONTROL ASSOCIATION (IECA) CHEMICAL COAGULANTS AND FLOCCULANTS FACT SHEET (IECA 2018).
- TYPE A AND B BASINS REQUIRE A FAST ACTING COAGULANT AND FLOCCULANT TO PERFORM BASED ON THE JAR TESTING. A FACTOR OF SAFETY (IN ACCORDANCE WITH ABOVE GUIDELINES) SHOULD BE APPLIED TO ALLOW FOR THE DIFFERENT SETTLING TIMES EXPERIENCED BY BASINS DUES TO DOSING, MIXING, FLOW VELOCITY AND WIND ACTION.
- REFER EROSION AND SEDIMENT CONTROL PLAN (ESCP PLAN) BY HENRY AND HYMAS, REFERENCE 240518.E&S REV 1.0 FOR GENERIC BASIN MANAGEMENT AND OPERATION DETAILS.

BASIN MANAGEMENT (CONT.)

- MAINTENANCE AND OPERATING PROCEDURES REPORT TO BE PREPARED AT DETAIL DESIGN PHASE. REPORT TO INCLUDE THE FOLLOWING:
- DECANT WATER QUALITY OBJECTIVES
- DESCRIPTION OF PROPOSED CHEMICAL TREATMENT OF THE BASIN, INCLUDING MINIMUM JAR TESTING PERFORMANCE REQUIREMENTS
- PERFORMANCE ASSESSMENT PROCEDURES
- GUIDANCE ON CORRECTIVE MEASURES BASED ON WATER QUALITY MONITORING OUTCOMES
- DESCRIPTION OF DE-WATERING TRIGGERS, INCLUDING TRIGGERS FOR TEMPORARY SHUT-OFF OF THE DECANT SYSTEM IN THE EVENT OF POOR WATER QUALITY
- DESCRIPTION OF DE-SILTING TRIGGERS
- DESCRIPTION OF THOSE CIRCUMSTANCES AND/OR WEATHER CONDITIONS THAT WOULD TRIGGER DE-WATERING OF THE BASIN PRIOR TO AN IMMINENT STORM.
- MAINTENANCE PROCEDURES AND PROTOCOLS INCLUDING DE-SILTING METHOD AND FREQUENCIES.

THE LONG TERM GROUND COVER FACTORS FOR THE CONSTRUCTION WORKS IS NOT TO EXCEED THE FOLLOWING LIMITS:

LAND	MAXIMUM C-FACTOR	REMARKS
WATERWAYS AND OTHER AREAS OF CONCENTRATED FLOWS, POST CONSTRUCTION	0.05	APPLIES AFTER TEN WORKING DAYS OF COMPLETION OF FORMATION AND BEFORE CONCENTRATED FLOWS ARE APPLIED. FOOT AND VEHICULAR TRAFFIC IS PROHIBITED IN THIS AREA AND 70% GROUND COVER IS REQUIRED.
STOCKPILES, POST CONSTRUCTION	0.10	APPLIES AFTER TEN WORKING DAYS FROM COMPLETION OF FORMATION. 60% GROUND COVER IS REQUIRED.
ALL LANDS, INCLUDING WATERWAYS AND STOCKPILES, DURING CONSTRUCTION.	0.15	APPLIES AFTER 20 DAYS OF INACTIVITY, EVEN THOUGH WORKS MAY BE INCOMPLETE. 50% GROUND COVER IS REQUIRED.

REFERENCE PARAMETERS - FOR CALCULATION OF SOIL LOSS (NOT USED IN ABOVE CALCULATIONS)

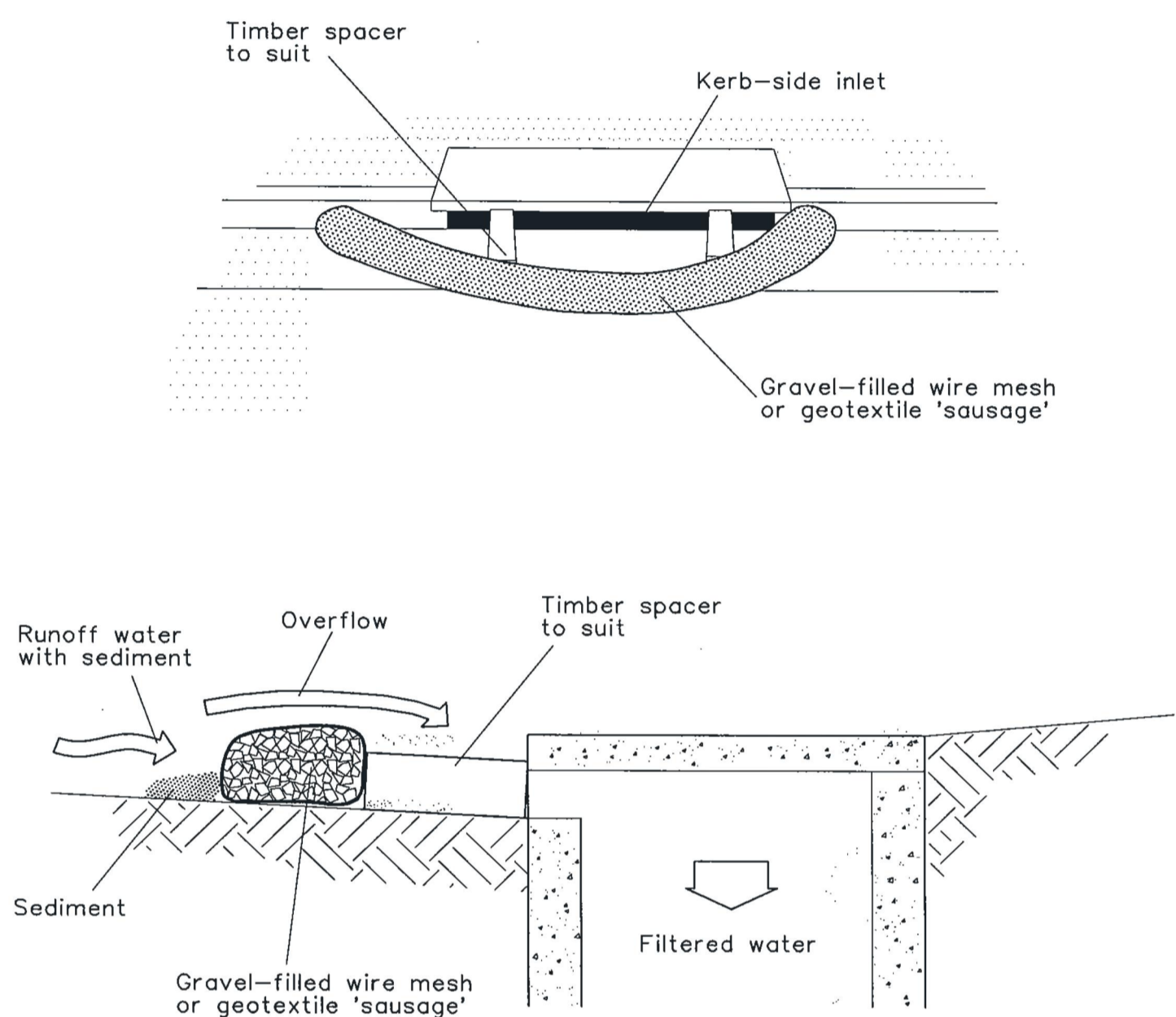
SEDIMENT BASIN SIZING TYPE D SOILS	
VOLUMETRIC RUNOFF COEFFICIENT, CV	6.4
80TH PERCENTILE 5 DAY TOTAL RAINFALL DEPTH, R	35mm
CATCHMENT AREA, A	VARIES
SETTLING ZONE VOLUME (PER HECTARE) 10 CV A R	124 x A
DISTURBED CATCHMENT AREA	VARIES
R K L S P C	143 x Ls
SEDIMENT ZONE VOLUME (0.17 A (R K L S P C))/1.3	18.7 x Ls
TOTAL SEDIMENT BASIN VOLUME REQUIRED :	REFER ADJACENT TABLE

* (LANDCOM MANAGING URBAN STORMWATER MANUAL REFERENCE)

2. THE FOLLOWING DESIGN PARAMETERS HAVE BEEN ASSESSED FOR THE SITE:

CONSTRAINT	VALUE	(SOURCE)*
RAINFALL EROSIVITY (R-FACTOR)	2200	APPENDIX B - MAP 10
LENGTH/SLOPE GRADIENT FACTOR, LS	VARIOUS	APPENDIX A - TABLE A1
SOIL ERODIBILITY (K-FACTOR)	0.05	(TABLE C19)
EROSION CONTROL PRACTICE FACTOR (P-FACTOR)	1.3	APPENDIX A - TABLE A2
COVER FACTOR (C-FACTOR)	1.0 (DURING EARTHWORKS)	APPENDIX A - FIGURE A5
CALCULATED SOIL LOSS, A (RUSLE EQUATION)	VARIES	A = R K L S P C
SOIL HYDROLOGIC GROUP	GROUP D	APPENDIX C TABLE 19
85TH PERCENTILE 5-DAY RAINFALL EVENT	35mm	TABLE 6.3A

* (LANDCOM MANAGING URBAN STORMWATER MANUAL REFERENCE)



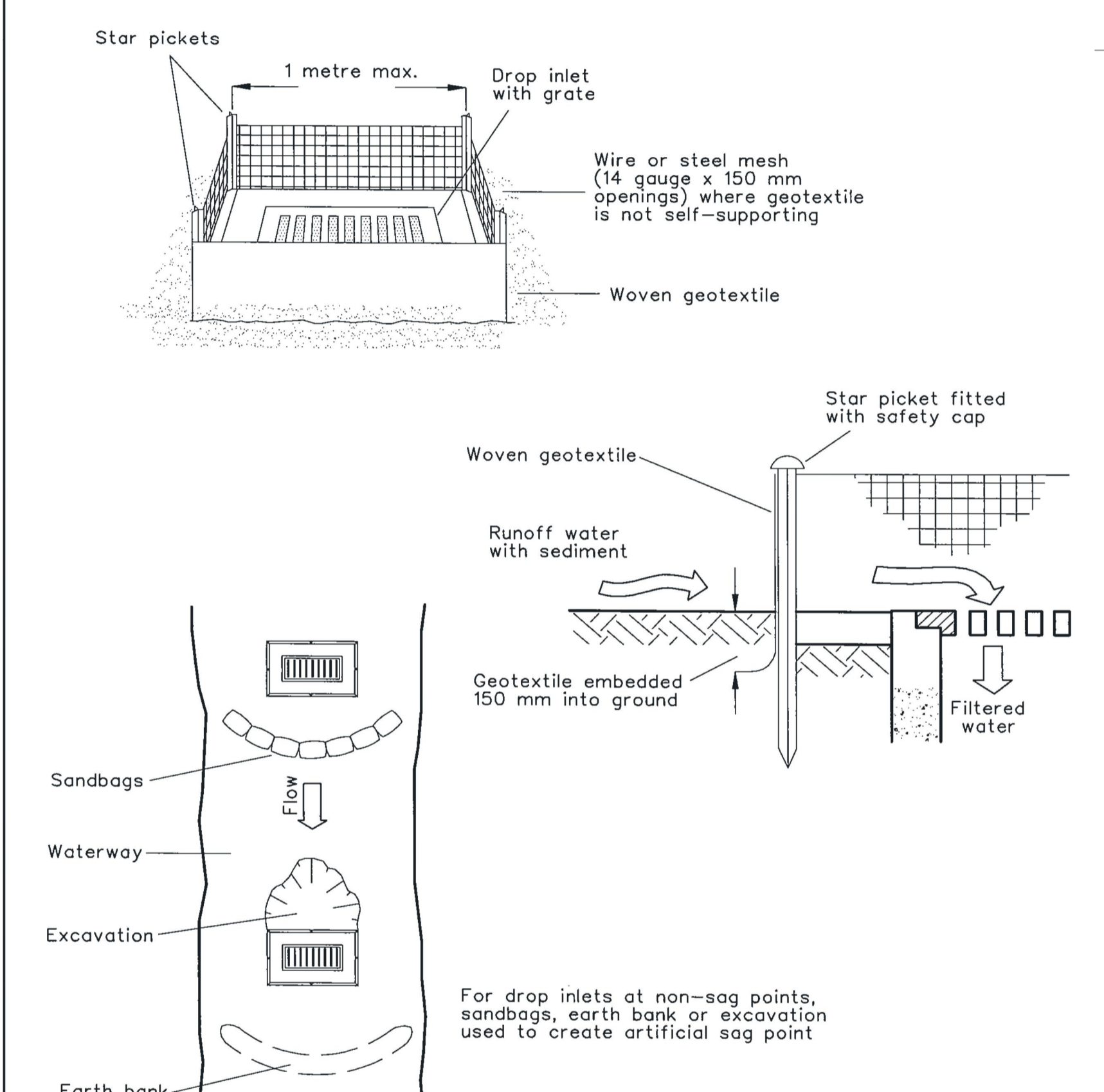
NOTE: This practice only to be used where specified in an approved SWMP/ESCP.

Construction Notes

1. Install filters to kerb inlets only at sag points.
2. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit and fill it with 25 mm to 50 mm gravel.
3. Form an elliptical cross-section about 150 mm high x 400 mm wide.
4. Place the filter at the opening leaving at least a 100-mm space between it and the kerb inlet. Maintain the opening with spacer blocks.
5. Form a seal with the kerb to prevent sediment bypassing the filter.
6. Sandbags filled with gravel can substitute for the mesh or geotextile providing they are placed so that they firmly abut each other and sediment-laden waters cannot pass between.

MESH AND GRAVEL INLET FILTER

SD 6-11



For drop inlets at non-sag points, sandbags, earth bank or excavation used to create artificial sag point

Construction Notes

1. Fabricate a sediment barrier made from geotextile or straw bales.
2. Follow Standard Drawing 6-7 and Standard Drawing 6-8 for installation procedures for the straw bales or geofabric. Reduce the picket spacing to 1 metre centres.
3. In waterways, artificial sag points can be created with sandbags or earth banks as shown in the drawing.
4. Do not cover the inlet with geotextile unless the design is adequate to allow for all waters to bypass it.

GEOTEXTILE INLET FILTER

SD 6-12

Issue	Description	Date
D	ISSUED FOR COORDINATION	15-10-24
WIP	ISSUED FOR COORDINATION	09-09-24
C	ISSUED FOR APPROVAL	14-06-23
B	ISSUED FOR COORDINATION	20-04-23
A	ISSUED FOR COORDINATION	22-12-22

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Client



Scales AS SHOWN

Grid GDA2020

Height Datum AHD

Drawn CK

Designed CK

Checked CB


Approved



Project INDUSTRIAL DEVELOPMENT BURRA PARK

Title LOT 4.3 & 4.4 (WH 01 & 02) EROSION AND SEDIMENT CONTROL DETAILS SHEET 2

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Status FOR COORDINATION NOT FOR CONSTRUCTION

Project - Drawing No. 22-993-C2031

Issue D



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