

Moorebank Avenue Realignment Works

Construction Soil and Water Management Plan

SSI - 10053

22 January 2025

NATIONAL INTERMODAL CORPORATION

MOOREBANK AVENUE REALIGNMENT WORKS

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Approver 






Date 22/01/2025

Revision Text E

TECHNICAL SPECIALIST DETAILS

Name	Qualification and Experience
	

REVISIONS

Revision	Date	Description	Prepared By	Approved By
A	27/02/2023	First draft for client review		
B	24/05/2023	Update following National Intermodal review		
C	23/06/2023	Update following National Intermodal review		
D	31/08/2023	Update following ER review		
E	22/01/2025	Update to reflect revised construction footprint and EPBC variation approval		

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ACRONYMS AND DEFINITIONS

Acronym	Definition
ARI	Annual Recurrence Interval
BOM	Bureau of Meteorology
CAQMP	Construction Air Quality Management Plan
CBMP	Construction Biodiversity Management Plan
CCMP	Construction Contamination Management Plan
CCS	Community Communication Strategy
CEMP	Construction Environmental Management Plan
CHMP	Construction Heritage Management Plan
CLM Act	<i>Contaminated Land Management Act 1997 (NSW)</i>
CNVMP	Construction Noise and Vibration Management Plan
CoA	Conditions of Approval
Construction	Includes all work required to construct the Project as described in the EIS and RtS (NSW CoA A1) including commissioning trials of equipment and temporary use of any part of the Project but excluding Low Impact Work which is carried out or completed before approval of the CEMP.
CPESC	Certified Professional in Erosion and Sediment Control
CSWMP	Construction Soil and Water Management Plan (CSWMP),
CTTMP	Construction Traffic and Transport Management Plan
CWRMP	Construction Waste and Resource Management Plan
DAWE	Department of Agriculture, Water and Environment (now DCCEEW)
DCCEEW	Department of Climate Change, Energy, Environment and Water (formerly DAWE)
DECC	Department of Environment and Climate Change (now DPE)
DEC	Department of Environment and Conservation (now DPE)
DJLU	Defence Joint Logistics Unit
DPE	Department of Planning and Environment (formerly DPIE)
DPI	Department of Primary Industries
DPIE	Department of Planning, Industry and Environment (now DPE)
EHC Act	<i>Environmentally Hazardous Chemicals Act 1985 (NSW)</i>
EES	NSW Environment, Energy and Science (part of DPE)
EHG	NSW Environment and Heritage Group (part of DPE)
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMS	Environmental management system
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	NSW Environment Protection Authority

Acronym	Definition
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
EPL	Environment Protection Licence
ER	Environmental Representative
ERP	Emergency response plan
ERSED	Erosion and sediment controls
ESCP	Erosion and Sediment Control Plan
EWMS	Environmental Work Method Statement
HSE	Health Safety and Environment
Infrastructure Approval	SSI 10053 or NSW CoA
INP	Industry Noise Policy
LCC	Liverpool City Council
Low Impact Work	As defined in the Infrastructure Approval, and which Includes activities like survey work, investigative drilling, minor clearing, installation of mitigation measures etc. The low impact work described in this definition becomes construction when the Construction Environmental Management Plan is approved. This also applies to low impact work that has already commenced.
LV	Light vehicles
MARW	Moorebank Avenue Realignment Works
MIP	Moorebank Intermodal Precinct, which includes MPE and MPW
MPE	Moorebank Precinct East
MPE Site	Comprises the MPE Stage 1 Project as approved by SSD 14-6766 for the development of the intermodal terminal facility (IMT) at Moorebank and MPE Stage 2 as approved under SSD 7628 (as modified) and MPE Concept Approval (MP 10_0193) for the construction and operation of warehousing and distribution facilities and upgrades to approximately 2.1 kilometres of Moorebank Avenue.
MPW	Moorebank Precinct West
MPW Site	Comprises the MPW Stage 2 Project which is the second stage of development under the MPW Concept Approval (SSD 5066) and SSD 7709. The Project involves the construction and operation of a multi-purpose intermodal terminal facility, Rail link connection, warehousing and upgraded intersection on Moorebank Avenue.
National Intermodal	National Intermodal Corporation
NGER Act	<i>National Greenhouse and Energy Reporting Act 2007 (Commonwealth)</i>
NML	Noise management level
OEH	NSW Office of Environment and Heritage (now NSW EES, a part DPE)
PASS	Potential Acid Sulfate Soils
PIRMP	Pollution Incident Response Management Plan
PMF	Probable Maximum Flood
Planning Secretary	Secretary to the DPE

Acronym	Definition
Project Site	Refers to the construction footprint which is approximately 18.96 hectares and includes access for the construction of road embankments and cuttings, temporary and permanent fencing, temporary and permanent water quality control basins, ancillary facilities, access roads and construction side roads. It is generally bounded by the Defence Joint Logistics Unit (DJLU), MPE, Boot Land and the Sydney Trains owned land adjacent to the East Hills Railway.
REMM	Revised Environmental Management Measures
RMS	Roads and Maritime Services (now TfNSW)
RTA	Roads and Traffic Authority (now TfNSW)
RtS	Response to Submissions
RUSLE	Revised Universal Soil Loss Equation
SDS	Safety Data Sheets
SEARs	Secretary Environmental Assessment Requirements
SEMP	Site Establishment Management Plan
SES	State Emergency Service
SSI	State significant infrastructure
TfNSW	Transport for NSW
TSI	Targeted Site Investigations
The Project	Moorebank Avenue Realignment Works
TSI	Targeted Site Investigation
Waterfront Land	As defined in the <i>Water Management Act 2000</i> , the bed of any river, lake or estuary, and the land within 40 metres of the river banks, lake shore or estuary mean high-water mark
WMP	Water Management Plan

1 INTRODUCTION

1.1 Context

This Construction Soil and Water Management Plan (CSWMP) forms part of the Construction Environmental Management Plan (CEMP) for the Moorebank Avenue Realignment Works (MARW) (the Project).

This CSWMP has been prepared to address the requirements of the NSW Minister's Conditions of Approval (CoA) and the Revised Environmental Management Measures (REMMs) detailed in the Response to Submissions (RtS) and the applicable legislation.

1.2 Background and Project Description

National Intermodal Corporation (National Intermodal) plans to realign and upgrade a section of Moorebank Avenue. The Project involves the realignment of an existing two-kilometre section of Moorebank Avenue, from about 130 meters south of the Anzac Road/Moorebank Avenue intersection to a point immediately north of the East Hills Railway. Moorebank Avenue currently divides the Moorebank Intermodal Precinct (MIP) into the Moorebank East Precinct (MPE site) and the Moorebank West Precinct (MPW site) (See Figure 1.1).

The project is about three kilometres of additional road which ties in with the existing Moorebank Avenue at the northern and southern extremities. From its northernmost point, the realigned Moorebank Avenue follows the northern boundary of the MPE site, before continuing south along the MPE Site eastern boundary. This section of the realignment comprises four lanes (i.e. two lanes in each direction). At the south-western corner of MPE, the additional road section merges to become a dual lane road (i.e. one lane in each direction) before continuing in a south-west direction, crossing Anzac Creek, and re-joining the existing Moorebank Avenue alignment near the East Hills Railway (refer to Figure 1.1). At completion and commissioning of the realigned road section, the public through traffic using Moorebank Avenue will be redirected onto the upgraded alignment. The existing road alignment will be decommissioned and modified to function as a restricted access to the MIP.

The Project Site is about 18.96 hectares and includes access for the construction of road embankments and cuttings, temporary and permanent fencing, temporary and permanent water quality control basins, ancillary facilities, access roads and construction side roads. It is generally bounded by the Defence Joint Logistics Unit (DJLU), MPE, Boot Land and the Sydney Trains owned land adjacent to the East Hills Railway (refer to Figure 1.1).

A detailed description of the Project is provided in Section 2 of the CEMP and is also shown on Figure 1.2.

The Project will not be staged but is anticipated to be undertaken in phases. Construction is expected to take approximately 16 months to complete.

An Environmental Impact Statement (EIS) for the Project was prepared in March 2021 to describe and assess the Project and recommend management measures to address impacts. The EIS was exhibited by the then NSW Department of Planning, Industry and Environment¹ (DPIE) from 17 March 2021 to 13 April 2021 to give the community and stakeholders the opportunity to provide comment. A RtS was submitted in May 2021 to address the identified issues.

¹ Now NSW Department of Planning and Environment (DPE)

The Project was approved by the NSW Minister for Planning on 14 October 2021 as State Significant Infrastructure (SSI-10053) (Infrastructure Approval) under Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Project is also a controlled action under Section 130(1) and 133(1) of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and was approved by the Minister for the Environment on 7 December 2021 (EPBC Approval 2020-8839). On 14 January 2025 a variation to EPBC 2020-8839 was approved by the Minister for the Environment and Water.

The EIS assessed the construction soil and water impacts for the Project. As part of EIS development, a detailed Water Assessment (Appendix G of the EIS) was prepared in accordance with the legislation. The Assessment was prepared to address the Secretary's Environmental Assessment Requirements (SEARs) issued by the DPE and the Commonwealth EIS Guidelines.

Revised Environmental Management Measures (REMMs) were provided within the RtS. Where applicable, the REMMs from the RtS have been included in this CSWMP (Section 6.7 and Appendix C).

1.3 Scope of the Plan

This CSWMP is applicable to the construction stage of the Project. The CSWMP describes how potential soil and water impacts will be managed during construction of the Project. Operational soil and water impacts and operation measures do not fall within the scope of this CSWMP and therefore are not included within the processes contained herein.

Additionally, in line with NSW CoA A6 and outlined in the approved Project environmental risk assessment, the Soil and Water Management Plan is a combination of the following management plans:

- Water Management Plan
- Construction Soil and Water Management Plan
- Erosion and Sediment Control Plan
- Flood Emergency Response and Evacuation Plan.

1.4 Environmental Management System Overview

The environmental management framework for the Project is described in Section 3 of the CEMP. This CSWMP forms part of the framework for the Project. The requirements of the NSW CoA and the REMMs identified in the CSWMP will be complied with during construction.

Management measures identified in this CSWMP may also be incorporated into site or activity specific Environmental Work Method Statements (EWMS). EWMS incorporate appropriate mitigation measures and controls and identify key procedures to be used during construction activities. A template EWMS is provided in Appendix F of the CEMP.

1.5 CSWMP Endorsement and Approval

This CSWMP has been prepared to satisfy the NSW CoA's in relation to soil and water management during construction of the Project.

This CSWMP will be reviewed by the Project Manager / Delivery Team and will be endorsed by the Environmental Representative (ER) (Appendix A) at least one month prior to the commencement of construction as nominated in the Project Risk Assessment Matrix approved by the DPE in accordance with NSW CoA A19. Construction of the Project will not commence prior to the approval of the CEMP by the Planning Secretary and endorsement of the CSWMP by the ER. The final endorsed Plan will be available on

the MIP and/or National Intermodal website within 20 business days of approval by the Planning Secretary in accordance with Commonwealth CoA 15.

The ER can approve minor amendments to this CSWMP if they do not increase impacts to nearby receivers, are of an administrative nature and are consistent with the conditions of the Infrastructure Approval. This does not include any modifications to the conditions of the Infrastructure Approval.

1.5.1 Interactions with Other Management Plans

This CSWMP has interrelationships with other management plans and documents as detailed below:

- Emergency response protocols and procedures as addressed in the Construction Environmental Management Plan (CEMP)
- The Contamination Management Plan (CMP) addresses the management of contaminated lands and unexpected contaminated finds
- The Construction Air Quality Management Plan (CAQMP) addresses the management of dust and odour
- The Construction Biodiversity Management Plan (CBMP) addresses the management of flora and fauna including aquatic and riparian habitats and vegetation rehabilitation
- The Construction Waste and Resources Management Plan (CWRMP) addresses the management of waste and resources including the classification and handling of spoil and water reuse
- Pollution Incident Response Management Plan (PIRMP) (prepared upon the receipt of the EPL) details how pollution incidents will be managed in accordance with the CEMP.

1.6 Consultation

1.6.1 Consultation for Preparation of the CSWMP

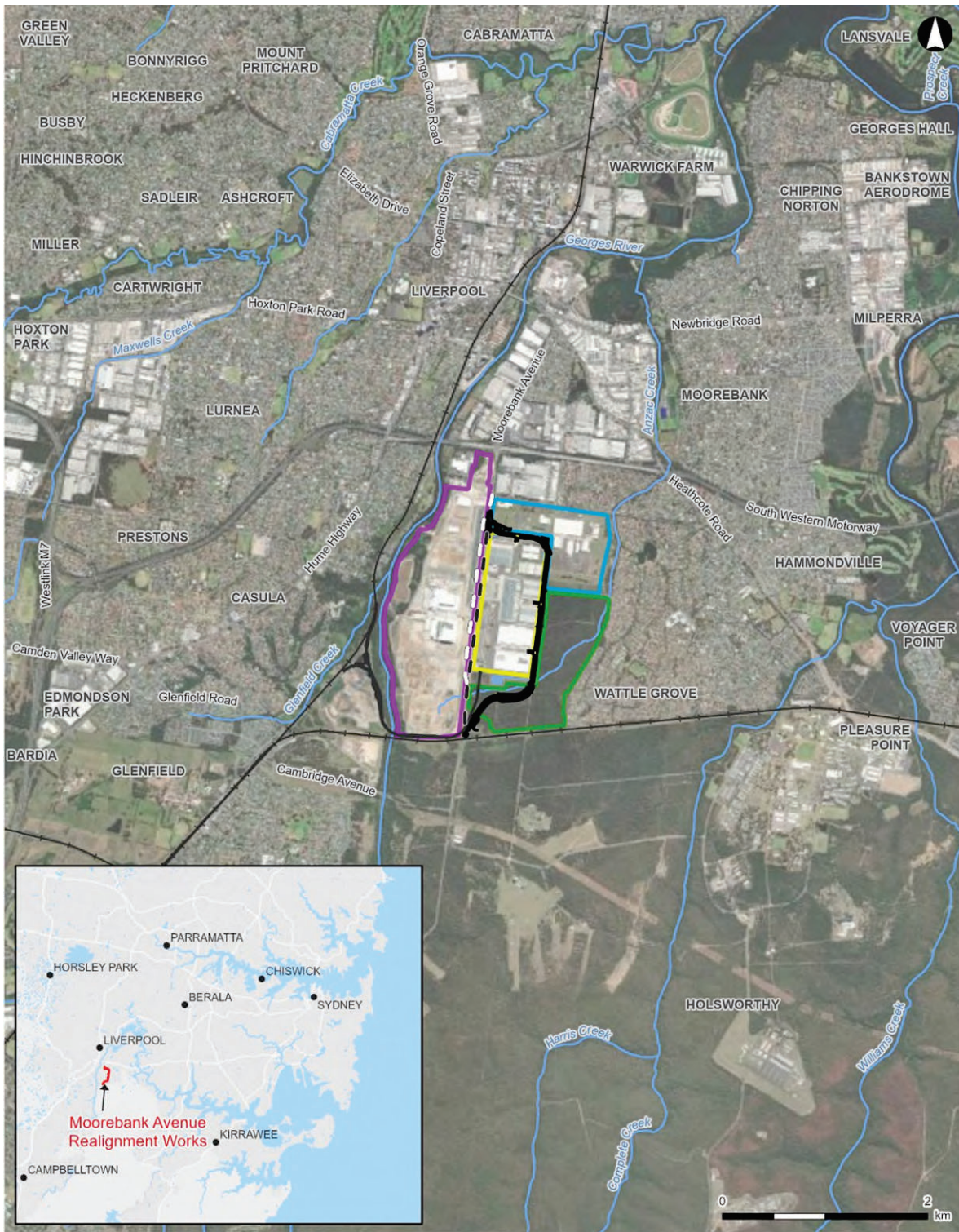
There is no requirement to consult with government agencies and stakeholders during the development of this CSWMP as nominated in the Project Risk Assessment Matrix. Refer to Appendix D of the CEMP for additional consultation requirements.

1.6.2 Ongoing Consultation during Construction

Ongoing consultation between the Project and stakeholders, relevant agencies and the community regarding the management of soil and water impacts will be undertaken during the construction of the Project as required. The process for the consultation will be documented in the CCS.

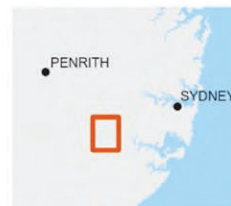
1.6.3 Flooding Consultation

In accordance with NSW CoA E11, Liverpool City Council and Campbelltown City Council (if required), the Environment and Heritage Group (EHG) and the State Emergency Service (SES) must be notified in writing that flooding information including flood reports, models and geographic information systems outputs and surveying of flood prone land is available no later than one month following the completion of construction. If the information is requested by any of the parties, the flood information must be provided no later than six months following the completion of construction or within another timeframe agreed with Council, EHG and the SES.



Legend

- Moorebank Avenue Realignment Works
 - MIP Rail link
 - - Previous Moorebank Avenue
 - Moorebank Avenue diversion road
 - ~ Watercourse
 - Railway
 - ▭ Moorebank Precinct West
 - ▭ Moorebank Precinct East
 - ▭ Boot Land boundary*
 - ▭ Defence Joint Logistics Unit
 - ▭ On-site detention
- *relates to the parcel of land known as the Boot Land, does not indicate biobanking boundaries



1:55,000 at A4
 Coordinate System: GDA2020 MGA Zone 56
 Date issued: December 6, 2024
 Imagery: Esri, HERE, Garmin, USGS, Maxar



Path: C:\Users\cs08137\ARCADIS\30144760 - Env Panel Minor Projects - 04 GIS\A_Current\B_Maps\CEMPC\EMF\appx

Figure 1.1: Project Location



- Legend
- Moorebank Avenue Realignment Works
 - - - Construction footprint
 - Construction compound
 - + Railway
 - ~ Watercourse



1:15,000 at A4
 Coordinate System: GDA2020 MGA Zone 56
 Date issued: December 11, 2024
 Imagery: Nearmap



Path: C:\Users\206137\ARCADIS\30144700 - Env Panel Minor Projects - 04 GIS\A_Current\G_Map\CEMP\CEMP.aprx

Figure 1.2: Project Layout

2 PURPOSE AND OBJECTIVES

2.1 Purpose

The purpose of the CSWMP is to describe how construction impacts for soil and water will be minimised and managed during the construction of the Project.

2.2 Objectives

The key objective of the CSWMP is to ensure that soil and water impacts are managed appropriately throughout the construction of the Project and consider the mitigation and management measures referred to in:

- NSW Minister's Infrastructure Approval dated 14 October 2021 (SSI-10053)
- Federal Minister for the Environment Approval dated 7 December 2021 (EPBC 2020-8839), as varied on 14 January 2025
- *Moorebank Avenue Realignment Environmental Impact Statement Volume 1 and Volume 2* prepared by EMM for Sydney Intermodal Terminal Alliance dated March 2021 (EIS) (EMM 2021a)
- *Moorebank Avenue Realignment Response to Submissions* prepared for Sydney Intermodal Terminal Alliance dated May 2021 (RtS) (EMM 2021b).

The NSW Water Quality Objective requirements are the agreed environmental values and long-term goals for NSW's surface water (DECCW, 2006). Upon receipt of the EPL, these objectives will be met by the Construction Contractor during construction of the Project through the implementation of management measures detailed within this CSWMP.

2.3 Targets

Table 2.1 details the targets established for the management of soil and water impacts during construction of the Project.

Table 2.1: Project environmental targets for soil and water

Objective	Target	Timeframe	Responsibility
Maintain compliance with relevant NSW and Commonwealth CoA and applicable legislation.	No written warnings or infringement notices	Throughout construction	Construction Contractor
Implement controls and procedures during construction activities to avoid, minimise or manage potential adverse soil, water and/or flooding impacts within and adjacent to the Project Site.	100% compliance	Throughout construction	Construction Contractor
Minimise impacts to, and complaints from, community and stakeholders regarding soil and water impacts.	No complaints from community or stakeholders	Throughout construction	Construction Contractor
Avoid degradation to the receiving environment and waterways. As a result of soil disturbances, surface water runoff and pollution incidents	No reportable incidents	Throughout construction	Construction Contractor

Objective	Target	Timeframe	Responsibility
Induction training of construction personnel to include detail on soil and water management during construction	100% of relevant staff	Before and throughout construction	Construction Contractor
Meet the Water Quality Objectives requirements upon receipt of the EPL during construction.	100% compliance	Throughout construction	Construction Contractor

3 ENVIRONMENTAL REQUIREMENTS

3.1 Relevant Legislation and Guidelines

3.1.1 Legislation

All legislation relevant to the Project is included in Appendix B of the CEMP. Legislation considered during the development of the CSWMP includes:

- *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- Environmental Planning and Assessment Regulation 2000
- *Protection of the Environment Operations Act 1997* (POEO Act)
- *Water Management Act 2000*
- *Fisheries Management Act 1994*
- *Work Health and Safety Act 2011* (WHS Act)
- *Contaminated Land Management Act 1997* (CLM Act).

3.1.2 Additional Approvals, Licences, Permits and Requirements

Refer to Appendix C of the CEMP.

3.1.3 Guidelines and Standards

The main guidelines, specifications and policy documents relevant to the CSWMP include:

Guidelines

- Acid Sulfate Soils Assessment Guidelines (DoP, 2008)
- Acid Sulfate Soil Manual (ASSMAC, 1998).
- Bunding and Spill Management Guidelines contained within EPA Environmental Protection Manual for Authorised Officers (EPA, 1995)
- Department of Environment and Conservation (DEC): Bunding & Spill Management. Insert to the Environment Protection Manual for Authorised Officers – Technical section “Bu” November 1997
- Environmental Best Management Practice Guideline for Concreting Contractors (DEC, 2004)
- Fairfull, S. and Witheridge, G. (2003) *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings. NSW Fisheries*
- Fishnote – Policy and Guidelines for Fish Friendly Waterway Crossings (Ref: NSWF – 1181) (NSW Fisheries, November 2003)
- Guidelines for watercourse crossings on waterfront land (DPE, 2022a)
- Guidelines for controlled activities on waterfront land – Riparian Corridors (DPE, 2022b)
- Managing Urban Stormwater: Soils and Construction Volume 1, Landcom, (4th Edition) March 2004 (reprinted 2006) (the “Blue Book”)
- Managing Urban Stormwater: Soils and Construction Volume 2A Installation of Services (DECCW, 2008).
- Managing Urban Stormwater: Soils and Construction Volume 2C Unsealed Roads (DECCW, 2008)

- Managing Urban Stormwater: Soils and Construction Volume 2D Main Roads Construction (DECCW, 2008)
- Roads and Salinity (Department of Infrastructure, Planning and Natural Resources (DIPNR), 2003)

Standards

- Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DECC, 2008)
- AS/NZS 5667.1.1988 (R2016) Water quality -Sampling Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ, 2000)

Codes of practice

- Code of Practice for Water Management – Road Development and Management (RTA, 1999)
- Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005).

Policies

- NSW Aquifer Interference Policy (NSW DPI – Office of Water, 2012)
- Policy and Guidelines for Fish Habitat Conservation and Management (DPI Fisheries, 2013)

3.2 Commonwealth Approval

The Project is considered a controlled action under the EPBC Act and is therefore subject to Commonwealth CoA's. There are no Commonwealth CoA related to soil and water and flood management.

3.3 NSW Infrastructure Approval

The requirements of the Infrastructure Approval relevant to the development of this CSWMP are shown in Table 3.1. These are defined as 'primary NSW CoA' and specifically relate to the development of the CSWMP. Secondary CoA relevant to, but not specific to the development of the CSWMP, have been listed in Appendix B. A cross reference is also included to indicate where the CoA is addressed in the CSWMP or other Project plans.

Table 3.1: Primary NSW CoA relevant to the CSWMP

No.	Requirements	Document reference
A6	A strategy, plan or program (or the like) required by the terms of this approval may be combined with any other strategy(ies), plan(s) or program(s) with the agreement of the Planning Secretary.	Section 1.3
C6	CEMP Sub-plans as identified in documents listed in Condition A1 must be prepared in consultation with relevant government agencies and stakeholders. Relevant government agencies and stakeholders must be nominated in the risk assessment matrix submitted to the Planning Secretary require in accordance with Condition A14 or A19. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant CEMP Sub-plan, including copies of all correspondence from those agencies as required by Condition A5.	Section 1.6
C7	The CEMP Sub-plans must state how:	
	(a) the environmental performance outcomes identified in the documents listed in Condition A1 will be achieved	Section 2.2 Section 2.3

No.	Requirements	Document reference
		Section 6 Section 7 Section 8
	(b) the mitigation measures identified in the documents listed in Condition A1 will be implemented	Section 6.8
	I the relevant terms of this approval will be complied with	Table 3.1 Table 3.2
	(d) issues requiring management during construction (including cumulative impacts), as identified through ongoing environmental risk analysis, will be managed through SMART principles.	Section 2.2 Section 2.3 Section 5.3 Section 6.8
C8	With the exception of any CEMP Sub-plans expressly nominated by the Planning Secretary to be endorsed by the ER, all CEMP sub-plans must be submitted to the Planning Secretary for approval. <i>Note: The Planning Secretary will consider the assessment of the predicted level of environmental risk and potential level of community concern required under Condition I(e) when deciding whether any CEMP Sub-plans may be endorsed by the ER.</i>	Section 1.5 Appendix A
C9	The CEMP Sub-plans not requiring the Planning Secretary's approval must obtain the endorsement of the ER as being in accordance with the conditions of approval and all relevant undertakings made in the documents listed in Condition A1. Any of these CEMP Sub-plans must be submitted to the ER with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before construction or where construction is staged no later than one (1) month before the commencement of that stage	Section 1.5 Appendix A
C10	Any of the CEMP Sub-plans to be approved by the Planning Secretary must be submitted to the Planning Secretary with, or subsequent to, the submission of the CEMP but in any event, no later than one (1) month before construction or where construction is staged no later than one (1) month before the commencement of that stage.	Section 1.5 Appendix A
C11	Construction must not commence until the CEMP and all CEMP Sub-plans have been approved by the Planning Secretary or endorsed by the ER (whichever is applicable), unless otherwise agreed by the Planning Secretary. The CEMP and CEMP Sub-plans, as approved by the Planning Secretary or endorsed by the ER (whichever is applicable), including any minor amendments approved by the ER, must be implemented for the duration of construction	Section 1.5 Appendix A

3.4 Revised Environmental Management Measures

The REMMs relevant to the development of this CSWMP, defined as 'primary REMMs' are detailed in Table 3.2. A cross reference is also included to indicate where the REMM is addressed in the CSWMP or other Project plans. Secondary REMMs relevant to, but not specific to the development of the CSWMP, have been listed in Appendix B.

Table 3.2: Primary REMMs relevant to the development of the CSWMP

No.	Requirements	Timing	Document reference
WAR01	A Water Management Plan (WMP) will be developed for the Project post-approval and will be encompassed within the CEMP. The WMP will provide details for the ongoing management and maintenance of water management and mitigation measures during the construction phase of the Project.	Prior to construction	This CSWMP Section 1.3
WAR02	A Soil and Water Management Plan (SWMP) will be prepared in accordance with Managing Urban Stormwater: Soils and Construction – Volume 1 (Landcom, 2004) for the construction phase of the Project and will be encompassed within the CEMP.	Prior to construction	This CSWMP Section 1.3
WAR03	A surface water monitoring program for the construction phase of the Project will be developed as part of the SWMP. Monitoring locations will target discharge locations such as temporary sediment basins and receiving waters.	Prior to construction During construction	Appendix C
WAR06	A dewatering and discharge procedure is to be incorporated in the SWMP. Recommended discharge criteria is provided in Section 5.8 of the Water Assessment.	Prior to construction During construction	Appendix D
WAR15	A flood emergency response and evacuation plan or equivalent will be prepared and implemented for the construction phase of the Project to minimise hazard to construction personnel, construction plant/equipment and downstream watercourses.	Prior to construction During construction	Figure 4.3 Appendix E

4 EXISTING ENVIRONMENT

4.1 Key References

The sources of data and information for the Water Assessment carried out and used to develop this CSWMP are Section 7.7 and Appendix G of the Project EIS and Section 4.13 and Appendix D of the Project RfS.

The Project boundary and relevant environmental constraints are shown on the Sensitive Area Plans included in Appendix D of the CEMP.

Key components of the Water Assessment included:

Desktop review of existing environmental information:

- Moorebank Logistics Park Concept Design – Stormwater (Arcadis, 2020)
- Atlas of Australian Acid Sulfate Soils (CSIRO, 2023)
- Moorebank Intermodal Terminal Project: Environmental Impact Statement – Surface Water Assessment (Parsons Brinckerhoff, 2014)
- Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Source–2011 - Lower Georges River and Bunbury Curran Creek Management Zone (NSW Government, 2011a)
- Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources–2011 - Sydney Basin Central Groundwater Source (NSW Government, 2011b)
- SIMTA Intermodal Terminal Facility – Stage 1 – Phase 2 Environmental Site Assessment (JBS&G, 2015)
- Overland Flow Report – SSI 10053 Moorebank Avenue Realignment (Costin Roe, 2020)
- Anzac Creek Floodplain Risk Management Study and Plan (FRMSP) (BMT WBM, 2008)
- Georges River Floodplain Risk Management Study and Plan (Bewsher, 2004)
- Georges River Flood Study: Final Draft Report (BMT, 2020)
- Liverpool Local Environmental Plan 2008
- Liverpool Development Control Plan 2008
- NSW Water Quality and River Flow Objectives (DECCW, 2006)
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018)
- Working on waterfront land (NRAR, 2020)
- Guidelines for controlled activities on waterfront land – Riparian Corridors (DPE, 2022b)
- Controlled activities on waterfront land – Guidelines for watercourse crossings on waterfront land (DPE, 2022a)
- Policy and Guidelines for Fish Habitat Conservation and Management (DPI Fisheries, 2013).
- Other relevant environmental and strategic planning documents.

The following sections summarise existing soil and water conditions within and adjacent to the Project Site including soil conditions, surface water, groundwater, stormwater infrastructure and flooding.

4.2 Environmental Aspects

4.2.1 Regional Context

The area surrounding the Project Site is mostly flat with isolated areas that are steep in gradient and short in distance; these isolated areas are associated with permanent and ephemeral water courses and drainage

lines. The surrounding area has experienced previous disturbance from clearing of vegetation and subsequent earthworks (cut and fill), largely for the creation of transmission line easements and access tracks.

The Georges River and Anzac Creek are the closest waterways to the Project Site. The Georges River catchment (960 km²) is located 500 metres west of the Project Site. Georges River flows in a south to north direction and is well defined with vegetated banks on both sides of the river. The receiving environment of the Georges River catchment is Botany Bay catchment and includes residential, industrial, commercial, recreational and bushland with the main sources of pollution coming from stormwater runoff.

The Georges River forms the western boundary of the MPW site where the channel is well defined with vegetated banks on both sides of the channel.

Anzac Creek is a sub-catchment of the Georges River catchment, a first order ephemeral tributary (10.6 km²). The tributary flows towards the DJLU site and discharges into the Georges River, three kilometres north of the Project Site. The upstream Anzac Creek channel is characterised by a series of linked ponds constructed as part of the former Royal Australian Engineers golf course (now the MPW Site). Anzac Creek is predominately in a natural state within the Boot Land adjacent and immediately downstream of the Project Site. The watercourse has been extensively altered further downstream within the DJLU land and adjacent to Wattle Grove; structures including several instream culverts run along the length of the creek, upstream of the Project Site.

The Georges River and Anzac Creek are considered sensitive receiving environments i.e. they are both defined as having a high conservation or community value and/or support ecosystems or human uses of water that are particularly sensitive to pollution or degradation of water quality.

4.2.2 Project Site

4.2.2.1 Topography, Soils and Geology

The Project Site is comprised of predominantly flat areas with isolated areas of steeper slopes near watercourses and drainage lines. The Project Site is underlain by sand or clayey sand fill to depths of up to 1.5 metres over interbedded alluvial sand and clay which is likely to be floodplain deposits associated with the Georges River with depths of up to 23 metres (Golder, 2016).

Alluvium soils are present extensively across the northern, western, and southern extents of the Project Site and decreases in thickness towards the east. Ashfield Shale lies below the alluvium layer with Hawkesbury Sandstone, a part of the Triassic age Wianamatta Group, immediately below the alluvium in the southern portion of the Project Site.

4.2.2.2 Acid Sulfate Soils

Based on the review of the Atlas of Australian Acid Sulfate Soils, there is a low to extremely low chance of acid sulfate soils being present at the Project Site.

Based on a review of the *Liverpool Local Environmental Plan 2008* mapping, category 1 (likely to be found below the natural ground surface) acid sulfate soils have been recorded in the Georges River.

4.2.2.3 Saline Soils

Based on a review of the *Liverpool Local Environmental Plan 2008* mapping, no saline soils have been identified within or adjacent to the Project Site.

4.2.2.4 Rainfall and Climate

The average yearly rainfall in the vicinity of the Project Site was based on data collected at the Bankstown Airport Automatic Weather Station (AWS). Rainfall averages have been inferred from the Bureau of Meteorology (BoM) for the period from 1968 to April 2023. The annual average rainfall is 890.5 millimetres, with the wettest month being March, with an average rainfall of 113.5 millimetres. The driest month is September with an average of 44.5 millimetres (BoM, 2023).

Average maximum temperatures at the Bankstown Airport AWS have been inferred from BoM (2023) for the period 1968 to 2023. The lowest average temperatures are in July at 17.6 degrees Celsius and highest in January at 28.5 degrees Celsius. Average minimum temperatures were lowest in July at 15.5 degrees Celsius, and highest in January at 25.3 degrees Celsius (BoM, 2023).

4.2.2.5 Surface Water

Catchments and waterways

As described in Section 4.2.1, Anzac Creek rises west of the Project Site and flows in an easterly direction traversing the existing Moorebank Avenue and Moorebank Intermodal Precinct Rail Link and crosses into the Project Site (see Figure 4.1).

A review of the water quality monitoring data for Anzac Creek has shown that the creek was identified as a potential pathway for the migration of per and poly-fluoroalkyl substances (PFAS). PFAS concentrations in water samples collected from Anzac Creek were found to be greater than the human health drinking water guidelines, but below recreational water use guidelines (CH2M HILL, 2018). Refer to Section 4.2.5 of the Construction Contamination Management Plan (CCMP) for further details.







Surface water quality

Previous water quality sampling (Hyder, 2013; Parsons Brinckerhoff, 2014; CH2M HILL, 2018, Biosis, 2018; Bio-Analysis, 2023) for Anzac Creek indicates the following water quality characteristics:

- Most physico-chemical water quality parameters are within ANZECC (2000) guidelines for low land aquatic ecosystems in south-eastern Australia, with the exception of pH and dissolved oxygen which were occasionally lower than the guideline range and turbidity which occasionally exceeded the guideline value
- No major exceedances of metals that indicate unusual or long-term trends of concern. However, aluminium concentrations were observed to exceed guideline values in one sample on Anzac Creek (Hyder, 2013)
- Total nitrogen and total phosphorus occasionally exceed ANZECC (2000) guideline values. Anzac Creek was observed to exceed guideline values more frequently, which was attributed to runoff from the former Royal Australian Engineers golf course (Parsons Brinckerhoff, 2014).
- Most water and sediment sampling undertaken in Anzac Creek were within the ANZECC (2000) guidelines with the exception of aluminium (260 ug/L), nickel (25 mg/kg) and lead (91 mg/kg) that exceeded the ANZECC criteria which provides the baseline survey for Anzac Creek (Biosis, 2018)
- Bi-annual water and sediment quality monitoring has been undertaken in Anzac Creek for the MPE Stage 2 Project since 2018 (Bio-Analysis, 2023). The latest reporting period for spring 2022 indicated ANZECC guideline (2000) exceedances for water sampling including aluminium (survey 1: 4000 ug/L and survey 2: 93 ug/L) and copper (survey 1: 2.6 ug/L).



Legend

-  Moorebank Avenue Realignment Works
-  Construction footprint
-  Construction compound
-  Waterway crossings
-  Watercourse
-  Railway



1:16,000 at A4
 Coordinate System: GDA2020 MGA Zone 56
 Date issued: December 6, 2024
 Imagery: Nearmap



Path: C:\Users\cbri137\ARCADIS\30144760 - Env Panel Minor Projects - 04 GIS\A_Current\B_Maps\CS\WMP\CSWMP.aprx

Figure 4.1: Nearby Waterways

4.2.2.6 Groundwater

Two groundwater systems have potential to interact with the Project Site:

- Alluvial groundwater systems
- Semi confined groundwater systems within the bedrock.

Alluvial groundwater systems are unconfined (not under pressure) to semi confined (partially pressurised) alluvial groundwater systems associated with Georges River and Anzac Creek.

Groundwater levels

No registered groundwater bores were identified within the Project Site. However, there is one existing groundwater monitoring well located in the Project Site and three groundwater monitoring wells located within MPE site (JBS&G, 2015).

The BoM Groundwater Explorer (BoM, 2023b) displays 18 groundwater bores present within a 2 kilometre radius of the Project Site. Of the 18 groundwater bores, approximately 11 are functional; the groundwater bore depths range from 4-23.7 metres.

The Hydrogeology Map of Australia (Geoscience Australia) identified that aquifers within the Project Site are likely to be low to moderate productivity. Regional groundwater flows are expected to be in a west and northerly direction towards the Georges River.

Two main aquifer systems were identified as part of previous investigations conducted at the MPW site:

- A perched system within the alluvium soils near the Georges River
- A deeper aquifer within the bedrock.

Groundwater depth varies across the Project Site (four metres to seven metres below ground level (mbgl)). Groundwater within the shallow alluvial aquifer flows towards the Georges River at depths typically around seven to eight mbgl. Groundwater is generally shallower near Anzac Creek around 1.5 mbgl in the south-eastern corner of the MPE Site.

Groundwater Dependant Ecosystems

Parts of the Project Site which relate to ecosystem types identified in the Groundwater Dependent Ecosystems (GDE) Atlas including Castlereagh Swamp Woodland, Castlereagh Scribbly Gum Woodland and Castlereagh Ironbark Forest, have been identified as GDE in the south-western portion of the Project Site (refer to Figure 4.2 and the CBMP for further detail on GDEs).

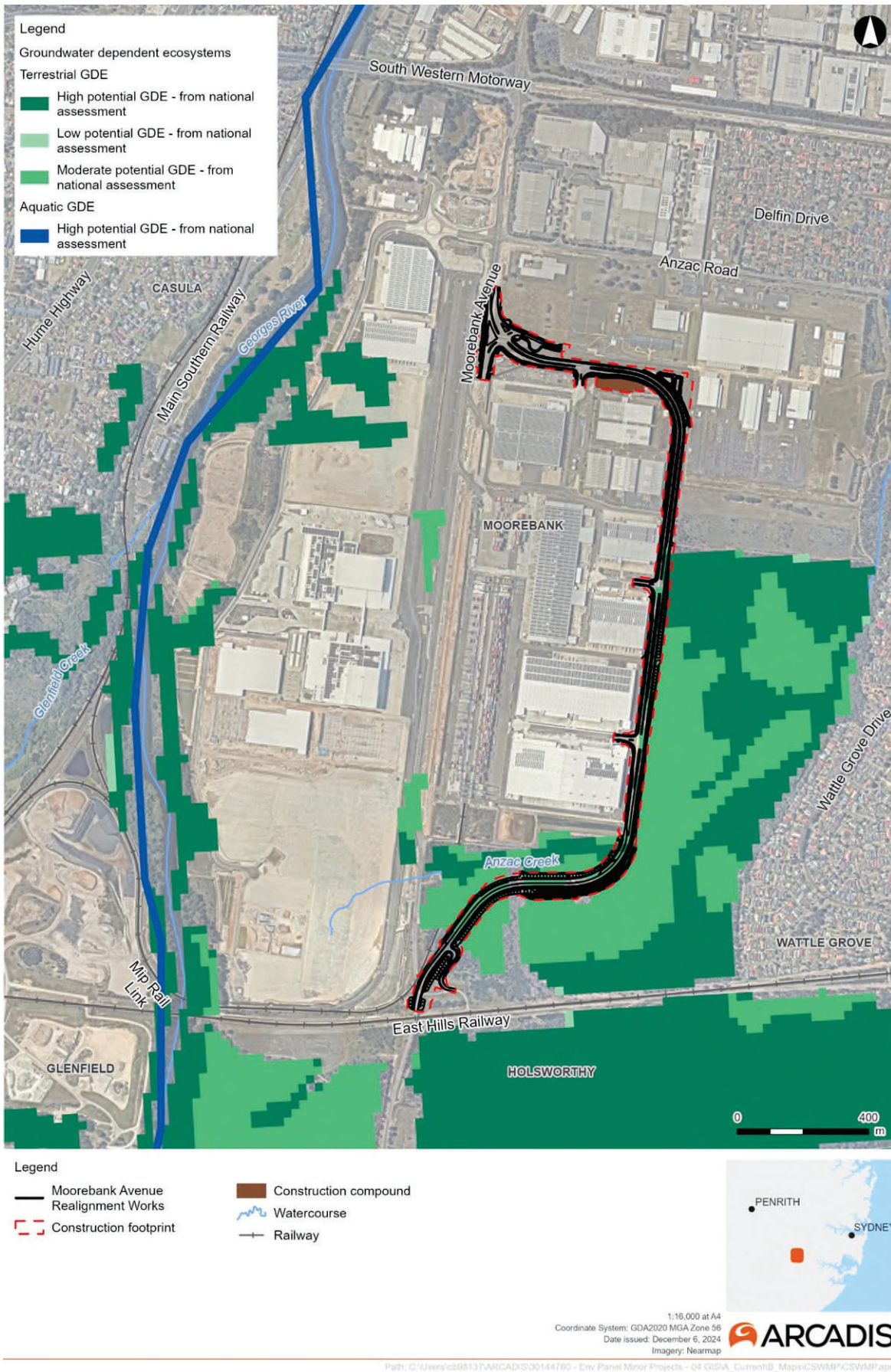


Figure 4.2: Groundwater dependent ecosystems

4.2.2.7 Stormwater Infrastructure

Existing stormwater drainage infrastructure in proximity to the Project Site primarily consists of pit and pipe network and open channels associated with the MPE and MPW Sites as well as the existing Moorebank Avenue and DJLU. The majority of the existing Project Site drains to Anzac Creek, while the north-western extent of the Project Site drains towards the current infrastructure established as part of the MPE and MPW developments before discharging to the Georges River. It is noted that some aspects of the stormwater infrastructure associated with the MPE and MPW developments are still in construction, as such, stormwater flow may be subject to change as construction progresses.

There are four external stormwater catchments upstream of the Project Site as detailed in the Revised Water Assessment in the RtS. Table 4.1 summarises the upstream drainage catchments located on or adjacent to the Project Site.

Table 4.1: Summary of upstream drainage catchments

Catchment	Area (ha)	Outlet ID	Outlet location	Peak discharge at outlet ²	Receiving waterway
MPE A	22.8	A	North crossing Project Site	2.9 m ³ /s (Costin Roe, 2019)	Anzac Creek
MPE B	24.9	B	Central crossing of Project Site	2.1 m ³ /s (Costin Roe, 2018)	Anzac Creek
MPE C	57.3	C	Previous Moorebank Avenue	6.7 m ³ /s (Arcadis, 2019)	Georges River
DJLU	5.1	C	Previous Moorebank Avenue	6.7 m ³ /s (Arcadis, 2019)	Georges River

4.2.2.8 Flooding

The 100-year Annual Recurrence Internal (ARI) flood extent is about 400 metres west of the Project Site. While the Probable Maximum Flood (PMF) event is shown to extend up to the north-western section of the Project Site it does not encroach on the Project Site. Some backwater flooding effects during such an extreme flood event may be experienced in the channel located in the MPW site that conveys water from MPE Catchment C and the DJLU Catchment to the Georges River. The critical storm duration for the Georges River near the Project Site is 36 hours for the 100-year ARI storm event (Parsons Brinckerhoff, 2014). Flood levels resulting from the critical storm are expected to remain elevated for a relatively long period of time, in the order of a day or more.

Further flood modelling was carried out to assess the existing flood conditions during stormwater events for Anzac Creek (Costin Roe, 2020). Flood mapping shows that shallow overland flooding extends across much of the Project Site for all events. However, mainstream flooding along Anzac Creek is relatively well confined to the creek line for events up to the 100-year ARI (refer to Figure 4.3). Existing 1% Annual Exceedance Probability (AEP) flood mapping has been undertaken for the Project Site during 85% detailed design that is shown in Appendix E.

The critical storm duration for the upper reaches of Anzac Creek near the Project Site were determined to be in the order of 1.5 hours (Costin Roe, 2020). Critical storm durations for lower parts of the catchment are typically in the order of 9 hours (BMT WBM, 2008). As Anzac Creek has a significantly shorter critical storm duration than the Georges River, the timing of peak flows from Anzac Creek are expected to occur well before the Georges River peak as is experienced by other local tributary catchments (BMT, 2020).

² Peak discharge for the 100-year ARI design storm event

Depths of flooding in the vicinity of the Project alignment reach up to about 1.5 metres in the 100-year ARI event, extending to a maximum of about 2.5 metre deep for the PMF. Flooding conditions along Anzac Creek would be typically of relatively high hazard and unsafe for construction workers and vehicles during the construction period for all events assessed, whilst overland flows approaching the creek line would be typically of low hazard. A Flood Emergency Response plan is provided in Appendix E.

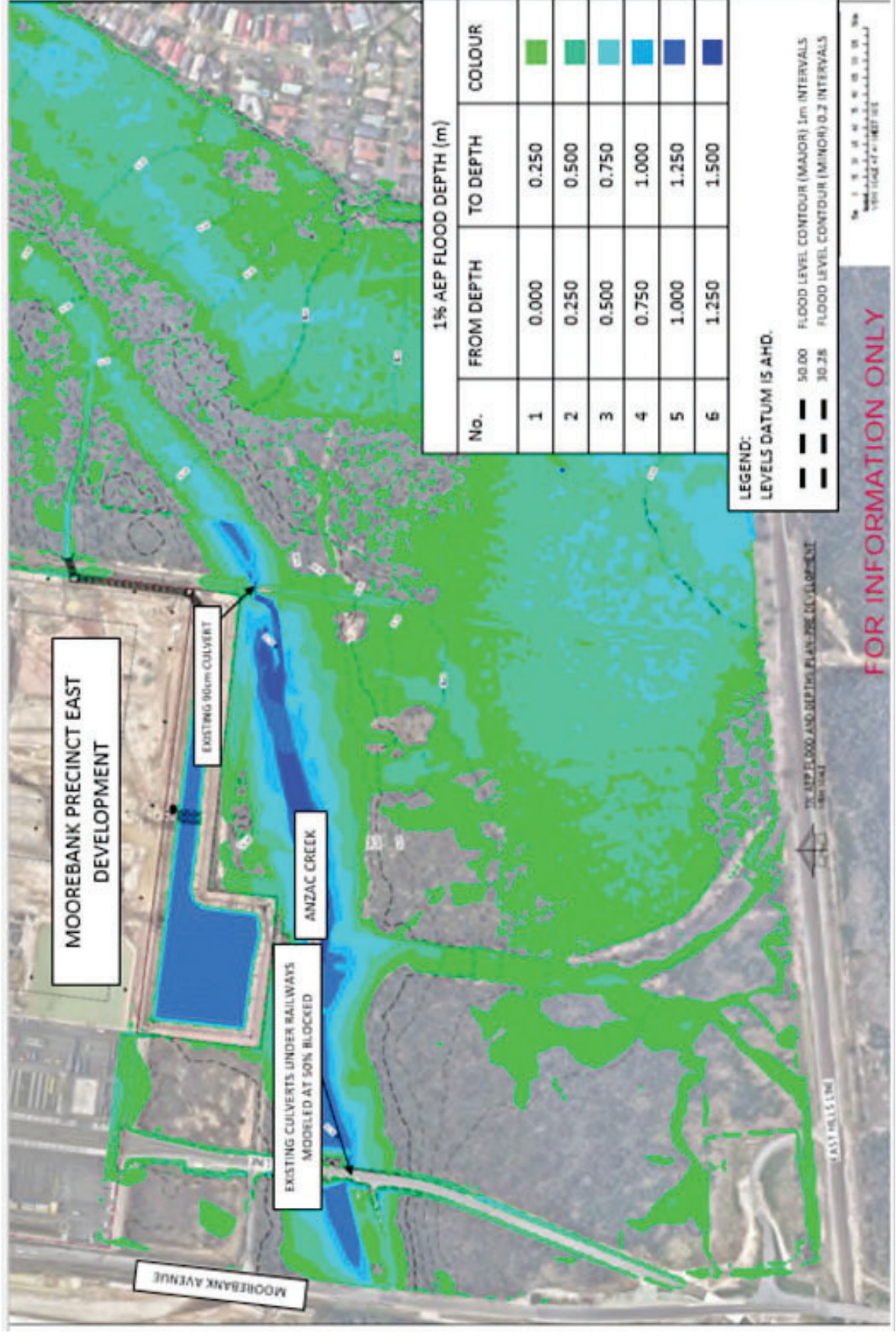


Figure 4.3: Anzac Creek existing condition flood level and depth (100-year ARI)(Costin Roe, 2020)

5 ENVIRONMENTAL ASPECTS AND IMPACTS

5.1 Construction Activities

Section 2.3 of the CEMP provides an overview of the construction activities that have the potential for environmental impact. The potential risks have been identified based on the outcomes of the risk assessment provided in Appendix D of the CEMP. The potential environmental aspects and impacts associated with construction are identified in Table 4.1 of the CEMP.

Key aspects of the Project that could result in adverse impacts to soils and water include:

- Preliminary enabling works
- Vegetation clearing and topsoil stripping
- Construction of ancillary facilities, site compounds and storage areas for plan, construction materials and spoil
- Earthworks and excavations during construction, including excavations required for culvert and basin construction as part of stormwater drainage work
- Temporary and permanent watercourse crossings and work platforms
- Temporary access roads
- Construction in areas of highly erodible soil
- Material stockpiling
- Pavement construction including installation of pavement and subsoil drainage
- Construction discharges including surface water runoff and dewatering of sediment basins.

5.2 Impacts

Construction of the Project may result in direct and indirect impacts to soil and water and flooding, including:

- Changes to streamflow flow regimes including catchment yield, peak discharge, and velocity as a result of increased impervious area and/or flow diversions.
- Increased risk of erosion and scour of downstream waterways due to exposed soils, altered streamflow regimes and the installation of stormwater infrastructure without adequate scour protection.
- Altered watercourse geomorphology due to increased risk of erosion and scour of exposed soils and changes in streamflow flow regimes.
- Reduction in the water quality of receiving watercourses resulting from:
 - Increased concentrations and loads of suspended solids, nutrients, and metals in runoff from exposed soils due to disturbance activities and vehicle movements
 - Spills and/or leaks of fuel, oils, hydraulic fluids and other substances used in construction
 - Run-off from potentially contaminated excavation areas and works within waterways disturbing contaminated sediment.
- Increased flood risk resulting in:
 - Hazard to site workers health and safety and plant/equipment damage
 - Construction materials being washed into watercourses
 - Increased localised upstream flooding where existing drainage lines are undergoing construction.

- Groundwater ingress into the construction area, increasing the volume of water that requires management and reducing the effectiveness of management measures.
- Reduction in groundwater quality where groundwater interception occurs during construction.

Potential impacts on soil and water and flooding as a result of construction of the Project will be minimised through the implementation of the environmental management measures provided in Section 6.

5.3 Cumulative Impacts

Cumulative soil and water and flooding impacts may arise from the interplay between construction activities associated with the Project, other approved or proposed projects that are likely to occur within the area. When considered in isolation, specific impacts may be considered minor. These minor impacts may be more substantial however, when the impact of multiple projects on the same receivers is considered.

As outlined in the EIS, a number of other projects in the area that may coincide with construction works include, but are not limited to the following:

- MPE Stage 2 (SSD 7628)
- MPW Stage 2 (SSD 7709) and Stage 3 (SSD 10431)
- M5 Motorway Westbound Traffic Upgrade
- Glenfield Waste Services Resource Recovery Facility (SSD 6249).

Although impacts are likely to be associated with soil erosion, soil management, contamination and spills, it is anticipated that these impacts will be short-term and minor as they will be limited to the construction phase and will be minimised through the implementation of management measures identified in Section 1.1.

Communication between the Construction Contractor and developers for these adjacent projects will be undertaken with the aim of combining messages when possible, to coordinate disruptive activities and manage and minimise cumulative impacts to the local community as per the CCS.

6 ENVIRONMENTAL MITIGATION AND MANAGEMENT MEASURES

6.1 Erosion and Sediment Control

Temporary erosion and sediment (ERSED) control measures will be installed to protect water quality on the Project. Controls and management measures will be designed, constructed, operated and maintained in accordance with the “Blue Book”, i.e. *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004) and *Managing Urban Stormwater – Soils and Construction, Volume 2D, Main road construction* (DECC, 2008).

A Preliminary Erosion and Sediment Control Plan (ESCP) has been prepared and details the location, design and maintenance of erosion and sediment control measures during construction (refer to Appendix F).

The Construction Contractors will prepare progressive ESCPs, based upon the Preliminary ESCP, as construction progresses and will take into account the construction program, work methods, and location of the works and surrounding sensitive receivers. The progressive ESCPs will identify ERSED control risks and describe how these will be addressed during construction. The progressive ESCPs will include drawings showing all controls required to avoid erosion and sedimentation within the Project Site, surrounding areas, watercourses, drainage systems, water bodies and wetlands (as appropriate). The drawings will be updated as the site conditions change during construction and will include as relevant:

- Diversions for clean water around construction work areas
- Use of natural ERSED controls where practicable e.g. using felled trees, organic materials, micro water capture and contour shaping.
- Scour protection measures where there is an erosion hazard due to steepness, soil erodibility or potential for concentrating runoff flow
- Stabilisation methods for disturbed areas and temporary drains
- ERSED controls for stockpiles
- Measures to minimise mud tracking on roads
- Measures to retain topsoil on the batter slopes
- Locations of the sediment basins (refer to Section 6.2.1)
- Measures to reduce flow velocities and minimise the potential for erosion in runoff flow paths
- Controls for wastewater (e.g. dewatering, surface washing, grit blasting, saw cutting, drilling, washing vehicles and plant) to minimise discharge on or around the site
- Maintenance of ERSED control structures.

The progressive ESCPs will include all ancillary activities and/or areas and activities that may impact on water quality, such as:

- Access and haulage tracks
- Stockpile and storage areas
- Temporary work areas
- Materials processing areas
- Ancillary and compound areas

- Location(s) of concrete washouts
- Known (or discovered areas) of contamination.

Environmental Work Method Statements (EWMS) will be prepared to manage and control high risk activities (such as works in Anzac Creek) that have the potential to negatively impact on the environment, and where required, will include an activity specific ESCP. The ESCP developed for high-risk activities, will be prepared in consultation with a Certified Professional in Erosion and Sediment Control (CPESC). An EWMS template has been provided in Appendix E of the CEMP.

6.2 Sediment Basins

Temporary sediment basins will be required during construction of the Project. Sediment Basin A, C and 3 (See Appendix F) may be used by the Construction Contractor during construction. Basins A and C will later be converted to bio-retention basins for operations. Storage volumes and basin locations are included in the ESCP. Locations and sizing will be refined by the Construction Contractor, with consideration of the relevant guidelines, as construction progresses and updated in the progressive ESCPs (refer to Section 3.1.3). Water from the sediment basins may be used as dust suppression during construction. This water will be screened prior to usage on site.

6.2.1 Rainfall Erosivity and Erosion Hazard

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

The annual soil loss estimates will be used to demonstrate whether sediment basins will be required, or whether sediment traps, fences and other localised controls will be adequate along the alignment. Sediment basins will be designed to the 80th percentile of a 5-day event rainfall with opportunity to increase capacity based on the recommendations of the TSI and site constraints.

Where areas of the Project Site are constrained, in particular at tie-ins to existing roads (e.g. areas where the terrain is flat, and levels limit the use of some water management measures), alternative water management such as clean and dirty water diversions, progressive ground cover, temporary sediment traps etc will be implemented where practical and detailed within the ESCP.

6.3 Acid Sulfate Soils and Saline Soils

As described in Section 4.2.2.1, there is a low to extremely low chance of acid sulfate soils being present at the Project Site and no saline soil has been mapped within or adjacent to the Project Site. Nevertheless, best practice measures will be put in place to manage any unexpected finds in relation to acid sulfate soils and saline soils.

6.4 Tannin Management

Tannins may result from the storage and use of mulch and are generally highest from mulched vegetation that is stockpiled in areas that are subject to inundation. Placement in wet areas will result in accelerated leaching of tannins into water, concentration of tannins in pooled water, and result in greater impacts on water quality.

The temporary application during construction and the application of mulch for permanent landscaping will be designed and planned to avoid material and tannin runoff and will be addressed within the ESCP. This will include limiting the application of mulch near waterways where practicable.

6.5 Dewatering Management

Dewatering is any activity that involves the removal of ponded stormwater or infiltrated groundwater from any location within the Project Site (including from sediment basins and dams) and the subsequent reuse or discharge of that water. The Construction Contractors will plan to avoid and minimise discharges as much as practicable and undertake dewatering activities in a manner to minimise erosion and pollution of the environment. The EPL will determine the discharge criteria for licensed discharge points. The CSWMP will be updated upon receipt of the EPL.

A Dewatering and Discharge Procedure has been prepared (Appendix D) and outlines disposal options.

6.6 Work in Waterways

Works on waterfront land³ will be carried out in accordance with controlled activity guidelines (refer to Section 4.1 and Figure 4.1). Where work is required within waterways, an EWMS for the work(s) will be prepared and will detail the control measures to avoid or minimise erosion and any adverse impact on water quality and riparian fauna and flora.

Where culvert works are required within Anzac Creek, these will be scheduled during periods of lower rainfall where possible to limit contact with stormwater. Cofferdams and diversions will be installed to provide dry working disturbed areas within Anzac Creek. Outlet structures will be constructed in accordance with NRAR's Guideline for outlet structures on waterfront land (NSW Office of Water, 2012).

6.6.1 Temporary Waterway Crossings

Temporary waterway crossings may be required for the Project. A suitably qualified and experienced engineer within the Construction Contractors team will design, construct and maintain temporary waterway crossings and maintain fish passage consistent with the following guidelines:

- Guidelines for controlled activities on waterfront land – Riparian Corridors (DPE, 2022a)
- Controlled activities on waterfront land – Guidelines for watercourse crossings on waterfront land (DPE, 2022b)
- Policy and Guidelines for Fish Habitat Conservation and Management (DPI Fisheries, 2013).

Permanent design features will be confirmed during detailed design.

6.7 Groundwater

In accordance with REMM WAR17 and WAR18, hydrogeological investigations will be undertaken by a suitability qualified person to assess the potential impacts on the excavation of an underlying aquifer and determine the base of excavation with respect to the groundwater level. Where impacts may occur, the suitability qualified person will determine if mitigation to protect groundwater quality is required.

³ Defined in the *Water Management Act 2000* as the bed of any river, lake or estuary, and the land within 40 metres of the river banks, lake shore or estuary mean high-water mark

6.8 Management Measures

Management actions prescribed by this CSWMP aim to avoid and minimise soil and water impacts are summarised in Table 6.1.

The development of management measures has been based on SMART principles i.e. measures that are specific, measurable, achievable, relevant, and time-bound:

- **S**pecific –mitigation and management measures identified in specifically to manage soil and water impacts during construction
- **M**easurable – Inspection and monitoring requirements detailed in Section Table 7.1 include specific measures or indicators for which inspection and monitoring requirements will be triggered
- **A**chievable – Ongoing compliance with the Infrastructure Approval (Table 3.1 and Table 3.2) and Commonwealth CoAs, is achievable throughout the delivery of construction and represents the minimum requirements to be implemented by the Construction Contractor
- **R**elevant - The management measures outlined in represent the approach to monitoring and tracking against the objectives, targets and environmental performance outcomes (identified in Section 2 of the CSWMP)
- **T**ime-bound – The management measures set out within are required to be implemented for the duration of construction, setting a clear and defined time frame and includes reference to other timeframes, including during detailed design, pre-construction, post-construction and/or operation.

Table 6.1: Soil and water management and mitigation measures

ID	Management Measure	Timing	Responsibility	Reference	Evidence
Erosion and Sediment Control					
SW01	The Construction Contractor must prepare ESCPs for the duration of construction. The ESCPs must be prepared by a person with demonstrated skills and experience in preparing ESCPs in accordance with the Blue Book guidelines (Landcom, 2004). The ESCPs must be reviewed and updated to reflect site conditions during construction.	Prior to construction During construction	Construction Contractor	NSW CoA E31 REMM WAR04 REMM BIO26	ESCP
SW02	Erosion and sediment control measures will be implemented and maintained at all work sites in accordance with the principles and requirements in Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004) and Volume 2D (DECC, 2008).	During construction	Construction Contractor	NSW CoA E31 REMM BIO07 REMM BIO22 REMM BIO26 REMM WAR14	ESCP
SW03	The NSW Water Quality Objective requirements (upon receipt of the EPL) will be met during construction of the Project through the implementation of management measures detailed within this Plan.	Detailed Design During construction	Designers Construction Contractor	NSW CoA E75 NSW CoA E79 REMM WAR08	Detailed Design Report EPL
SW04	Construction activities will be staged where possible to minimise clearing and total disturbance of an area, particularly around drainage lines and watercourses which should remain in their natural state. This will include: <ul style="list-style-type: none"> • Screen water that is intended for dust suppression use • Constructing clean water diversions and drains to accommodate up to the 10-year ARI design storm event • Revegetating areas of disturbance following construction in accordance with Blue Book (Landcom, 2004) • Stabilisation and rehabilitations of works areas as soon as practicable. 	Prior to construction During construction	Construction Contractor	REMM BIO15 REMM BIO16 REMM BIO23 REMM BIO24 REMM WAR09 REMM AIR16	ESCP

ID	Management Measure	Timing	Responsibility	Reference	Evidence
Sediment basin management					
SW05	Sediment basins must be designed and constructed in accordance with the Blue Book (Landcom, 2004) detailed within the ESCP and will consider the outcomes of the Targeted Site Investigation.	Prior to construction During construction	Construction Contractor	REMM WAR08 TSI	ESCP
SW06	<p>Sediment basins will be managed in accordance with Blue Book (Landcom, 2004) for the duration of construction. The Construction Contractor will consider the following:</p> <ul style="list-style-type: none"> • Provide and maintain suitable access to sediment basins and sediment traps to allow inspection, maintenance, monitoring and cleaning out in all weather conditions • Sediment basins should be cleaned out whenever the accumulated sediment exceeds 60% of the sediment storage zone • Accumulated sediment from sediment basins and traps must be removed in such a manner as not to damage the structures and disposed of, or reused, in accordance with Construction Waste and Resources Management Plan (CWRMP). • Captured water within sediment basins used for dust suppression within the Project Site rather than using potable water, where practicable and following screening of water to ensure appropriate for that use. • Remove all construction sediment basins and sediment traps prior to completion of works and ensure all upstream areas have been vegetated or otherwise stabilised. 	During construction	Construction Contractor	REMM BIO15 REMM BIO25 REMM WAR05	Inspection records
Dewatering Management					
SW07	A Dewatering and Discharge Procedure will be prepared which will outline the dewatering methodology, testing requirements, supervision requirements, staff responsibilities and training, and approvals required before any de-watering activity begins.	Prior to construction	Construction Contractor	REMM WAR06	Appendix D

ID	Management Measure	Timing	Responsibility	Reference	Evidence
SW08	<p>The personnel responsible for approval and/or carrying out dewatering activities must be adequately trained and inducted on the use of the dewatering procedure.</p> <p>If it is proposed to discharge stormwater, a Water Pollution Impact Assessment will be required. This must be consistent with Nation Water Quality Guidelines and submitted to the Planning Secretary for information. The assessment must:</p> <ul style="list-style-type: none"> • Provide details of the discharge locations and receiving waterways • Characterise the expected discharge quality under typical and worst-case conditions for all pollutants present at levels that pose a risk of non-trivial harm to human health or the environment • Assess the potential impact of discharges on the environmental values of the receiving waterway, including typical through to worst-case scenarios with reference to the relevant Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018) for slightly to moderately disturbed ecosystems for standard receiving environments • Demonstrate that all practical and reasonable measures to avoid discharges (e.g. stormwater reuse or tinkering for offsite disposal) and minimise water pollution and protect human health and the environment from harm are investigated and implemented. 	Prior to water discharge	Construction Contractor	CoA NSW E79 REMM WAR06	EPL Permit to Discharge Construction Water Quality and Discharge Impact Assessment
SW09	<p>The following records will be kept in relation to dewatering:</p> <ul style="list-style-type: none"> • Dewatering procedure • Date and time for each discharge at each location • Water quality test results for each discharge • Personnel approving the dewatering activities • Evidence of discharge monitoring, or risk assessment and mitigation measures used to eliminate the risks of pollution or erosion • Any other EPA licence requirements where issued. 	During construction	Construction Contractor	REMM WAR06	Appendix D

ID	Management Measure	Timing	Responsibility	Reference	Evidence
Working in waterways					
SW10	<p>Work on waterfront land must have regard to the following guidelines:</p> <ul style="list-style-type: none"> Guidelines for controlled activities on waterfront land – Riparian Corridors (DPE, 2022a) Controlled activities on waterfront land – Guidelines for watercourse crossings on waterfront land (DPE, 2022b) Policy and Guidelines for Fish Habitat Conservation and Management (DPI Fisheries, 2013). 	<p>Prior to construction</p> <p>During construction</p>	<p>Construction Contractor</p>	<p>NSW CoA E76</p> <p>NSW CoA E77</p> <p>NSW CoA E78</p> <p>REMM BIO07</p> <p>REMM WAR16</p>	<p>Best practice</p>
SW11	<p>Where work is required within waterways, an Environmental Work Method Statement (EWMS) will be prepared for the work(s) which will include the ESCP developed in consultation with a CPESC. The EWMS for work in waterways must detail the control measures and must include the following:</p> <ul style="list-style-type: none"> Plan work to avoid, where practicable, any activities in aquatic habitats and riparian zones Plan works during periods of lower rainfall Properly protect and signpost as environmentally sensitive areas, all waterways areas in or adjacent to the site which are excluded from the work areas Minimise riparian vegetation removal where practicable, and restrict access to the waterways to the minimum amount of bank length required for the activity Retain stumps in riparian zones and aquatic habitats, where practicable, to reduce the potential for bank erosion Carry out any refuelling of plant and equipment, chemical storage and decanting at least 50 metres away from aquatic habitats. 	<p>Prior to construction</p>	<p>Construction Contractor</p>	<p>REMM BIO15</p> <p>REMM WAR07</p>	<p>EWMS</p>
SW12	<p>The following measures will be carried out to manage activities within watercourses or on waterfront land:</p> <ul style="list-style-type: none"> Implementing practices to minimise disturbance of banks Undertaking bank stabilisation and installing instream structures 	<p>During construction</p>	<p>Construction Contractor</p>	<p>REMM BIO15</p> <p>REMM WAR07</p>	<p>Inspection records</p>

ID	Management Measure	Timing	Responsibility	Reference	Evidence
SW13	<ul style="list-style-type: none"> Maintaining minimum flows to assist in maintaining the viability of aquatic communities and preventing barriers to fish passage Constructing instream crossings during low flows and design so that drainage off crossing doesn't contribute sediment load to the stream. <p>All drainage feature crossings (permanent and temporary watercourse crossings and stream diversions), drainage swales and depressions will be designed by a suitably qualified and experienced professional and will be designed and constructed in accordance with relevant guidelines.</p> <p>A suitably qualified and experienced engineer within the Construction Contractors team will design, construct and maintain temporary waterway crossings and maintain fish passage consistent with the following guidelines:</p> <ul style="list-style-type: none"> Guidelines for controlled activities on waterfront land – Riparian Corridors (DPE, 2022a) Controlled activities on waterfront land – Guidelines for watercourse crossings on waterfront land (DPE, 2022b) Policy and Guidelines for Fish Habitat Conservation and Management (DPI Fisheries, 2013). 	During construction	Construction Contractor	Best practice	ESCP
Acid sulfate soils and saline soils					
SW14	Construction in the vicinity of waterways where there is a moderate risk of encountering Potential Acid Sulfate Soils (PASS) and any unexpected PASS	During construction	Construction Contractor	Best practice	Incident response

ID	Management Measure	Timing	Responsibility	Reference	Evidence
SW15	<p>finds and will be managed in accordance with the Acid Sulfate Soil Manual (1998). The manual includes procedures for the investigation, handling, treatment and management of such soils. Management strategies will include:</p> <ul style="list-style-type: none"> • Avoid land where PASS occurs • Avoid disturbing PASS if present on land • Undertake shallow soil disturbance so as not to disturb PASS at depth • Cover PASS with clean fill material • Set aside or do not disturb PASS material. <p>Soil salinity management will also be carried out in accordance with the NSW Department of Primary Industries (2014) Salinity Training Handbook</p>	During construction	Construction Contractor	Best practice	Incident response
Stockpile Management					
SW16	<p>Stockpile management will comply with the following:</p> <ul style="list-style-type: none"> • Locate stockpiles outside of the tree protection zone of trees or native vegetation identified for retention. Delineate exclusion zones in accordance with AS 4970. • Minimise the number of stockpiles, area used for stockpiles, and time that they are left exposed • Stabilise stockpiles, establish appropriate sediment controls and suppress dust as required • Locate stockpiles at least five metres from likely areas of concentrated water flows and at least 10 metres from waterways that are classified as Class 1 and Class 2 from the DPI Fisheries guideline “<i>Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings</i>”. • Keep stockpile heights to no greater than two metres, unless otherwise approved by the Principal, and slopes to no steeper than 2:1. 	<p>Prior to construction</p> <p>During construction</p>	Construction Contractor	Best practice	ESCP Inspection records

ID	Management Measure	Timing	Responsibility	Reference	Evidence
	<ul style="list-style-type: none"> Cover, or otherwise protect from erosion, stockpiles that will be in place for more than 20 days as well as any stockpiles that are susceptible to wind or water erosion, within 10 days of forming each stockpile. Keep topsoil that is not contaminated by noxious weeds in stockpiles for later spreading on fill batters and other areas. Other material may also be stockpiled but kept separated from the topsoil stockpiles. Implement measures to prevent the growth of weeds in topsoil stockpiles. Construct a diversion bank up-slope of stockpiles to divert overland flow around the stockpiles. Minimise loss of soil material from stockpiles by installing sediment fence or geotextile wrapped straw bale filters on the downslope side of the stockpile. 				
Tannin Management					
SW17	Prepare a procedure to manage the use and stockpiling of mulch on site and to reduce the risk of tannin leachate from mulch flowing into waterways, and include this within the ESCP. Prepare the procedure in accordance with TfNSW Environmental Direction 25: Management of Tannins from Vegetation Mulch.	Prior to construction During construction	Construction Contractor	Best practice	ESCP
Monitoring					
SW18	The Construction Contractor will monitor on site weather conditions daily using the BOM website and prepare the site for potential rain events when there is more than a 50% chance of 10 mm of rainfall or greater and following rainfall events.	Pre, during and post rainfall	Construction Contractor	Blue Book (Landcom, 2004)	Inspection records
SW19	Surface water monitoring must be undertaken in accordance with the Construction Soil and Water Monitoring Program and implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Planning Secretary, whichever is the greater.	During construction	Construction Contractor	REMM WAR03	Monitoring records Construction Surface Water Quality Monitoring Program (Appendix C)

ID	Management Measure	Timing	Responsibility	Reference	Evidence
Groundwater					
SW20	Due to the depth of groundwater, the depth of excavations are not expected to penetrate the underlying aquifer. However, should it become apparent that the groundwater will be intercepted, a Hydrogeological Assessment will be undertaken to consider the installation of an impermeable liner to protect the groundwater quality.	Detailed Design Prior to construction	Construction Contractor	REMM WAR17 REMM WAR18	Hydrogeological Assessment
Flooding					
SW21	A flood emergency response plan will be prepared and implemented during construction that details hazards, construction plant/equipment and downstream watercourses.	Prior to construction	Construction Contractor	REMM WAR15	Appendix E Emergency Response Plan
SW22	Flood information including flood reports, models and geographic information system outputs, and work as executed information from a registered surveyor certifying finished ground levels and the dimensions and finished levels of all structures within the flood prone land, will be provided to the Liverpool City Council (Council), Environment and Heritage Group (EHG) (Former NSW Office Environment and Heritage) and the State Emergency Service (SES). This will occur in writing no later than one month following the completion of construction and any additional information requested by the Council, EHG or SES will be provided no later than six months following the completion of construction or within another timeframe agreed with the relevant Council EHG or SES.	One month prior to finishing construction works	Principal Construction Contractor	CoA NSW E11	Flood reporting and extent maps Flood mapping notification
Refuelling, washdown and chemical storage					
SW23	Storage, handling and use of dangerous goods and hazardous substances must be in accordance with the <i>Work Health and Safety Act 2011</i> and the <i>Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005)</i> .	During construction	Construction Contractor	Best practice	Inspection records
SW24	All fuels, chemicals, and liquids must be stored on slopes less than 1:10 and at least 50 metres away from waterways (including existing stormwater drainage systems) and flood prone areas.	During construction	Construction Contractor	Best practice	Inspection records

ID	Management Measure	Timing	Responsibility	Reference	Evidence
	Secure, bunded areas must be provided around storage areas for oils, fuels and other hazardous liquids.				
SW25	Safety Data Sheets (SDS) must be obtained for dangerous goods and hazardous substances stored onsite before their arrival.	During construction	Construction Contractor	Best practice	Inspection records Safety Data Sheets
SW26	All hazardous substances must be transported in accordance with relevant legislation and codes, including the Road and Rail Transport (Dangerous Goods) (Road) Regulation 1998 and the 'Australian Code for the Transport of Dangerous Goods by Road and Rail' (National Transport Commission, 2008).	During construction	Construction Contractor	Best practice	PIRMP/CEMP Transport register
SW27	Spill prevention and response will comply with: <ul style="list-style-type: none"> Relevant legislation and Australian Standards EPA "Bunding and Spill Management Guidelines" contained within EPA Environmental Protection Manual for Authorised Officers". 	During construction	Construction Contractor	Best practice	PIRMP Incident report
SW28	The Construction Contractor must not refuel or maintain plant and equipment, undertake plant/equipment washdown, mix cutting oil with bitumen, or carry out any other activity which may result in spillage of a chemical, fuel or lubricant at any location which drains directly to waters or environmentally sensitive areas, without the appropriate temporary bunding being provided. Refuelling operations must be attended.	During construction	Construction Contractor	Best practice	PIRMP Incident report
Spill Prevention and Response					
SW29	A spill response procedure will be prepared as part of the PIRMP, to minimise the impact of spills. The procedure will include details on the requirements for managing, cleaning up and reporting of spills.	During construction	Construction Contractor	Best practice	PIRMP
SW30	Spill kits will be located to allow for timely response to uncontained spills. Adequate quantities of suitable material to counteract spillage will be readily available. Site inductions will include a briefing on the use of spill kits.	During construction	Construction Contractor	Best practice	Inspection records
SW31	The Construction Contractor will prepare a procedure(s) for the following activities, as a minimum, to minimise the possibility of pollution of the site:	During construction	Construction Contractor	Best practice	PIRMP Inspection records Incident reports

ID	Management Measure	Timing	Responsibility	Reference	Evidence
	<ul style="list-style-type: none"> • Refuelling or maintenance and cleaning of plant and equipment including concrete agitators, bitumen spray bars and asphalt pavers • On-site batching of concrete and asphalt • Mixing of bitumen with cutting oil and additives; • Application of liquid membranes, including paint and thermoplastic, resin, emulsion, precoat agent and curing compound; • Bulk fuel or chemical deliveries; • Removal and disposal of excess chemicals and water used for washing down of equipment; • Pumping out of oil and grease collection pits; • Decanting operations such as for fuel, chemicals and bitumen <p>The procedure will include the following, as a minimum:</p> <ul style="list-style-type: none"> • Details of the management of the bunded areas including monitoring of the bunded areas, drainage requirements and measures to ensure that bund capacities are maintained • Details of the management associated with the removal and transportation of chemical drums from bunded areas • Routine maintenance requirements of machinery, pumps and other equipment to prevent and/or minimise leaks • Installation of controls for the capture and filtering of all chemicals that may runoff in storm events, for example wax and hydrocarbon curing compounds, bitumen tack coat and saw cutting material. 				

7 COMPLIANCE MANAGEMENT

7.1 Roles and Responsibilities

The Project organisational structure and overall roles and environmental responsibilities are outlined in Section 5.1 of the CEMP. Specific responsibilities for the implementation of soil and water management are detailed in Section 6 of this CSWMP.

7.2 Training

All site personnel (including sub-Construction Contractors) will undergo site induction training relating to soil and water management and flooding issues prior to construction commencing. The induction training will address elements related to soil and water management, including:

- Existence and requirements of this CSWMP
- Relevant legislation, regulations and pending EPL conditions
- Incident response, management and reporting
- Environmentally sensitive locations and exclusion zones
- Emergency response measures in high rainfall or flood events
- The Pollution Incident Response Management Plan (PIRMP)
- Mulch and tannin management
- Stockpile location criteria
- Roles and responsibilities for soil and water management
- ERSED control installation methodology and maintenance
- Sediment basin construction and management
- Dewatering requirements
- Working near or in drainage lines and creeks
- Water quality management and protection measures
- Groundwater issues
- Spill response.
- Specific responsibilities for the protection of soil and water
- All requirements of appendices contained within this CSWMP.

A register will be kept and updated to record employees who have completed the soil and water induction and their date of completion.

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in soil and water management or those undertaking an activity with a high risk of environmental impact. Project Site personnel will undergo refresher training at not less than six monthly intervals.

Daily pre-start meetings conducted by the Construction Contractor Site Supervisor will inform the site workforce of any environmental issues relevant to soil and water that could potentially be impacted by, or impact on, the day's activities.

Further details regarding staff induction and training are provided in Section 5.2 of the CEMP.

7.3 Monitoring and Inspections

Inspections and monitoring of activities with the potential to impact soil and water will occur for the duration of the construction phase of the Project.

Requirements and responsibilities in relation to monitoring and inspections are documented in Section 7.1 of the CEMP. Specific water quality monitoring and inspection requirements are detailed in the following sections.

7.3.1 Inspections

Inspection requirements are summarised in Table 7.1.

7.3.1.1 Daily and Weekly Inspections

A daily site walk over and weekly environmental inspections will be undertaken to review compliance and effectiveness of controls. Items that require action will be documented during environmental inspection and notified to the Construction Contractor Site Supervisor.

The Site Supervisor will be responsible for providing appropriate resources in terms of labour, plant and equipment to enable the items to be rectified in the nominated timeframes. Monitoring under this CSWMP will be undertaken by the Construction Contractor's Environmental Advisor during weekly inspections of construction activities to monitor compliance with the requirements of the CoCs and this plan.

Weekly inspections will focus on the following key issues:

- Integrity, capacity and performance of ERSED and flood control measures (e.g. sediment fences, drainage protection, sediment basins, diversion bunds, drain protection devices)
- Rehabilitation works.

7.3.1.2 Wet Weather Preparedness

Where a wet weather event is predicted, the Construction Contractor's Environmental Advisor will undertake a review of site erosion and sediment controls. Wet weather events are defined as more than a 50% chance of 10 mm of rainfall or greater triggering the requirement to prepare the site for wet weather. Wet weather sampling in accordance with monitoring program will occur when >24.4 mm rainfall occurs in a 24 hour period.

The erosion and sediment control review will include:

- Inspection of the site to ensure that all erosion/sedimentation and stabilisation controls are in place and in effective working order
- Actions to be taken to prevent any environmental incidents such as potential pollution incidents
- Measures to be implemented to protect disturbed ground from erosion
- Additional measures to be taken to protect the Project Site from the wet weather event.

An inspection will be undertaken during the wet weather event to review site performance. Following the wet weather event, a post wet weather inspection will be undertaken to review and repair controls as required.

7.3.1.3 Site Shutdown

Prior to a prolonged shut period, the Construction Contractor will undertake a review of all site ERSED controls and prepare the site to minimise potential for pollution during the shut down period. Maintenance will be undertaken if required to ensure the controls are working effectively.

7.3.2 Monitoring

Surface water monitoring for the Project will be carried out in accordance with the Construction Surface Water Monitoring Program (refer to Appendix C). Monitoring of discharged water will be undertaken in accordance with the Dewatering and Discharge Procedure (refer to Appendix D).

Monitoring requirements are summarised in Table 7.1.

Table 7.1: Inspections and Monitoring relevant to Soil and Water

Inspection / Monitoring	Frequency	Responsibility	Requirement
Inspections			
Daily site inspections	Daily	Construction Contractor Site Supervisor	Best practice
Inspect all plant and equipment daily for leakages of fuel, oil or hydraulic fluid. Repair any leaks before using item of plant or equipment and maintain records of plant inspections	Daily	Construction Contractor	Best practice
Inspection of sediment basins	Monthly	Construction Contractor	Blue Book (Landcom, 2004)
Rainfall Inspections All water quality control and sediment control structures (i.e. ERSED controls, stockpiles, disturbed areas, revegetated/ stabilised areas and banded area and sediment basins)	Prior to, during and post wet weather event During dry conditions within 24 hours of expected rainfall defined as more than a 50% chance of 10 mm of rainfall	Construction Contractor Site Supervisor Construction Contractor Environmental Advisor	Best practice
Inspection of all erosion and sediment controls, stockpiles, disturbed areas etc prior to a shutdown	Prior to and after a site shutdown (e.g., Christmas shutdown)	Construction Contractor Construction Contractor Environmental Advisor	Best practice
Pre-flood and post flood inspections	Prior to heavy rainfall and following a flood event	Construction Contractor Construction Contractor Environmental Advisor	Best practice Appendix E
Monitoring			
Review BoM forecast for heavy rainfall events and flood warnings	Daily	Construction Contractor Construction Contractor Environmental Advisor	Appendix E
Visual monitoring of local water quality (i.e. checking for plumes of turbidity and oil and grease)	Daily	Construction Contractor Construction Contractor Environmental Advisor	Appendix C

Inspection / Monitoring	Frequency	Responsibility	Requirement
Monitoring of surface water quality	As per procedure detailed in Appendix C	Construction Contractor Construction Contractor Environmental Advisor	Appendix C
Monitoring of dewatering activities	As per procedure detailed in Appendix D	Construction Contractor Construction Contractor Environmental Advisor	Appendix D

7.4 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, State and Commonwealth CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 7.3 of the CEMP.

7.5 Reporting and Identified Records

Reporting requirements and responsibilities are documented in Section 7.4 of the CEMP.

Specific reporting requirements associated with the CSWMP are outlined in Table 7.2.

Table 7.2: Reporting Requirements relevant to Soil and Water Management

Report	Frequency	Responsibility
Construction Soil and Water Monitoring Results	For the duration of construction and as required by the Planning Secretary	Construction Contractor

The Construction Contractor will be required to maintain accurate records substantiating all construction activities associated with the Project or relevant to the State and Commonwealth CoA, including measures taken to implement this CSWMP. Records will be made available to the DPE and DCCEEW upon request, within the timeframe nominated in the request.

7.6 Incidents

It is the responsibility of all personnel to report any incident in accordance with the incident management procedures detailed to Section 6.1 of the CEMP.

7.7 Complaints

Complaints will be managed as soon as possible in accordance with the requirements of the Community Communication Strategy (CCS) and Complaints Management System developed in accordance with NSW CoA B7 and B8 respectively. Complaints will be managed in accordance with Section 5.4.3 of the CEMP and CCS.

7.8 Non-Compliances and Corrective Actions

Non-compliance may be identified via internal and external audits, site monitoring, inspections and observations, environmental incidents and emergencies, complaints and management reviews.

Non-compliance and resulting corrective actions will be managed in accordance with Section 7.2 of the CEMP.

8 REVIEW AND IMPROVEMENT

8.1 Continuous Improvement

Continuous improvement of the CSWMP will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement and through SMART principles:

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-compliances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-compliances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.
- Project environmental risks will be identified and included in the risk register and appropriate mitigation measures implemented throughout the construction of the Project as part of the continuous improvement process.

The process for ongoing risk identification and management during construction is outlined in Section 4.2 and Appendix D of the CEMP.

8.2 CSWMP Update and Amendment

The processes described in Section 7.5 of the CEMP may result in the need to update or revise the CSWMP. This will occur as needed.

Any revisions to the CSWMP will be endorsed and / or approved in accordance with the process outlined in Section 1.5 of the CEMP.

A copy of the updated CSWMP and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure.

APPENDIX A Environmental Representative Endorsement



2 September 2023

Our Ref: 2205 L10

National Intermodal Corporation
Senior Manager – Planning and Environment
Attention: Westley Owers

Dear Westley

**SSI 10053 - Moorebank Avenue Realignment Works (MARW)
Environmental Representative (ER) - Endorsement of the Construction Soil and Water
Management Plan**

Pursuant to SSI10053 Conditions of Approval (CoA) A31(d) and C9, I confirm that I have reviewed and endorsed the following documentation as being consistent with the conditions of approval and relevant undertakings made in the documents listed in Condition A1:

- National Intermodal Corporation, Moorebank Avenue Realignment Works, Appendix F, Construction Soil and Water Management Plan, Version D, dated 22 August 2023 (CSWMP).

In accordance with CoA A6, and as agreed by a nominee of the Planning Secretary (Department of Planning and Environment letter dated 22 November 2022, Reference: SSI-10053-PA-4), the CSWMP includes:

- Water Management Plan (REMM WAR01)
- Erosion and Sediment Control Plan (REMM WAR04)
- Soil and Water Management Plan (REMM WAR02)
- Flood Emergency Response Plan (REMM WAR06)
- Surface Water Monitoring Program (REMM WAR03)

In accordance with CoA C8, the CWRMP was expressly nominated by a nominee of the Planning Secretary to be endorsed by the ER (Department of Planning and Environment letter dated 22 November 2022, Reference: SSI-10053-PA-4).

Yours sincerely,

Maurice Pignatelli
Environmental Representative – MARW Project
OptimE Pty Ltd





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12 February 2025

Our Ref: 2205.L13.2

National Intermodal Corporation
Senior Manager – Planning and Environment
Attention: Westley Owers

Dear Westley

**SSI 10053 - Moorebank Avenue Realignment Works (MARW)
Environmental Representative (ER) – Approved amendments to the Construction
Environmental Management Plan (CEMP) and associated sub-plans and monitoring
programs**

National Intermodal Corporation (NIC) has updated the CEMP and associated sub-plans and monitoring programs approved by the Secretary to reflect the following documents:

- Moorebank Avenue Realignment Works (MARW) Division 5.2 Consistency Assessment – Proposed Design and Boundary Changes, Revision E, 16 July 2024
- Artefact Moorebank Avenue Realignment Works Surface Collection Completion Memo, 30 August 2024
- Moorebank Avenue Realignment Project Remediation Action Plan (Rev C), 5 July 2024
- Variation to EPBC 2020-8839 approved by the Minister for the Environment and Water on 14 January 2025.
- Approval of variation to the conditions attached to the Environment Protection and Biodiversity Conservation (EPBC) Act 1999 approval 2020/8839, dated 14 January 2025.

A summary of the amendments, prepared by Arcadis, is provided as Attachment A to this letter.

The ER was requested by NIC to review the updated CEMP and associated sub-plans and monitoring programs and if the updates were considered by the ER to be consistent with SSI10053 Conditions of Approval (CoA) A31(i), to approve the amendments.

Pursuant to SSI10053 CoA A31(i), I confirm that I have reviewed the following MARW documentation:

- Construction Environmental Management Plan, Version F, dated 22 January 2025
- Construction Air Quality Management Plan, Version F, dated 22 January 2025



- Construction Bushfire Management Plan, Version F, dated 22 January 2025
- Construction Biodiversity Management Plan, Version H, dated 22 January 2025
- Construction Contamination Management Plan, Version E, dated 22 January 2025
- Construction Heritage Management Plan, Version I, dated 22 January 2025
- Construction Noise and Vibration Management Plan, Version H, dated 22 January 2025 and associated Construction Noise and Vibration Monitoring Program, Version H, dated 22 January 2025
- Construction Soil and Water Management Plan, Version E, dated 22 January 2025 and associated Construction Surface Water Monitoring Program, Version E, dated 22 January 2025
- Construction Traffic and Transport Management Plan, Version H, dated 22 January 2025
- Construction Waste and Resource Management Plan, Version H, dated 22 January 2025.

In my opinion, the amendments to the approved CEMP and associated subplans and monitoring programs do not increase impacts to nearby receivers, are of an administrative nature, and are consistent with the terms of SSI10053. On this basis, I approve the amendments.

Yours sincerely,



Maurice Pignatelli
Environmental Representative – MARW Project
OptimE Pty Ltd

Attachment A - MARW CEMP and Sub-plan minor updates, Q4 2024



Date 12 February 2025
To Maurice Pignatelli
From Jamie Crawford
Copy to Gail Hall, Wes Owers, Ben Bracken
Subject MARW CEMP and Sub-plan minor updates, Q4 2024

CEMP AND SUB-PLAN MINOR ADMENDMENTS

The MARW CEMP and Sub-plans have been updated to reflect the following:

- Moorebank Avenue Realignment Works (MARW) Division 5.2 Consistency Assessment – Proposed Design and Boundary Changes, Revision E, 16 July 2024
- Artefact Moorebank Avenue Realignment Works Surface Collection Completion Memo, 30 August 024
- Moorebank Avenue Realignment Project Remediation Action Plan (Rev C)
- Approval of variation to the conditions attached to the Environment Protection and Biodiversity Conservation (EPBC) Act 1999 approval 2020/8839, dated 14 January 2025.

The following table summarises the updates made to the CEMP and Sub-plans in order to reflect the above documentation.

Reason for update	Plan, version and section subject to minor update
Construction Environmental Management Plan	
Consistency Assessment – Proposed Design and Boundary Changes	Construction Environmental Management Plan (Version E), updated to Version F: <ul style="list-style-type: none"> • Figure 1.1 Project regional and local context, updated to reflect revised construction footprint. • Figure 2.1 Project Overview, updated to reflect revised construction footprint. • Figure 2.2a Project Overview, updated to reflect revised construction footprint and renamed Figure 2.2 • Figure 2.3b Project Overview, updated to reflect revised construction footprint and renamed Figure 2.3 • Figure 2.4c Project Overview, updated to reflect revised construction footprint and renamed Figure 2.4 • Figure 2.5d Project Overview, updated to reflect revised construction footprint and renamed Figure 2.5 • Appendix E Sensitive Area Plans: <ul style="list-style-type: none"> ○ App E Main Figure ○ App E Fig a ○ App E Fig b ○ App E Fig d
Moorebank Avenue Realignment Works Surface Collection Completion Memo	Construction Environmental Management Plan (Version E), updated to Version F: <ul style="list-style-type: none"> • Section 3.2.5. Bullet list summary of information included on Sensitive Area Plans updated to remove reference to Aboriginal heritage sites

Reason for update	Plan, version and section subject to minor update
	<ul style="list-style-type: none"> • Appendix E Sensitive Area Plans: <ul style="list-style-type: none"> ○ App E Main Figure. 'Recorded AHIMS' removed ○ App E Fig a. 'Recorded AHIMS' removed ○ App E Fig c. 'Recorded AHIMS' removed ○ App E Fig d. 'Recorded AHIMS' removed
EPBC Act 2020/8839 variation, dated 14 January 2025.	<p>Construction Environmental Management Plan (Version E), updated to Version F:</p> <ul style="list-style-type: none"> • Section 1.1 Overview updated to reflect approval of the variation to EPBC 2020/8839 dated 14 January 2025 • Section 1.2 Purpose of the CEMP updated to reflect that EPBC 2020/8839 was varied on 14 January 2025 • Table 4.2 Approvals permits and licences required for the Project updated to include Commonwealth EPBC Approval (EPBC 2020-8839) variation dated 14 January 2025 • Appendix C1 Legislation Register updated to reflect that EPBC 2020/8839 was varied on 14 January 2025.
Other minor updates	<p>Construction Environmental Management Plan (Version E), updated to Version F:</p> <ul style="list-style-type: none"> • Section 5.4.2 updated to reflect current Project website.
Construction Biodiversity Management Plan	
Consistency Assessment – Proposed Design and Boundary Changes	<p>Construction Biodiversity Management Plan (Version G), updated to Version H:</p> <ul style="list-style-type: none"> • Figure 1.1: Project location. Figure updated to reflect revised construction footprint. • Figure 1.2: Project overview. Figure updated to reflect revised construction footprint. • Figure 6.1: Project exclusion zones. Figure updated to reflect revised construction footprint. • Figure D-1 Native Plant Community Types and threatened flora and fauna. Figure updated to reflect revised construction footprint.
EPBC Act 2020/8839 variation, dated 14 January 2025.	<p>Construction Biodiversity Management Plan (Version G), updated to Version H:</p> <ul style="list-style-type: none"> • Section 1.1 Background and Project Description updated to reflect approval of the variation to EPBC 2020/8839 dated 14 January 2025 • Section 2.2 Objectives updated to reflect that EPBC 2020/8839 was varied on 14 January 2025.
Construction Traffic and Transport Management Plan	
Consistency Assessment – Proposed Design and Boundary Changes	<p>Construction Traffic and Transport Management Plan (Version G), updated to Version H:</p> <ul style="list-style-type: none"> • Figure 1.1: Project location. Figure updated to reflect revised construction footprint.

Reason for update	Plan, version and section subject to minor update
	<ul style="list-style-type: none"> Figure 1.2: Project layout. Figure updated to reflect revised construction footprint. Figure 4.1: Key intersections. Figure updated to reflect revised construction footprint.
<p>EPBC Act 2020/8839 variation, dated 14 January 2025.</p>	<p>Construction Traffic and Transport Management Plan (Version G), updated to Version H:</p> <ul style="list-style-type: none"> Section 1.1 Background and Project Description updated to reflect approval of the variation to EPBC 2020/8839 dated 14 January 2025 Section 2.2 Objectives updated to reflect that EPBC 2020/8839 was varied on 14 January 2025.
<p>Construction Noise and Vibration Management Plan</p>	
<p>Consistency Assessment – Proposed Design and Boundary Changes</p>	<p>Construction Noise and Vibration Management Plan (Version G), updated to Version H:</p> <ul style="list-style-type: none"> Figure 1.1: Project location. Figure updated to reflect revised construction footprint. Figure 1.2: Project layout. Figure updated to reflect revised construction footprint. Figure 4.1: Sensitive receivers and assessment and monitoring locations. Figure updated to reflect revised construction footprint. Figure 7.1: Modelled Construction Noise Contours (NVIA). Figure updated to reflect revised construction footprint. <p>Construction Noise and Vibration Monitoring Program (Version G)</p> <ul style="list-style-type: none"> Figure 2.1: Location of noise and vibration assessment and monitoring locations. Figure updated to reflect revised construction footprint.
<p>EPBC Act 2020/8839 variation, dated 14 January 2025.</p>	<p>Construction Noise and Vibration Management Plan (Version G), updated to Version H:</p> <ul style="list-style-type: none"> Section 1.1 Background and Project Description updated to reflect approval of the variation to EPBC 2020/8839 dated 14 January 2025 Section 2.2 Objectives updated to reflect that EPBC 2020/8839 was varied on 14 January 2025.
<p>Construction Heritage Management Plan</p>	
<p>Consistency Assessment – Proposed Design and Boundary Changes</p>	<p>Construction Heritage Management Plan (Version H), updated to Version I:</p> <ul style="list-style-type: none"> Figure 1.1: Project location. Figure updated to reflect revised construction footprint. Figure 1.2: Project layout. Figure updated to reflect revised construction footprint. Figure 4.1 (previously Figure 4.2): Location of Non-Aboriginal heritage sites and items. Figure renamed as Figure 4.1 and updated to reflect revised construction footprint.

Reason for update	Plan, version and section subject to minor update
<p>Moorebank Avenue Realignment Works Surface Collection Completion Memo</p>	<p>Construction Heritage Management Plan (Version H), updated to Version I</p> <p>The following updates have been made in response to completion of surface collection activities on 19 August 2024 in accordance with Section 6.1.1 of the CHMP, Appendix A of Infrastructure Approval SSI-10053 and REMM ABH01, during which no Aboriginal objects were identified and an Aboriginal Site Impact Recording Form (ASIRF) was submitted to AHIMS to note the revised status of these sites.</p> <ul style="list-style-type: none"> • Section 4.1 – Update to include reference to Artefact Moorebank Avenue Realignment Works Surface Collection Completion Memo (30 August 2024) • Section 4.2.1.2 Known Aboriginal Cultural Heritage Values – Project Site updated to reflect that there are now no known Aboriginal sites within the Project Site (previous desktop and field investigations identified six remaining sites). • Section 4.2 – Removal of Figure 4.1: Location of Aboriginal sites and isolated finds across the Project • Section 5.2.1 Aboriginal Heritage Impacts revised to reflect that no known Aboriginal sites are identified within the construction boundary and therefore no impacts to Aboriginal heritage associated with Project construction are anticipated. • Section 5.3 Cumulative impacts revised to reword paragraph three and remove reference to “...the Aboriginal items identified within the Project Site...” • Section 6.1 Management of Aboriginal Cultural Heritage Risks updated to remove inference that there are known Aboriginal heritage objects on the Project Site • Section 6.1.1 Salvage of Aboriginal Objects updated to reflect that surface collection activities are now complete and no Aboriginal objects were identified. • Section 6.1.2 Care of Salvaged Aboriginal Objects updated to reflect that surface collection activities are now complete and, as no objects were identified, no temporary storage locations were required for the storage of collected objects. • Section 7.5, Table 7.1 reference to Heritage Salvage Report retained, but reference to six Aboriginal sites removed
<p>EPBC Act 2020/8839 variation, dated 14 January 2025.</p>	<p>Construction Heritage Management Plan (Version H), updated to Version I</p> <ul style="list-style-type: none"> • Section 1.1 Background and Project Description updated to reflect approval of the variation to EPBC 2020/8839 dated 14 January 2025 • Section 2.2 Objectives updated to reflect that EPBC 2020/8839 was varied on 14 January 2025.
<p>Construction Soil and Water Management Plan</p>	
<p>Consistency Assessment – Proposed Design and Boundary Changes</p>	<p>Construction Soil and Water Management Plan (Version D), updated to Version E:</p> <ul style="list-style-type: none"> • Figure 1.1: Project location. Figure updated to reflect revised construction footprint.

Reason for update	Plan, version and section subject to minor update
	<ul style="list-style-type: none"> Figure 1.2: Project Layout. Figure updated to reflect revised construction footprint. Figure 4.1: Nearby Waterways. Figure updated to reflect revised construction footprint. Figure 4.2: Groundwater dependent ecosystems. Figure updated to reflect revised construction footprint. <p>Construction Surface Water Monitoring Program (Version D), updated to Version E:</p> <ul style="list-style-type: none"> Figure 3.1: Proposed Monitoring Locations. Figure updated to reflect revised construction footprint. <p>NOTE: Appendix F Preliminary Erosion and Sediment Control Plan is not proposed for update as this effort is unwarranted given Progressive Erosion and Sediment Control Plans will be developed reflecting the revised construction footprint.</p>
<p>EPBC Act 2020/8839 variation, dated 14 January 2025.</p>	<p>Construction Soil and Water Management Plan (Version D), updated to Version E:</p> <ul style="list-style-type: none"> Section 1.1 Background and Project Description updated to reflect approval of the variation to EPBC 2020/8839 dated 14 January 2025 Section 2.2 Objectives updated to reflect that EPBC 2020/8839 was varied on 14 January 2025.
<p>Contamination Management Sub-Plan</p>	
<p>Consistency Assessment – Proposed Design and Boundary Changes</p>	<p>Contamination Management Sub-Plan (Version D), updated to Version E:</p> <ul style="list-style-type: none"> Figure 1.1: Project location. Figure updated to reflect revised construction footprint. Figure 1.2: Project Layout. Figure updated to reflect revised construction footprint. Figure 4.1: Sources of potential contamination. Figure updated to reflect revised construction footprint.
<p>Moorebank Avenue Realignment Remediation Action Plan (Rev C)</p>	<p>Contamination Management Sub-Plan (Version D), updated to Version E:</p> <p>The following updates have been made as a result of preparation of the Interim Audit Advice and the Remediation Action Plan (RAP).</p> <ul style="list-style-type: none"> Section 1.5.1 Interactions with Other Management Plans and Documents updated to confirm that a RAP has been prepared Section 6.1 Targeted Site Investigations updated to reflect completion of the Interim Audit Advice verifying the appropriateness of the SAQP (Condition E33), and completion of the targeted investigations required and subsequent reporting of findings (Condition E34). A summary of the key remediation recommendations has been included. <p>Section 6.2 Remediation Action Plan updated to reflect preparation of a RAP in accordance with NSW Condition E35, E36, E37 and E38.</p>

Reason for update	Plan, version and section subject to minor update
<p>EPBC Act 2020/8839 variation, dated 14 January 2025.</p>	<p>Contamination Management Sub-Plan (Version D), updated to Version E:</p> <ul style="list-style-type: none"> Section 1.1 Background and Project Description updated to reflect approval of the variation to EPBC 2020/8839 dated 14 January 2025 Section 2.2 Objectives updated to reflect that EPBC 2020/8839 was varied on 14 January 2025.
<p>Construction Bushfire Management Plan</p>	
<p>Consistency Assessment – Proposed Design and Boundary Changes</p>	<p>Construction Bushfire Management Plan (Version E), updated to Version F:</p> <ul style="list-style-type: none"> Figure 1.1: Project location. Figure updated to reflect revised construction footprint. Figure 1.2: Project layout. Figure updated to reflect revised construction footprint. Figure 4.2: Project Bushfire Prone Land Map. Figure updated to reflect revised construction footprint. Figure 6.1: Assembly Points and Evacuation Route. Figure updated to reflect revised construction footprint.
<p>EPBC Act 2020/8839 variation, dated 14 January 2025.</p>	<p>Construction Bushfire Management Plan (Version E), updated to Version F:</p> <ul style="list-style-type: none"> Section 1.1 Background and Project Description updated to reflect approval of the variation to EPBC 2020/8839 dated 14 January 2025 Section 2.2 Objectives updated to reflect that EPBC 2020/8839 was varied on 14 January 2025.
<p>Construction Air Quality Management Plan</p>	
<p>Consistency Assessment – Proposed Design and Boundary Changes</p>	<p>Construction Air Quality Management Plan (Version E), updated to Version F:</p> <ul style="list-style-type: none"> Figure 1.1: Project location. Figure updated to reflect revised construction footprint. Figure 1.2: Project layout. Figure updated to reflect revised construction footprint. Figure 4.1: Receptors for construction impacts. Figure updated to reflect revised construction footprint.
<p>EPBC Act 2020/8839 variation, dated 14 January 2025.</p>	<p>Construction Air Quality Management Plan (Version E), updated to Version F:</p> <ul style="list-style-type: none"> Section 1.1 Background and Project Description updated to reflect approval of the variation to EPBC 2020/8839 dated 14 January 2025 Section 2.2 Objectives updated to reflect that EPBC 2020/8839 was varied on 14 January 2025.
<p>Construction Waste and Resource Management Sub-Plan</p>	
<p>Consistency Assessment – Proposed Design and Boundary Changes</p>	<p>Construction Waste and Resource Management Sub-Plan (Version D), updated to Version E:</p> <ul style="list-style-type: none"> Figure 1.1: Project location. Figure updated to reflect revised construction footprint.