

# Soil and Water Management Procedure

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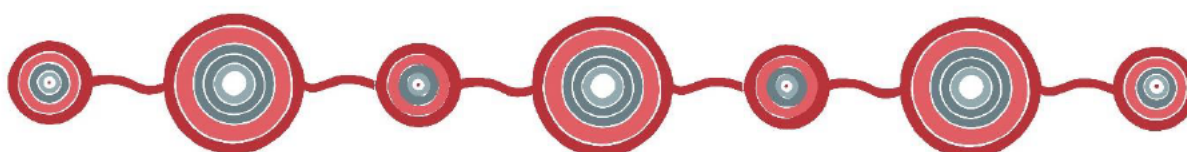
## DOCUMENT APPROVAL

**A W EDWARDS PTY LIMITED**

**REVISION**

REVISION	DATE	STATUS	AUTHOR	APPROVED BY	COMMENTS
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**"COMMUNITY"**  
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(or 000 if an emergency)		
WIRES Wildlife Rescue		1300 094 737

**CONTENTS**

**Soil and Water Management Procedure**

<b>1</b>	<b>BACKGROUND</b>	<b>5</b>
1.1	SYDNEY METRO CITY & SOUTHWEST – CHATSWOOD TO SYDENHAM	5
1.2	SYDNEY METRO CROWS NEST OVER STATION DEVELOPMENT –	
SITE C		5
<b>2</b>	<b>DOCUMENT PURPOSE</b>	<b>5</b>
<b>3</b>	<b>CONSTRUCTION OVERVIEW</b>	<b>6</b>
<b>4</b>	<b>POTENTIAL IMPACTS</b>	<b>6</b>
<b>5</b>	<b>ROLES AND RESPONSIBILITIES</b>	<b>6</b>
<b>6</b>	<b>SOIL AND WATER MANAGEMENT OBJECTIVES</b>	<b>7</b>
<b>7</b>	<b>SOIL MANAGEMENT</b>	<b>7</b>
7.1	PROGRESSIVE EROSION AND SEDIMENT CONTROL (PESC)	7
7.2	EROSION AND SEDIMENT CONTROL PRINCIPLES	7
7.3	MONITORING PESCP	7
7.4	UNEXPECTED CONTAMINATED MATERIAL	8
<b>8</b>	<b>WATER MANAGEMENT</b>	<b>9</b>
8.1	WATER RESOURCE MANAGEMENT	9
8.2	WATER MANAGEMENT PRINCIPLES	9
8.2.1	SSI	9
8.2.2	SSD	9
8.3	SURFACE WATER COLLECTION	10
8.3.1	SSI	10
8.3.2	SSD	10
8.4	SURFACE WATER TREATMENT, REUSE AND DISCHARGE	10
8.4.1	SSI	10
8.4.2	SSD	10
<b>9</b>	<b>SPILL RESPONSE</b>	<b>13</b>
9.1	SPILL PREVENTION	13
9.2	STORAGE AND HANDLING	13
<b>10</b>	<b>RECORD MANAGEMENT</b>	<b>13</b>
	APPENDIX A: PROGRESSIVE EROSION AND SEDIMENT CONTROL MANAGEMENT	
	DIAGRAM	14
	APPENDIX B: SPILL RESPONSE MANAGEMENT DIAGRAM	15
	APPENDIX C: WATER DISCHARGE & REUSE PROCEDURE FOR SSD-13852803	16

## 1 BACKGROUND

The Sydney Metro City & Southwest is a 30 kilometre metro rail between Chatswood and Bankstown, including; 17 kilometres of new tunnel from Chatswood, under the harbour to Sydenham connecting seven new underground stations at Crows Nest, Victoria Cross (North Sydney), Barangaroo, Pitt Street, Martin Place, Central and Waterloo. Upgrading 13 kilometres of the Bankstown line, including 11 existing stations; Sydenham, Marrickville, Dulwich Hill, Hurlstone Park, Canterbury, Campsie, Belmore, Lakemba, Wiley Park, Punchbowl and Bankstown plus southern service facilities.

### 1.1 SYDNEY METRO CITY & SOUTHWEST – CHATSWOOD TO SYDENHAM

The application for Sydney Metro City & Southwest – Chatswood to Sydenham was lodged by Sydney Metro as a Critical State Significant Infrastructure project (reference CSSI-7400) and was approved by the Minister in January 2017. The project is described in the approval (hereafter referred to as the CSSI Approval) as:

*Construction and operation of a metro rail line, approximately 16.5 kilometres long (of which approximately 15.5 kilometres is located in underground rail tunnels) between Chatswood and Sydenham.*

The new metro stations identified in the CSSI Approval are at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street and Waterloo. In addition to this, new metro platforms are proposed at Central Station and Sydenham Station.

A W Edwards has been awarded the tender to construct Crows Nest Metro Integrated Station Development (the ISD project).

### 1.2 SYDNEY METRO CROWS NEST OVER STATION DEVELOPMENT – SITE C

The application for the Sydney Metro Crows Nest Over Station Development for Site C, on the north-western corner of Hume Street and Clarke Street, was lodged by Sydney Metro as a State Significant Development on 10 June 2021 (reference SSD- 13852803) and was approved by the Minister in December 2021. The project is described in the approval (hereafter referred to as the SSD Approval) as:

*Construction of an eight (8) storey commercial office building above the metro station.*

A W Edwards has been awarded the tender to construct Crows Nest Metro Over Station Development Site C (the OSD project)

## 2 DOCUMENT PURPOSE

This soil and water management procedure has been prepared to minimise potential soil and water quality impacts during construction.

### 3 CONSTRUCTION OVERVIEW

Construction activities which have the potential to soil and water quality include:

- Structure;
- Fit out;
- Services;
- External works;
- Landscaping; and
- Over station development enabling works
- Over station works (SSD 13852803); and
- Testing and commissioning (SSD 13852803).

### 4 POTENTIAL IMPACTS

The following adverse impacts to soil and water resources may arise during construction activities:

- Soil erosion;
- Soil and water contamination;
- Surface water quality; and
- Changes to existing stormwater flows from:
  - the introduction of new impervious surfaces,
  - alterations to existing infrastructure (drainage) and.
  - dewatering activities

### 5 ROLES AND RESPONSIBILITIES

A summary of the specific responsibilities for soil and water quality management specific to each role are specified in Table 4.1

*Table 4.1 Summary of Roles and Responsibilities*

Action	Responsibility
- Performance and compliance with the CEMP, ERSED, spills and soil and water management procedure	Construction Manager Planning & Environment Manager
- Daily weather monitoring - Visual inspections to determine if mitigation measures are needed or successful - Implementation of environmental mitigation measures - Recording implementation of mitigation measures	Site Supervisor
- Environmental monitoring and visual inspections - Recording and reporting on effectiveness of mitigation measures	Environmental Coordinator

## 6 SOIL AND WATER MANAGEMENT OBJECTIVES

The following soil and water management objectives will be applied to construction:

- Minimisation pollution of surface water through appropriate erosion and sediment control.
- Existing water quality of surrounding surface watercourses will be maintained.
- Construction water will be sourced from non-potable sources, where feasible and reasonable.

## 7 SOIL MANAGEMENT

### 7.1 PROGRESSIVE EROSION AND SEDIMENT CONTROL (PESCP)

Progressive erosion and sediment control plans (PESCP) will be developed in accordance with Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Managing Urban Stormwater: Soils and Construction Volume 2 (Department of Environment and Climate Change, 2008). Measures would be designed as a minimum for the 80th percentile; 5-day rainfall event. The PESCP will:

- Present the required erosion and sediment control measures for the site;
- Provide an overview of construction activities and locations if there is the potential to impact stormwater flows and groundwater;
- Illustrate the location of water treatment facilities and discharge points; and
- Provide details of temporary stockpile locations and management.

PESCP will be updated to reflect current site conditions. All reviews and updates to the plans will be undertaken by the Construction Manager, Site Supervisor and Planning & Environment Manager.

### 7.2 EROSION AND SEDIMENT CONTROL PRINCIPLES

- Implementation of progressive temporary erosion and sediment controls.
- Design and location of sediment control measures as close as possible to the potential source of sediment.
- Appropriate controls to prevent tracking dirt and mud onto roads.
- Minimise exposed surfaces during construction and remediating the site as soon as possible after completion of construction.
- Diversion of clean water away from the site and stockpile, preventing water runoff from entering the work area.
- Installation of sediment controls downstream of works, stockpiles and other disturbed areas.
- Inspection of erosion and sediment controls (ERSED) after rainfall events (>20mm in 24hrs).
- If contaminated material or suspected contaminated material is found, work must stop and the Sydney Metro Unexpected Finds Procedure for Contamination is to be followed.

### 7.3 MONITORING PESCP

Environmental site inspections include a review of erosion and sediment controls onsite, ensuring all controls are undamaged, functional, adequate and installed as per the PESCP. Reviews are to be conducted:

- Weekly (minimum).

**Soil and Water Management Procedure**

- Prior and post site shutdown.
- Prior and post a significant rainfall event, (>20mm/24hr).
- New or changes to existing work activities to conform with the PESCP and reduce the risk of erosion.

**7.4 UNEXPECTED CONTAMINATED MATERIAL**

As outlined in Section 6.3 of the Construction Spoil Management Plan, the potential to encounter contaminated material during construction is low.

If contamination is identified or suspected, all work in the vicinity of the find shall cease and the area isolated appropriately. A specialist consultant experienced in the identification, sampling and testing of contamination would be engaged to undertake an assessment of site conditions prior to re-commencement of works. The consultant should:

- Sample and analysis of soil to determine the potential existence of contaminants. Analysis must be undertaken by a NATA accredited laboratory;
- Sample, analyse and determine classification of material to be disposed and/or confirm for re-use as backfill or transportation to another development suitably licensed to accept the material; and
- Report and provide advice on management options, re-use onsite and disposal criteria.

Once waste has been classified, appropriate management options would be considered and implemented in accordance with legislated requirements.



## **8 WATER MANAGEMENT**

### **8.1 WATER RESOURCE MANAGEMENT**

The following water resources management objectives will be applied to the construction of the project:

- Demand for and use of potable water will be minimised.
- Opportunities for water re-use from captured stormwater, wastewater and groundwater will be maximised.
- Water generated in tunnelling operations and concrete batching and casting facility processes will be collected, treated and reused.
- Recycled water or treated water from onsite sources will be used in the formulation of concrete.
- Rainwater from roofs of temporary facilities will be harvested and reused.
- Water from recycled water networks will be used.
- Groundwater and stormwater will be collected, treated and used.
- Water efficient construction methods and equipment will be used.
- Designated sealed areas for equipment wash down will be provided.

### **8.2 WATER MANAGEMENT PRINCIPLES**

#### **8.2.1 SSI**

- Dewatering systems must be planned and monitored to avoid spills, overflows and pollution.
- The WTP is to be maintained appropriately and discharge monitored in accordance with the Construction Groundwater Management Plan (CGWMP).
- Where possible, water required for use on site should be sourced from non-potable sources.
- All discharge from the WTP would be monitored to ensure compliance with the discharge criteria outlined in Section 4.3 of the CGWMP.
- Incorporation of water efficient controls, fixtures and fittings in temporary facilities.
- Using water efficient construction methods and equipment.

Providing designated sealed areas for equipment wash down and concrete washout areas. These areas must be outlined in the Environmental Control Map (ECM).

#### **8.2.2 SSD**

- Dewatering systems must be planned and monitored to avoid spills, overflows and pollution.
- The settling tanks are to be appropriately maintained and discharged in accordance with the Sydney Metro Water Discharge & Reuse Procedure (Version 3.0), hereinafter referred to as the 'discharge procedure' and included as Attachment 1 to this document.
- Where possible, water required for use on site should be sourced from non-potable sources.
- All discharge from the settling tanks would be monitored to ensure compliance with the discharge criteria set out in the discharge procedure and outlined in Section 8.4 below.
- Incorporation of water efficient controls, fixtures and fittings in temporary facilities.
- Using water efficient construction methods and equipment.

**Soil and Water Management Procedure**

- Providing designated sealed areas for equipment wash down and concrete washout areas. These areas must be outlined in the Environmental Control Map (ECM).

**8.3 SURFACE WATER COLLECTION****8.3.1 SSI**

As outlined in Section 3.2.3 of the CGWMP, any rainwater or surface water which flows into the site will be directed to designated sumps for collection before being pumped to the water treatment plant (WTP) in Site C, or settling tanks on the surface for subsequent treatment, re-use or discharge.

**8.3.2 SSD**

All rainwater and surface water which flows into the site will be directed to designated sumps located for collection. This water will then be pumped to settling tanks. Here, the water will be tested and treated for re-use or discharge in accordance with the discharge procedure.

**8.4 SURFACE WATER TREATMENT, REUSE AND DISCHARGE****8.4.1 SSI**

As outlined in Section 4.1 of the CGWMP, all surface water collected within designated sumps would be pumped to the WTP or settling tanks for analysis and treatment if required.

Water sampling and testing of the water will be undertaken to determine the most suitable treatment processes to meet the required water quality standards for re-use of the water (as outlined in Table 4.1 of the CGWMP).

The TfNSW Water Reuse and Discharge Guideline (April 2016) regulates both onsite reuse and offsite point source discharge. Prior to any discharge off the premises, or reuse within the premises, the water is to be tested in accordance with Section 4.3 of the CGWMP and the Planning and Environment Manager is to sign off that the water is suitable for reuse or discharge.

All feasible and reasonable opportunities for water reuse for construction purposes will be utilised in the first instance. Should water inflows and required treatment volumes be surplus to onsite construction purposes, the treated water product would be discharged into stormwater drainage as per the process outlined in Section 4.3 of the CGWMP. All accumulated water shall be treated to ensure that NSW water quality objectives are met, prior to re-use or discharge.

Condition E107 requires the project to meet the NSW water quality objectives where they are being achieved at the date of the approval, and contribute towards achievement of the NSW Water Quality Objectives over time where they are not being achieved.

Typical water quality parameters to be measured, sampled and/or analysed prior to discharge are identified in Table 4.2 of the CGWMP. These parameters have been determined to meet the NSW water quality objectives and form the discharge criteria for the project and all water to be discharged to the stormwater network must meet these criteria, with evidence documented prior to discharge.

**8.4.2 SSD**

As described above, all surface water collected within designated sumps would be pumped to the settling tanks for analysis and treatment if required.

**Soil and Water Management Procedure**

Water sampling and testing of the water will be undertaken to determine the most suitable treatment processes to meet the required water quality standards for re-use of the water (as outlined in the discharge procedure).

The discharge procedure regulates both onsite reuse and offsite point source discharge. Prior to any discharge off the premises, or reuse within the premises, the water is to be tested in accordance with Section 4.4 of the discharge procedure and the Planning and Environment Manager is to sign off on the 'Water Discharge or Reuse Approval Form' and confirm that the water is suitable for reuse or discharge.

All feasible and reasonable opportunities for water reuse for construction purposes will be utilised in the first instance. Should water inflows and required treatment volumes be surplus to onsite construction purposes, the treated water product would be discharged into stormwater drainage as per the process outlined in Section 4.3 of the discharge procedure. All accumulated water shall be treated to ensure that NSW water quality objectives are met, prior to re-use or discharge.

The project should meet meet the NSW water quality objectives where they are being achieved at the date of the approval, and contribute towards achievement of the NSW Water Quality Objectives over time where they are not being achieved.

The NSW Water Quality Objectives are the agreed environmental values and long-term goals for NSW's surface waters. The Objectives are consistent with the agreed national framework for assessing water quality set out in the ANZECC 2000 Guidelines. These guidelines provide an agreed framework to assess water quality in terms of suitability for a range of environmental values (including human uses).

The Water Quality Objectives provide environmental values for NSW waters and the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000) Guidelines provide the technical guidance to assess the water quality needed to protect those values. To determine the receiving water quality criteria, the ANZECC 2000 guidelines provide standardised criteria relevant to achieving the public health and environmental water quality for that water body (Sydney Harbour). Despite the ultimate receiving waters being a marine environment, the immediate receiving environment would be creeks and drainage lines following discharge to the stormwater network. As such the trigger values for lowland rivers have been adopted under ANZECC 2000.

Typical water quality parameters to be measured, sampled and/or analysed prior to discharge are identified in Table 8.1 below, these are consistent with the criteria established in the discharge procedure. Additional parameters to be analysed at the settling tanks are outlined in Table 8.2. These parameters have been formulated to be consistent with the EIS and water quality objectives. These parameters outlined in Table 8.1 will be sampled at the settling tanks prior to any discharge, the parameters outlined in Table 8.2 will be sampled from the settling tanks on a monthly basis to ensure the NSW water quality objectives are being achieved.

*Table 8.1: Settling Tank water quality criteria*

PARAMETER	CRITERIA	SAMPLING METHOD	ANALYTICAL METHOD
pH	6.5 – 8.5	Probe or grab sample	Field analysis, with confirmation via NATA accredited laboratory assessment as required.

## Soil and Water Management Procedure

PARAMETER	CRITERIA	SAMPLING METHOD	ANALYTICAL METHOD
Turbidity	50 Nephelometric Turbidity Units (NTU) (visibly clean)	Grab sample	Field analysis using either a portable probe or turbidity tube. A portable probe is preferred to a turbidity tube as the results obtained from using a turbidity tube may be limited by the variability of the eyesight of users and may not be highly accurate. Confirmation of turbidity would be supported via NATA accredited laboratory assessment as required.
Total suspended solids (TSS)*	50 mg/L	Grab sample	NATA accredited laboratory analysis Turbidity measurements may be substituted for TSS analysis provided a correlation has been established between the two parameters on a site-specific basis for the project
Oil and grease*	No visible oil or fuel (hydrocarbon) sheen	Grab sample	If oils and grease are visually evident, a sample will be forwarded to a NATA accredited laboratory for analysis
Odour, slime and scum	Free from unusual odour, coloured slime or other foamy scum	Grab sample	If odours are observed or other slime or scum visible, a sample will be forwarded to a NATA accredited laboratory for analysis

\*ANZECC & ARMCANZ. 2000. Australian and New Zealand Guidelines for Fresh and Marine Water Quality. Australian and New Zealand Environment and Conservation Council, and Agriculture and Resource Management Council of Australia and New Zealand, Canberra.

Table 8.2 Additional Discharge water quality criteria

PARAMETER	WATER QUALITY OBJECTIVE TRIGGER VALUE
Total phosphorus	25 ug/L
Total nitrogen	350 ug/L
Dissolved oxygen	85 – 110%
Electrical conductivity	125 - 2200 µS/cm
Chlorophyll-a	5 ug/L

## 9 SPILL RESPONSE

### 9.1 SPILL PREVENTION

- Dangerous goods and hazardous materials to be stored within bunded areas with a capacity of 110 % of the maximum single stored volume.
- Chemicals and fuel to be labelled and stored in bunded areas in accordance with the safety data sheet (SDS).
- Appendix B prescribes the spill response management process for the construction phase.
- Spill kit and fire response equipment to be located where chemicals and fuelled plant or equipment is being stored, operated or maintained and outlined in the Environmental Control Map (ECM).
- All hazardous substances to be stored and managed in accordance with the Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005) and Hazardous and Offensive Development Application Guidelines.

### 9.2 STORAGE AND HANDLING

Dangerous goods, as defined by the Australian Dangerous Goods Code, will be stored and handled strictly in accordance with:

- all relevant Australian Standards;
- for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund;
- Storing and Handling Liquids: Environmental Protection – Participants Manual (Department of Environment and Climate Change, May 2007); and
- the Environmental Compliance Report: Liquid Chemical Storage, Handling and Spill Management – Part B Review of Best Practice and Regulation (Department of Environment and Conservation (NSW), 2005).

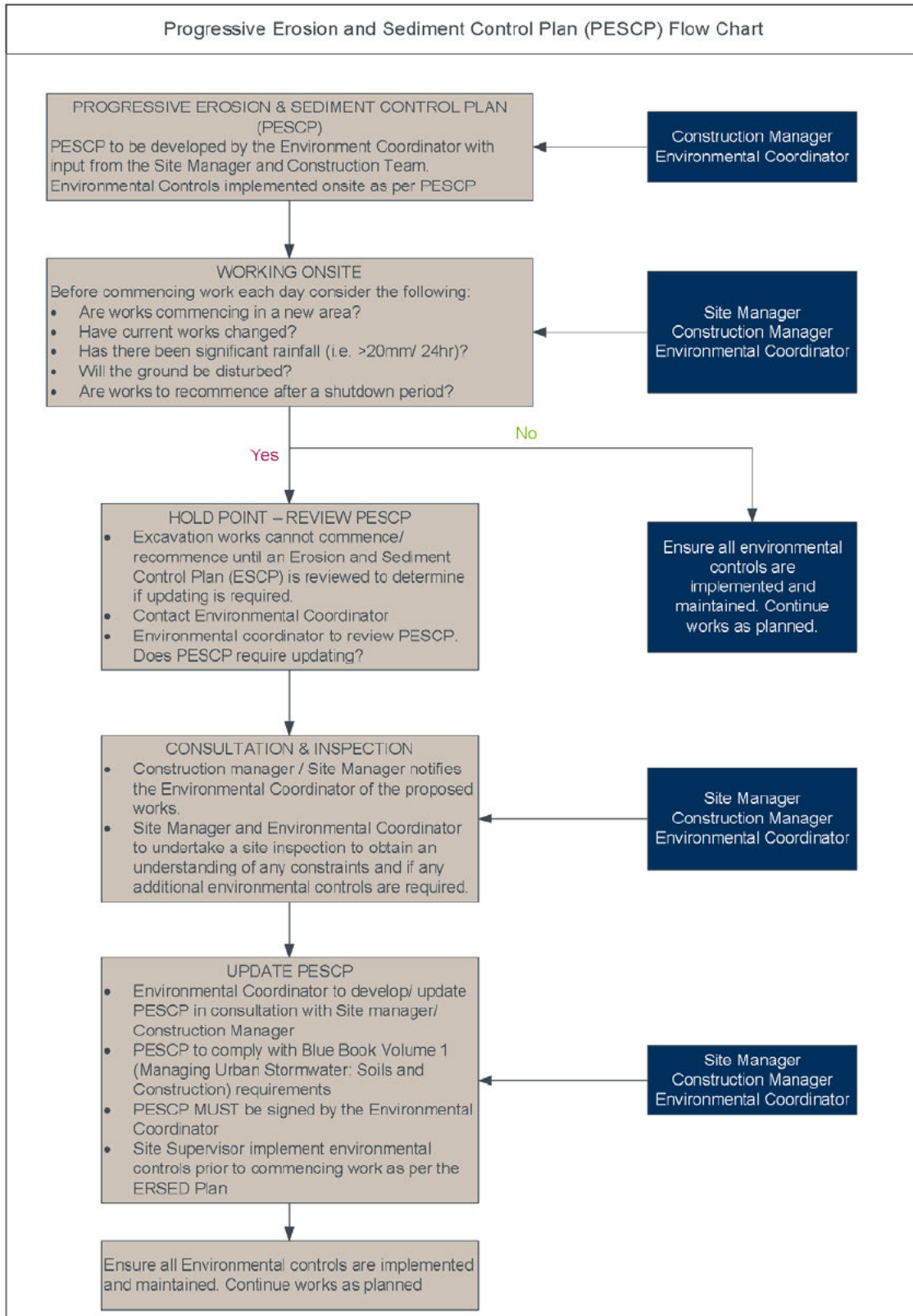
In the event of an inconsistency between the requirements listed above, the most stringent requirement shall prevail to the extent of the inconsistency.

## 10 RECORD MANAGEMENT

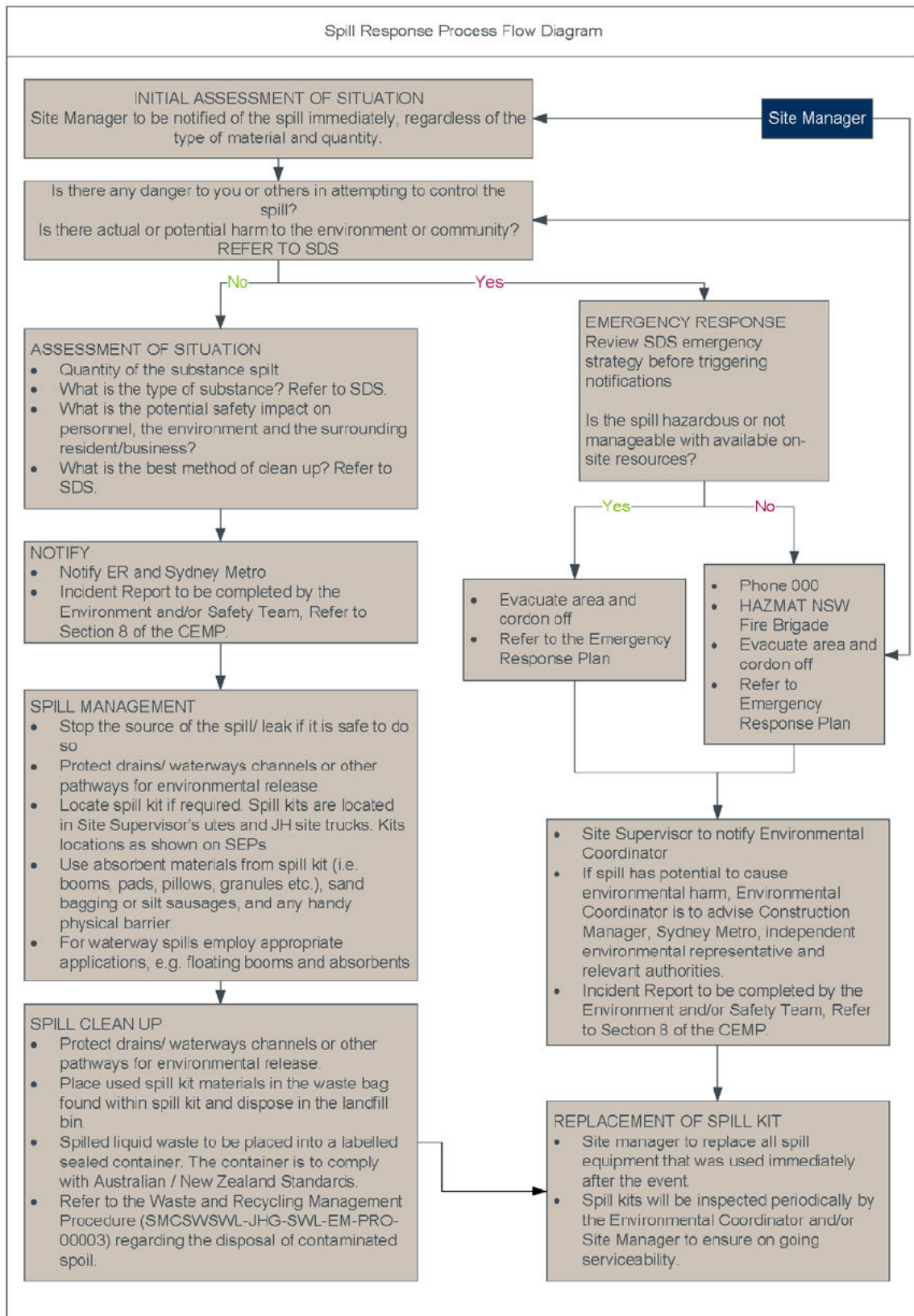
The following compliance records will be kept by the Environment Coordinator:

- Copies of current PESCPs for all active construction areas;
- Records of soil and water inspections undertaken;
- Records of testing of any water prior to discharge; and
- Records of the release of the hold point to discharge water from the construction site to the receiving environment.

**APPENDIX A: PROGRESSIVE EROSION AND SEDIMENT CONTROL MANAGEMENT DIAGRAM**



**APPENDIX B: SPILL RESPONSE MANAGEMENT DIAGRAM**



**APPENDIX C: WATER DISCHARGE & REUSE PROCEDURE FOR SSD-  
13852803**