


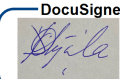

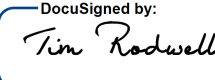


6BF Reline Project

Soil and Water Management Plan

Document No: 6BFR-PRJ-PLN-0033

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Glossary of Terms and Acronyms

Term	Definition
5BF	No.5 Blast Furnace
6BF	No.6 Blast Furnace
Approval	Infrastructure Approval SSI-22545215
bgl	Below ground level
BlueScope	BlueScope Steel (AIS) Pty Ltd
BSL	BlueScope Steel Limited
BTEX	Benzene, Toluene, Ethylene, Xylene
CEMP	Construction Environment Management Plan
CLM Act	Contaminated Land Management Act 1997
CSSI	Critical State Significant Infrastructure
DPE	Department of Planning and Environment
EIS	No.6 Blast Furnace Reline Project Environment Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environment Protection Agency
EPL	Environment Protection Licence
ESCP	Erosion and Sediment Control Plan
ha	Hectare
HSE	Health, Safety and Environment
Incident	An incident is an occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance.
IMED	Ironmaking East Drain
JSEA	Job Safety and Environment Analysis
km	Kilometre
m	Metre
Material Harm	Material harm is harm that: a) Involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial, or b) Results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practical measures to prevent, mitigate, or make good harm to the environment.
Non-compliance	A non-compliance is an occurrence or set of circumstances that breach the conditions of the Infrastructure Approval, Environment Protection Licence and/or any other legal requirement
Non-conformance	A non-conformance is a situation or event that does not comply with the safeguards required in this CEMP
PAH	Polyaromatic Hydrocarbons
PIRMP	Pollution Incident Response Management Plan
PKSW	Port Kembla Steelworks
POEO Act	Protection of the Environment Operations Act 1997

Term	Definition
Project	No.6 Blast Furnace Reline Project
SSW	Safe System of Work
SWMP	Soil and Water Management Plan
SWMS	Safe Work Method Statement
T&I SEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021
TPH	Total Petroleum Hydrocarbons
VOC	Volatile Organic Compounds

1 Introduction

1.1 Background

BlueScope Steel (AIS) Pty Ltd (BlueScope) is one of Australia's leading manufacturers and with its parent company, BlueScope Steel Limited (BSL), is a global leader in finished and semi-finished steel products.

BlueScope's Port Kembla Steelworks (PKSW) currently operates as an integrated iron and steel plant utilising Blast Furnace ironmaking and Basic Oxygen Furnace steelmaking operating model. The plant is co-located with hot rolling mills for plate and coil and has adjacent manufacturing facilities for cold rolling, coated products, flat products and welded beams. The site is licenced and operates in accordance with Environment Protection Licence (EPL) 6092.

This project aims to return the No.6 Blast Furnace (6BF) to service through a reline process to allow operations to continue at PKSW following the end of the current No.5 Blast Furnace (5BF) campaign with minimal disruption to production levels.

On 3 May 2021 the Minister for Planning and Public Spaces declared the Port Kembla Steelworks Blast Furnace No. 6 Reline Upgrade Project (the project) as Critical State Significant Infrastructure (CSSI) in accordance with sections 5.12(4) and 5.13 of the Environmental Planning and Assessment Act, 1979 (EP&A Act).

On 20 September 2022 the Minister for Planning approved the project under section 5.19 of the EP&A Act subject to conditions specified in Infrastructure Approval SSI-22545215 (Approval).

1.2 Purpose and Scope of the Soil and Water Management Plan

This Soil and Water Management Plan (SWMP) has been prepared as part of the Construction Environmental Management Plan (CEMP) to support BlueScope's Environmental Management System for the 6BF Reline Project (the project) and is applicable to the construction phase of the project.

The SWMP describes the strategies and controls that will be implemented to mitigate or minimise the risks associated with the construction activities of the project which have the potential to cause water pollution and soil erosion. The SWMP has been developed in accordance with the Approval Conditions, No.6 Blast Furnace Reline Environment Impact Statement (EIS), and EPL 6092.

1.3 SWMP Objectives

The objectives of the SWMP are to:

- Describe the measures and controls to be implemented to minimise the potential for soil erosion and water pollution during construction;
- Describe the measures and controls to be implemented to manage runoff from the project area; and
- Ensure disturbed materials that have the potential to be contaminated are appropriately managed to minimise the potential impact to the environment.

2 Project Description

2.1 Project Overview

The project involves the reline of 6BF over a period of approximately 3 years to return it to service and commence ironmaking after 5BF ceases operation. Major construction work will be required within the blast furnace and surrounding facilities to deliver the project.

The reline of the furnace initially involves removal of remaining burden material and iron skull, followed by stripping of the staves, refractories and hearth from inside the shell. In places, repairs to the furnace shell will be required. Once stripped, installation of the new hearth, sidewall refractories and staves will be completed, together with repairs/replacement of the tuyeres, tapholes, furnace cooling systems and instrumentation. Significant work will also be required to prepare each of the 6BF ancillary systems for continuous operation across the length of the new campaign.

Following construction and equipment commissioning, 5BF will be ramped down and decommissioned. 6BF will then be hot-commissioned and ramped up for operation. 5BF and 6BF will not operate concurrently.

2.2 Site Location

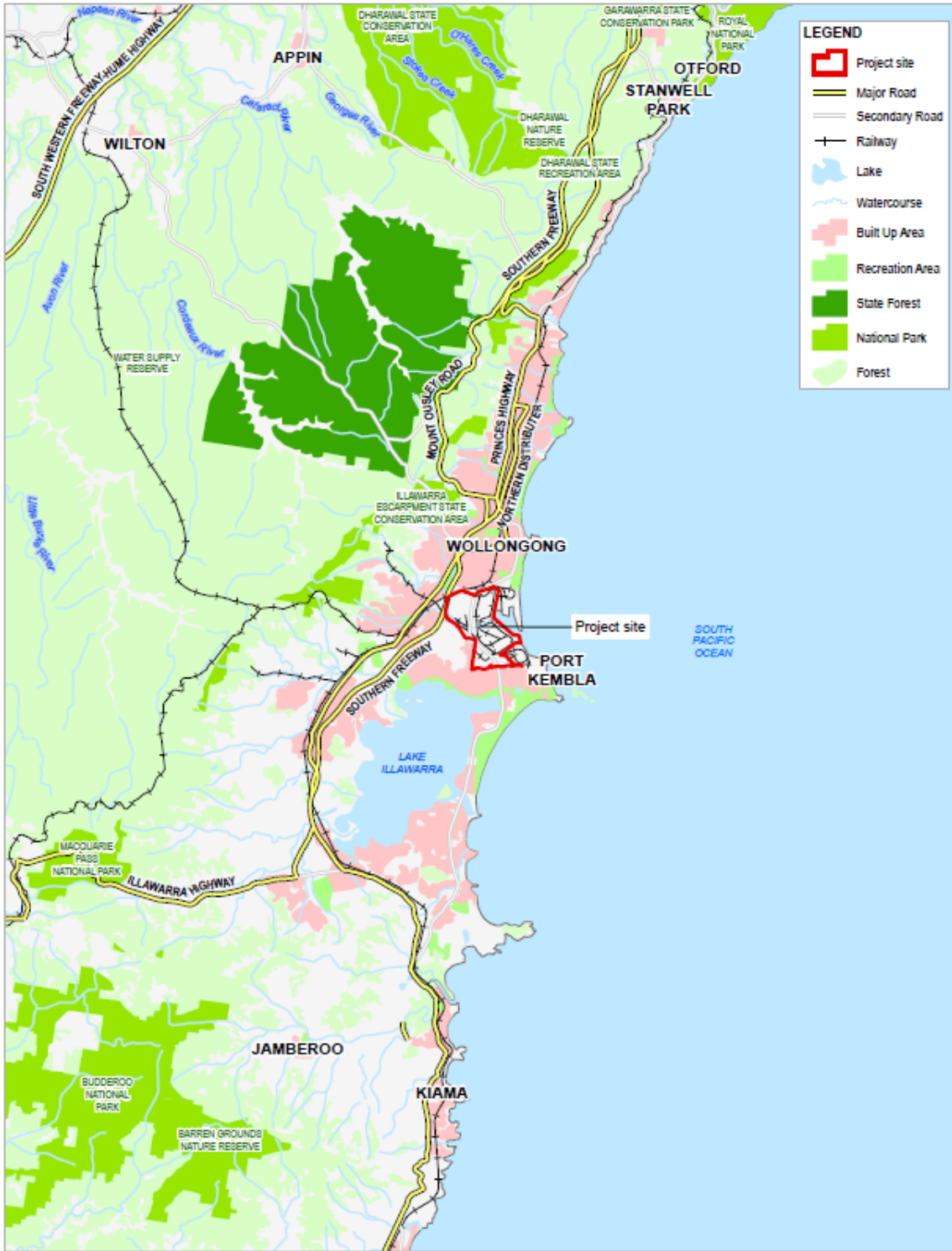
The project is located in Port Kembla in the Wollongong Local Government area and Illawarra region of NSW as shown in Figure 1. Sydney is approximately 80 km to the north of Port Kembla, while the Wollongong Central Business District is approximately 2.5 km to the north, and Lake Illawarra is approximately 3 km to the south. Port Kembla is the main industrial centre of the Illawarra region.

The PKSW site is zoned IN3 – Heavy Industrial under State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP). PKSW and the adjacent Springhill Works together comprise the largest site in the Port Kembla industrial area, occupying approximately 750 ha, and are mostly built around the western and southern side of Port Kembla's Inner Harbour. The PKSW site is a multi-use industrial area which includes storage, manufacturing, port berths, private internal roads and offices. Access to PKSW is provided by Springhill Road, Five Islands Road and Flinders Street, and then private internal roads within PKSW.

The project site is an established (brown-field) site located within the No.2 Works at the PKSW. The land to which this project applies, including all connecting infrastructure and materials handling elements that require upgrades as part of the project, is within the southern section of the No.2 Works, and is part of the ironmaking facilities, located within Lot 1 DP 606434. Ancillary construction facilities will also be required and will be located within the broader PKSW site as shown on Figure 2.

The area surrounding the Port Kembla industrial area is primarily occupied by residential development. These urban areas provide small and large-scale retail outlets, community services (e.g. medical facilities, hospital, schools and sporting facilities) and commercial facilities (e.g. banking and post office). The closest urban developments to PKSW are the suburbs of Cringila, Berkeley, Lake Heights, Warrawong and Port Kembla to the south, Unanderra, Cobblers Hill, Mount St Thomas, Coniston and Figtree to the north and west. The urban areas of Cringila are located adjacent to the No.1 Works and No.2 Works areas and are the nearest to the project site, being approximately 1.2 km to the southwest as shown on Figure 3.

The PKSW has several licenced water discharge points specified in EPL 6092. The locations of these discharge points are shown on Figure 4.



<p>Paper Size ISO A4 0 1.5 3 4.5 6 Kilometres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56</p>	<p>BlueScope Steel Ltd No.6 Blast Furnace Reline and Operations Environmental Impact Statement</p> <p>Regional Location</p>	<p>Project No. 12541101 Revision No. 0 Date 21/10/2021</p> <p>FIGURE 2-1</p>
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Figure 1: Project Regional Location. Extracted from *Blast Furnace No.6 Reline Project Environmental Impact Statement* (p. 5) GHD, 2022.

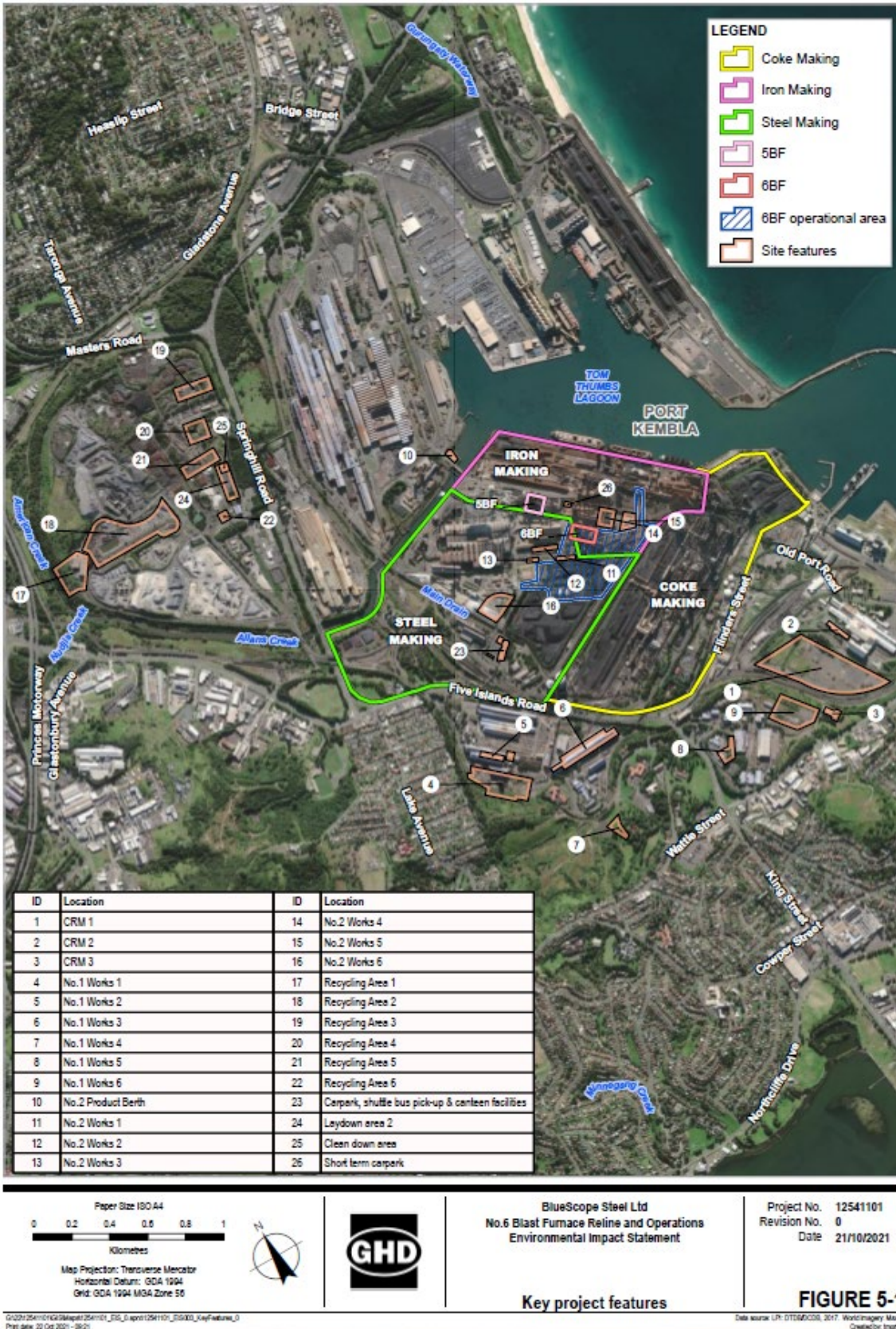


Figure 2: Project site and laydown areas. Extracted from *Blast Furnace No.6 Reline Project Environmental Impact Statement* (p. 28) GHD, 2022.



Springhill/RA/Newsprint/Projects/2012/541101/3/2021/01_AQI_Assessment_April12/541101_AQAI00_SensitiveReceptors_A
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Figure 3: Location of Sensitive Receivers. Extracted from *Blast Furnace No.6 Reline Project Air Quality Impact Assessment* (p. 19) GHD, 2022.

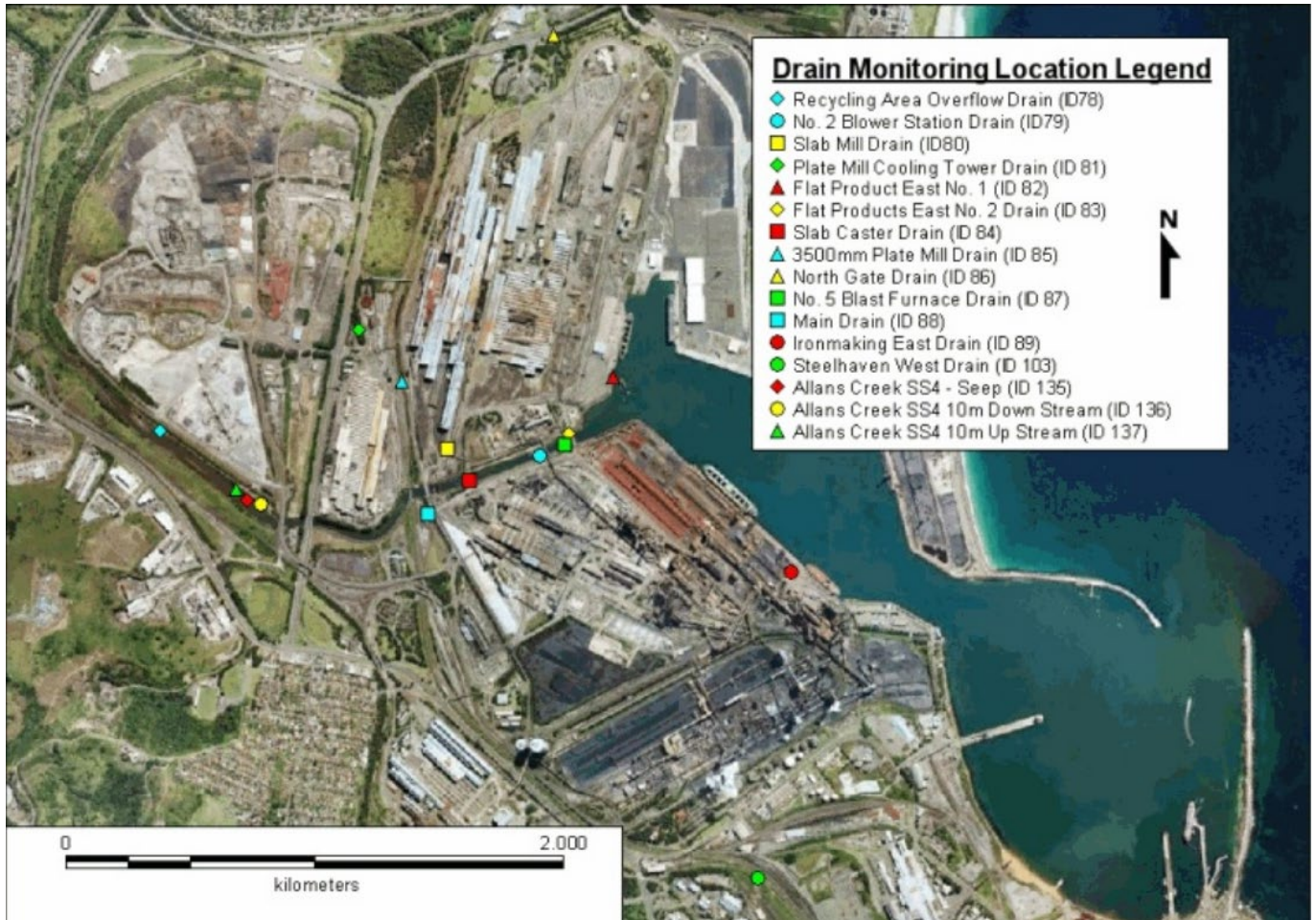


Figure 4: Location of EPL 6092 licenced water discharge points

2.3 Scope of Work

Construction activities will involve the following tasks:

- Removal of the remaining burden materials
- Removal of the iron skull
- Removal of worn carbon block refractories in the hearth
- Removal of worn refractories in the remainder of the vessel
- Demolition of other equipment including:
 - Cooling staves which protect the blast furnace shell
 - Hot Blast Main refractory lining, including the expansion joints
 - Clarifier tank and associated equipment where required
- Repairs to the blast furnace shell where required
- Installation of a new clarifier tank and associated equipment
- Installation of the new hearth, sidewall refractories and staves
- Repair/replacement of tuyeres, tapholes and instrumentation
- Repair, maintenance and/or upgrade of ancillary equipment including:
 - Furnace cooling systems

- Hot Blast system including the stoves, with the addition of a stove Waste Gas Heat Recovery (WGHR) system
- Gas system, with addition of a Top Gas Recovery Turbine (TRT)
- Furnace Top, including the charging equipment, bleeder valves and outrigger crane
- Casthouse Floors and associated equipment
- Stockhouse (raw materials feed system)
- Automation and power systems
- Services
- Installation of a new slag granulation system
- Installation of primary ferrous feed system.

The scope of work for the construction phase of the project includes the following surface disturbing works:

- Excavation;
- Surface grading;
- Piling;
- Concrete pad/slab foundations;
- Installation of access roads; and
- Installation of pavements.

3 Environmental Management System

3.1 Environmental Management Documents

This SWMP forms part of the CEMP for the project. BlueScope's existing environmental management procedures and systems apply to all project activities. These include but are not limited to the procedures and systems listed in Table 1.

Table 1 - BlueScope Environmental Management Procedures and Systems

Document/System	Reference	Purpose
BlueScope's HSEC Policy	BSL-MS-P-01	Identifies BlueScope's commitment to Health, Safety, Environment, and Community
ASP Manufacturing Management Systems Manual	MM.BZ-MS-M-01-01	Describes at the highest level, those systems and processes used by BlueScope Australian Steel Products Manufacturing Businesses to effectively manage its operations
BlueScope's Safety, Environment, and Quality system	SEQ System	A management system for Safety, Environment and Quality that provides access to the SEQ procedures, tools and other resources.
HSE Risk Management	BSL-HSE-SD-03-01	Sets the requirements and mechanisms for implementing the BlueScope Risk Management Standard within a Health, Safety and Environmental (HSE) context.
HSE Incident Management	BSL-HSE-SD-12-01	Sets the requirements for incident management across BlueScope in order to meet the expectations of the BlueScope Health, Safety & Environment (HSE) Management System
Management of Excavated Soil at PKSW	MA-ENV-02-02	Outlines how excavated soil, arising during construction, demolition or maintenance activity, is managed to minimise harm to human health and the environment
Fugitive Dust Management System	MA-ENV-02-02	Describes the system used to monitor and report both fugitive dust emissions and the conditions contributing to the dust emissions from the BlueScope PKSW site
Vegetation Management Plan	MA-ENV-02-08	Identifies the requirements of tree planting, pruning, removal, weed management and disposal
Management of Threatened Species, The Green and Golden Bell Frog, <i>Litoria Aurea</i>	MA-ENV-03-03	Identifies the actions and requirements necessary to promote the development and maintenance of existing sub-populations of the Green and Gold Bell Frogs on the PKSW site.
Stockpile Environment Management Plan	MA-ENV-03-08	Details the how stockpiles and fugitive dust emissions are to be managed at BlueScope's PKSW site
Biodiversity Management Plan	MA-ENV-03-09	Assists with the identification, protection and management of native vegetation and fauna habitats across BlueScope's Illawarra sites
Unexpected Finds Procedure	MA-ENV-03-11	Provides guidance for the management of any unexpected finds including contamination and heritage items on BlueScope Steel licenced sites in New South Wales
Spill Response Guidelines	MA-ENV-11-02	Outlines the necessary steps to be taken by Plant Departments to prepare for or respond to spills reported within their area.
Pollution Incident Response Management Plan for NSW Licenced Premises	MA-ENV-11-04	Details the procedure for the notification of pollution incidents that result in or have the potential to cause material harm to the environment in BlueScope licenced sites across NSW

Document/System	Reference	Purpose
Contact Procedure for Complaints and Enquiries	SP-ENV-07-03	Define actions to be followed by the Environment Department personnel, External Affairs personnel and the PKSW Switchboard in relation to handling complaints and enquiries
Management of Waste Material	DIV-AR-RS-01	Describes the system for waste management within PKSW and for movement of waste materials to and from the PKSW site
SAP Learning Centre	SAP Learning Centre	A repository of training and support materials to assist in the use of the BlueScope SAP systems and processes
Job Safety and Environment Analyses	F.BZ-SEQ-S-03-02.02	A tool used to identify task related hazards and controls based on the sequential job steps or unplanned changes to the job
Safe System of Work	BZ-OHS-S-03-01	Processes that may include procedures, risk assessments, permits, inductions and training, that collectively form a system for undertaking work in a safe manner
Safe Work Method Statement	F.BZ-SEQ-S-09-10.21	A tool used to identify task related hazards and controls based on the sequential job steps or unplanned changes to the job

Specific Environment Management Documents relevant to the construction phase of the project are required in accordance with the conditions of Approval and commitments made in the EIS. Some of the requirements are adequately covered by existing BlueScope procedures, while others have been prepared specifically for the project as outlined in Table 2.

Table 2: Specific Environment Management Plans

6BFR Management Plan	Requirement	Reference
Construction Environmental Management Plan	Approval Condition C2	6BFR-PRJ-PLN-0008
Erosion and Sediment Control Plan	Approval Condition C3, EIS Commitment	Appendix 2 of this document
Construction Traffic Management Plan	Approval Conditions B41, C3, EIS Commitment	6BFR-PRJ-PLN-0020
Unexpected Contamination Procedure	Approval Conditions B47, C3	MA-ENV-03-11
Noise and Vibration Management Measures	Approval Condition C3, EIS Commitment	6BFR-PRJ-PLN-0032
Community Consultation and Complaints Handling	Approval Condition C3	Section 3 6BFR-PRJ-PLN-0004 SP-ENV-07-03
Soil and Water Management Plan	EIS Commitment	6BFR-PRJ-PLN-0033
Dust Management Plan	EIS Commitment	6BFR-PRJ-PLN-0034
6BF Reline Environmental Induction	EIS Commitment	6BF-GEN-PRE-0031
6BF Emergency Response Plan	EIS Commitment	MA-BF6-EMG-01
6BFR Risk Management Plan	Nil	6BFR-PRJ-PLN-0011

3.2 Environmental Management Structure and Responsibilities

All personnel working on the 6BF Reline project must comply with regulatory and BlueScope requirements and must conduct work in a proper and efficient manner to protect the environment.

The Project Director takes primary responsibility for environmental issues and compliance with the CEMP and all associated documents including the SWMP. Environmental advisors within the BlueScope Environment Department will support the Project Director and will assist managers and supervisors fulfill their accountabilities.

Each position in the 6BF Reline management team has defined responsibilities for the management of environmental aspects and issues as defined in the CEMP. Environmental management responsibilities for contractor managers and supervisors working on the project are also defined in the CEMP.

With respect to soil and water management, the environmental responsibilities for the key management and supervision roles include (but are not limited to) those listed in Table 3.

Table 3: Key Management Roles and Environmental Responsibilities

Role	Responsibilities
Project Director	<ul style="list-style-type: none"> Develop a culture in which environmental effects are considered at all times.
Project Manager	<ul style="list-style-type: none"> Develop a culture in which environmental effects are considered at all times. Participate in environmental audits and communication sessions. Provide resources to ensure that actions to address environmental issues are implemented. Ensure that adequate environmental evaluations are made of all modification designs and plant and equipment purchases. Ensure that systems are in place to inform employees, contractors and visitors of pertinent environmental issues. Ensure that meetings are held to discuss environmental issues. Ensure that desktop exercises are carried out to test the effectiveness of Emergency Response Plans. Ensure that there is responsible management of contractors on the site. Ensure that competent and trained, responsible engineers and supervisors exist to manage contractors on the works.
Engineering Manager	<ul style="list-style-type: none"> Ensure that management systems are in place and understood to give environmentally safe design and operation. Ensure that environmental hazards and risks are identified for all plant and major equipment. Ensure that designs are fit for purpose and that adequate consideration has been given to environmental issues. Ensure that all engineering staff are inducted and have received the required training to enable adequate environmental management of site. Promote the involvement of all employees in improving environmental management. Conduct environmental audits to evaluate compliance with environmental management plans and systems as per the audit/inspection schedule. Participate in environment meetings. Identify hazards and risks through analysis and inspection, including personnel, plant and environment. Focus on the elimination of environmentally hazardous acts, and rectify unsafe conditions quickly. Conduct workplace inspections.
Construction Manager	<ul style="list-style-type: none"> Contribute to a positive environmental culture by example. Ensure that management systems are in place and understood to provide an environmentally safe construction workplace. Ensure that environmental hazards and risks are identified on all construction activities. Arrange construction pre-start hazard-analysis studies for all “at risk” operations. Participate in environment meetings. Participate in environmental inspections and serious incident investigations. Participate in environmental audits. Focus on the elimination of environmentally unsafe acts, and rectify unsafe conditions quickly. Ensure that there is responsible management of contractors on the site. Ensure that competent and trained, responsible engineers and supervisors exist to manage contractors on the works.

Role	Responsibilities
HSE Manager	<ul style="list-style-type: none"> • Participate in a pre-start environmental review with the vendors'/Contractor's management to facilitate an Environmental Bridging Document to remove any uncertainty/differences between this CEMP and the vendors'/Contractor's CEMP. <hr/> <ul style="list-style-type: none"> • Contribute to a positive environmental culture by example. • Ensure that meetings are held to discuss environmental issues. • Ensure that management systems are in place for environmentally safe execution of the project. • Report HSEC matters and performance to BlueScope. • Coordinate and participate in drills and exercises to test the effectiveness of Emergency Response Plans. • Review training needs for all employees and provide training as required. • Ensure that proper training is provided to enable an environmentally safe execution of the project. • Ensure that environmental hazards and risks are identified and control measures introduced on all project activities. • Participate in environmental inspections and serious incident investigations. • Participate in environmental audits.
Commissioning Manager	<ul style="list-style-type: none"> • Contribute to a positive environmental culture by example. • Ensure that management systems are in place and understood to provide an environmentally safe workplace. • Ensure that environmental hazards and risks are identified on all commissioning activities. • Arrange commissioning pre-start hazard-analysis studies for all "at risk" operations. • Participate in environment meetings. • Participate in environmental inspections and serious incident investigations. • Participate in environmental audits. • Focus on the elimination of environmentally unsafe acts, and rectify unsafe conditions quickly. • Ensure that there is responsible management of contractors on the site. • Ensure that competent and trained, responsible engineers and supervisors exist to manage contractors on the works.
Area Managers	<ul style="list-style-type: none"> • Ensure that environmental hazards and risks are identified in design stage. • Ensure that management systems are followed to give environmentally safe designs. • Ensure self and others' environmental awareness at all times. • Be aware of environmental hazards and risks in the plant area of activity. • Promote a culture in which environmental effects are considered at all times. • Define and document environmentally safe systems of work and, through consultation, ensure they are applied. • Ensure that all incidents are thoroughly investigated to avoid re-occurrence. • Ensure that there is responsible management of contractors on the site. • Ensure that competent and trained, responsible engineers and supervisors exist to manage contractors on the works. • Ensure that contractors and employees understand any environmental hazards associated with performing tasks. • Promote the involvement of all employees in improving environmental awareness. • Focus on the elimination of environmentally unsafe acts, and rectify unsafe conditions quickly. • Conduct environmental inspections, monitor behaviour on site and participate in audits. • Notify incidents and address environmentally unsafe acts and conditions in accordance with the project's Environment Management System, and follow-up to ensure corrective and preventative actions are timely and effective. • By actions, demonstrate to contractors at all times the commitment of the 6BF Reline team to the highest standards of environmental management. • Participate in accident/incident investigations.

Role	Responsibilities
Environment Advisor	<ul style="list-style-type: none"> Promote a culture in which environmental effects are considered at all times. Liaise with regulatory bodies and other external agencies. Promote the involvement of all employees in improving environmental compliance. Focus on the elimination of environmentally hazardous acts, and rectify unsafe conditions quickly. Ensure self and others' environmental awareness at all times. Participate in accident/incident investigations. Report to the 6BF Reline Management team on environmental issues Ensure that all incidents are thoroughly investigated to identify root causes.
Construction Coordinators	<ul style="list-style-type: none"> Compliance with the requirements of the project's Environmental Management System. Ensuring environmental aspects are adequately addressed and mitigated during Job Safety and Environment Analyses and execution of Works. Initiation and completion of environmental audits and inspections. Reporting all incidents, accidents and non-conformance in accordance with the CEMP. Participation in relevant investigations of accidents, incidents and non-conformance. Demonstrating to the vendor / contractor workforce, by their actions, commitment to the highest standards of environmental management. Provision of appropriate resources to control / mitigate environmental hazards. Attendance at team's environment meetings. Pro-active addressing of environmental issues, looking for improvements and looking after themselves and the environment. Ensuring hazards and controls are addressed and implemented prior to and during the execution of Works

3.3 Legal and Compliance Requirements

Key legislative requirements relevant to soil and water management for the project include:

- Environmental Planning and Assessment Act 1979 (EP&A Act)
- Protection of the Environment Operations Act 1997 (POEO Act)
- Contaminated Land Management Act 1997 (CLM Act)
- Environment Protection Licence 6092
- Infrastructure Approval SSI-22545215.

4 Existing Environment

4.1 Soil and Geology

The project site was historically low-lying swampland with soils predominantly including silty sands and clay. However, during the 20th century, the site was filled with blast furnace slag, open hearth slag and coal washery rejects to accommodate industrial activities.

The site surface is flat and generally sealed. Any remaining soil or sediments present on the site are highly disturbed thin coverings overlying fill material. Various investigations (Egis, 2001; GHD, 2004; GHD, 2009; JBS&G, 2016) have refined the understanding of the site, and have broadly identified the following underlying geology:

- Fill material 0 to 6 m below ground level (bgl): Variable quality and composition of slag material, dredged sands and coal wash materials of varying thicknesses, generally in the order of 4 to 6 m deep and of high permeability.
- Estuarine sediments 6 to 15 m bgl: including interbedded sands, silts, clays and muds of variable thicknesses.
- Deeper bedrock materials are reported as present at depths from 19 m bgl as weathered latite underlain by sandstone in some areas.

A review of acid sulfate soil risk mapping (DPIE, 2021a) indicates that the project site is classified as disturbed terrain at an elevation of greater than four metres. Estuarine sediments within Allans Creek and the Inner Harbour are mapped as having a high probability of occurrence of acid sulfate soils. As the site contains filled areas resulting from the reclamation of Tom Thumb Lagoon, it is possible that some acid sulphate soil material will be present, particularly in the estuarine sediments underlying fill material.

PKSW is listed as a contaminated site by the EPA and ongoing management of site contamination occurs under EPL 6092. Previous investigations undertaken at the project site have identified it as a moderate contamination risk for heavy metals, total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene and xylenes (BTEX), polyaromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs).

4.2 Hydrology

4.2.1 Groundwater

Previous groundwater investigations indicated that on site groundwater is generally shallow, ranging from approximately 1 to 8 m bgl, and encountered within fill materials overlying the less permeable alluvial deposits. JBS&G (2016) recorded standing groundwater levels near 6BF ranging between 3.5 to 5.6 m bgl. Groundwater flow was inferred to flow northeast, towards Port Kembla Inner Harbour, in line with the local topography

Investigations by GHD in 2009 concluded that the site has two primary aquifers:

- Fill/shallow estuarine aquifer (5 to 10 m bgl): a shallow unconfined aquifer, of variable quality and yield, which may be discontinuous and intermittent.
- Deeper estuarine aquifer (greater than 10 m bgl): a partially confined aquifer underlying fill material and dredged sediments.

Elevated concentrations of heavy metals, TPH, PAHs, VOCs, cyanide, ammonia, nitrate, nitrogen and fluoride have been found within groundwater across the PKSW site. BlueScope has established a network of groundwater monitoring wells across the PKSW site with wells nearest to the project site located to the east and west of the proposed 6BF Slag Handling Area and to the north of 6BF Stockhouse.

4.2.2 Surface Water

The majority of the project site has established stormwater drainage consisting of a series of sumps and collection tanks which capture the 'first flush' of rainfall events and any potential spills. Following the first flush and when sumps reach capacity, stormwater drains to the Ironmaking East Drain (IMED) and is subsequently pumped to the No. 2

Blower Station Drain for release to Allans Creek. During major rainfall events, the IMED weir can overtop leading to discharge to the Inner Harbour via licence discharge Point 89.

The slag handling area does not currently have a drainage system in place. As part of the project, the area will be prepared with hardstand graded to new internal drains that will flow into either a new slag pit settling pond or the granulator settling pond. In high rain events the settling ponds will overflow to the IMED via new and existing stormwater networks.

The stormwater drainage system is available in Drawing 339042.

The stormwater catchment area is shown in Figure 5.

During construction, there will be no process water discharges from the project site.

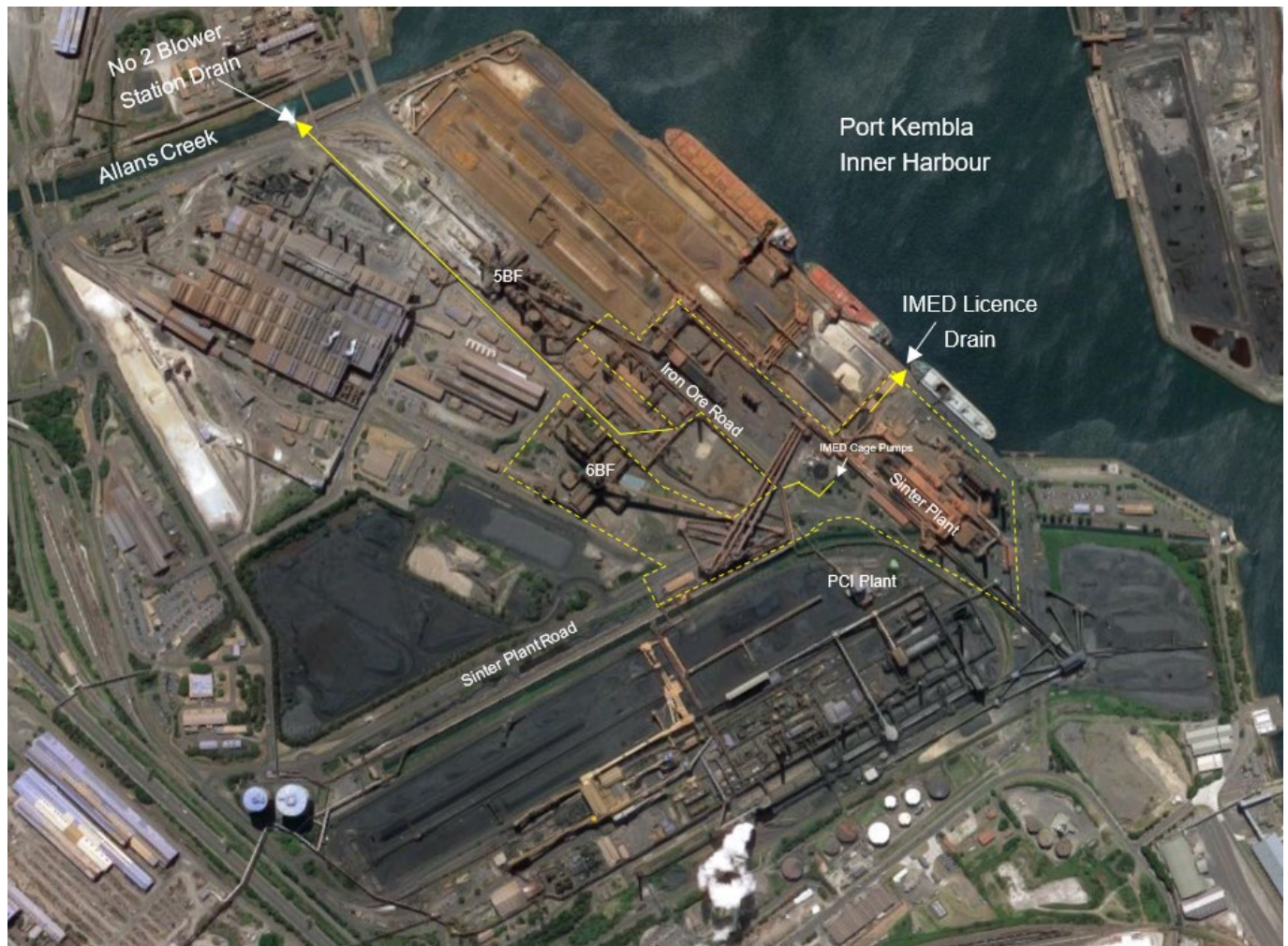


Figure 5: 6BF Reline Stormwater catchment area

During commissioning, process water will commence discharging to drain in accordance with the Approval and EPL 6092. A commissioning Water Quality Management Plan detailing mitigation measures will be developed prior to execution of the commissioning activities.

5 Environmental Risk Management

Potential risks to water quality during the construction phase include:

- Release of poor-quality stormwater into drains and waterways where it is impacted by excavation works and other construction activities. This may include elevated solid particles, reduced dissolved oxygen, pH impacts, and the presence of organic matter and other debris.

- Mobilisation of existing contamination within soils.

5.1 Erosion and Sediment Control Plan

In accordance with condition C3(a) of the Approval and commitments made in the EIS, an Erosion and Sediment Control Plan (ESCP) has been prepared by SMEC Australia Pty Ltd and is attached as Appendix 2 of this SWMP.

The management measures listed in the ESCP and EIS relevant to this SWMP have been incorporated into Appendix 1.

This ESCP will need to be reviewed and updated following change in construction methods and/or site conditions to ensure it remains relevant to the works being undertaken onsite.

5.2 Environmental Monitoring Program

Throughout the project construction phase, monitoring will be undertaken as specified in Table 4 to determine the effectiveness of environmental controls.

Table 4: Monitoring during Construction

Aspect	Parameter	Location	Methodology	Frequency	Responsibility	Evidence
Surface Water	Discharge to waterways	Discharge at Ironmaking East Drain	Sampling and Analysis	As specified in EPL 6092 at a minimum	Environment Department	Laboratory Data (Monitor Pro)
		Discharge at No.2 Blower Station Drain	Sampling and Analysis	As specified in EPL 6092 at a minimum	Environment Department	Laboratory Data (Monitor Pro)
Groundwater	Contamination	Environmental boreholes	Sampling and Analysis	Annually	Environment Department	Consultant Reports
Soil	Contaminated material	Excavated material	Sampling and Analysis	As required	Environment Department	Laboratory Report

In addition to the monitoring listed in Table 4, weather forecasts will be monitored to determine if heavy rainfall or high winds might affect site activities. Daily notifications from the Early Warning Network will be emailed to relevant personnel including the Construction Manager, HSE Manager, and Environment Advisor.

5.3 Environmental Inspections and Audits

All personnel working on the project will be encouraged to undertake environmental audits of activities as they are performed and record the audits and any findings in BlueScope's incident and risk management database.

Inspections of environmental controls will be conducted as a monthly audit by the construction manager (or a nominated delegate) to confirm the controls are in place and working effectively, and to identify improvement opportunities. The inspections may constitute a general assessment of control conditions, targeted inspections, adequacy assessment of controls, or activity observations.

Table 5: Inspections during Construction

Environmental Controls	Aspect	Potential Impact	Performance Criteria	Frequency
Bunding	Loss of containment	Discharge to waterway	No damage Appropriate capacity in accordance with Australian Standards	Monthly or after heavy rainfall

Environmental Controls	Aspect	Potential Impact	Performance Criteria	Frequency
Chemical Storage	Loss of containment	Discharge to waterway Odour	No damage to containers or bunds Appropriate storage and bund capacity in accordance with Safety Data Sheets and Australian Standards where applicable	Monthly and on use
Street Sweepers	Dragout	Dust emissions	No material on roadways Appropriate service schedule	Monthly
Water carts	Emissions from stockpiles or during excavation	Dust emissions	No emissions from stockpiles or during excavation activities	Monthly

Observations of all inspections and audits will be documented in an incident and risk management system. Any corrective actions identified must be assigned to a suitable person with an appropriate timeframe for completion.

5.4 Corrective and Preventative Actions

A non-conformance is a situation or event that does not comply with the safeguards required in this SWMP. All personnel working on the project may raise any non-conformances or improvement opportunities as they are identified.

A non-compliance is an occurrence or set of circumstances that breach the conditions of the Infrastructure Approval, Environment Protection Licence and/or any other legal requirement. In accordance with Condition C11 of the infrastructure Approval, non-compliances will be reported to the DPE via the Major Projects website within seven days of becoming aware of any non-compliance. Non-compliances to the EPL will be reported to the EPA.

Non-conformances and non-compliances will be recorded in BlueScope's incident and risk management database and managed in accordance with BlueScope's HSE Incident Management procedure (BSL-HSE-SD-12-01). Corrective and preventative actions addressing any non-conformances or non-compliances will be assigned to relevant personnel with an appropriate completion date. These actions will be recorded in the incident and risk management database entry.

5.5 Environmental Incident and Emergency Response

An incident is an occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance. Material harm is harm that:

- Involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial, or
- Results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practical measures to prevent, mitigate, or make good harm to the environment).

A project-specific 6BFR Emergency Response Plan (MA-6BF-EMG-01) has been developed to ensure that effective systems and appropriately trained personnel are in place to detect and respond to an emergency. This plan identifies potential emergency scenarios and their safety and environmental impacts, describes the response process, specifies personnel who are responsible and others that must be notified, and details the locations of emergency assembly areas, emergency shower and eyewash stations, spill kits, and fire suppression equipment.

All incidents must be reported and managed in accordance with BlueScope's HSE Incident Management procedure (BSL-HSE-SD-12-01) and documented in an incident and risk management system. Corrective and preventative actions relating to incidents will be included in the incident report. Contractor incident reports must be provided to



the plant or work owner (as identified in the relevant JSEA/SSW/SWMS) such that they can be documented in the project's incident and risk management system.

A BlueScope Environment Officer is available 24 hours 7 days per week on 1800 640 252 or (02) 4275 7522. The Environment Officer will receive and respond to incident reports, provide clean up assistance where required, and will notify appropriate government agencies, such as the EPA and DPE in accordance with relevant statutory requirements. In accordance with Condition C10 of the Infrastructure Approval, incidents relating to the project will be reported to the DPE via the Major Projects website.

BlueScope has an existing Pollution Incident Response Management Plan (PIRMP) for the Port Kembla Steelworks as required by the Protection of the Environment Operations Act 1997 (POEO Act). The existing PIRMP (MA-ENV-11-04) applies to all activities on the PKSW premises, including those associated with the project.

Appendix 1. Environmental Management Measures

The Environmental Management Measures identified in the EIS relevant to the SWMP are detailed in Table 6.

Table 6: SWMP Environmental Management Measures during Construction

Environmental Management Measure	Phase	Timing/ Frequency	Location	Responsibility	Source/ Reference	Evidence
Prior to construction commencing, a site specific Soil and Water Management Plan (SWMP) will be prepared. The plan will include arrangements for managing wet weather events, specific controls and environmental inspection requirements. The SWMP will include an Erosion and Sediment Control Plan (ESCP) which will be prepared in accordance with the Blue Book - Managing Urban Stormwater: Soils and Construction (4th edition , Landcom, 2004) and Volume 2 (DECC, 2008a).	Construction	Pre-construction	All areas	Environment Advisor	EIS	Soil and Water Management Plan Erosion and Sediment Control Plan (Appendix 2 of this document)



Environmental Management Measure	Phase	Timing/ Frequency	Location	Responsibility	Source/ Reference	Evidence
<p>The ESCP will detail the erosion controls used for the project and where they will be established. The ESCP will include soil specific measures to:</p> <ul style="list-style-type: none"> – Prevent sediment moving off-site and sediment laden water entering any watercourse, drainage lines, or drain inlets – Prevent mixing of soils – Ensure soils are replaced in their pre-existing configuration during rehabilitation where possible – Reduce water velocity overland and capture sediment on site – Minimise the amount of material transported from site to surrounding pavement surfaces – Divert clean water around the site – Install measures and site entry and exit points to minimise movement of material onto public roads 	Construction	Pre-construction	All areas	Environment Advisor	EIS	Erosion and Sediment Control Plan (Appendix 2 of this document)
<p>Spill management will involve:</p> <ul style="list-style-type: none"> – EPA compliant bunding of all hazardous chemicals – Spill kits readily available in clearly defined location 	Construction and Commissioning	At all times	Process areas and areas where chemicals are stored	All personnel	EIS Spill Response Guidelines Emergency Response Plan	Audits/Inspections
Erosion and sediment controls will be established prior to works commencing on site.	Construction	Prior to construction	All areas	Construction Manager Work Crews	EIS	Audits/Site inspections
Erosion and sediment controls will be inspected on a regular basis and replaced when their function is compromised.	Construction	Quarterly	All areas	Construction Manager Work Crews	EIS	Audits/Site inspections

Environmental Management Measure	Phase	Timing/ Frequency	Location	Responsibility	Source/ Reference	Evidence
Erosion and sediment controls will be inspected promptly after rainfall events.	Construction	After rainfall	All areas	Construction Manager Work Crews	EIS	Audits/Site inspections
If excavations are required during demolition works, soil generated will be reused where applicable. Excess spoil not required or able to be reused onsite will be disposed of appropriately as per the EPA's Waste Classification Guidelines (2014).	Construction	At all times	All areas	Construction Manager Work Owner	EIS Management of Excavated Soil at PKSW Waste Management Procedure	Laboratory results Waste Transport Certificates
Vehicles will be restricted to existing access routes where practical.	Construction	At all times	All areas	HSE Manager Logistics Manager	EIS	Construction Traffic Management Plan
Establish access to sites requiring ground-disturbing works via stabilised entry and exit points that permits tyres to be inspected and washed or brushed to remove dirt and mud in order to prevent tracking of sediments off the work site.	Construction	At all times	Areas where ground disturbing works are required	Construction Manager	ESCP	Cleaning facilities Audits/Site inspections Construction Traffic Management Plan
Disturbed areas will be returned to pre-existing condition following the completion of construction.	Construction	At all times	All areas	Construction Manager Project Manager	EIS	Photographs
Plant and machinery will be inspected regularly to ensure that they are in sound working order	Construction and commissioning	At all times	All areas	All personnel	EIS	Pre-start checks

Environmental Management Measure	Phase	Timing/ Frequency	Location	Responsibility	Source/ Reference	Evidence
<p>If soils that appear to be contaminated are exposed during construction of the project, works will cease in the area until further investigation can be undertaken.</p> <p>The following factors are indications of potential contamination on site:</p> <ul style="list-style-type: none"> – Stained or discoloured fill – Hydrocarbon or chemical odour – Construction wastes such as concrete, bricks, timber, tiles, fibre cement sheeting, fragments and pipes – Imported material such as ash, slag or coal chitter containing material. <p>Contaminated soils requiring disposal will be classified under the Waste Classification Guidelines (EPA,2014) prior to disposal.</p>	Construction	At all times	All areas	All personnel	EIS Unexpected Finds Procedure	Incident/Self Reports Laboratory Analysis
All chemical/fuel storage and loading areas will be bunded or otherwise contained.	Construction and commissioning	At all times	All areas	All personnel	EIS	Audits/Inspections
All plant personnel that may encounter chemicals/fuels will be trained in required handling procedures.	Construction and commissioning	At all times	All areas	Project Manager HSE Manager	EIS Training Needs Analysis	SAP Comply Flow
The Proponent must ensure that any construction activities in identified areas of acid sulfate soil risk are undertaken in accordance with the Acid Sulfate Soil Manual (Acid Sulfate Soil Management Advisory Committee, 1998).	Construction	At all times	All areas	All personnel	Condition B48 Unexpected Finds Procedure	JSEA/SWS/SWMS



Environmental Management Measure	Phase	Timing/ Frequency	Location	Responsibility	Source/ Reference	Evidence
The Proponent must: (a) ensure that only VENM, ENM, or other material approved in writing by EPA is brought onto the site; (b) keep accurate records of the volume and type of fill used in relation to the project; and (c) make these records available to the Planning Secretary upon request.	Construction	At all times	All areas	Area Managers Construction Manager	Condition B46	Supplier Documents
Protection of existing stormwater drains in roadside and curbs surrounding the project area with sandbags or gravel socks or similar during excavation or ground-disturbing works	Construction	During ground disturbing works	All roads surrounding project area	Area Managers Construction Manager	ESCP	JSEA/SWS/SWMS Audits/Site Inspections
Install sediment fencing along downhill perimeter in slag handling area. Maintain perimeter berms where reasonable and feasible.	Construction	During Works	Slag Handling Area	Area Managers Construction Manager	ESCP	JSEA/SWS/SWMS Audits/Site Inspections
Install sediment filters with coir log around proposed primary material and equipment staging area	Construction	During Works	6BF Area	Area Managers Construction Manager	ESCP	JSEA/SWS/SWMS Audits/Site Inspections
General runoff from the primary ferrous area may report to the excavation along the length of works within the site. Water captured within the area will be pumped or diverted to the existing soak away pond northwest of the site. Discharge offsite will be in accordance with site EPL and site operational treatment systems	Construction	During Works	Primary Ferrous Area	Area Managers Construction Manager	ESCP	JSEA/SWS/SWMS Audits/Site Inspections
Stockpiles in Slag Handling Area will be managed in accordance with Standard Drawing SD 4-1 per Section 7.3.7 of the ESCP.	Construction	During Works	Slag Handling Area	Area Managers Construction Manager	ESCP	JSEA/SWS/SWMS Audits/Site Inspections



Appendix 2. Erosion and Sediment Control Plan



SMEC INTERNAL REF. 30018084

**Erosion and Sediment
Control Plan**

No. 6 Blast Furnace Reline Project, Port Kembla, NSW

Client Reference No. 6BFR-GEN-AGR-0017/4860100474
Prepared for: BlueScope Steel (AIS) Pty Ltd
6 June 2023

Through our specialist expertise, we deliver advanced infrastructure solutions for our clients and partners.

Leveraging our 70-year history of delivering nation-building infrastructure, we provide technical expertise and advanced engineering services to resolve complex challenges.

Through our network of global specialists collaborating with local partners, we connect you with the best teams and capabilities to deliver innovative and sustainable solutions.

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Document Control

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1. Introduction

1.1 General

SMEC Pty Ltd (SMEC) has been engaged by BlueScope Steel (AIS) Pty Ltd (BlueScope) to prepare an Erosion and Sediment Control Plan (ESCP) which details the measures and procedures that will be employed for the No. 6 Blast Furnace Reline Project.

Blue Scope Steel (AIS) Pty Ltd (Blue Scope) currently operates the No. 5 Blast Furnace (5BF) to produce iron. The No. 6 Blast Furnace Reline (6BFR) Project involves substantial work in and around the blast furnace to enable 6BF to be brought back online for iron making. A portion of the work to reline 6BF (the site) involves earthworks, piling and/or foundation preparation. These project construction activities have a potential for impact upon local water quality and drainage as a result of erosion through runoff and sedimentation downstream according to the Environmental Impact Statement¹ (EIS). The approval conditions for the 6BFR Project require an ESCP be developed for the project. The ESCP will form part of the Construction Environmental Management Plan (CEMP) which will be provided to the NSW Department of Planning and Environment for approval prior to construction commencing.

The overall construction program is anticipated to be around 3 years. An indicative construction timeline showing the duration of key activities is to be provided by BlueScope to understand project phasing and what site-specific trigger values are to be adopted by the ESCP and the sites Environmental Protection License (EPL) requirements. The final design and staging will be reflected in the progressive erosion and sediment controls plans in addition to this initial plan and completed by the construction team at the time to maintain compliance.

1.2 Purpose of the plan

The purpose of the ESCP is to satisfy approval conditions B1 and C3(a) of the Infrastructure Approval for application SSI-22545215.

1.3 Compliance

Table 1 presents the approval conditions requested by NSW Department of Planning and Environment.

Table 1: Conditions of approval

Condition	Requirement
B1	<i>Prior to the commencement of any construction or other surface disturbance for the project, the Proponent must install and maintain 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.</i>
C3	<i>As part of the CEMP required under Condition C2 of this approval, the Proponent must include the following: (a) Erosion and Sediment Control Plan;</i>

1.4 Erosion and Sediment Control Standards

This ESCP has been prepared to meet the guidelines and standards set in the NSW Blue Book²(Landcom, 2004).

This plan specifically relates to the proposed demolition and construction works and associated site establishment. This plan covers the locations as shown on the drawings only and do not cover any other areas or scope of works. Erosion and sediment controls will need to be re-assessed for future works and revised plans will be required (or these plans can be updated).

¹ GHD (2022), Blast Furnace No.6 Reline Project, Environmental Impact Statement, prepared for BlueScope Steel (AIS) Pty Ltd, dated 07 March 2022.

² Landcom (2004). Managing Urban Stormwater: Soils and Construction. Volume 1. NSW Government, Sydney.

1.5 Assumptions

At this current stage of the planning process there are a few project variables to be defined by the construction contractor and demolition phasing and to provide a more comprehensive ESCP the following assumptions have been made:

- Demolition and construction may occur progressively.
- Each stage will have up gradient surface flow managed via existing drainage infrastructure.
- Buildings identified for demolition and renovation will retain operational drainage assets where possible and do not require additional erosion and sediment controls.
- Sediment Basin Design Criteria used in the Revised Universal Soil Loss Equation (RUSLE) calculations are based on 36 months (duration of proposed entire works).
- The plan does not cover rehabilitation or landscaping.
- Soil and Water Management Plans do not form a part of this ESCP.
- Water treatment requirements as part of EPL and CEMP approval.

2. Site location

The project site is located within the existing Port Kembla Steelworks, which is located within the North Port Kembla Industrial Area, bound by Tom Thumbs Lagoon to the east, Allans Creek to the north, and the Port Kembla railway to the west and south. The site is approximately 5km south of Wollongong CBD.

The No.6 Blast furnace is an existing structure surrounded by supporting infrastructure and ancillary developments that make up the greater steelworks. The project site can be grouped into four distinct areas within the greater Port Kembla Steelworks site. The areas are:

- **Area 1:** Slag Handling area and Granulator
- **Area 2:** No.6 Blast Furnace – Hot Blast and Gas Cleaning
- **Area 3:** Excess Gas Bleeder
- **Area 4:** Primary Ferrous Area

Figure 2-1 below presents the four areas within the greater steelworks footprint.



Figure 2-1: Overview of project areas, Port Kembla Steelworks.

The site is typically low lying, heavily developed, and near level with no apparent ground surface slope in any direction, with elevations across the project site ranging between +3.94m and +9.1m AHD. The project site is mostly un-vegetated with only small areas of vegetation including some vegetated medium strip and vegetated pond areas, located predominately to the south and west of the No.6 Blast Furnace.

The majority of the project area consists of buildings, asphalt sealed surfaces or hardstand/unsealed surfaces.

In the hardstand/unsealed areas, the following were noted:

- Iron ore fill was noted in the primary ferrous area,
- coal in the slag (coal) handling area, and mixtures of gravel/coal/slag/Iron ore gravel in the excess gas bleeder area.
- The area surrounding the Number 6 Blast Furnace (6BF Site) is mostly sealed with a mix of concrete, asphalt and cemented slag wearing courses.

3. Proposed work details

The reline project includes installation of new equipment across the four distinct project areas:

3.1 Area 1 - Slag Handling and Slag Granulator

The proposed construction works within this area includes:

- New slag granulation equipment
- New cooling tower and pump
- New slag handling switch room
- New slag pot carrier road
- New knocking block
- New drainage pond
- Reinstatement of Slag Pits

3.2 Area 2 – No.6 Blast Furnace and Surrounding Areas

The proposed construction works within this area includes:

- New TRT equipment and associated switch rooms
- New vertical demister
- New clean gas main structure
- New scrubber water pump
- Dust catcher lift and jacking foundations
- New clarifier structure
- New aeration blowers and tanks
- New chemical treatment and slurry pumping plants
- Large, tracked cranes (Alimak elevator and Crawler Crane) will be utilising this area during construction

3.3 Area 3 - Excess Gas Bleeder

The proposed construction works within this area includes a new excess gas bleeder and associated ductwork including water seal structure

3.4 Area 4 - Primary Ferrous Area

The proposed construction works within this area includes:

- Primary ferrous building
- Highline switch room

4. Existing Environment

4.1 Study Area Catchment

The project site sits within the existing Port Kembla Steelworks, which is located within the North Port Kembla industrial area spanning approximately 750 hectares (ha) bound by Tom Thumbs Lagoon to the east, Allans Creek to the north and the Port Kembla Inner Harbour in the east.

Port Kembla is located between the Pacific Ocean and the Port Kembla heavy industrial area. The Inner Harbour, specifically developed as an all-weather shipping port, covers approximately 60ha with around 2,900m of commercial shipping berths.

Based on review of the aerial photos, this portion of the broader Port Kembla Steelworks industrial site was bulk filled and ‘developed’ sometime between 1948 and 1961 (i.e. post World War Two), with the No.6 Blast Furnace being constructed in the 1990s and commencing operations in 1996.

4.2 Climate

The nearest up to date Bureau of Meteorology (BOM) weather station is the Bellambi AWS NSW (station Number 068228) approximately 11km from the project site. Port Kembla has a mild and generally warm temperate climate, with moderate temperature variations between summer and winter and wetter months tending towards February and March. Recorded extreme temperatures have ranged from 4.1°C to 43.7°C and monthly rainfall extremes range between 0mm and 682mm (Bureau of Meteorology, 2023) for the record period between 1997 to 2023. The annual median rainfall for Bellambi AWS is 1125mm for the recorded period between 1997 to 2023. Heavy rainfall in the region is typically associated with the passage of east coast low pressure systems with daily rainfalls typically greater than 100mm. During 2022, the annual total rainfall at Albion Park rain gauge was 2585.4mm and is attributed to La Niña. Figure 4-1 presents the mean maximum monthly temperate VS mean monthly rainfall for Bellambi AWS weather station.

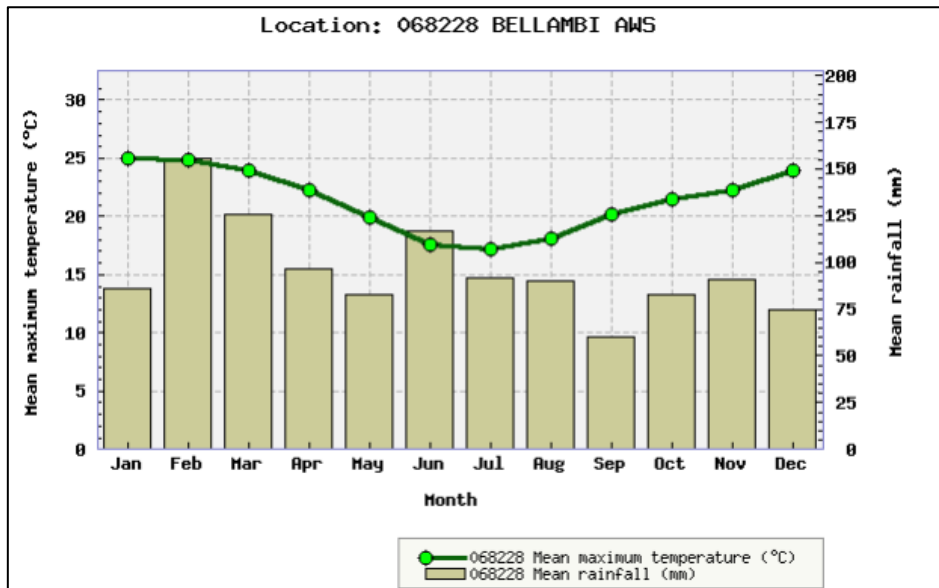


Figure 4-1: Bureau of Meteorology – Bellambi AWS (068228) Climate Statistic

4.3 Regional Geology and Soil Landscape

4.3.1 Regional Geology

Information from the Geological Survey of New South Wales (GSNSW) Seamless Geology Project Version 2 (May 2020) indicates that the project site is underlain by anthropogenic deposits, as presented in Figure 4-3. The seamless geology project supersedes the 1:250,000 scale Geological Series Sheet SI 56-9 Wollongong Map (1966), which indicates that the site is underlain by alluvial swamp deposits. Figure 4-2 shows an excerpt of the 1:250,000 scale geological map.

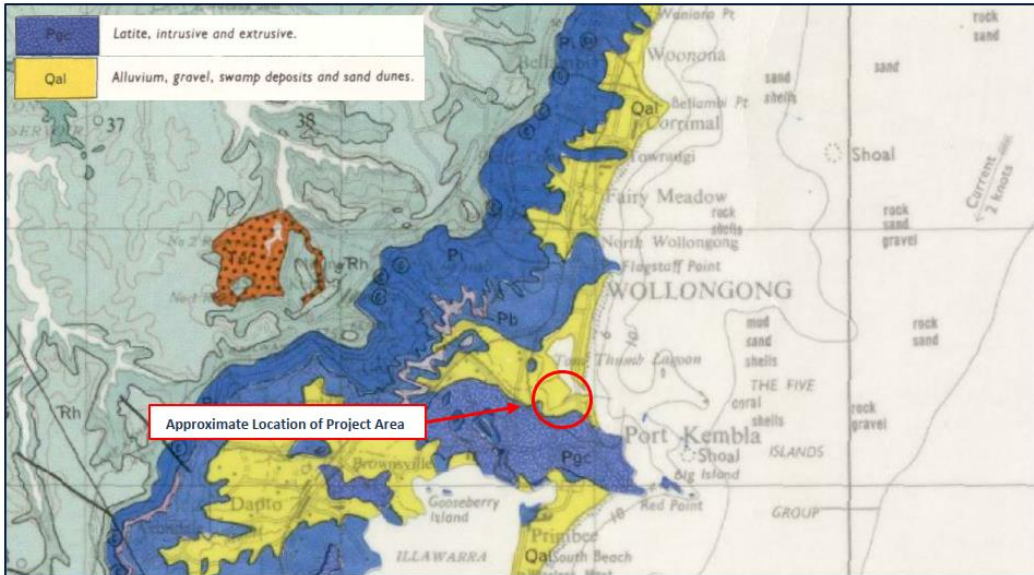


Figure 4-2: Screen Grab – NSW Department of Mines 1:250,000 Geological Series Sheet SI 56-9. Second Edition 1966

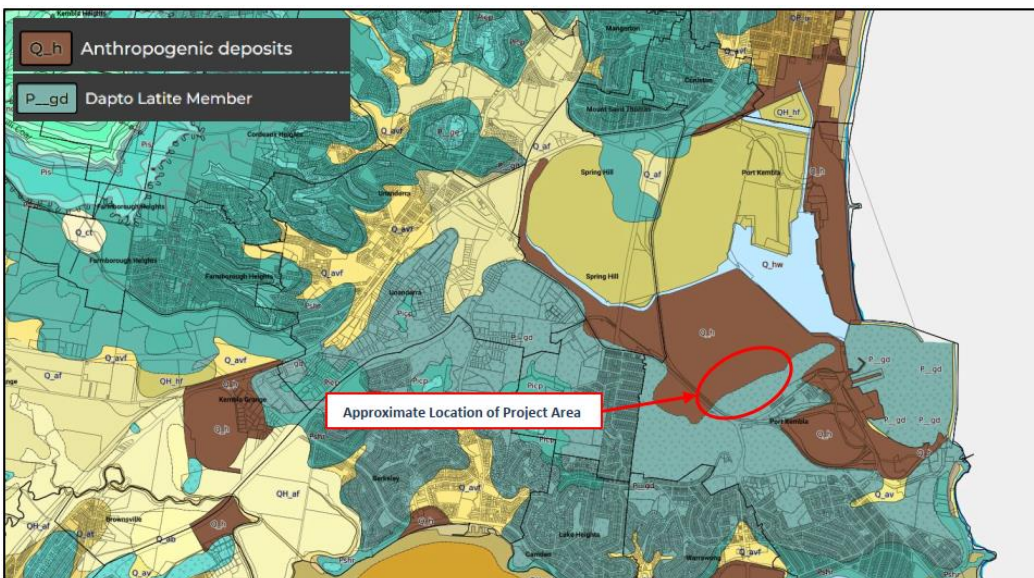


Figure 4-3: Screen Grab – Geological Survey of NSW (GSNSW) Seamless Geology Project Version 2 (May 2020)

4.3.2 Soil Landscape

With reference to eSPADE web app mapping (accessed via www.environment.nsw.gov.au/eSPADE on 01 May 2023), the site is mapped as Disturbed Terrain soil landscape (9029xx) occurring within other landscapes as shown in Figure 4-4. Based on review of available aerial photos, it is known that the project site was previously a low-lying area consisting of coastal floodplain wetlands and coastal valley grassy woodlands that existed pre-clearing, and estuaries surrounding the original Allans Creek which led into Tom Thumbs Lagoon. The site was progressively filled using

artificial fill (including sinter slag, dredged sands, coal wash and carbonaceous material). A copy of the eSPADE report is presented in Appendix C.



Figure 4-4: Screen Grab – Soil landscape of Wollongong-Port Hacking region eSpade v2.1 (May 2023)

5. Risk Assessment

5.1 Identification of Potential Impacts

The EIS (GHD, 2022) for the project has identified the site as draining into two creeks, Main Drain and Allans Creek, which discharge into Tom Thumb Lagoon and Port Kembla Inner Harbour. These are environmentally sensitive receiving areas.

The EIS states that the erosion risk is considered relatively low as the site is flat, and predominantly sealed with concrete or bitumen and the level of disturbance will be minor. Potential erosion and sedimentation impacts will be managed through the implementation of appropriate controls with reference to Managing Urban Stormwater: Soils and Construction Volume 1 (The 'Blue Book'; Landcom, 2004).

5.2 Erosion and Sediment Control Requirements

The primary ESCP and the associated calculations and drawings have been prepared based on the concept design for drainage.

5.2.1 Construction Catchments

Preliminary construction catchments have been identified for the entire length of the proposal in accordance with the proposed design (refer to Appendix B). Each construction catchment has been assessed in principle with Blue Book and using the Revised Universal Soil Loss Equation (RUSLE) to determine the need for likely sediment basin locations.

The design of construction catchments followed a best practice management approach in accordance with the Blue Book which included the following considerations:

- A maximum value/worst case scenario has been adopted for design input data
- Slope lengths have been calculated as the distance from the origin of overland flow along its flow path to the location of either concentrated flow or deposition.
- Where required (e.g. intersections) catchments were sized to be inclusive of all substages to improve efficiency of control implementation.

Review of catchment sizing will be required as construction progresses at least annually or 6 monthly if required, to reflect available contractor construction phasing. Up gradient urban stormwater catchments may also need to be considered in some events where offsite clean water diversion controls are being temporarily or permanently impacted.

5.2.2 Design Parameters

In accordance with the Blue Book, Table 2 details the design parameters which have been used to estimate the Revised Universal Soil Loss Equation (RUSLE) for each identified construction catchment of the project. Additional RUSLE calculations may need to be reviewed subject to detailed construction staging and planning details based on revised slope length and gradient factors.

Table 2: Demolition catchment assessment parameters.

Parameter	Value	Blue Book Reference
Sediment Type	Type C (less than 10 percent dispersible fines and 33 percent or less are finer than 0.02 mm)	Table C21 Wollongong Port Hacking
Soil Hydrological Group	Group A	Table C21 Wollongong Port Hacking
Volumetric Runoff Coefficient (Cv)	0.15	Table F2 in Appendix F
Rainfall Data	5 day / 80 th %ile /33mm	Table 6.3(a)
Rainfall Erosivity (R factor)	4500	Appendix B, Map 11, B13

Parameter	Value	Blue Book Reference
Soil Erodibility (K factor)	0.042	Table C21 Wollongong Port Hacking
Erosion Control Practice (P factor)	1.3 (compacted and smooth)	Appendix A Table A2
Ground Cover and Management Factor (C factor)	1	Appendix A Section A6

5.2.3 Slope length and gradient factor

The slope length and gradients have been measured using each designated flow path length. The values have been used to calculate the LS factor using Table A1 of the Blue Book. Slope maximum length of 80 m was utilised, and 50 m should be considered where possible.

5.2.4 Erosion control practice factor

A default P factor of 1.3 has been adopted. This reflects a worst-case scenario 'compacted and smooth' surface condition of the site.

5.2.5 Ground cover and management factor

A default C factor of 1 has been adopted. This reflects a worst-case scenario cover factor where topsoil has been stripped.

5.2.6 Soil Hydrology Group

Soils on site are predominantly imported fill material which have been characterised for this study as Group A. Group A has a very low runoff potential. Water moves into and through these soil materials relatively quickly, when thoroughly wetted. Usually, they consist of deep (>1.0 metres), well-drained sandy loams, sands or gravels. They shed runoff only in extreme storm events.

5.3 Catchment Risk Assessment

5.3.1 Construction Catchment Sizing

Catchment sizing is based on the proposed construction activity area, project engineered elements like new pavement, new drainage features and temporary ancillary facilities required during the construction phase schedules. The requirement for sediment basins has been considered throughout the concept design process. Placement of proposed basins have been assessed for co-location potential with the proposed permanent operational water quality basins or detention tanks in the contractor's design.

Sizing of catchments was provided by BlueScope and may need to be further defined once detailed planning of the construction staging is underway. Provisions for potentially larger up gradient stormwater catchments would be taken into consideration during higher risk activities for example: redirecting live stormwater assets, or when each works area is connected to existing site water treatment facilities.

5.3.2 Erosion Risk Hazard and High-Risk Area

An evaluation of the erosion risk was made using the Revised Universal Soil Loss Equation (RUSLE) methodology. The RUSLE formula is outlined below:

$$A = R \times K \times LS \times P \times C$$

Where:

- A is computed soil loss (tonnes/hectare/year)
- R is rainfall erosivity factor
- K is soil erodibility factor
- LS is slope length and gradient factor

- P is soil conservation practice factor
- C is ground cover factor

The values identified in Table 2 Section 5.2.2 have been used in the assessment of each construction catchment. RUSLE calculations for each of the construction catchments are included in Appendix B.

5.3.3 Soil Loss Results

As detailed in Section 6.3.2 (d) of the Blue Book 'the building of a sediment retention basin can be considered unnecessary if the computed soil loss from a catchment is less than 150m³ per year. For all catchments, which exceed this requirement, a sediment basin is required.

Appendix B presents the RULSE assessment finding for each construction catchment areas are provided and is summarised below.

5.3.3.1 Area 1 - Slag Handling and Slag Granulator

The RUSLE assessment concluded that Area 1 registered a soil loss of >150m³ per year and hence required a Type C basin to be constructed. Additional information on construction phasing and management may minimise sediment basin sizing (refer Section 1.2).

The proposed slag pond and recovery tank can effectively act as a Type C soil (bulk of which are coarse-grained with less than 33 percent finer than 0.02 mm) sediment basin provided the capacity of the recovery tank is increased from 1ML to a minimum of 1.4ML (refer Appendix B).

5.3.3.2 Area 2 – No.6 Blast Furnace and Surrounding Areas

The current calculation of the soil loss class rates Area 2 as low risk for soil loss indicating no requirement for a basin.

5.3.3.3 Area 3 - Excess Gas Bleeder

The current calculation of the soil loss class rates Area 3 as low risk for soil loss indicating no requirement for a basin.

5.3.3.4 Area 4 - Primary Ferrous Area

The current calculation of the soil loss class rates Area 4 as low risk for soil loss indicating no requirement for a basin.

6. Erosion and Sediment Controls

Key management strategies for erosion and sediment control plans are to include:

- Minimise extent and duration of construction disturbance
- Ensure /separation of offsite water from site water
- Use erosion control measures to prevent offsite impacts
- Inspect and maintain erosion controls measures
- Progressively stabilise and/or rehabilitate disturbed areas as soon as operationally possible.

6.1 Area 1 - Slag Handling and Slag Granulator

Two existing soak away pits on the southern boundary of the project area capture surface runoff.

The proposed Area 1 works spans across approximately 35,000m² with approximately 80% of the site proposed to be disturbed during construction.

The erosion and sediment control measures detailed in Table 3 are to be implemented for all ground-disturbing works in the area such as earthworks, piled foundations, concrete pad/slab foundations, and construction of new pavements.

Table 3: Area 1 - Erosion and sediment control measures

ID	Management measure	Timing	Responsibility
ESC01	All personnel working in the area will be inducted into this ESCP and will be made aware of the requirements for erosion and sediment control.	Prior to works	Site Manager
ESC02	A copy of this ESCP will be retained onsite.	During works	Site Manager
ESC03	Establish access to site (Section 7.3.6) for construction vehicles via proposed stabilised entry and exit points along Coal Stock Road and Sinter Plant Road that permits tyres to be inspected and washed or brushed to remove dirt and mud in order to prevent tracking of sediments off the work site.	During works	Site Manager
ESC04	Protection of existing stormwater drains in roadside and curbs along Caster Road and Caster Park Road with sandbags or gravel socks or similar in accordance with standard drawings SD 6-11(Section 7.3.1) and SD 6-12 (Section 7.3.2) during trenching works at Coal Stock Road.	During works	Site Manager
ESC05	As much as possible, minimise ground-disturbing works	During works	Site Manager
ESC06	Retain the two existing soak away pits on the southern boundary of the work area to remain in service until permanent structures, such as retaining walls, slag pond and recovery tank are established. This slag pond and recovery tank should be established as soon as reasonable and feasible for use as a Type C sediment basin during construction and will be transitioned to operational phase during which waters will be treated at the IMED in accordance with site EPL and site operational treatment systems.	During works	Site Manager
ESC07	Install sediment fencing in accordance with Standard Drawing SD 6-8 (Section 7.3.47.3.4) or SD 6-9 (Section 7.3.5) along downhill perimeter. Maintain perimeter berms where reasonable and feasible.	During works	Site Manager
ESC08	Dust-generating activities will be monitored, and fugitive dust controlled by applying water from a water cart if required or locally by a garden hose.	During works	Site Manager
ESC09	Consider use of polymer for dust suppression: Vital Bon Matt Stonewall (http://www.vitalindustries.com.au) or equivalent for stockpiles and exposed areas.	During works	Site Manager

ID	Management measure	Timing	Responsibility
	Vital BonMatt HR (http://www.vitalindustries.com.au) or equivalent for unsealed Haul Roads and high water flow drains.		
ESC13	Weather forecasts will be monitored to determine if high winds or heavy rainfall might affect site activities.	During works	Site Manager
ESC14	This ESCP will need to be reviewed and updated following change in construction methods and/or site conditions to ensure it remains relevant to the works being undertaken onsite.	During works	Site Manager
ESC15	Stockpiles will be managed in accordance with Standard Drawing SD 4-1 (Section 7.3.7).	During works	Site Manager

6.2 Area 2 – No.6 Blast Furnace and Surrounding Areas

The area uses a network of stormwater infrastructure that feed into existing basins (SA1 and CB2) northwest of the area. A network of stormwater infrastructure is proposed to discharge into primary basin (CB2) that overflows into basin SA1 during periods of high discharge during proposed works. Basin SA1 discharges into the Ironmaking East Drain (IMED) which has a capacity of 7ML. IMED is periodically pumped into a licensed discharge point (EPL 6092) at the No.2 Blower Station Drain that reports to Allans Creek.

The proposed Area 2 works spans across 33,280m² with approximately 7.5% of the site proposed to be disturbed during construction.

The erosion and sediment control measures detailed in Table 4 are to be implemented for all ground-disturbing works in the area such as earthworks, piled foundations, concrete pad/slab foundations, and construction of access road.

Table 4: Area 2 - Erosion and sediment control measures

ID	Management measure	Timing	Responsibility
ESC01	All personnel working in the area will be inducted into this ESCP and will be made aware of the requirements for erosion and sediment control.	Prior to works	Site Manager
ESC02	A copy of this ESCP will be retained onsite.	During works	Site Manager
ESC03	Establish access to site (Section 7.3.6) for construction vehicles via a stabilised entry and exit point along Caster Park Road northwest and southwest of the site that permits tyres to be inspected and washed or brushed to remove dirt and mud in order to prevent tracking of sediments off the work site.	During works	Site Manager
ESC04	Protection of existing stormwater drains in roadside and curbs along Caster Park Road, Blast Furnace Road, No.6 BF carpark as well as dust catcher with sandbags or gravel socks or similar SD6-11 and SD 6-12 (refer Section 7.3.1 and Section 7.3.2).	During works	Site Manager
ESC05	As much as possible, minimise ground-disturbing works	During works	Site Manager
ESC08	Dust-generating activities will be monitored, and fugitive dust controlled by applying water from a water cart if required or locally by a garden hose.	During works	Site Manager
ESC10	Install sediment filters with coir log around proposed primary material and equipment staging area in accordance with SD 6-7 (Section 7.3.3).	During works	Site Manager
ESC11	Consider use of polymer for dust suppression: Vital Bon Matt Stonewall (http://www.vitalindustries.com.au) or equivalent for stockpiles and exposed areas Vital BonMatt HR (http://www.vitalindustries.com.au) or equivalent for unsealed Haul Roads and high water flow drains	During works	Site Manager
ESC13	Weather forecasts will be monitored to determine if high winds or heavy rainfall might affect site activities.	During works	Site Manager
ESC14	This ESCP will need to be reviewed and updated following change in construction methods and/or site conditions to ensure it remains relevant to the works being undertaken onsite.	During works	Site Manager

6.3 Area 3 - Excess Gas Bleeder

A network of drainage around the proposed Excess Gas Bleeder reports to the drainage network on Iron Ore Road, which reports to the IMED.

The erosion and sediment control measures detailed in Table 5 are to be implemented for all ground-disturbing works in the area such as earthworks, piled foundations, water seal and ductwork.

Table 5: Area 3 - Erosion and sediment control measures

ID	Management measure	Timing	Responsibility
ESC01	All personnel working in the area will be inducted into this ESCP and will be made aware of the requirements for erosion and sediment control.	Prior to works	Site Manager
ESC02	A copy of this ESCP will be retained onsite.	During works	Site Manager
ESC03	Establish access to site (Section 7.3.6) for construction vehicles via a stabilised entry and exit point along Iron Ore Road east of the site that permits tyres to be inspected and washed or brushed to remove dirt and mud in order to prevent tracking of sediments off the work site.	During works	Site Manager
ESC04	Protect existing stormwater drains in roadside and curb with sandbags or gravel socks or similar, along Iron Ore Road (refer Section 7.3.1 and Section 7.3.2).	During works	Site Manager
ESC07	Erosion and sediment controls using sand bags or in accordance with Standard Drawing SD 6-7 or SD 6-9 (Section 7.3.3 and Section 7.3.5) around piling works.	During works	Site Manager
ESC08	Dust-generating activities will be monitored, and fugitive dust controlled by applying water from a water cart if required or locally by a garden hose.	During works	Site Manager
ESC13	Weather forecasts will be monitored to determine if high winds or heavy rainfall might affect site activities.	During works	Site Manager
ESC14	This ESCP will need to be reviewed and updated following change in construction methods and/or site conditions to ensure it remains relevant to the works being undertaken onsite.	During works	Site Manager

6.4 Area 4 - Primary Ferrous Area

A sediment and runoff containment and treatment strategy exists for this area. The system consists of various soak away pits with periodic pumping of water either to the nearby thickener and effluent treatment station which discharges to the IMED, or directly to the IMED. The IMED is pumped periodically to Allans Creek in accordance with current licensing conditions.

The proposed Area 4 works spans across 2,000m² with 100% of the site proposed to be disturbed during construction.

The erosion and sediment control measures detailed in Table 6 are to be implemented for all ground-disturbing works in the area such as deep excavations, piling, and concrete pad/slab foundations.

Table 6: Area 4 - Erosion and sediment control measures

ID	Management measure	Timing	Responsibility
ESC01	All personnel working in the area will be inducted into this ESCP and will be made aware of the requirements for erosion and sediment control.	Prior to works	Site Manager
ESC02	A copy of this ESCP will be retained onsite.	During works	Site Manager
ESC03	Establish access to site (Section 7.3.6) for construction vehicles via a stabilised entry and exit point along Screen House Road west of the site that permits tyres to be inspected and washed or brushed to remove dirt and mud in order to prevent tracking of sediments off the work site.	During works	Site Manager
ESC05	As much as possible, minimise ground-disturbing works.	During works	Site Manager

ID	Management measure	Timing	Responsibility
ESC08	Dust-generating activities will be monitored, and fugitive dust controlled by applying water from a water cart if required or locally by a garden hose.	During works	Site Manager
ESC12	General runoff from the work area may report to the excavation along the length of works within the site. Water captured within the area will be pumped or diverted to the existing soak away pond northwest of the site. Discharge offsite will be in accordance with site EPL and site operational treatment systems	During works	Site Manager
ESC13	Weather forecasts will be monitored to determine if high winds or heavy rainfall might affect site activities.	During works	Site Manager
ESC14	This ESCP will need to be reviewed and updated following change in construction methods and/or site conditions to ensure it remains relevant to the works being undertaken onsite.	During works	Site Manager

7. Erosion and sediment control planning

7.1 Key Management Strategies

Key management strategies for erosion and sediment control plans are to include:

- Minimising extent and duration of disturbance
- Control stormwater flows onto, through and from the site
- Use erosion control measures to prevent onsite damage
- Use sediment control measures to prevent off site damage
- Stabilise disturbed areas quickly
- Inspect and maintain controls measures

7.2 Primary and Progressive ESCP

The best practice management guidance provided in Soils and Construction Volume 1 Managing Urban Stormwater (Landcom, 2004) assists in planning and implementation of appropriate controls to minimise soil erosion and control sedimentation. The purpose of these documents is to outline the intentions and fundamental principles that would be followed in the planning and implementation of erosion and sediment control measures for the proposal.

The primary ESCP contains detailed background information, risk assessment and discussion, while a series of subordinate progressive ESCPs provide up-to-date detail regarding location and installation of control measures.

Progressive ESCPs are typically developed as the project proceeds, as site conditions evolve and as flow paths are changed. Over the construction and/or maintenance phase of a project, a series of progressive ESCPs would be prepared to address all stages of the work and to provide the necessary levels of flexibility. The following steps should be undertaken prior to construction within each designated catchment area.

- Site personnel charged with the responsibility for implementation of the ESCP should have appropriate knowledge and experience in erosion and sediment control management in accordance with the Blue Book Volume 1 and Volume 2D.
- Where permitted by design, an offsite water diversion bank or similar should be constructed at the top of the construction activity areas or catchment to divert offsite water (offsite water) around the areas of disturbance. Section 7.3 further details how offsite water diversions may be constructed.
- Where required, install sediment containment measures (e.g. excavated sumps, sediment fence, sandbag traps) to treat runoff from the disturbed catchment area. Placement of these control measures are restricted to the available space within the project boundary and preferably outside of the construction zone. Where space is restricted, the capacity of sediment containment measures may be reduced by separating the catchment into smaller portions by way of diversion banks or temporary cut drains.

7.3 Standard Controls

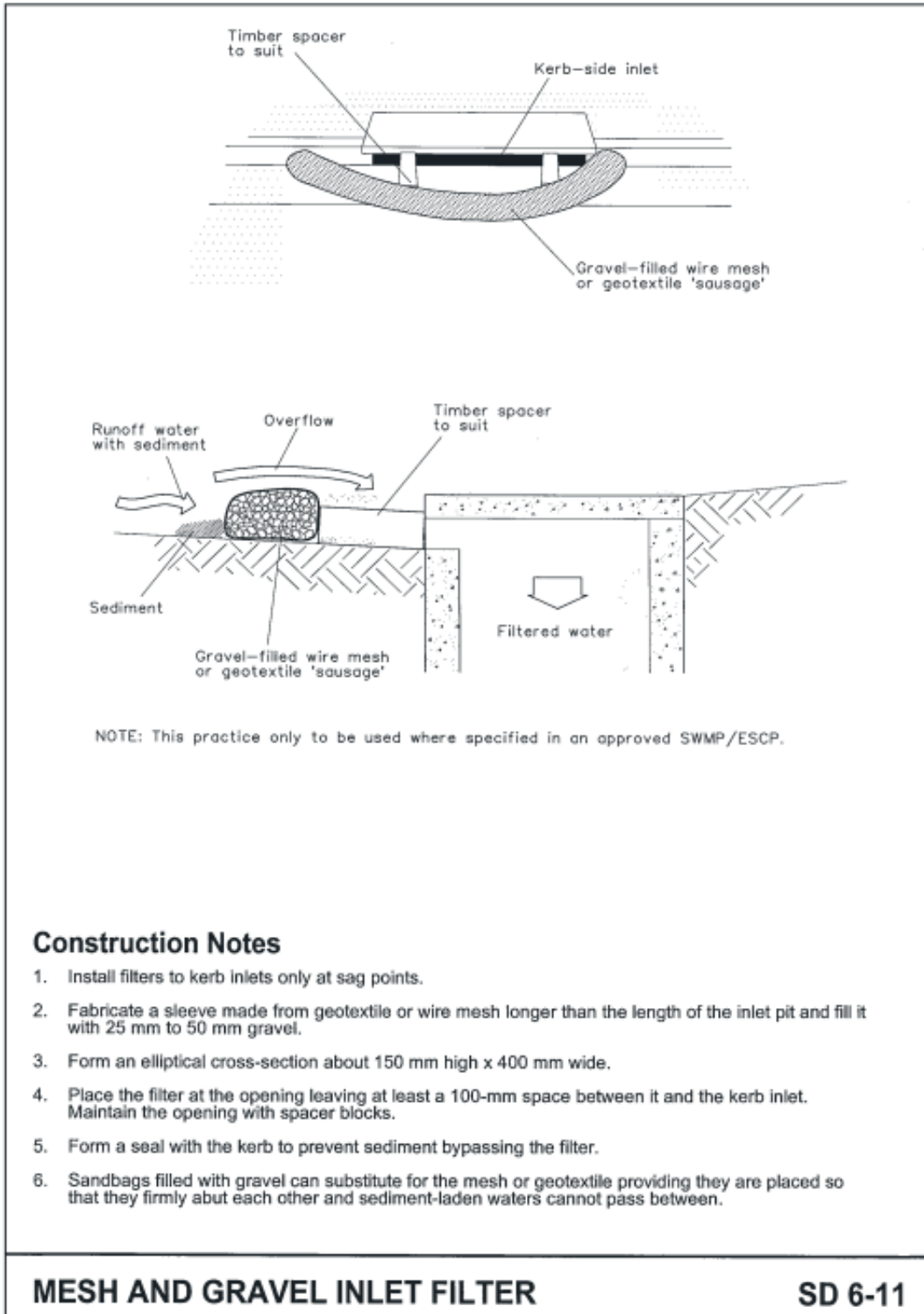
The following erosion and sediment controls are indicative of controls to be used to manage soil and water impacts during construction. Controls should be implemented where appropriate and maintained to ensure proper function.

Selection of control measures requires the following:

- Identifying the problem (erosion or sedimentation) to be managed.
- Where the problem is erosion, identifying whether it is caused by raindrop impact or concentrated flow.
- Where the problem is sedimentation, identifying if sediment is conveyed by sheet or concentrated flow.
- Selecting the appropriate techniques depending on the identified specific nature of the problem.

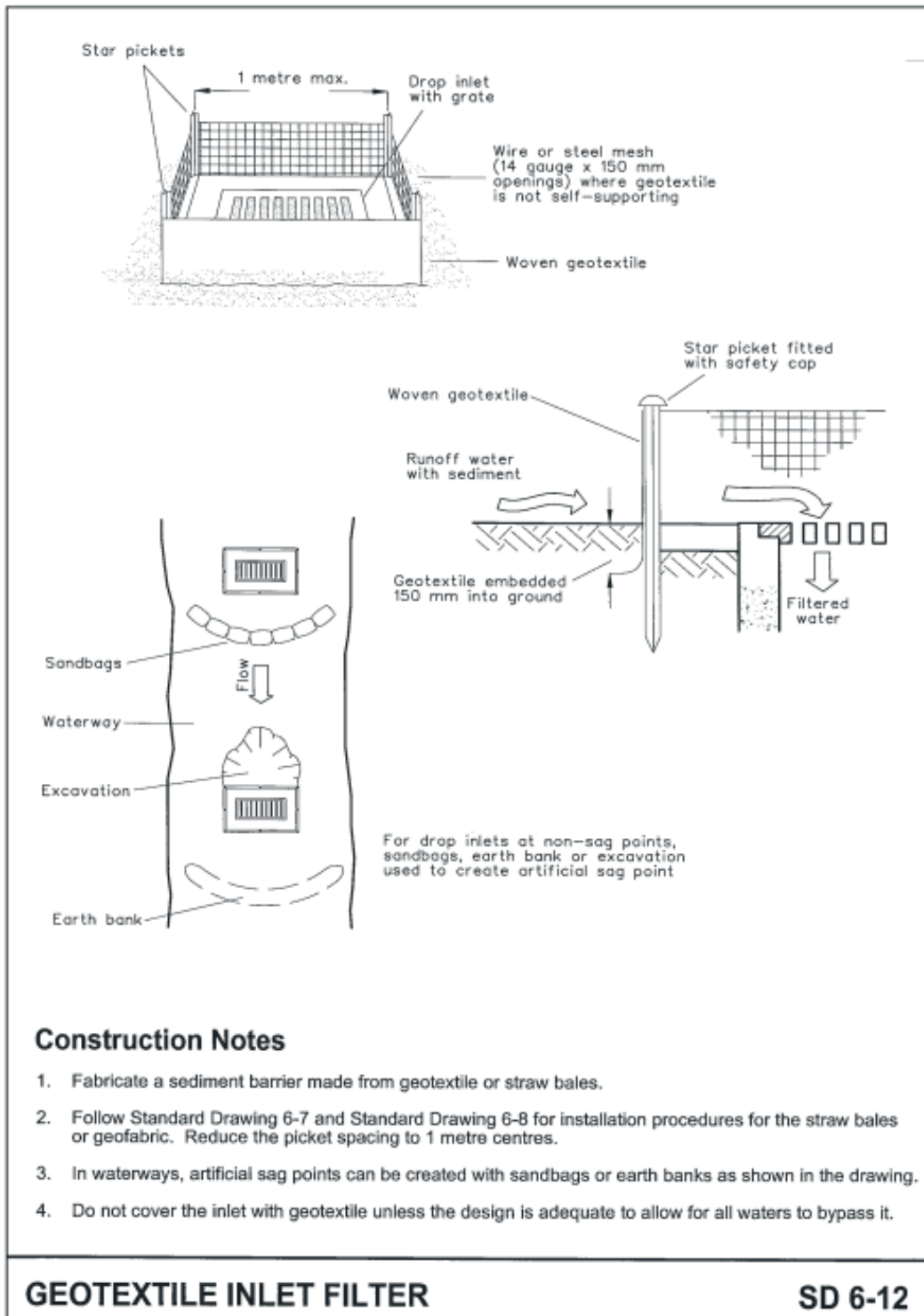
7.3.1 Mesh and gravel inlet filter

From Landcom,2004.



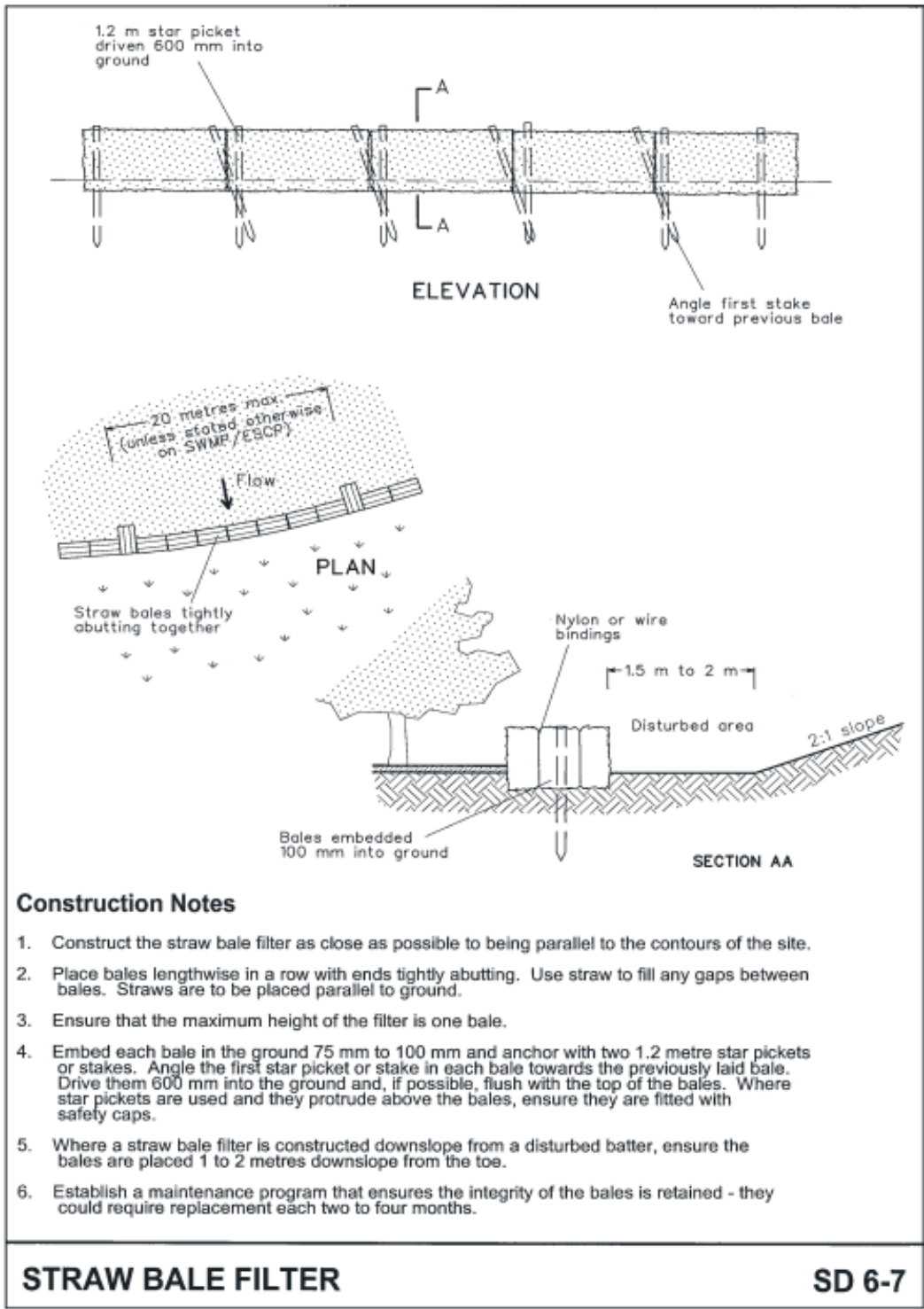
7.3.2 Geotextile inlet filter

From Landcom,2004.



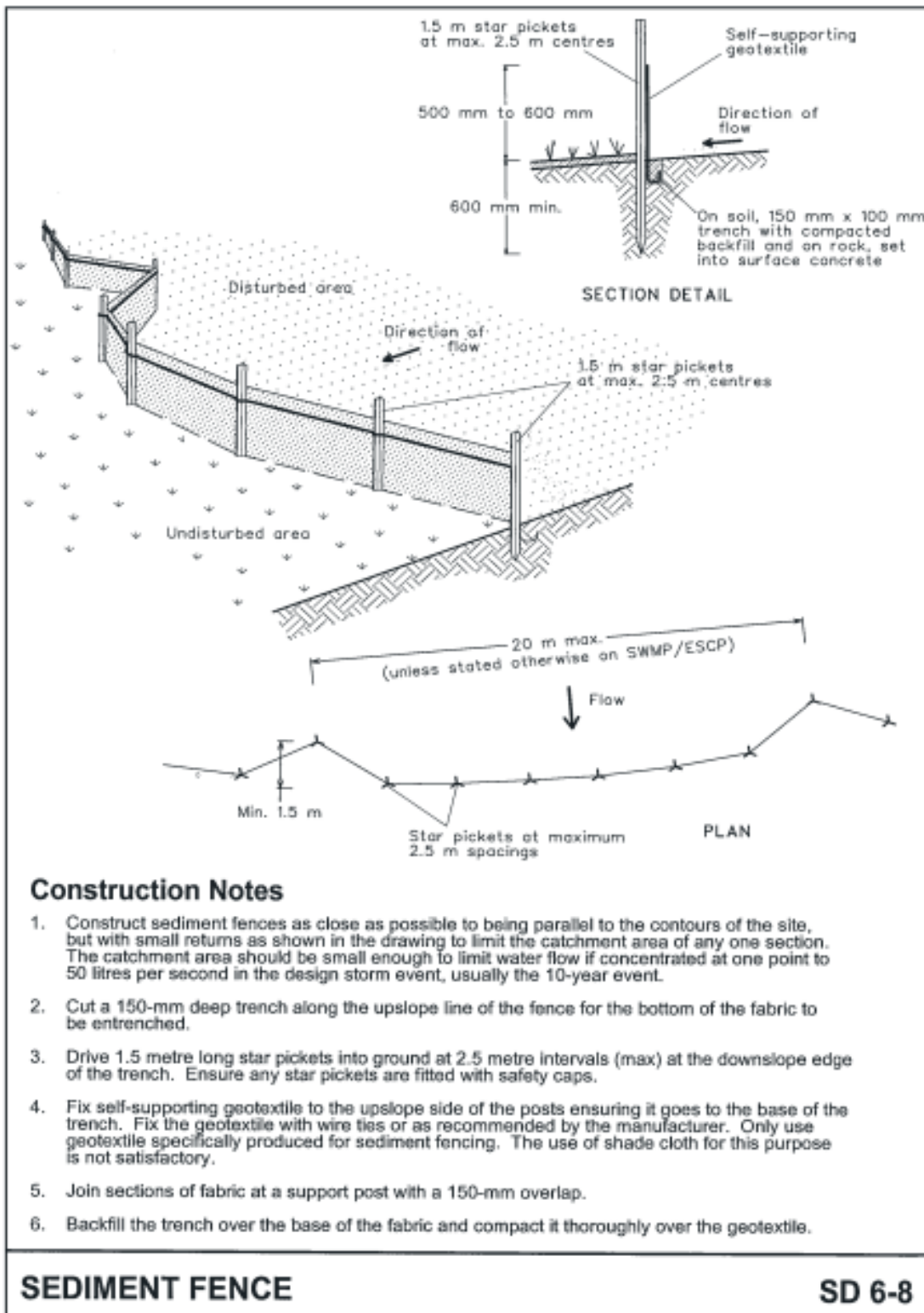
7.3.3 Straw Bale Filter or coir log equivalent

From Landcom,2004.



7.3.4 Sediment Fence

From Landcom,2004.

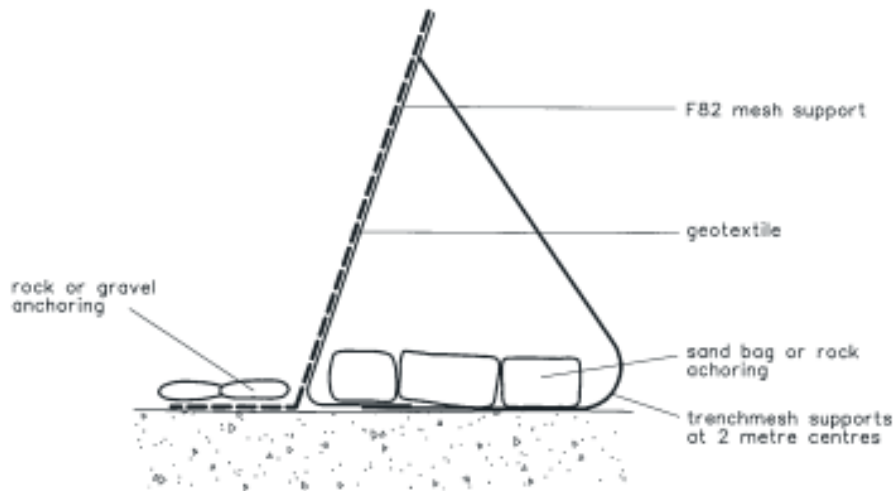


- Install sediment fencing in accordance with Standard Drawing SD 6-8.
- Sediment fences must be firmly trenched into the ground for their entire length.

- If sediment fences cannot be trenched into the ground (i.e. If hardstand/pavement surfaces are present) sediment fences can be secured by placing tightly abutting sandbag or coir log bunds over the fabric to hold it down.
- Tightly abutting gravel bags, coir log bunds or sandbags or can also be used in place of sediment fencing where sediment fencing cannot be installed (i.e. on hardstand areas or constantly changing areas). However, gravel bags and sand bags are to be minimum 2 bags high and consideration should be given to ongoing traffic and construction movements to avoid damaging consideration should be given to ongoing traffic and construction movements to avoid damaging the bunds.
- Sediment fences are to be held up by securing to star pickets placed at maximum 2.5m centres alternatively they can be securely attached to site security fencing.
- Sediment fences must include small 'returns' at maximum 20m intervals (see Standard Drawing 6-8) to minimise the risk of water flowing along them rather than through them. Sandbag bunds can be used for this purpose if desired.
- If available mulch may be use on in 200mm high rows instead of sandbags to break up and achieve slope lengths.

7.3.5 Alternative Sediment Fence

From Landcom,2004.



Construction Notes

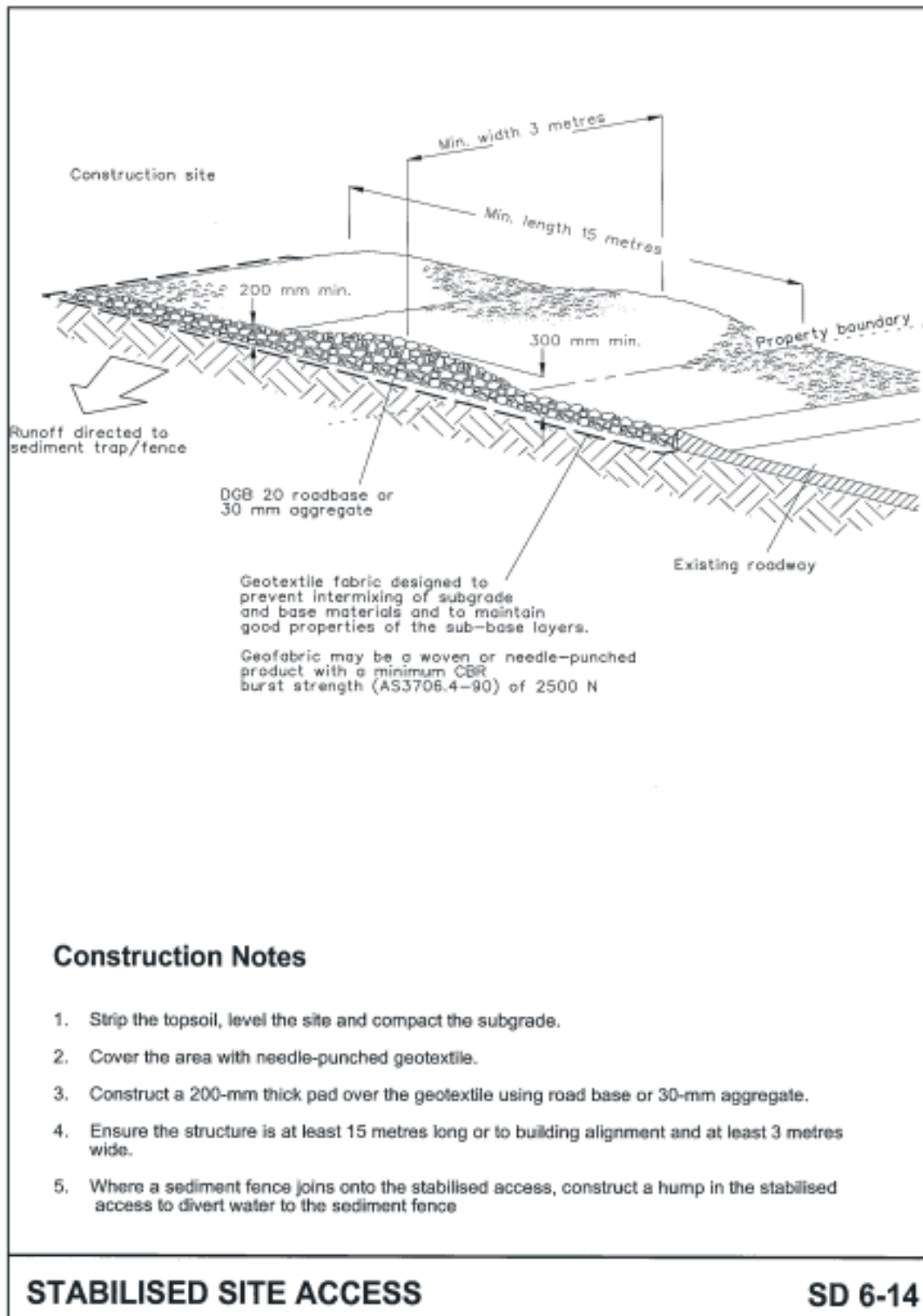
1. Install this type of sediment fence when use of support posts is not desirable or not possible. Such conditions might apply, for example, where approval is granted from the appropriate authorities to place these fences in highly sensitive estuarine areas.
2. Use bent trench mesh to support the F82 welded mesh facing as shown on the drawing above. Attach the geotextile to the welded mesh facing using UV resistant cable ties.
3. Stabilise the whole structure with sandbag or rock anchoring over the trench mesh and the leading edge of the geotextile. The anchoring should be sufficiently large to ensure stability of the structure in the design storm event, usually the 10 year event.

ALTERNATIVE SEDIMENT FENCE

SD 6-9

7.3.6 Stabilised Site Access

From Landcom,2004.

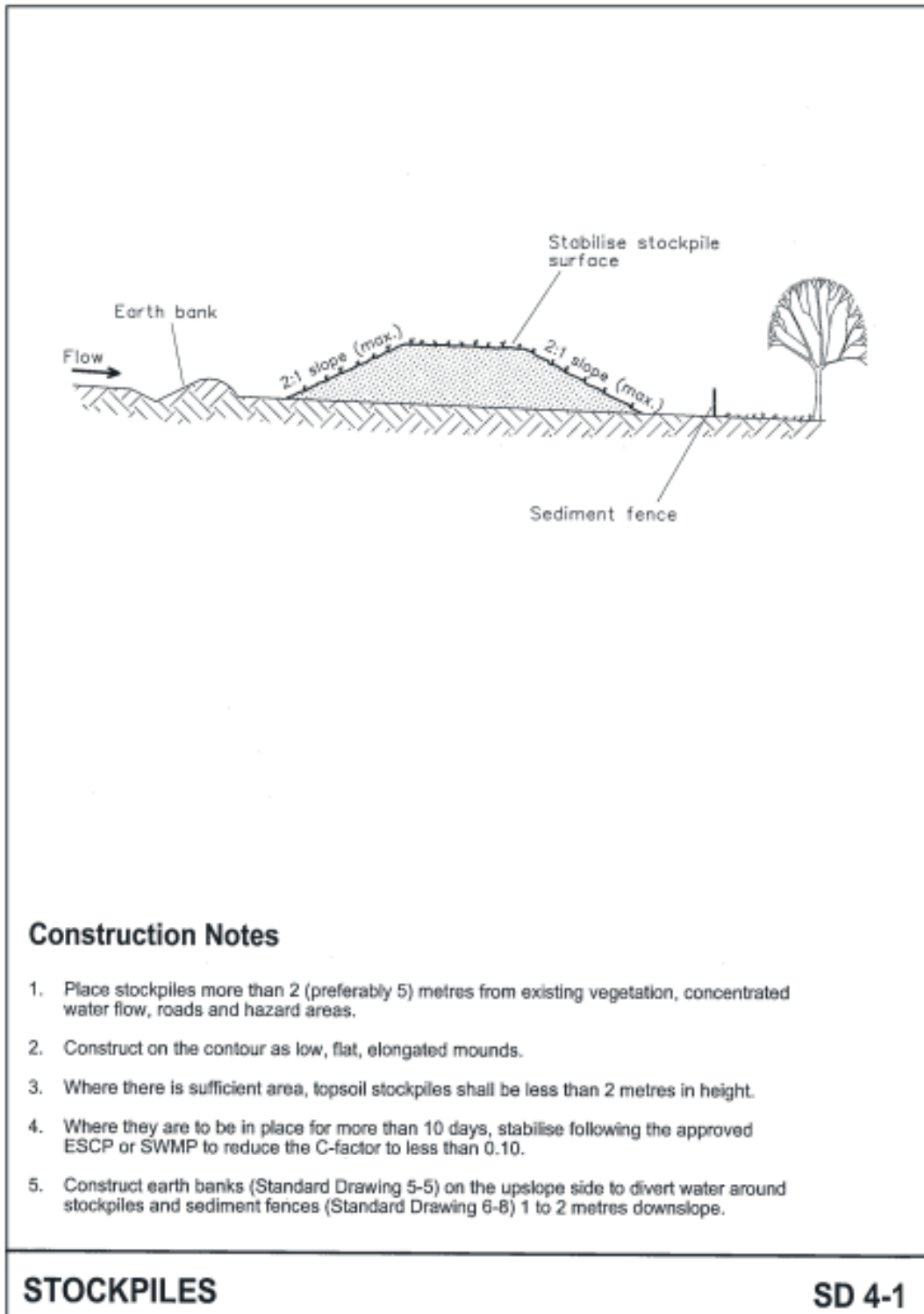


- Install barrier fences or suitable administrative controls to define the project works and clearing limits.
- Barrier fencing for erosion and sediment control purposes can be simply made from tape or flagging around star pickets or stakes. Alternatively, sediment fence, site security /safety fence or chain wire fences can be used for this purpose if so desired. Existing fences and or site fluffing can also be used where they are present in the relevant locations.

- Stabilised site access points (SD 6-14) are to be provided in the locations where construction/demolition vehicles exit the work areas or public roads.
- Establish stabilised temporary site access/egress points, using rumble grids or similar, if required by visual inspection or use established facilities where available to prevent materials being tracked outside of construction areas and further onto public roads. These do not need to be installed if existing sealed driveway/s remain intact and sediment tracking is alternatively managed. Proposed locations are indicative only and can be moved to suit demolition and construction. However, note that in doing so, other surrounding erosion and sediment controls must still be implemented to the same effect. Barrier and sediment fencing are to be used to ensure that all vehicles leaving the site pass over stabilised access point to minimise dispersion of sediments onto other areas within BlueScope and public roads.
- Barrier fencing is to be used to delineate all 'no work' areas. Barrier fencing is to be used at the discretion of the site manager to delineate other 'No Go' areas.

7.3.7 Soil Management and Stockpiles

From Landcom,2004.



- Stockpile areas are to be established within laydown areas defined allowable by the Infrastructure Approval. If additional or alternative locations for stockpiling are required, then they may be subject to approval prior to establishment. All stockpiles should incorporate clearly defined access controls and comply with the regulations outlined below. Progressive ESCPs are to detail the required erosion and sediment controls for each stockpile area.

- All stockpiles are to be constructed and maintained generally in accordance with Section 7.3.7 and the following regulations:
 - Potentially contaminated materials are not to be stockpiled with un-contaminated materials or on un-contaminated surface areas. Separate stockpile areas are to be established to ensure this. All stockpiles must have sediment fencing or equivalent installed downslope as per Section 7.3.7.
 - Different materials types (e.g. mulched vegetation, topsoil, subsoil and other materials) are to be stockpiled separately wherever possible.
 - Soil stockpiles are to be stabilised to achieve a C – factor of 0.1 within 10 days of formation using a temporary soil stabiliser (e.g. ESC11), geotextile or equivalent.
 - Topsoil stockpile (where practical) should be constructed to no more than 2 meters in height wherever possible.
 - Stockpiles should be battered down to a maximum slope of 2:1 wherever possible.

7.3.8 Dust Suppression

- Avoid dust generating activities during dry windy conditions where control options (e.g. wetting) are limited.
- Regularly clean machinery and vehicle tyres to prevent track-out of dust to public roads.
- Restrict vehicle speeds on unsealed haul roads to reduce dust generation.
- Dust suppression should be carried out wherever necessary to minimise sediments becoming airborne due to wind erosion.
- Internal access tracks to be maintained/kept wet to prevent dust generation.
- An appropriate water source for dust suppression and/or dust suppressant management system must be identified as per industry best practise (consider for e.g. Vital Stonewall or equivalent).
- Temporary stabilisers (consider for e.g. vital bond-matt P47) or geotextile can be used in non-trafficked areas to assist with dust control.
- Wherever possible haul road running surfaces to be stabilised with crushed rock, aggregate, road base, a trafficable soil stabiliser or equivalent to assist with dust control on these surfaces.

7.3.9 Water treatment and discharge requirements

Water from excavations or from the ponds (SA1 and CB2 and proposed slag pond and 1ML retention basin in Area 1) will report to the IMED via new and existing drainage infrastructure. Discharge offsite will be in accordance with the EPL license criteria.

7.3.10 Slope lengths

Slope lengths are to be restricted to 80m intervals or smaller across all exposed surfaces prior to and during rainfall.

Diversion bunds/drains, low flow earth banks or sandbags/equivalent should be installed prior to rainfall events to achieve this where required. However, slope lengths are often naturally minimised due to the topography of the works and in this case additional slope breaks may not be necessary.

Batter chutes are to be provided at regular intervals down batters as fills are formed – locations and details to be provided within progressive ESCPs.

7.3.11 Rainfall preparation procedure

- The weather forecast is to be monitored regularly (at least daily when rainfall is imminent) by the site foreman, Environmental representative.
- Temporary erosion and sediment controls specified in this plan will be reinstated prior to rainfall and inspected and maintained after rainfall. Any controls that exceed >50% capacity will be replaced.

- Additional bunds and sumps/traps are to be installed for general works in Area 1 or where required to separate catchments and minimise reliance on sediment ponds.

7.3.12 Site Inspection, monitoring and maintenance

- Regular site inspections are to be conducted by the construction contractor with ownership of the work areas weekly during normal construction hours.
- Inspections should include documenting any urgent repair maintenance or improvement works. Records are to be kept including details of actions and their close outs.
- Additional erosion and sediment controls will be installed as necessary to ensure satisfactory outcomes in keeping with project conditions and best-practice Blue Book guidelines.
- Sediment or rocks tracked from the site will be removed from public roads as soon as possible (e.g. with street sweepers) as required.
- After rainfall, sediment accumulated in trapping devices (e.g. in sand bag Coir logs etc) will be removed to a secure location where it can't wash or blow offsite (preferably to an active stockpile).
- Weather conditions will be monitored, and daily rainfall will be recorded. A BOM weather station is located nearby at Bellambi (Station ID: 068228) or use of onsite BlueScope weather Early Warning Network (EWN) and predictive data.
- Safe storage areas for wastes, fuels, excess concrete and other potential contaminants are to be delineated by the site supervisor.
- Adequate supplies of erosion control measures (e.g. geofabric rolls, filter socks or coir log or similar) are to be maintained onsite for rapid deployment as required.
- Dust suppression is to be undertaken as required to minimise the risk of offsite dust impacts; ESC08, (Refer Section 7.3.8).

8. Responsibilities

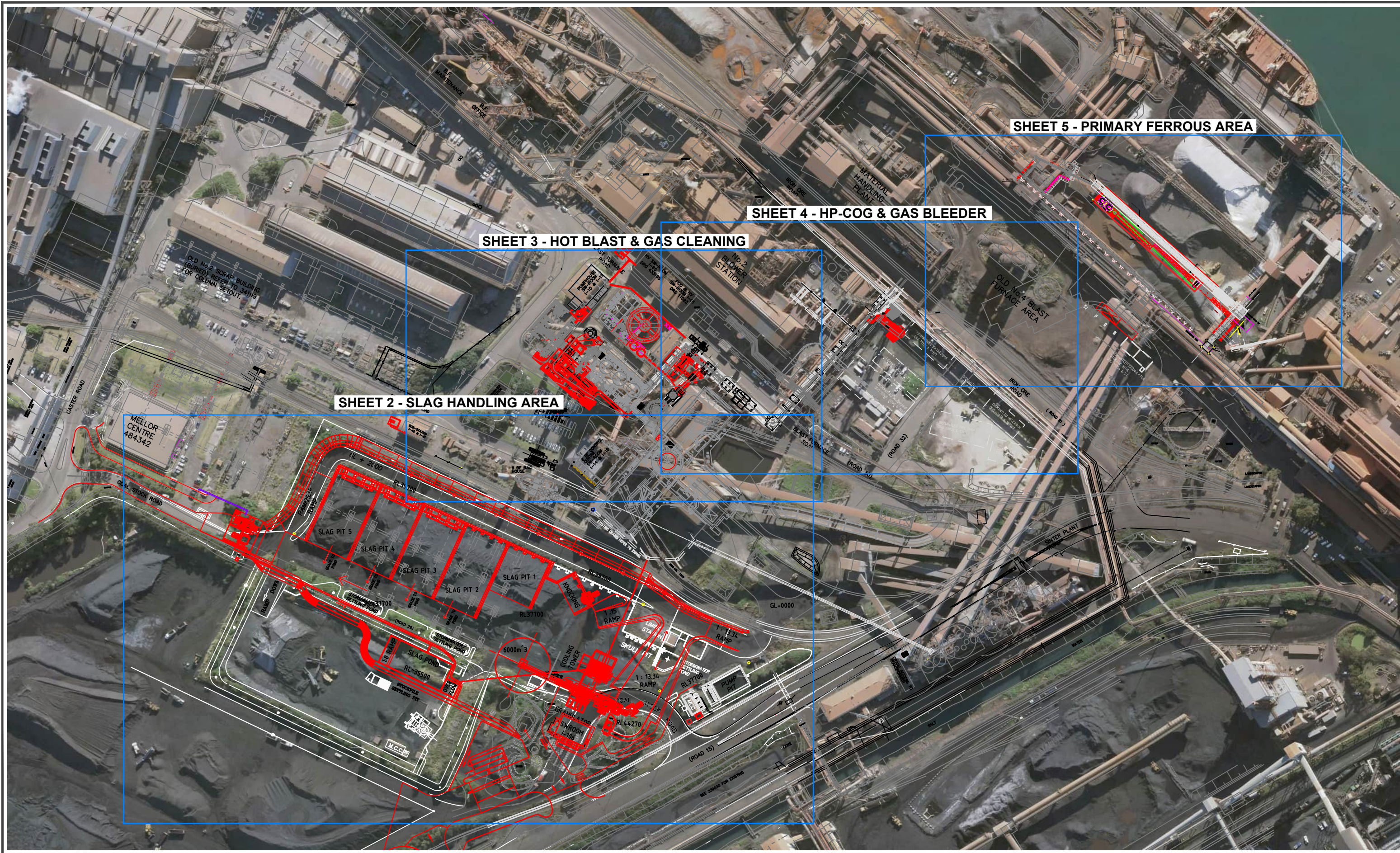
It is the construction contractor with ownership of the individual work areas responsibility to implement erosion and sediment control detailed in this plan and the following measures:

- Nomination of a suitably qualified environmental representative on site to complete self-audits.
- A progressive erosion and sediment control plan should be considered as works sites change through construction activities. PESCP's should be in accordance with the requirements of Managing Urban Stormwater: Soils and Construction (Landcom, 2004).
- A permanent retention basin within Area 1 Slag handling should be constructed as soon practical to perform as a sediment basin during construction and later upgraded to operational performance.

9. References

- Managing urban stormwater: soils and construction Volume 1, Landcom, 2004 (the 'Blue Book')
- Managing urban stormwater: soils and construction Volume 2D, Main road construction, Department of Environment and Climate Change, NSW, 2008.
- Soil Landscapes of the Wollongong-Port Hacking 1:100,000 sheets, OEH 2004
- GHD (2022), Blast Furnace No.6 Reline Project, Environmental Impact Statement, prepared for BlueScope Steel (AIS) Pty Ltd, dated 07 March 2022
- SMEC (2023), No. 6 Blast Furnace Reline Project, Port Kembla, NSW, Geotechnical Interpretive Report, prepared for BlueScope Steel Ltd, dated 02 March 2023

Appendix A - Figures



Blast Furnace No.6 Reline Project
Erosion and Sediment Control Plan (ESCP)
 Five Island Road, Port Kembla, NSW, AUSTRALIA
SITE OVERVIEW
 Project No. 30018084 Ver. A
 Sheet No. SHEET 1 of 5
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Bluescope Steel (AIS)
 AUSTRALIA

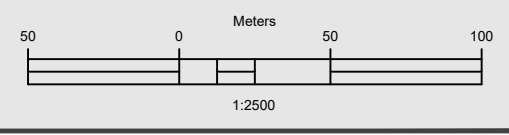
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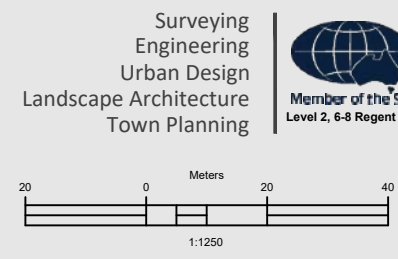
No. 6 BLAST FURNACE

Blast Furnace No.6 Reline Project
Erosion and Sediment Control Plan (ESCP)
 Five Island Road, Port Kembla, NSW, AUSTRALIA
SLAG HANDLING AREA & SLAG GRANULATOR
 Project No. 30018084 Ver. A
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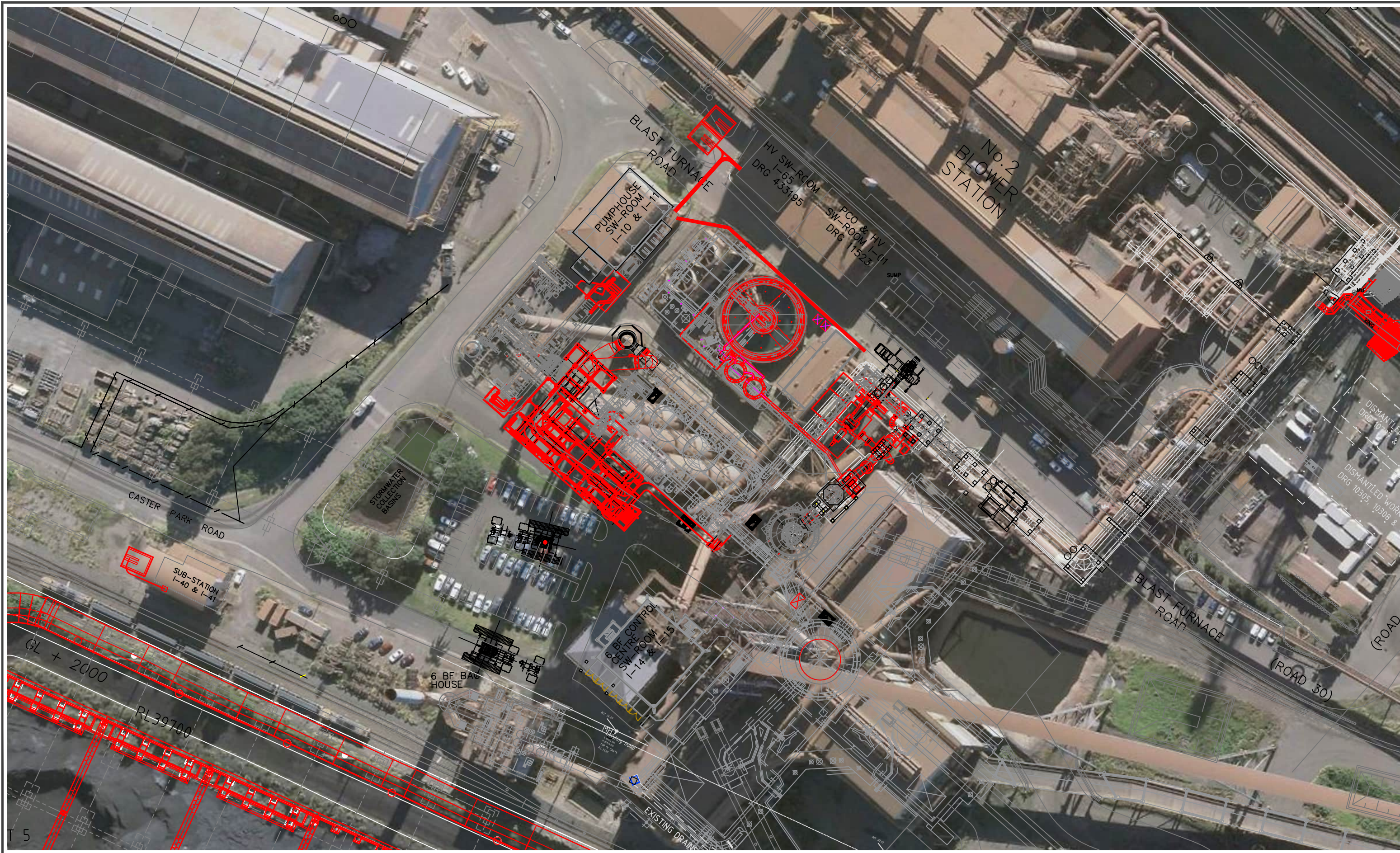
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Erosion and Sediment Control Plan (ESCP)
 Five Island Road, Port Kembla, NSW, AUSTRALIA
HOT BLAST AND GAS CLEANING
 Project No. 30018084 Ver. A
 Sheet No. SHEET 3 of 5
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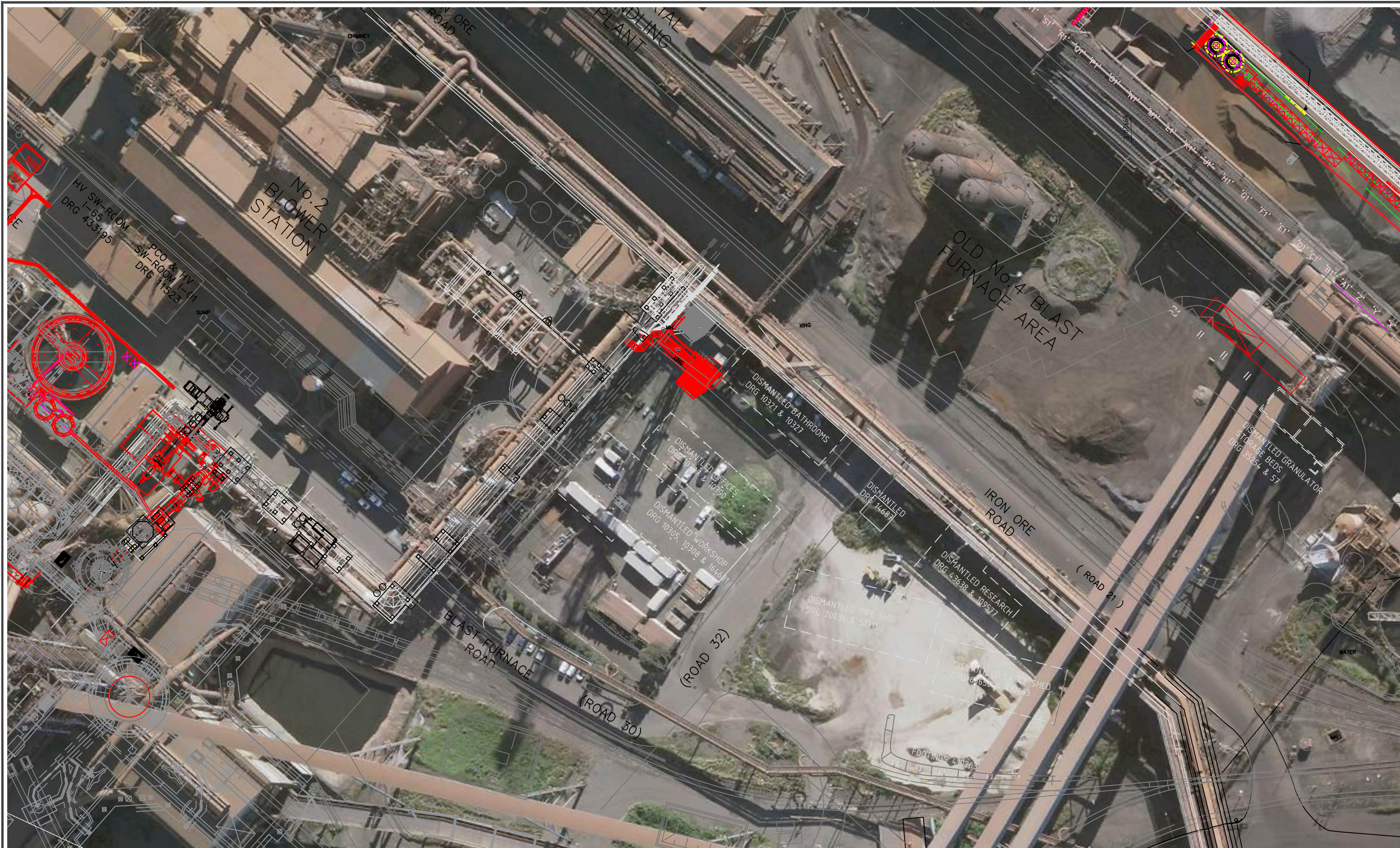


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Erosion and Sediment Control Plan (ESCP)
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 HP-COG AND GAS BLEEDER AREAS
 Project No. 30018084 Ver. A
 Sheet No. SHEET 4 of 5
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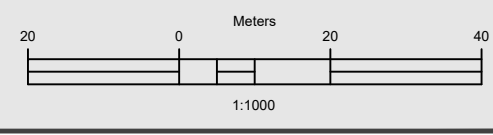
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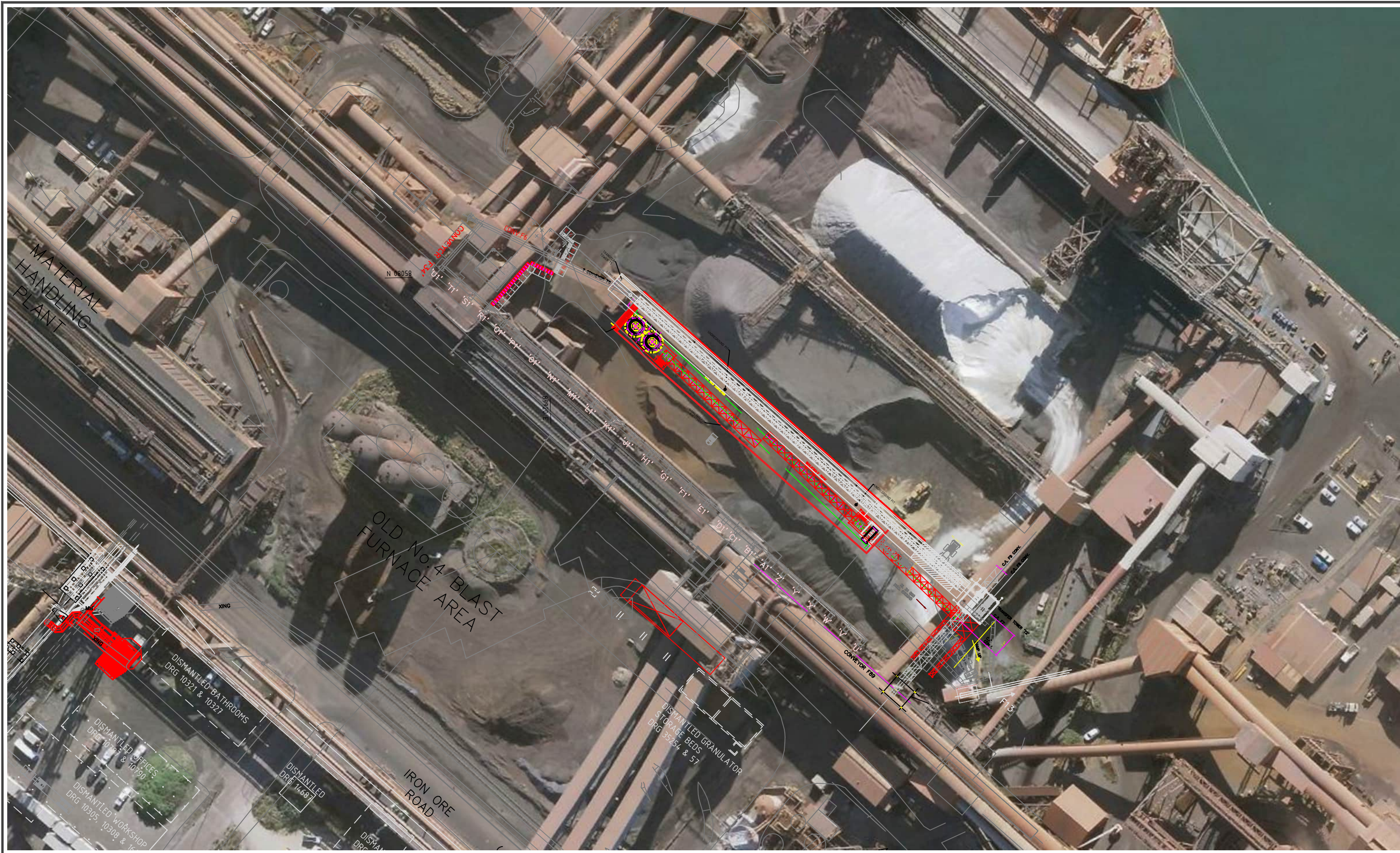
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Blast Furnace No.6 Reline Project
Erosion and Sediment Control Plan (ESCP)
 Five Island Road, Port Kembla, NSW, AUSTRALIA
PRIMARY FERROUS AREA
 Project No. 30018084 Ver. A
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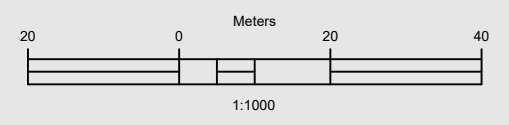
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Appendix B - Sub catchment RUSLE calculations

1. Erosion Hazard and Sediment Basins

Site Name: No.6 Blast Furnace Reline

Site Location: BlueScope Site Port Kembla

Precinct/Stage: Initial ESCP

Other Details: Construction Catchments Proposed on four sites Areas 1-4 as per Report

Site area	Sub-catchment or Name of Structure						Notes
	Area 1	Area 2	Area 3	Area 4			
Total catchment area (ha)	3.5	3.328	0.1	0.2			
Disturbed catchment area (ha)	2.8	0.25	0.01	0.2			

Soil analysis (enter sediment type if known, or laboratory particle size data)

Sediment Type (C, F or D) if known:	C	C	C	C			From Appendix C (if known)
% sand (fraction 0.02 to 2.00 mm)							Enter the percentage of each soil fraction. E.g. enter 10 for 10%
% silt (fraction 0.002 to 0.02 mm)							
% clay (fraction finer than 0.002 mm)							
Dispersion percentage							E.g. enter 10 for dispersion of 10%
% of whole soil dispersible							See Section 6.3.3(e). Auto-calculated
Soil Texture Group	C	C	C	C			Automatic calculation from above

Rainfall data

Design rainfall depth (no of days)	5	5	5	5			See Section 6.3.4 and, particularly, Table 6.3 on pages 6-24 and 6-25.
Design rainfall depth (percentile)	80	80	80	80			
x-day, y-percentile rainfall event (mm)	33	33	33	33			
Rainfall R-factor (if known)	4500	4500	4500	4500			Only need to enter one or the other here
IFD: 2-year, 6-hour storm (if known)							

RUSLE Factors

Rainfall erosivity (R-factor)	4500	4500	4500	4500			Auto-filled from above
Soil erodibility (K-factor)	0.05	0.05	0.05	0.05			RUSLE LS factor calculated for a high rill/interrill ratio.
Slope length (m)	80	50	50	50			
Slope gradient (%)	2.5	2	2	2.5			
Length/gradient (LS-factor)	0.53	0.34	0.34	0.43			
Erosion control practice (P-factor)	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (C-factor)	1	1	1	1	1	1	

Sediment Basin Design Criteria (for Type D/F basins only. Leave blank for Type C basins)

Storage (soil) zone design (no of months)	36	36	36	36			Minimum is generally 2 months
Cv (Volumetric runoff coefficient)	0.35	0.35	0.35	0.35			See Table F2, page F-4 in Appendix F

Calculations and Type D/F Sediment Basin Volumes

Soil loss (t/ha/yr)	154	99	99	125			
Soil Loss Class	2	1	1	1			See Table 4.2, page 4-13

Soil loss (m ³ /ha/yr)	118	76	76	96			Conversion to cubic metres
Sediment basin storage (soil) volume (m ³)	995	57	2	58			See Sections 6.3.4(i) for calculations
Sediment basin settling (water) volume (m ³)	404	384	12	23			See Sections 6.3.4(i) for calculations
Sediment basin total volume (m ³)	1399	441	14	81			

Appendix C – eSPADE Report



Occurs within other landscapes and is mapped as xx. The topography varies from level plains to undulating terrain and has been disturbed by human activity to a depth of at least 100 cm. The original soil has been removed, greatly disturbed or buried. Most of these areas have been levelled to slopes of <5%. Landfill includes soil, rock, building and waste material. The original vegetation has been completely cleared.

Limitations are dependent on nature of fill material resulting in a Mass movement hazard (subsidence), soil impermeability leading to poor drainage, low fertility and toxic material. Care must be taken when these sites are developed. A survey at a suitable scale as well as geotechnical analysis should be undertaken because of variability of materials throughout the sites. Advice from local councils should be sought concerning localised areas of disturbed terrain.

LOCATION

Numerous areas occur throughout the Wollongong-Port Hacking region. Large areas of landfill include Taren Point, Woollooware Bay and numerous sites along Captain Cook Drive and Griffens Bay (Lake Illawarra).

Quarried areas include Mount Nebo, Darkes Forest and Sugar Loaf Mountain.

Geology

Artificial fill. This includes dredged sand or mud, rocks and local soil materials along with demolition rubble, industrial and household waste. In pits or quarries bedrock is usually exposed (for example, exposed dolerite at Sugar Loaf Mountain).

Landuse

Landuse is varied and includes commercial and industrial complexes, sporting and recreational areas, quarries, airports and waste disposal sites. Local parks are underlain by compacted waste –

for example, Ian McLennan Oval.

In quarries—e.g., Brambles Quarry, Port Kembla—bedrock is exposed.

Most disturbed sites are eventually artificially topsoiled and revegetated or covered by concrete and bitumen.