

**NATIONAL
INTERMODAL**

Moorebank Avenue Realignment Works

Construction Contamination Management Plan

SSI - 10053

31 March 2023

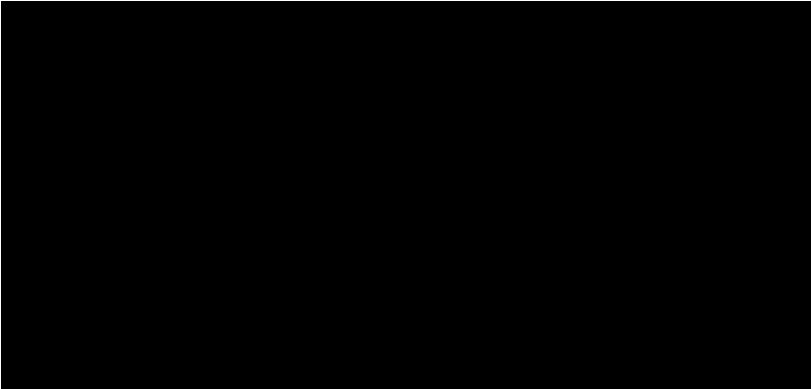
NATIONAL INTERMODAL CORPORATION MOOREBANK AVENUE REALIGNMENT WORKS

CONSTRUCTION CONTAMINATION MANAGEMENT PLAN

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ACRONYMS AND DEFINITIONS

Acronym	Definition
ACM	Asbestos Containing Material
AEC	Areas of Environmental Concern
CCMP	Contamination Management Sub-plan
CEMP	Construction Environmental Management Plan
CLM Act	<i>Contaminated Land Management Act 1997 (NSW)</i>
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.
CoPC	Contaminants of Potential Concern
CTTMP	Construction Traffic and Transport Management Plan
CWRMP	Construction Waste and Resources Management Sub-Plan
DAWE	Department of Agriculture, Water and Environment (now DCCEEW)
DCCEEW	Department of Climate Change, Energy, Environment and Water (formerly DAWE)
DJLU	Defence Joint Logistics Unit
DNSDC	Defence National Storage Distribution Centre
DoD	Commonwealth Department of Defence
DPE	Department of Planning and Environment (formerly DPIE)
DPIE	Department of Planning, Industry and Environment (now DPE)
EIS	Environmental Impact Statement
EMS	Environmental management system
EO	Explosive Ordnance
EOW	Explosive Ordnance Waste
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	NSW Environment Protection Authority
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
EPL	Environment Protection Licence
ER	Environmental Representative
EWMS	Environmental Work Method Statement
GDE	Groundwater Dependent Ecosystem
Infrastructure Approval	SSI 10053 or NSW CoA
MARW	Moorebank Avenue Realignment Works
MIP	Moorebank Intermodal Precinct, which includes MPE and MPW

Acronym	Definition
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
PFAS	Per- and Poly-fluoroalkyl Substances
Planning Secretary	Secretary to the DPE
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
PPE	Personal Protective Equipment
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.
PSI	Preliminary Site Investigation
RAP	Remediation Action Plan
REMM	Revised Environmental Management Measures
RtS	Response to Submissions
SAQP	Sampling, Analysis and Quality Plan
SEMP	Site Establishment Management Plan
SEPP 55	State Environmental Planning Policy (Resilience and Hazards) 2021
SDS	Safety Data Sheet
SSI	State Significant Infrastructure
SWMS	Safe Work Method Statement
TfNSW	Transport for NSW
The Project	Moorebank Avenue Realignment Works
UXO	Unexploded Ordnance

1 INTRODUCTION

1.1 Context

This Construction Contamination Management Plan (CCMP) forms part of the Construction Environmental Management Plan (CEMP) for the Moorebank Avenue Realignment Works (MARW) (the Project).

This CCMP has been prepared to address the requirements of the NSW Minister's Conditions of Approval (CoA), Commonwealth CoA, 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 a point approximately 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 Precinct East (MPE site) and the Moorebank Precinct West (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 of four lanes (i.e. two lanes in each direction). At the south-western corner of the MPE Site, the new 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. 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 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 (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 and 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 Environment (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.

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).

A Preliminary Site Investigation (PSI) was prepared as part of the EIS to assess potential contamination that could affect construction of the Project. The PSI was prepared in general accordance with Schedule B2 of the National Environment Protection Council (NEPC) National Environment Protection (Assessment of Site Contamination) Measure, 1999 as amended in 2013 (the ASC NEPM). The PSI was included as Appendix F in the EIS.

Further assessment of contamination impacts was undertaken subsequent to exhibition of the EIS in which the PSI recommended further investigation of identified potential contamination areas. These findings were incorporated into a Sampling Analysis and Quality Plan (SAQP) technical report as part of the RtS. The SAQP outlined the rationale and scope of targeted investigations recommended as an outcome of the PSI, and provides context, justification and details of the selected sampling and analysis approach. It also outlines the sampling and analytical requirements to ensure that data collected is representative and of an appropriate quality. The SAQP was included in the RtS as Appendix C.

As targeted investigations have been recommended as part of the PSI (refer to Section 6.1), any new information obtained as a result of detailed site investigations will be used, as relevant, to inform and update this CCMP.

Revised Environmental Management Measures (REMMs) were provided within the RtS. Where applicable, the REMMs from the RtS have been included in this CCMP (Section 3.4 and Appendix B).

1.3 Scope of the Plan

This CCMP is applicable to the construction stage of the Project. The CCMP describes how potential contamination impacts will be managed during construction of the Project and includes the Unexpected Finds Procedure for contamination (Appendix C) and an Unexploded Ordnance Management Plan (UXO) (Appendix D). Operational contamination impacts and operation measures do not fall within the scope of this CCMP and therefore are not included within the processes contained herein.

1.4 Environmental Management System Overview

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

Management measures identified in this CCMP 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 for use is provided in Appendix E of the CEMP.

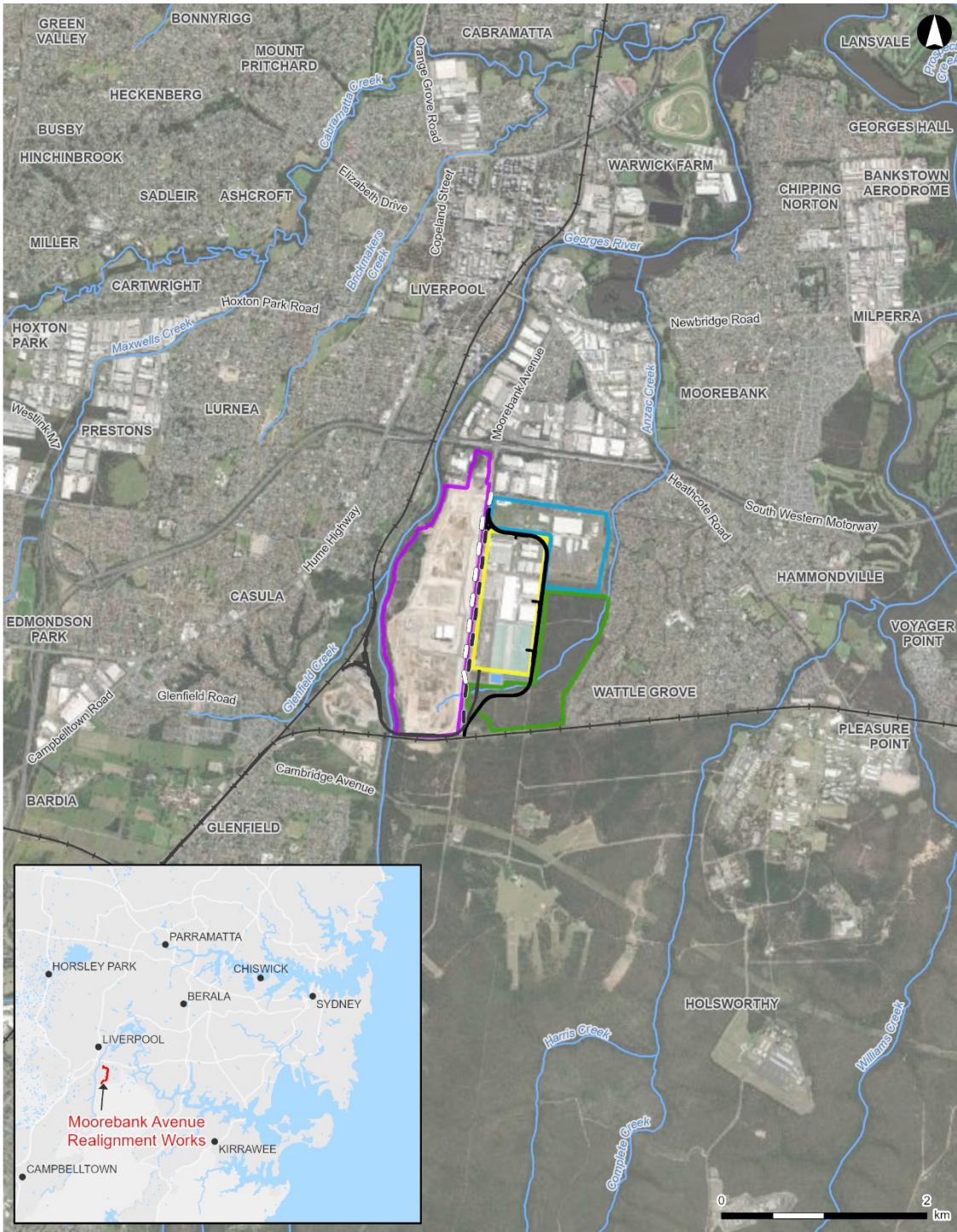
1.5 CCMP Endorsement and Approval

This CCMP has been prepared to satisfy the NSW and Commonwealth CoA's in relation to contamination management during construction of the Project.

This CCMP will be reviewed by the Project Manager / Delivery Team and will be endorsed by the Environmental Representative (ER) (refer to Appendix A) and submitted to the Planning Secretary and the Department of Climate Change, Energy, Environment and Water (DCCEE) for information, no later than one month prior to commencement of construction as nominated in the Project Risk Assessment Matrix

approved by the Department of Planning and Environment (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. The final approved 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 CCMP if they do not increase impacts to nearby receivers, do not comprise updating, 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.



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: March 16, 2023
 Imagery: Esri, HERE, Garmin, USGS, Earthstar Geographics



Path: C:\Users\cb98137\ARCADIS\30144760 - Env Panel Minor Projects - W1011 CEMP\01 Inputs\04 GISA_Current\B_Maps\CEMP\CEMP.aprx

Figure 1.1: Project Location

1.5.1 Interactions with Other Management Plans and Documents

This CCMP has the following interrelationships with other management plans and documents:

- Potential sources of contamination and associated contaminants of potential concern within construction worksites will be detailed on Sensitive Area Plans as detailed within Appendix D of the CEMP
- The Construction Waste and Resources Management Plan (CWRMP) provides a framework for waste management and outlines contingency management of unexpected waste materials, including contaminated materials
- The Construction Traffic and Transport Management Plan (CTTMP) provides a framework for management and maintenance of traffic management including the location of all heavy vehicles required for spoil haulage
- The SAQP outlines the scope and rationale of targeted investigations recommended as a result of the PSI
- The Remediation Action Plan (RAP), if required (refer to Section 6.2), outlines measures to remediate the site, and details how environmental and human health risks will be managed
- The Unexpected Finds Procedure for Contamination (refer to Appendix C) details the process to follow if previously unidentified potential contamination is encountered on the Project
- The Unexploded Ordnance Management Plan (refer to Appendix D) details the risk associated with finding unexploded ordnance waste on the Project Site and the process to be implemented if any ordnance waste is discovered.

1.6 Consultation

1.6.1 Consultation for Preparation of the CCMP

There is no requirement to consult with government agencies and stakeholders during the development of this CCMP as nominated in the Project Risk Assessment Matrix and approved by the Department of Planning and Environment (DPE) in accordance with NSW CoA A19. Refer to the Appendix D of the CEMP for additional consultation requirements.

1.6.2 Ongoing Consultation during Construction

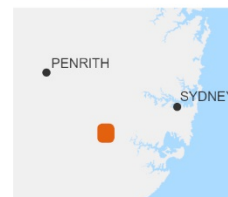
Consultation with stakeholders, the community, and relevant agencies regarding the management of contamination within the Project will be undertaken during the construction of the Project as required. The process for the consultation is documented in the CCS.

In accordance with the NSW CoA E42, the NSW Environment Protection Authority (EPA) and DCCEEW must be contacted within one month of per- and poly-fluoroalkyl substance (PFAS) identification if there is a potential risk to off-site receptors, to discuss community consultation.

Specific requirements of relevance to the management of contamination, which have emerged through consultation under the EIS and RtS, are evident in the NSW CoA and REMMs included in Section 6.7.



- Legend**
- Moorebank Avenue Realignment Works
 - Construction footprint
 - Construction compound
 - Watercourse
 - Railway



1:16,000 at A4
 Coordinate System: GDA2020 MGA Zone 56
 Date issued: March 30, 2023
 Imagery: Nearmap



Path: C:\Users\cb98137\ARCADIS\30144760 - Env Panel Minor Projects - W011 CEMP01 Inputs\04 GIS\A_Current\B_Maps\CEMPCEMP.aprx

Figure 1.2: Project Layout

2 PURPOSE AND OBJECTIVES

2.1 Purpose

The purpose of the CCMP is to describe how construction contamination impacts will be minimised and managed during the construction of the Project.

2.2 Objectives

The objective of the CCMP is to ensure that contamination impacts are managed appropriately throughout the construction of the Project and consider the mitigation and management measures referred to in:

- *Preliminary Site Investigation* prepared by EMM for Sydney Intermodal Terminal Alliance dated 30 October 2020 (EMM 2020a)
- NSW Minister's Infrastructure Approval dated 14 October 2021 (SSI-10053)
- Federal Minister for the Environment Approval dated 7 December 2021 (EPBC 2020-8839)
- *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)
- *Sampling, Analysis and Quality Plan: Targeted Site Investigations, Moorebank Avenue Realignment* prepared by EMM for Sydney Intermodal Terminal Alliance dated 21 May 2021 (EMM 2021c).

2.3 Targets

Table 2.2 details the targets established for the management of contamination impacts during construction of the Project.

Table 2.2: Project environmental targets for contamination

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 contamination impacts within and adjacent to the Project Site.	100% compliance	Throughout construction	Construction Contractor
Minimise impacts to, and complaints from, community and stakeholders regarding contaminated materials.	No complaints from community or stakeholders	Throughout construction	Construction Contractor
Avoid degradation to the receiving environment as a result of disturbing contaminated land.	No reportable incidents	Throughout construction	Construction Contractor

Objective	Target	Timeframe	Responsibility
Inform relevant Project personnel via toolbox talks and induction to enable the identification of potentially contaminated land.	100% of relevant staff	Before and 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 A of the CEMP. Legislation considered during the development of the CCMP includes:

- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *Protection of the Environment Operations Act 1997* (POEO Act)
- *Contaminated Land Management Act 1997* (CLM Act)
- Protection of the Environment Operations (Waste) Regulation 2014
- *Work Health and Safety Act 2011*
- Work Health and Safety Regulation 2011.

3.1.2 Additional Approvals, Licences, Permits and Requirements

Refer to Section 4.3.2 and Appendix B of the CEMP.

3.1.3 Guidelines and Standards

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

- National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPC 2013)
- Consultants reporting on contaminated land, Contaminated land guidelines (NSW EPA 2020)
- Guidelines for NSW Site Auditor Scheme (3rd Edition) (NSW EPA 2017)
- Guidelines for the assessment and management of groundwater contamination (NSW DEC 2007)
- Guidelines on the duty to report contamination under the *Contaminated Land Management Act 1997* (NSW EPA 2015)
- Waste Classification Guidelines – Part 1: Classifying waste (NSW EPA 2014)
- Addendum to the Waste Classification Guideline (2014) – Part 1: classifying waste (NSW EPA 2016)
- State Environmental Planning Policy (Resilience and Hazards) 2021 (SEPP 55)
- Managing Land Contamination: Planning Guidelines, SEPP 55 – Remediation of Land (Department of Urban Affairs and Planning and Environment Protection Authority 1998)
- NSW Government Code of Practice – How to Safely Remove Asbestos, August 2019
- PFAS National Environmental Management Plan version 2.0 – January 2020 (National Chemicals Working Group of the Heads of EPAs Australia and New Zealand 2020).

3.2 Commonwealth Approval

The Project is considered a controlled action under the EPBC Act and is therefore subject to Commonwealth CoA. The requirements of the Commonwealth CoA and where they are met in this CCMP are detailed in Table 3.1.

Table 3.1: Commonwealth CoA relevant to the CCMP

No.	Requirements	Document reference
7	The approval holder must comply with conditions E32 – E43 of the NSW Approval as they relate to minimising contamination impacts on the environment, including in the Commonwealth lands surrounding the study area.	Table 3.2 Appendix B

3.3 NSW Infrastructure Approval

The requirements of the Infrastructure Approval relevant to the development of this CCMP are shown in Table 3.2. These are defined as 'Primary CoA' and specifically relate to the development of the CCMP. Secondary CoA relevant to, but not specific to the development of the CCMP, have been listed in Appendix C. A cross reference is also included to indicate where the CoA is addressed in the CCMP or other Project plans.

Table 3.2: Primary NSW CoA relevant to the CCMP

No.	Requirements	Document reference
A5	Where the terms of this approval require a document or monitoring program to be prepared or a review to be undertaken in consultation with identified parties, evidence of the consultation undertaken must be submitted to the Planning Secretary with the document. The evidence must include:	Section 1.6
	(a) Documentation of the engagement with the party identified in the condition of approval that has occurred before submitting the document for approval	
	(b) A log of the dates of engagement or attempted engagement with the identified party	
	(c) Documentation of the follow-up with the identified party where engagement has not occurred to confirm that they do not wish to engage or have not attempted to engage after repeated invitations	
	(d) Outline of the issues raised by the identified party and how they have been addressed	
	(e) A description of the outstanding issues raised by the identified party and the reasons why they have not been addressed	
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 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 Section 6 Section 7 Section 8

No.	Requirements	Document reference
	(b) the mitigation measures identified in the documents listed in Condition A1 will be implemented;	Section 6
	(c) the relevant terms of this approval will be complied with; and	Section 7 Table 3.1 Table 3.2 Table C.1 Appendix B
	(d) issues requiring management during construction (including cumulative impacts), as identified through ongoing environmental risk analysis, will be managed through SMART principles.	Section 5.3 Section 6.7 Table 6.1 Section 8.1
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 A14(e) when deciding whether any CEMP Sub-plans may be endorsed by the ER.</i>	Section 1.5
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
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
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
E43	An Unexpected Finds Procedure for Contamination must be prepared before the commencement of work, implemented throughout construction and must be followed should unexpected contamination or asbestos (or suspected contamination) be excavated or otherwise discovered. The procedure must include details of who will be responsible for implementing the unexpected finds procedure and the roles and responsibilities of all parties involved. The procedure must be submitted to the Planning Secretary for information before work commences.	Section 6 Section 6.7 Section 7.1 Appendix C

3.4 Revised Environmental Management Measures

The REMMs presented in the RtS relevant to the development of this CCMP (primary REMMs) are detailed in Table 3.3. A cross reference is also included to indicate where the REMM is addressed in the CCMP or other Project sub-plans. Secondary REMMs relevant to, but not specific to the development of the CCMP, have been listed in Appendix B.

Table 3.3 : Primary REMMs relevant to the development of the CCMP

No.	Requirements	Document reference
CON01	A Contamination Management Plan will be developed for the Project post-approval and will be encompassed within the CEMP. The CCMP will provide details for the ongoing management and maintenance of contamination management and mitigation measures during the construction phase of the Project.	The CCMP

4 EXISTING ENVIRONMENT

4.1 Key References

The Project boundary and relevant contaminated land data is shown on the Sensitive Area Plans included in Appendix D of the CEMP.

The sources of data and information for the contamination assessment carried out and used to develop this CCMP are Section 7.6 and Appendix F of the Project EIS and Section 4.7 and Appendix C of the Project RtS.

The following sections summarise existing contamination within and adjacent to the Project Site.

4.2 Environmental Aspects

4.2.1 Topography

The Project Site is predominantly flat with isolated areas of steeper slopes. Land immediately adjacent to the Project Site vary in gradient from 0 degrees (flat land) in most areas, to isolated areas that are over 20 degrees in gradient in the central/eastern portion. These steeper gradients are short in distance and are associated with permanent and ephemeral water courses and drainage lines, as well as areas that have had previous disturbance from clearing of vegetation and subsequent earthworks (cut and fill), largely for the creation of transmission line easements and access tracks.

4.2.2 Soils and Geology

The Project Site is underlain by clayey sand and clay of tertiary age, which are likely to be floodplain deposits associated with the Georges River and Anzac Creek. These sand and clay deposits are likely to be underlain by Ashfield Shale, Mittagong Formation and Hawkesbury.

4.2.3 Hydrogeology

No registered groundwater bores were identified within the Project Site or in the immediate surrounding area. 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 within the shallow alluvial aquifer is expected to flow towards the Georges River at depths typically around 7 to 8 m below ground level, however, groundwater may be shallower near Anzac Creek. Parts of the Project Site which relate to ecosystem types identified in the Groundwater Dependent Ecosystems (GDE) Atlas have been discussed within the CBMP.

4.2.4 Surface Water

The Georges River is located about 500 m west of the Project Site. It flows in a south to north direction and is well defined with vegetated banks on both sides of the river. A terraced floodplain area with relatively low elevations exists on the eastern bank of the river at the northern end of the Project Site. The terrain rises steadily from the terraced area to the higher elevations of the Project Site to the east.

Anzac Creek rises west of the Project Site and flows in an easterly direction traversing the existing Moorebank Avenue and MIP Rail Link. It crosses the Project Site adjacent to the south-eastern corner of MPE before turning north-east through vegetated bushland. Downstream of the Project Site, the creek flows adjacent to the Defence Joint Logistics Unit site and along the western side of Wattle Grove before traversing the M5 Motorway and discharging to the Georges River about three km north-east of the Project site.

4.2.5 Contamination

The Project Site, the MIP and the surrounding area have been partially occupied by the Commonwealth Department of Defence (DoD) since at least 1915. The bushland appears to have been used for various low impact training activities such as walking, driving and camping, with the exception of the former grenade range in the central south-western portion of the Project Site. In the early 1990s, the Defence National Storage Distribution Centre (DNSDC) occupied part of the Project Site, which overlaps with MPE, which included warehousing, refuelling and chemical storage areas.

Sources of potential contamination were identified in and around the Project Site including waste burial areas, fuel and chemical storage areas, asbestos in buildings and in soils, lead in soils and Unexploded Ordnance (UXO), Explosive Ordnance (EO) and Explosive Ordnance Waste (EOW) (refer to Figure 4.1).

Remediation works have been undertaken across the Project Site and MIP, with Contamination Management Plans for the MPE site. Therefore, the potential for *significant* contamination to be present within the Project Site is considered low however, other sources of contamination are likely to be encountered as detailed below:

- The southern portion of the Project Site which includes stockpiles of fill and residual soils, including asbestos containing materials (ACM)
- The south-western most extent of the Project Site within Sydney Trains land, where significant filling has occurred as well as storage of materials and equipment associated with railway operations and infrastructure.

Existing sources of contamination are discussed in more detail in the subsequent sections.

4.2.5.1 Asbestos

Sources of potential ACM observed on and adjacent to the Project Site during a site walkover on 3 March 2020 and a site history review are as follows:

- Fragments of ACM on the ground surface, partially buried in stockpiles of demolition rubble and waste in the southern portion of the Project Site
- Unsealed road and pipe lagging along the eastern portion of the Project Site and adjacent to the Boot Land
- The disused rail spur in the Boot Land that crosses the southern portion of the site in a north-south orientation was previously observed as having ACM, ash and slag.

4.2.5.2 PFAS

Anzac Creek is considered a first order watercourse with an ephemeral flow regime near the Project Site. It has been reported that the concentration of PFAS in water samples collected from Anzac Creek were greater than the human health drinking water guidelines, but below recreational water use guidelines. As such, Anzac Creek is also a potential pathway for the migration of PFAS contamination. PFAS investigations undertaken at Holsworthy Barracks to the south of the Project Site identified that the former DoD fire station (now Liverpool Fire Station), located about 350 m to the north of the Project Site was a source of PFAS contamination. Migration of PFAS via surface water from the fire station to Anzac Creek was identified (refer to Figure 4.1) and subsequently discharged into Georges River however, this is down hydraulic gradient of the Project Site. Anzac Creek surface water and sediment may also be impacted by PFAS and other contaminants of potential concern (CoPC).

4.2.5.3 Acid Sulphate Soils

Based on the Atlas of Australian Acid Sulphate Soils, there is a low to extremely low chance of acid sulphate 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.

4.2.5.4 Unexploded Ordnance

A former grenade range in the central south-eastern portion of the Project Site was reportedly active been the 1950s and 1980s, and was used for both thrown and rifle propelled grenades. The grenade range was remediated in 2015 to the top 100 mm to support the use of the bushland as a biodiversity offset area by the DoD. However, the environmental management plan for the Wattle Grove Offset Area (BA341) indicates the potential for UXO and EOW below 100 mm in and around Anzac Creek. A UXO Management Plan (refer to Appendix D) has been prepared, the outcomes of which are summarised as follows:

- The Grenade Range Area (Area C) was remediated to a depth of 100 mm in 2015. The likelihood of any complete remnant UXO in this area is very low. Outside of Area C, there is not expected to be any UXO or major explosive ordnance material contamination (Figure 4.1).
- No further UXO investigations are required for the Project, however, a Project UXO Coordinator (a member of the Construction Contactors team) will be nominated who is conversant with the details of Section 3, Appendix A and B of the UXO Management Plan (see Appendix D), and in addition will be onsite during the excavation activities in this area.



Figure 4.1: Sources of potential contamination

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 C 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 contamination impacts include:

- Preliminary enabling works
- Construction of ancillary facilities, site compounds and storage areas for plant, construction materials and spoil
- Initial clearing and grubbing of vegetation
- Initial topsoil removal
- Earthworks and excavations during construction including excavations required for culvert and basin construction as part of stormwater drainage works
- Temporary access roads
- Pavement construction including installation of pavement and subsoil drainage.

5.2 Impacts

Construction of the Project may result in the potential for contaminated land disturbance where the impacts will depend on a number of factors. Potential impacts attributable to construction might include:

- Leaching through soil profile and into shallow groundwater and/or surface water
- Direct run-off into surface water (i.e. Anzac Creek and drainage swales)
- Inappropriate handling or disposal of contaminated or hazardous excavated materials
- Exposure of contaminated soils and/or groundwater to sensitive human receptors (construction personnel or nearby communities)
- Mobilisation of surface and subsurface contaminants
- Migration of contaminants into the surrounding area via leaching, overland flow and/or subsurface flow
- Mobilisation of groundwater and/or surface water contamination
- Exposure of contaminants to sensitive ecological receptors (local water bodies, flora and fauna)
- Maintenance of onsite plant or unexpected release of potential contaminants
- Cross contamination within working areas
- Release of PFAS, asbestos, UXO or EOW
- Release of odours from contaminated materials.

Relevant aspects and the potential for related impacts have been considered in a risk assessment provided in Appendix C of the CEMP where the aim of the environmental management measures provided in Section 6.7 is to minimise the potential contamination impacts of the Project.

5.3 Cumulative impacts

Cumulative contaminated impacts may arise from the interaction between construction activities associated with the Project, and 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).

It is noted that the scale of impact is dependent upon timing, location and type of construction activities. Although impacts are likely to be associated with soil erosion, soil management, salinity waterway 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 6.7.

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

6 ENVIRONMENTAL MITIGATION AND MANAGEMENT MEASURES

In accordance with NSW CoA E32, the Principals Representative will engage a NSW EPA-accredited Site Auditor for the duration of construction to oversee work relating to soil or groundwater contamination, management and remediation. See Section 7.1 for specific roles and responsibilities.

6.1 Targeted Site Investigations

A NSW EPA Site Auditor has been engaged by the Principals Representative in accordance with NSW CoA E32 and will provide an Interim Audit Advice verifying the appropriateness of targeted investigations proposed in the SAQP. The Interim Audit Advice will be submitted to the Planning Secretary prior to implementation of the SAQP.

The targeted investigations detailed in the SAQP will be undertaken prior to the commencement of construction in accordance with NSW CoA E34 by the Project Contamination Specialist engaged by the Principals Representative. Reporting of findings must be prepared in accordance with relevant NSW EPA endorsed guidelines under Section 105 of the CLM Act 1997 by a suitably qualified person(s) (Contamination Specialist; see Section 7.1) appointed by the Principals Representative.

The Targeted Site Investigation Report(s) will include the following:

- Primary sources of contamination, for example potentially contaminating activities, infrastructure (such as drainage lines) or site practices

- Contaminant dispersal in air, hazardous ground gases, surface water, groundwater, soil vapour, separate phase contaminants, sediments, infrastructure (e.g. concrete), biota, soil and dust
- Contaminant characterisation and behaviour (volatility, leachability, speciation, degradation products and physical and chemical conditions on-site which may affect how contaminants behave)
- Potential effects of contaminants on human health, including the health of occupants of built structures (for example arising from risks to service lines from hydrocarbons in groundwater, or risks to concrete from acid sulphate soils) and the environment
- Potential and actual contaminant migration routes including potential preferential pathways
- Adequacy and completeness of all information available for use in the assessment of risk and for making decisions on management requirements, including an assessment of uncertainty
- Review and update of the conceptual site model from the preliminary site investigations
- Nature and extent of any existing remediation and/or
- Whether the land is suitable (for the intended final land use) or can be made suitable through remediation.

If the targeted site investigations indicate that remediation is required to make the land suitable for its intended final land use, a Remedial Action Plan must be prepared (detailed in Section 6.2).

The Targeted Site Investigation Report(s) will be provided to National Intermodal, the Principals Representative and the Construction Contractor, and if required, trigger an update to this CCMP in accordance with the process outlined in Section 1.5 of the CEMP.

6.2 Remediation Action Plan

If Targeted Site Investigations conclude that the specified land is unsuitable for the final intended use, a Remediation Action Plan (RAP) will be prepared by a suitably qualified and experienced person, in accordance with NSW CoA E35, E36, E37 and E38. The RAP will be completed in accordance with relevant guidelines made or approved by the EPA under section 105 of the CLM Act 1997 and must be submitted to the Planning Secretary for information before remediation commences.

The RAP must include:

- Measures to remediate the contamination at the site to make the site suitable for the proposed use
- Detail how the environmental and human health risks will be managed during the disturbance, remediation and/or removal of contaminated soil/sediment or groundwater.

Prior to commencing with remediation, in accordance with NSW CoA E38, an Interim Audit Advice or a Section B Site Audit Statement(s) prepared by the NSW EPA-accredited Site Auditor that certifies that the RAP is appropriate and that the site can be made suitable for the proposed use, will be submitted to the Planning Secretary for information.

6.2.1 Validation Report

In accordance with NSW CoA E39, if remediation is required as part of the RAP, a Validation Report must be prepared by the Project Contamination Specialist and reviewed by the Site Auditor, and submitted to the Planning Secretary for information for the development before commencement of use. It must also be submitted to both the Planning Secretary and DCCEEW for information one month after the completion of remediation works.

The Validation Report must be prepared in accordance with the relevant guidelines made or approved by the EPA under section 105 of the CLM Act 1997, and be prepared, or reviewed and approved, by a suitably qualified person(s) (See Section 7.1).

As per NSW CoA E39, the Validation Report must include:

- Commentary on the extent and nature of the remediation undertaken
- Describe the location, nature and extent of any remaining contamination as well as any ongoing management requirements
- Classification and appropriate removal/disposal of the stockpiled materials
- Clearance survey of UXO, EO, and removal of EOW
- Sampling and analysis and sampling methodology undertaken as part of the remediation
- If treated material is to remain on the Project Site, results of sampling of treated material, compared with treatment criteria specified in the Remedial Action Plan required by NSW CoA E35
- Results of any validation sampling, compared to relevant guidelines/criteria
- Comment on the suitability of the area for the intended land use.

6.3 Contamination Register

A register of contaminated sites will be maintained for the Project and will be updated in response to the findings of any site contamination assessments (refer to Appendix D1). The register will also be used to track the ongoing management of the sites. The Construction Contractor Environmental Advisor will maintain the Contamination Register and reflect new information as construction progresses. A copy of Contamination Register shall be provided to the Principal Representative on a regular basis.

Where unexpected contamination is identified prior to or during works, the area of land will be documented within the Contamination Register by the Construction Contractor. In addition to detailing the proposed future land use of each area of land, the Contamination Register will reference assessments and investigations undertaken.

6.4 Disposal of Waste and Contaminated Material

In accordance with REMM CON02 and CON04, waste classification testing and investigation will be undertaken for:

- Any soil/sediment proposed to be excavated and disposed of offsite or re-used on site
- Stockpiled materials in and around the southern portion of the Project Site i.e. the Boot Land.

All waste generated by the Project will be classified in accordance with the EPA's Waste Classification Guidelines and disposed of to a licenced waste facility, with appropriate records and disposal docketts retained for audit purposes. Waste management will be completed in accordance with the CWRMP. Refer to the CWRMP on how to manage potential impacts related to the management and transport of spoil generated during construction of the Project.

The selection of waste disposal and recovery facilities will be dependent on the nature and volume of waste streams generated and the capacity of the receiving facilities at the time of the waste generation.

For disposal of contaminated waste, this will be completed in accordance with the POEO Act and the Protection of the Environment Operations (Waste) Regulation 2014.

6.5 Asbestos Management

The discovery of asbestos or ACM during construction will be strictly managed in accordance with the Protection of the Environment Operations (Waste) Regulation 2014, Work Health and Safety Regulation 2011, the unexpected finds procedure for contamination outlined in Appendix D and the requirements of this CCMP.

A licence is not required for the removal of asbestos products in the following circumstances:

- Non-Friable Asbestos - removal of asbestos or ACM having a total surface area of less than 10 square metres
- Friable Asbestos – collection of a sample for analysis.

Licensed removal is required for friable asbestos or non-friable asbestos greater than 10 m². An Asbestos Removal Contractor, engaged by the Construction Contractor, will remove ACM or asbestos impacted soils from the relevant site and provide on-site supervision and advice. Air monitoring may be undertaken during asbestos removal work where there is uncertainty as to whether the exposure standard may be exceeded.

6.6 Environmental Work Method Statement

Prior to commencement of any work that would result in disturbance near the contamination, an EWMS may be prepared by the Construction Contractor and provided to the ER for information or upon request.

An EWMS will be required upon the discovery of any unexpected contamination identified or suspected on the Project Site prior to any contamination, management or remediation activities, in line with the Unexpected Finds Procedure outlined in Appendix D.

The EWMS may include:

- Delineation and characterisation of the content of, nature of, extent of and risks presented by the contamination
- Measures to ensure that the extent of, and risks posed by the contamination, are not exacerbated during the works
- Containment, remediation or removal of contamination, where necessary
- Disposal of contaminants and contaminated materials, where necessary
- Measures to ensure that surface runoff is diverted away from the contamination, and that any surface runoff that is contaminated through exposure is captured and properly treated prior to being reused on site or released to the environment
- Precautions and actions to ensure the safety of persons working near the contamination
- Regular monitoring of the contamination and of the implementation of the EWMS
- Regular reporting of monitoring result to the Principal's Representative
- Retention of records relating to the contamination and implementation of the EWMS
- Validation and certification of compliance with and the completion of work in accordance with the EWMS
- Measures to ensure that no work will be undertaken in the vicinity of the contamination pending the implementation of the EWMS.

The EWMS will specifically reference the relevant management and mitigation measures from this CCMP.

6.7 Management Measures

Management actions prescribed by this CCMP aim to avoid and minimise contamination impacts and 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 Table 6.1 specifically to manage contamination impacts during construction
- **M**easurable – Inspection and monitoring requirements detailed in Section 7.3 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 Table 6.1 represent the approach to monitoring and tracking against the objectives, targets and environmental performance outcomes (identified in Section 2.3 of the CCMP)
- **T**ime-bound – The management measures set out within Table 6.1 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: Contamination management and mitigation measures

ID	Measure / requirement	Timing	Responsibility	Reference	Evidence
General					
CM1	The requirements of this CCMP will be implemented so that contamination risks are managed and mitigated throughout construction of the Project.	Prior to construction and during construction	Construction Contractor	REMM CON01	Environmental inspection report Incident log Targeted site investigations
CM2	A NSW EPA-accredited Site Auditor will be engaged throughout the duration of construction work who will oversee work relating to soil or groundwater contamination, management and remediation. They will also verify the SAQP.	Prior to construction and during construction	Site Auditor Principals Representative	NSW CoA E32	Interim Audit Advice
CM3	The EPA and DCCEEW will be provided a copy of all reports to date which have assessed PFAS on the Project Site. If any new identification of PFAS material arises during construction works that may present as a risk to off-site receptors, the EPA and DCCEEW must be contacted within one month.	Prior to construction Within one month of new PFAS identification	Construction Contractor	NSW CoA E41 NSW CoA E42	Environmental inspection report
Site Investigations and Remediation					
CM4	Prior to the implementation of the SAQP, an Interim Audit Advice verifying the appropriateness of targeted investigations proposed in the SAQP must be prepared by a NSW EPA-accredited Site Auditor and submitted to the Planning Secretary prior to implementation of the SAQP.	Prior to the implementation of the SAQP	Principals Representative	NSW CoA E33	Interim Audit Advice
CM5	Targeted site investigations will be undertaken in accordance with the SAQP	Prior to construction	Project Contamination Specialist Principals Representative	NSW CoA E34	Targeted site investigation report(s)
CM6	If remediation is to make the land suitable for the final intended land use, a Remediation Action Plan will be prepared as detailed in Section 6.2.	Prior to construction	Site Auditor Principals Representative	NSW CoA E35 NSW CoA E36 NSW CoA E37	Remediation Action Plan Site audit statements

ID	Measure / requirement	Timing	Responsibility	Reference	Evidence
				NSW CoA E38	Interim Audit Advice
CM7	If remediation is required, a Validation Report will be prepared and submitted to the Planning Secretary and DAWE one month after completion of remediation works.	Prior to construction and within one month after completion of remediation works.	Project Contamination Specialist Principals Representative	NSW CoA E39	Validation Report
CM8	A clearance survey will be undertaken and any EOW observed in and around the southern portion of the Project Site will be removed prior to the commencement of construction within the Boot Land.	Prior to construction within the Boot Land	Site Auditor Construction Contractor	REMM CON03	Environmental inspection report Targeted site investigation report
Disposal of Waste and Contaminated Material					
CM9	Targeted investigations will be undertaken for any soil/ sediment disturbance as part of the Project to assess waste classification or if there is any re-use suitability.	Prior construction and during construction	Site Auditor Construction Contractor	REMM CON04	Environmental inspection report
CM10	Stockpiled materials in the southern portion of the Project Site will be classified and removed to an appropriately licenced facility as detailed in Section 6.4.	Prior to the commencement of construction in the Boot Land	Construction Contractor	REMM CON02	Environmental inspection report Laboratory reports
CM10A	All wastes, including contaminated wastes will be identified and classified in accordance with the NSW EPA's Waste Classification Guidelines, with appropriate records and disposal docketts retained for audit purposes. Disposal of contaminated waste will be undertaken in accordance with the POEO Act, <i>Protection of the Environment Operations (Waste) Regulation 2014</i> and the Construction Waste and Resource Management Plan.	During construction	Construction Contractor	Best practice	Laboratory reports
Unexpected Finds					
CM11	Where contaminated materials not identified in the EIS or SAQP are discovered on the Project Site,	Upon the discovery of unexpected contaminated material	Construction Contractor	NSW CoA E43 REMM CON05	Contamination register

ID	Measure / requirement	Timing	Responsibility	Reference	Evidence
	STOP WORK and follow the Unexpected Finds Procedure.				
CM12	If Acid Sulphate Soils are found during construction works, STOP WORK. An Acid Sulphate Soils Management plan will be prepared and implemented. Work will recommence once acid sulphate management protocols have been implemented.	Upon the discovery of acid sulphate soils	Construction Contractor	REMM CON06	Contamination register
CM12A	If Unexploded Ordnance are found during construction, STOP WORK and contact the Project UXO Coordinator. Follow the Unexploded Ordnance Management Plan (Appendix D).	Upon discovery of an Unexploded Ordnance	Construction Contractor	Best practise Appendix D	Contamination register
Odour					
CM13	If any odorous or contaminated material is identified, limit the time that material is exposed, remove material as quick as reasonably possible and cover material at the end of the day. Odorous materials identified on site will be managed in accordance with the Construction Contamination Management Plan.	Construction	Site Supervisor	NSW CoA E1	Incident register

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 contamination management are detailed in Section 6 of this CCMP. Two additional roles specific to the CCMP are detailed in the following sections.

7.1.1 Site Auditor

A Site Auditor has been engaged by the Principals Representative in accordance with NSW CoA E32. They will be required to:

- Oversee work relating to soil or groundwater contamination, management and remediation
- Review of contamination investigations/ assessments (including the RAP and validation report, if required)
- Prepare and issue an Interim Audit Advice to verify the SAQP
- Prepare an Interim Audit Advice or Section B Site Audit Statement(s) to certify the implementation of a RAP, if remediation is required as identified by the targeted site investigations.

7.1.2 Contamination Specialist

A contamination specialist will be engaged by the Principals Representative for the Project. The Project Contamination Specialist will be suitably qualified and accredited under the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme. The Contamination Specialist will:

- Undertake targeted site investigations as required by the SAQP
- Assess unexpected finds
- Undertake a contamination investigation in the area of the unexpected find and determine appropriate management measures
- Prepare validation documents for removal of unexpected finds
- Prepare a RAP (unless otherwise prepared by National Intermodal)
- Reporting of findings of the targeted site investigations.

7.2 Training

All site personnel (including sub-construction contractors) will undergo site induction training relating to contamination issues prior to construction commencing. The induction training will address elements related to contamination management, including:

- Existence and requirements of this CCMP
- Relevant legislation, regulations and Environment Protection Licence (EPL) conditions (a relevant)
- Incident response, management and reporting
- Environmentally sensitive locations and exclusion zones

- Environmental and occupational health and safety and workplace health and safety risks associated with contaminated materials
- Personal Protective Equipment (PPE) requirements
- Roles and responsibilities for contamination management
- Location of identified potential contaminated land sites
- Contamination management and protection measures
- Signs of contaminated soil
- Visual asbestos identification protocols
- Procedure to follow in the event of unexpected contaminated land or asbestos findings during construction works (refer to Appendix D)
- All requirements of Appendices contained within this CCMP.

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

The ER will review and approve the induction and training program prior to the commencement of construction and monitor implementation.

Daily pre-start meetings conducted by the Construction Contractor Site Supervisor will inform the site workforce of any environmental issues relevant to contamination 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 of sensitive areas and activities with the potential to have contamination impacts will occur for the duration of the construction of the Project.

Monitoring for contamination will include, but not be limited to:

- Visual inspections of soil during excavations for signs of contamination (odour, discolouration, oily residue etc)
- Sampling of soil in accordance with the Waste Classification Guidelines (EPA, 2014)
- Monitoring as required for suspected contamination at the advice of the Project Contamination Specialist
- If required, testing of potential asbestos containing soil
- If required, asbestos fibre monitoring and personal exposure asbestos fibre air monitoring for workers in accordance with Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC: 3003(2005)] (National Occupational Health and Safety Commission, 2005) and How to Safely Remove Asbestos Code of Practice (Safe Work Australia, 2011) (see Appendix C).

Table 7.1 details inspections to identify potential contamination.

Table 7.1: Inspections for potential contamination

Inspection	Frequency	Responsibility	Requirement
Contamination management inspections (where contamination is found follow the unexpected finds procedure (Appendix C) and where unexploded ordnance is found follow Appendix D)	Weekly	Construction Contractor Site Supervisor	Best practise
Inspection of managed bunded areas, erosion and sediment controls as part of the weekly environmental inspection	Weekly	Construction Contractor Environmental Advisor	Blue Book (Landcom, 2004)
Assessment of suspected and potential contaminated sites	As required	Construction Contractor Environmental Advisor	Best practise

Requirements and responsibilities in relation to monitoring and inspections are documented in Section 7.1 of the CEMP.

7.4 Compliance Auditing

Environmental audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this plan, State and Commonwealth CoA and other relevant approvals, licenses and guidelines as detailed in Section 7.3 of the CEMP. Note these refer to compliance audits which are separate to contamination specific Site Audit requirements as detailed in NSW CoA E32.

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 CCMP are outlined in Table 7.1.

Table 7.2: Reporting requirements relevant to contamination management

Report	Frequency	Responsibility
Contamination Register For any unexpected contamination finds on the Project Site.	As required by the unexpected finds procedure for contamination	Construction Contractor
Interim Audit Advice	Before implementation of the SAQP As required if remediation is needed	EPA Accredited Site Auditor
Targeted Site Investigation Report of findings of the targeted site investigations outlined in the SAQP.	As required by the SAQP	Construction Contractor (unless otherwise identified by National Intermodal) Contamination Specialist
Remedial Action Plan Details the remediation required.	If investigations conclude that the specified land is contaminated such that it is and will remain unsuitable for the Project.	Project Contamination Specialist (unless otherwise identified by National Intermodal)
Validation Report Outlines the remediation undertaken and the suitability of the areas for the intended final land use.	If remediation is required	Construction Contractor Project Contamination Specialist (unless otherwise identified by National Intermodal)

Report	Frequency	Responsibility
<p>PFAS Reports</p> <p>All reports relating to the identification and assessment of per- and poly-fluoroalkyl substances (PFAS) for the development must be provided to EPA and DCCEEW.</p>	<p>Prior to commencement of construction</p>	<p>National Intermodal</p>

Accurate records will be maintained substantiating all construction activities associated with the Project or relevant to the State and Commonwealth CoA, including measures taken to implement this CCMP. 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 CCMP 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 C of the CEMP.

8.2 CCMP Update and Amendment

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

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

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

APPENDIX A Environmental Representative Endorsement



14 April 2023

Our Ref: 2205 L4

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 Contamination
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 Contamination Management Plan, Version D, dated 31 March 2023 (CCMP).

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 CCMP includes:

- Contamination Management Plan (REMM CON01)
- Unexpected Finds Procedure for Contamination (CoA E43).

In accordance with CoA C8, the CCMP 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



APPENDIX B **Secondary CoA and REMMs**

B1: Secondary NSW CoA relevant to the CCMP

No.	Requirements	Document reference
E32	A NSW EPA-accredited Site Auditor must be engaged throughout the duration of work to oversee work relating to soil or groundwater contamination, management and remediation. If work relating to soil or groundwater contamination is to be completed in stages, the site auditor must confirm satisfactory completion of each stage by the issuance of Interim Audit Advice/s.	Section 6 Section 6.7 Section 7.1
E33	An Interim Audit Advice, prepared by a NSW EPA-accredited Site Auditor, must be submitted to the Planning Secretary which verifies that the Sampling Analysis and Quality Plan, included in the documents listed in Condition A1, is appropriate for the scope of targeted investigations in areas before the implementation of the Sampling Analysis and Quality Plan.	Section 6.1 Section 6.7 Section 7.1
E34	The targeted investigations must be undertaken before commencement of construction in accordance with the Sampling Analysis and Quality Plan. Reporting of findings must be prepared in accordance with the relevant guidelines made or approved by the EPA under Section 105 of the Contaminated Land Management Act 1997 by a person(s) accredited under the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme.	Section 6.1 Section 6.7 Section 7.1 Section 7.5
E35	If the targeted site investigations required by Condition E34 indicate that remediation is required to make land suitable for the final intended land use, a Remedial Action Plan must be prepared or reviewed and approved, by a person(s) certified under either the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme.	Section 6.2 Section 6.7
E36	The Remedial Action Plan must be prepared in accordance with relevant guidelines made or approved by the EPA under section 105 of the Contaminated Land Management Act 1997. The Remedial Action Plan must be submitted to the Planning Secretary for information before remediation commences. Nothing in this condition prevents the Proponent from engaging the Site Auditor to prepare Site Audit Statements for different portions of the site.	Section 6.2 Section 6.7
E37	The Remedial Action Plan must include measures to remediate contamination at the site to make the site suitable for the proposed use and detail how the environmental and human health risks will be managed during the disturbance, remediation and/or removal of contaminated soil/sediment or groundwater. Nothing in this condition prevents the preparation of individual Remedial Action Plans for separate sites.	Section 6.2 Section 6.7
E38	Before implementing a required Remedial Action Plan, an Interim Audit Advice or Section B Site Audit Statement(s) prepared by a NSW EPA-Accredited Site Auditor must be submitted to the Planning Secretary, for information, that certifies that implementation of the Remedial Action Plan would make the site suitable for the proposed use Nothing in this condition prevents the Proponent from engaging the Site Auditor to prepare Site Audit Statements for separate sites.	Section 6.2 Section 6.7
E39	If remediation is required, a Validation Report must be prepared and submitted to the Planning Secretary for information for the development before commencement of use. The Validation Report must be prepared, or reviewed and approved, by a person(s) certified under the Environment Institute of Australia and New Zealand's Certified Environmental Practitioner (Site Contamination) scheme (CEnvP(SC)) or the Soil Science Australia Certified Professional Soil Scientist Contaminated Site Assessment and Management (CPSS CSAM) scheme. The Validation Report must:	Section 6.2.1 Section 6.7

No.	Requirements	Document reference
	<p>(a) be prepared in accordance with the relevant guidelines made or approved by the EPA under section 105 of the Contaminated Land Management Act 1997.</p> <p>(b) include, but not be limited to:</p> <p>i. comment on the extent and nature of the remediation undertaken;</p> <p>ii. describe the location, nature and extent of any remaining contamination as well as any ongoing management requirements;</p> <p>iii. classification and appropriate removal/disposal of the stockpiled materials;</p> <p>iv. clearance survey of unexploded ordnance (UXO), Explosive Ordnance, and removal of Explosive Ordnance Waste (EOW);</p> <p>v. sampling and analysis and sampling methodology undertaken as part of the remediation;</p> <p>vi. if treated material is to remain on the subject site, results of sampling of treated material, compared with treatment criteria specified in the Remedial Action Plan required by Condition E35</p> <p>vii. results of any validation sampling, compared to relevant guidelines/criteria; and</p> <p>viii. comment on the suitability of the area for the intended land use;</p> <p>(c) be submitted to the Planning Secretary and DAWE for information one month after the completion of remediation works.</p>	
E40	Before opening of the road to traffic, land subject to the Remedial Action Plan must not be used for the purpose approved under the terms of this approval until a Section A1 or A2 Site Audit Statement (accompanied by an Environmental Management Plan) is submitted to the Planning Secretary for information which states that the land is suitable for that purpose and any conditions on the Section A Site Audit Statement have been complied with.	Section 6.2
E41	Before construction, the proponent must provide the EPA and DAWE with a copy of all reports to date relating to the assessment of per- and poly-fluoroalkyl substances (PFAS) undertaken for the development and in relation to contamination from the development.	Section 6.7 Section 7.5
E42	The EPA must be contacted within 1 month of PFAS identification if a potential risk to off-site receptors is identified to discuss requirements for community consultation. DAWE must also be notified that PFAS has been identified and is a potential risk to off-site receptors.	Section 1.6.2 Section 6.7

B2: Secondary REMMs relevant to the development of the CCMP

No.	Requirements	Document reference
CON02	Classification and appropriate removal/disposal of the stockpiled materials observed in and around the southern portion of the Project Site.	Section 6.4 Section 6.7
CON03	A clearance survey and removal of EOW observed in and around the southern portion of the Project Site.	Section 6.7 Table 6.1 CM8
CON04	Targeted investigation of any areas of soil/sediment disturbance proposed as part of the development (i.e. assessment of soils/sediments required to be excavated to assess waste classification or re-use suitability)	Section 6.7
CON05	Preparation of an Unexpected Finds Protocol to be encompassed within the CEMP.	Appendix C

No.	Requirements	Document reference
CON06	Where Acid Sulphate Soils are encountered at the site works an Acid Sulphate Soils Management will be prepared and implemented.	Section 6.7

APPENDIX C Unexpected Finds Procedure

The purpose of this procedure is to define the responsibilities and necessary controls to manage unexpected contamination or asbestos (or suspected contamination) that may be encountered during construction works which were not identified in targeted site investigations as per the SAQP. This procedure is applicable to all construction activities that have the potential to uncover potential contamination or asbestos and will be implemented for the duration of construction.

An unexpected find is defined as potential contamination that was not previously identified in the EIS or RtS, or Targeted Site Investigation. Unexpected finds that may be encountered during construction works are summarised in Table C.1.

Table C.1: Potential unexpected finds

Unexpected find	Description
Fuels or oils	Fuel or oil contamination may be identified by odour, coloured sheen or staining/discolouration of soils. The oily odour can vary in strength from weak (just detectable) to very strong.
Buried waste	Buried waste includes construction and demolition materials (e.g. wood, plastic, metal, bricks, etc.) as well as landfill material (domestic putrescible waste).
Buried Asbestos Containing Material (ACM), asbestos fines/friable asbestos	Cement-bound ACM may be present in building waste or conduits. Friable (easily crumbled) asbestos is more commonly associated with lagging and insulation. Laboratory analysis is typically required to identify asbestos fines and fibres.
Storage tanks or conduits	Underground storage tanks and former pipelines are typically metal, concrete or plastic. Storage tanks may be full, partially full or decommissioned. Indications of contamination such as staining or odour may be present in the surrounding soils.
Ash or slag	Ash material is typically light weight, grey and white sand. Slag varies in consistency (loose or cemented) and colour (grey, blue, green).
PFAS	PFAS (per and poly fluoroalkyl substances) is a group of manufactured chemicals that include perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA) and perfluorohexane sulfonate (PFHxS) used for fire-retardant and consumer products.
Potential Acid Sulfate Soils or acid rock	Acid sulfate soils are those naturally occurring sediments and soils which contain sulfides, mainly iron sulfide and iron disulfide. These are found in low-lying coastal areas and saline inland areas. The soil may invariably be saturated with water in their natural state. Their texture may be peat, clay, loam, silt or sand and is often dark grey in colour, but these materials may also exhibit colours that are dark brown, or medium to pale grey to white. The pH of the soil and laboratory tests may need to be required to verify if the soil is PASS or acid rock.

All relevant site personnel (including sub-contractors) are to be inducted on the identification of potential contaminated soil/material along with the requirements of this Unexpected Finds Procedure during inductions and/or regular toolbox talks. Site personnel will be informed of the potential sources of contamination within the Project Site and indications of contamination in soil and groundwater, such as:

- Odour
- Discolouration/staining of soils
- Groundwater or surface water sheen
- Evidence of landfilling/discarded drums.

All personnel have a responsibility to STOP WORK and notify the Construction Contractor Site Supervisor of any suspected contamination. Where unexpected contamination (including asbestos) is identified or suspected, the Unexpected Finds Procedure will be implemented by the Construction Contractor Site Supervisor. The Construction Contractor's Environmental Advisor will ensure that this Procedure is

effectively implemented, and all site personnel are aware of the requirements. Unexpected contamination and asbestos finds will be reported in the Contamination Register (refer Appendix D1). In addition to detailing the proposed future land use of each area of land, the Contamination Register will reference assessments and investigations undertaken.

Step 1. Potential Contaminated Soil/Material Encountered During Construction Activities

If potential contaminated soil/material or asbestos is encountered during excavation/construction activities:

- **STOP WORK** in the immediate/affected area
- The Construction Contractor will immediately notify the Principals Representative and neighbouring projects within the MIP
- The Construction Contractor will install environmental controls around the site to contain the contaminated material, including diversion of water to minimise potential spread via surface water runoff
- The Construction Contractor will consult with the Project Contamination Specialist to determine appropriate actions
- If it is determined that there is a risk of environmental harm from the potential contamination, the EPA will be notified immediately
- If it is determined that the contaminated soil/material may contain asbestos containing material, refer to the Contractor Health and Safety Management Plan
- If it is determined that the contaminated soil/material may contain PFAS, contact DCCEE and the EPA if a potential risk to off-site receptors is identified to discuss requirements for community consultation
- If it is determined that the contaminated soil/material contain Potential Acid Sulphate Soils, an Acid Sulphate Soil Management Plan must be prepared
- Recommence works in an alternate area where practicable.

Step 2. Environmental Management And Work Health Safety Management

Prior to any contamination investigation, management or remediation activities, appropriate Safe Work Method Statements (SWMS) and Environmental Work Method Statements (EWMS) will be prepared by the Construction Contractor.

Personal protective equipment (PPE) will be worn as per the relevant Safety Data Sheet/s (SDS) (where the SDS are available). This may include, but not be limited, to:

- Protective eye-wear (if not wearing a full face mask)
- Face mask
- Steel – capped rubber-soled work shoes or gumboots with no laces or disposable overshoes that have an anti-slip sole for placement over work shoes
- Single use disposable nitrile or latex gloves
- Disposable asbestos coveralls rated type 5, category 3
- Work clothes (i.e. long sleeve shirt/pants and steel capped boots).

Step 3. Undertake Detailed Site Investigation

The Principals Representative will assess the situation with the Construction Contractor. If considered necessary, the Construction Contractor will consult with the Project Contamination Specialist to undertake a contamination investigation in the area of the find.

The material will be classified in accordance with the Waste Classification Guidelines (EPA, 2014).

If necessary, the Construction Contractor will liaise with the relevant authorities to determine the appropriate management options and, in consultation with the Contamination Specialist, determine the appropriate preliminary management measures to be implemented. This may include (but not limited to) leaving

contamination undisturbed, capping of contamination, treatment or off-site disposal. Material to be disposed of off-site will be transferred to an appropriately licensed waste facility, along with any other management measures, as outlined in the CWRMP.

Step 4. Remedial Action

If the Detailed Site Investigations conclude that the specified land is unsuitable for the final intended use, a RAP will be prepared by a suitably qualified person.

Prior to commencing with the remediation, the RAP and an Interim Audit Advice or a Section B Site Audit Statement from a NSW EPA accredited Site Auditor that certifies that the RAP is appropriate and that the site can be made suitable for the proposed use, will be submitted to the Planning Secretary for information only.

Remedial actions will be incorporated into specific RAPs. RAPs will be prepared by a suitably qualified and experienced person and in accordance with all guidelines under the *Contaminated Land Management Act 1997*.

Relevant EWMS or SWMS will be reviewed and updated when required.

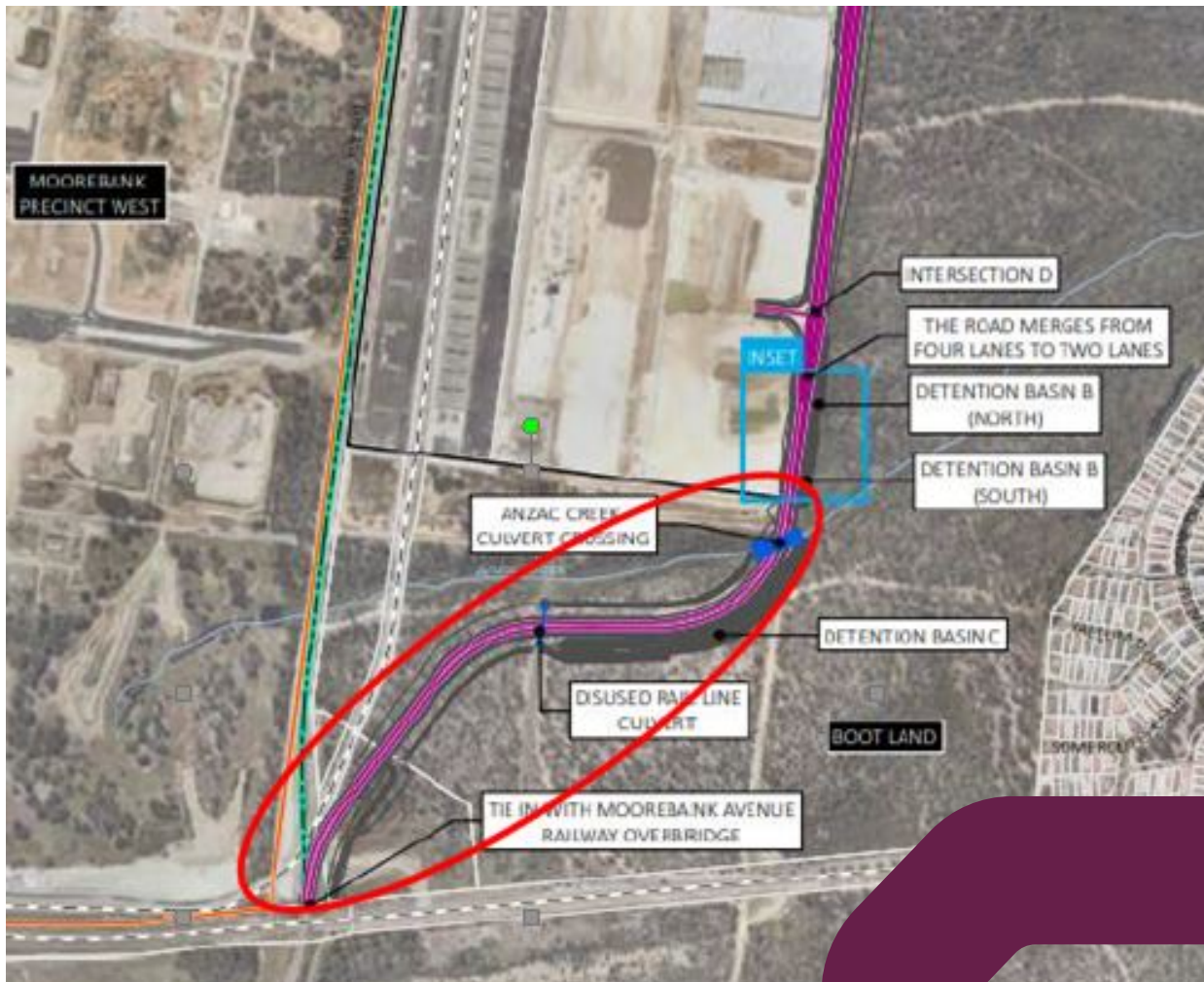
Step 5. Recommence Works

Recommence works once remedial works have been implemented and sampling has validated that the remediation strategy has been successful. Following implementation of the RAP, the Construction Contractor will submit a Section A1 or Section A2 Site Audit Statement and the accompanying Site Audit Report from the NSW EPA accredited site auditor, which states that the contaminated land disturbed by the works has been made suitable for the intended land use, to TfNSW, the Planning Secretary and relevant councils in accordance with NSW CoA E40.

APPENDIX D **Unexploded Ordnance Management Plan**

UNEXPLODED ORDNANCE MANAGEMENT PLAN

Moorebank Boot Land



Proposal Ref:
PPA1053

Proposal Number
PPA1053

Rev 2
03 March 2023

UXO MANAGEMENT PLAN

Document status					
Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
Rev 0	Management Plan	[REDACTED]	[REDACTED]	[REDACTED]	30/06/22
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Rev 2	Management Plan	[REDACTED]	[REDACTED]	[REDACTED]	03/03/23

Approval for issue		
[REDACTED]	[REDACTED]	2023-03-03

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Appendix A Hazard Flow Chart

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Appendix B UXO Coordinator Actions

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ABBREVIATIONS

Term	Definition
ALARP	As low as reasonably practicable
Area C	An area contained within the Boot Land Site, within which, the former grenade range was located
Boot Land	The area located to the south and east of Moorebank East Precinct
CCMP	Construction Contamination Management Plan
CEMP	Construction Environmental Management Plan
DNSDC	Defence National Storage Distribution Centre
EOM	Explosive Ordnance Material
JEOS	Joint Explosive Ordnance Support
MLP	Moorebank Logistics Park
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
NSW	New South Wales
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, Moorebank East Precinct, Boot Land, and the Sydney Trains owned land adjacent to the East Hills Railway
The Project	Moorebank Avenue Realignment Works
UXO	Unexploded Ordnance

EXECUTIVE SUMMARY

National Intermodal Corporation plans to realign and upgrade a section of Moorebank Avenue. Moorebank Avenue Realignment Works (the Project) involves the realignment of an existing two-kilometre section of Moorebank Avenue, from a point approximately 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 Logistic Park into Moorebank Precinct East and Moorebank Precinct West.

This UXO Management Plan is to provide Construction Contractors working on the Project with an understanding of the former military uses of the site between the 1940s to 1980s. The potential for unexploded ordnance (UXO) to be present within the boundaries of the Project Site is considered to be very low. The existence of explosive ordnance materials (EOM) is also considered to be very low.

The “Boot Land” site was historically an area of undisturbed bush land located between larger military establishments and ranges since at least WW2. The Moorebank Ammunition Depot and Anzac Rifle Range lay to the north, the School of Military Engineering and the former Defence National Storage Distribution Centre (DNSDC) Stores Depot lay to the west and the Holsworthy Ranges to the east and to the south.

The Boot Land was used for military training by the Australian Defence Force resulting in numerous blank 7.62 cartridges and other military waste, such as batteries and ration pack waste. As the area has become urbanised the ANZAC Rifle Range was decommissioned to form the Wattle Grove residential area, and the stop butt material, comprising of expended bullets, was found to be spread along one of the roads within the site. This “Road of Bullets” to the north of the Boot Land site was remediated in 2015 along with a former ungazetted grenade range which was used primarily for hand thrown grenades.

The 11.53 ha Grenade Range Area (Area C) was remediated to a depth of 100 mm in 2015. The target being a Mills 36 Hand Grenade Detonator Assembly. The search method used (F3 Minelab detectors) meant that any complete hand grenades (a much larger target) would have been found at a greater depth giving assurance that the likelihood of any complete remnant UXO in this area is very low. Anzac Creek borders the north of the former Grenade Range Area where EOM was still being found on the surface up to the edge of the creek where vegetation was not disturbed. Evidence of EOM from the grenade range was also reported inside the fence line of the adjacent former stores depot indicating that some EOM may be found during the works on the creek line itself. It is unlikely that complete grenades will be found in this area as it is outside of the known main use area. The requirement to carry out a UXO survey and vegetation reduction in the creek area is not considered necessary.

Outside of Area C, there is not expected to be any UXO or major EOM contamination. Some small arms ammunition cartridges may exist but are all expected to be expended blank rounds - non-expended blank rounds are a low hazard if handled correctly.

Despite there being some concerns regarding potential UXO or EOM being present at natural ground levels that have been covered by imported fill in part of the former Grenade Range Area, this area is considered low risk as the imported fill areas were to the south of the former Grenade Range Impact Area and formed part of the detention basin area constructed post clearance with no reported issues.

To mitigate this and any other potential UXO or EOM finds, a suitable person is to be nominated as the Project UXO Coordinator¹ for the works and should be conversant with the details in Section 3, Appendix A and Appendix B in addition to being on site during the excavation activities in this area.

No further UXO investigations are considered required for the Project.

¹ The Project UXO Coordinator is a member of the Construction Contractors team who has been inducted into the requirements of the UXOMP, have read this plan and are capable to implement the requirements of this plan. The Project UXO Coordinator does not need to be a technical specialist.

1 PROJECT OVERVIEW

National Intermodal Corporation ('National Intermodal') plans to realign and upgrade a section of Moorebank Avenue. Moorebank Avenue Realignment Works (the Project) involves the realignment of an existing two-kilometre section of Moorebank Avenue, from a point approximately 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 Logistic Park (MLP) into the Moorebank Precinct East (MPE site) and the Moorebank Precinct West (MPW site).

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 of four lanes (i.e., two lanes in each direction). At the south-western corner of the MPE Site, the new 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. 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 MLP.

The Project Site 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, MPE, Boot Land and the Sydney Trains owned land adjacent to the East Hills Railway.

Refer to the Project Construction Environmental Management Plan (CEMP) and Construction Contamination Management Plan (CCMP) for a detailed project description.

1.1 Purpose of this Plan

This Unexploded Ordnance (UXO) Management Plan forms part of the CCMP for the Project and has been prepared to address the risk of finding unexploded ordnance waste below, in and around Anzac Creek and portions of the Boot Land.

This UXO Management Plan has used the following information sources:

- Post Activity Report, Moorebank and Casula Remediation, Revision 1 (OPEC Systems Sydney, 15 March 2016)
- Department of Defence "Boot Land", Moorebank, NSW, Environmental Management Plan (GHD, April 2016)
- Site Audit Report and Site Audit Statement (AECOM, 2016).

2 SITE HISTORY

The “Boot Land” site (Boot Land) (see Figure 1) has been an area of undisturbed bush land located between larger military establishments and ranges since at least World War 2. The Moorebank Ammunition Depot and Anzac Rifle Range lay to the north, the School of Military Engineering and the former DNSDC Stores Depot lay to the west and the Holsworthy Ranges to the east and to the south.

Figure 1 provides an overview of the location of the Boot Land.

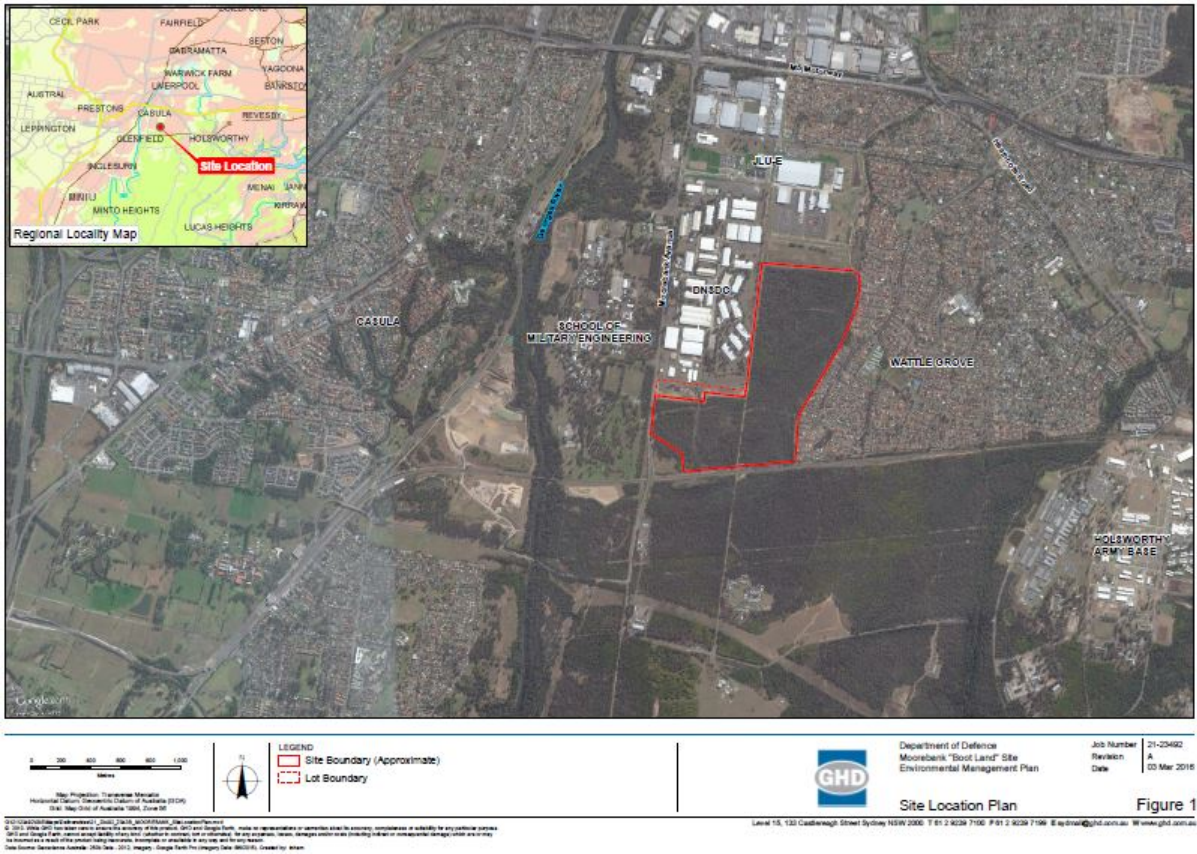


Figure 1: Boot Land Location Overview

2.1 Use Since World War Two

The Boot Land has been used for military training by the Australian Defence Force resulting in numerous blank 7.62 cartridges and other military wastes, such as batteries and ration pack waste in shallow burials or left on the surface at numerous locations. It is believed the area was in such use from 1945 until the late 1980’s.

As the surrounding area became urbanised, the ANZAC Rifle Range was decommissioned and became the Wattle Grove residential area and the stop butt material containing all the expended bullets, spread along one of the roads within the site. This “Road of Bullets” was remediated in 2015² along with the Grenade Range Area, a former ungazetted range used primarily for hand thrown grenades³. Refer Figure 2 for the location of the Road of Bullets and Grenade Range Area.

² Department of Defence “Boot Land”, Moorebank, NSW, Environmental Management Plan (GHD, April 2016)

³ Post Activity Report, Moorebank and Casula Remediation, Revision 1 (OPEC Systems Sydney, 15 March 2016)

UXO MANAGEMENT PLAN

ANZAC Creek borders the north of the former Grenade Range Area where explosive ordnance material (EOM) was found on the surface up to the edge of the creek vegetation during the 2015 remediation. This vegetation was not disturbed. Additionally, evidence of EOM from the grenade range was also reported inside the fence line of the adjacent former stores depot, prior to 2015, indicating that some EOM may be disturbed during the works on the creek line. It is unlikely that complete grenades will be found in this area as it is outside of the known main use area. The Grenade Range Area, shown in Figure 2, was remediated to a depth of 100mm in 2015. However, the search method used (F3 Minelab detectors) meaning that any complete hand grenades would have been found at a greater depth.

The likelihood of any remnant UXO in this area is very low.

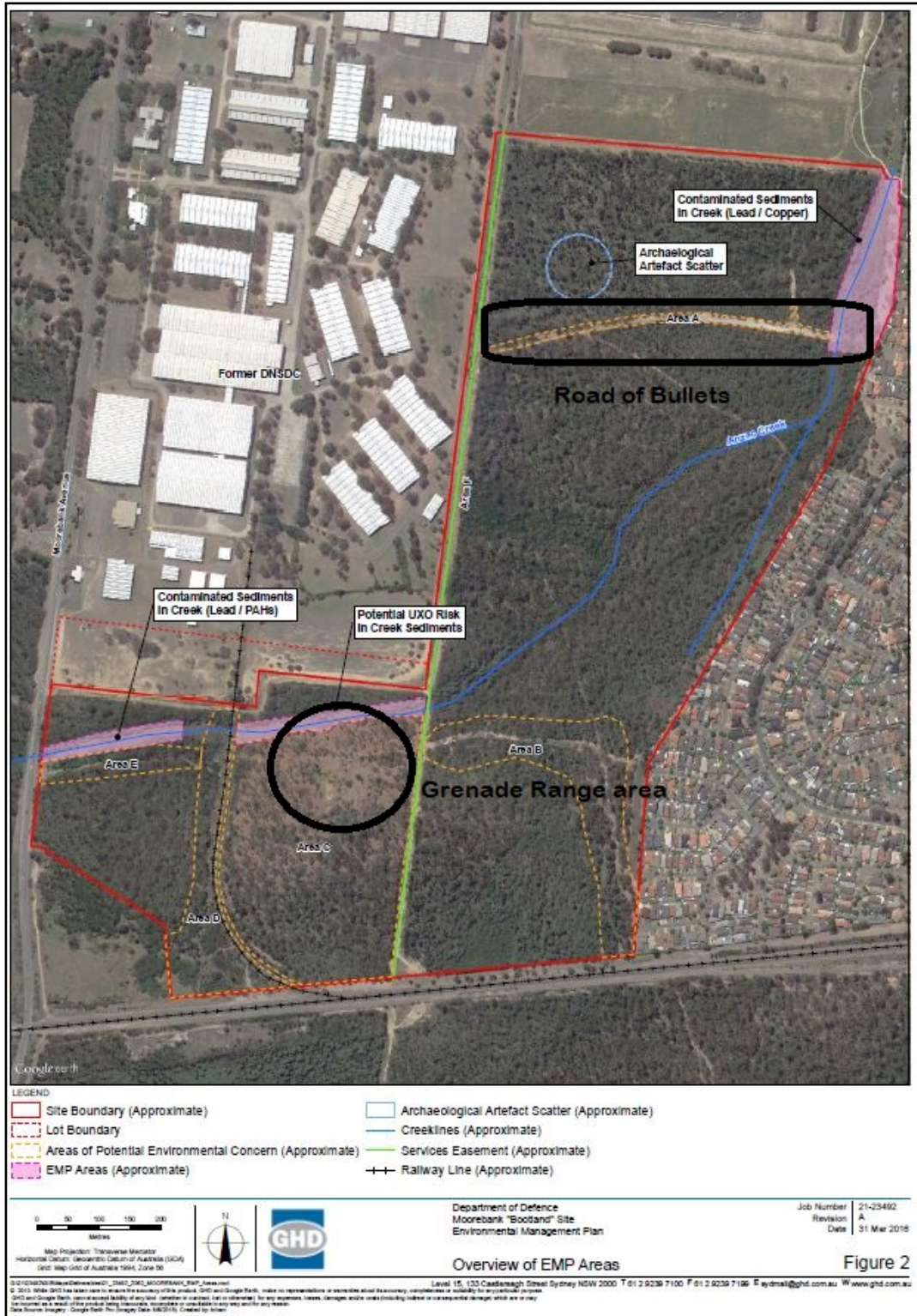


Figure 2: Location of Grenade Range and Road of Bullets

2.2 Type of Ordnance Used on the Grenade Range

The Grenade Range existed in an era where the main grenade used by the Australian Defence Force was the British Mills No. 36 fragmentation grenade. No other grenade type was found during the UXO clearance carried out in 2015. Anecdotal reports of a rifle grenade range were not substantiated based on the EOM finds in the wider Area C, as shown in Figure 2.

Given the history and nature of usage of the site, it is possible that the following types of UXO/EOM may be encountered:

- Mills 36M Fragmentation grenade, detonator assemblies
- Smoke Grenades and Small arms ammunition (blank).

3 RECENT WORKS

3.1 Area C - Former Grenade Range

The entirety of Area C, as shown on Figure 2, was subject to a shallow metal detector search in 2015 with the exception being the Anzac Creek line and a small buffer zone of vegetation on either side. The following is an excerpt from the OPEC Post Activity Report 2015:

Area C is approximately 11.5 hectares in area and is shown in Figure 2. The area was heavily vegetated and had significant threatened species (flora) habitats that while not part of the wider site Threatened Species permit still had to be taken into account in regard to vegetation reduction operations to enable unexploded ordnance (UXO) investigations to take place. Also evident on the site were several stockpiles of soil containing asbestos materials.

During the entire UXO investigation works a GHD Ecologist and Contamination specialist was present on site providing advice and assistance to aid both the vegetation reduction and stockpile remediation processes.

Area C had been used as both a mobile and static grenade range from 1940's up to, it is believed, the early 1980's. It was not registered as a range and as such no known records exist of its use. The amount of excessive explosive ordnance waste encountered would appear to support the postulated time frame.

After controlled vegetation reduction operations the area was divided into 25m² blocks to enable manual search techniques using F3 Minelab metal detectors to be carried out. The clearance depth and therefore the search depth was 100mm and the target of interest was the detonator assembly from a Mills 36 Hand Grenade. Each block was systematically searched in an east west direction and all targets physically interrogated by being exposed, identified and removed if EOM. The EOM contamination was heaviest around the suspected main impact area with further heavy contamination around suspected "pits" designed to simulate infantry positions.

The number of targets physically inspected and removed from the site was 23,162. Additionally stockpiles of EOM contaminated soils were physically screened for UXO with an estimated 5000 EOM items visually inspected on the conveyor belt and by spreading out the screened material and by searching it on the ground.

Almost all of the EOM identified came from the use of Mills 36 Hand grenades, some 14oz block demolition charge adaptors were also found and other types of grenade strikers but 99% could be said to be Mills 36 Grenade debris.

14 UXO were found, and all were the same i.e., detonator housings from Mills 36 Hand grenades with the detonator still intact. It is believed that the detonator housings found were the result of poor explosive ordnance disposal (EOD) practices when dealing with misfires or stores disposal after a serial. Only one of the UXO was an almost complete Mills 36 Grenade which still only had the detonator assembly as the UXO component the filling having been destroyed.

Considering the potential number of grenades used on the area (30k plus) and the very low percentage of UXO found, it would appear that the practises in use on the area were generally very good i.e., all potential UXO from misfires, blinds etc. having been dealt with appropriately.

It has been noted by Defence that EOM and therefore potential UXO may exist below the 100mm clearance depth especially where imported fill covers natural ground levels.

Area C was subject to a 5% QA/QC procedure. This was carried out by the EOD Technicians by searching two 1 metre wide lanes across the top and bottom of the 25m² blocks in a north south direction. As the blocks were originally searched in an east west direction this gave assurance that the degree of efficiency of search was consistent across the block and not affected by the time of day, temperature etc.

The 11.53 ha Grenade Range Area (Area C), shown in Figure 2, was remediated to a depth of 100 mm in 2015. The target being a Mills 36 Hand Grenade Detonator Assembly. The search method used (F3 Minelab detectors) meant that any complete hand grenades (a much larger target) would have been found at a greater depth giving assurance that the likelihood of any complete remnant UXO in this area is very low.

Anzac Creek borders the north of the former Grenade Range Area where EOM was still being found on the surface up to the edge of the creek where vegetation was not disturbed. Evidence of EOM from the grenade range was also reported inside the fence line of the adjacent former stores depot indicating that some EOM may be found during the works on the creek line itself. It is unlikely that complete grenades will be found in

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this area as it is outside of the known main use area. The requirement to carry out a UXO survey and vegetation reduction in the creek area for the purpose of the Project is not considered necessary.

Outside of Area C, there is not expected to be any UXO or major EOM contamination. Some small arms ammunition cartridges may exist but are all expected to be expended blank rounds - non-expended blank rounds are a low hazard if handled correctly.

Despite there being some concerns regarding potential UXO or EOM being present at natural ground levels that have been covered by imported fill in part of the former Grenade Range Area, this area is considered low risk as the imported fill areas were to the south of the former Grenade Range Impact Area and formed part of the detention basin area constructed post clearance with no reported issues.

To mitigate this and any other potential UXO or EOM finds, a Project UXO Coordinator will be nominated for the works and has to be conversant with the details in Section 3 and Appendix A and B in addition to being on site during the excavation activities in this area. No further UXO investigations are considered required for the Project.

3.2 Unexploded Ordnance and Explosive Ordnance Material

The grenades used on the Grenade Range are all of the type shown on Figure 3. The EOM from the Grenade Range Area clearance was extensive and at least one live grenade was found during those works in 2015. All grenades should be treated with caution and should be left in situ until this determination has been made by qualified UXO personnel contacted by the Project UXO Coordinator.

The items of UXO or EOM that may be encountered while working on the Project Site are shown in Figure 3 to Figure 6.



Figure 3: Mills 36 Hand Grenade

The grenades used on the range in Area C were all of the Mills 36 type shown in Figure 3. The EOM from the grenade range clearance was extensive and 1 live grenade was found during the remediation works in 2015. All potential complete grenades should be treated with caution and should be left in situ until this determination (Complete) has been made by qualified UXO personnel contacted by the Project UXO Coordinator.



Figure 4: Mills 36 Hand Grenade Detonator Assembly

The detonator assembly complete has been found on the site the Boot Land (see Figure 4) and is believed to have been the result of a poor demolition serial for a quantity of Mills 36 grenades. Thirteen were found during the remediation works in 2015.

Typical Smoke Grenade	
Dimensions:	Approx. 65 x 115mm (2.5 x 4.5in)
Type:	Smoke
Date Introduced:	Current MoD issue
Remarks:	Smoke grenades are used as ground-to-ground or ground-to-air signalling devices, target or landing zone marking devices, and screening devices for unit movement.

Figure 5: Typical Smoke Grenade

Smoke grenades would have been used in the area. Older types of smoke grenade smoke composition may be toxic if any unburnt material remains and should not be handled without adequate personal and protective equipment such as nitrile gloves and work gloves. Unless the item is complete it is unlikely to pose an UXO risk. Remnants and expended smoke grenades can be collected in a suitable container and removed from the work area, Complete unexpended grenades that have their flyoff lever and pin in place should be left in

situ until this determination has been made by qualified UXO personnel contacted by the Project UXO Coordinator.



Figure 6: 7.62 and 5.56 blank ammunition

There are two different types of blank ammunition to be found all over the site from post-World War Two training for recruits at the nearby School of Military Engineering. The 7.62 Calibre blanks date back to the 1950's with the 5.56 blanks coming into service in the late 80's. This shows the length of time the area was used by Defence. Small Arms Ammunition are not considered to be UXO. These projectiles are made of plastic or brass with a rimfire cap in the base. Fired cartridges do not pose a risk. Any found should be collected in a suitable container and removed from the works area and the Project UXO coordinator advised. Unfired projectiles pose no risk as long as they are not mishandled. They should be placed into a suitable container and kept separate from the fired cartridges. They do need handing over to the respective authority JEOS.

4 CONCLUSION

This “Road of Bullets” to the north of the Boot Land site was remediated in 2015 along with a former ungazetted grenade range which was used primarily for hand thrown grenades.

The 11.53 ha Grenade Range Area (Area C) was remediated to a depth of 100 mm in 2015. The likelihood of any complete remnant UXO in this area is very low.

Outside of Area C, there is not expected to be any UXO or major EOM contamination. Some small arms ammunition cartridges may exist but are all expected to be expended blank rounds - non-expended blank rounds are a low hazard if handled correctly.

To mitigate this and any other potential UXO or EOM finds, a suitable person is to be nominated as the Project UXO Coordinator for the works and should be conversant with the details in Section 3, Appendix A and Appendix B in addition to being on site during the excavation activities in this area.

No further vegetation reduction searches or UXO investigations are considered necessary for the Project.

A large, light gray rounded rectangular area with a dark purple shape cut out of its lower-left corner, serving as a placeholder for the Hazard Flow Chart.

Appendix A
Hazard Flow Chart

A.1 Actions on finding UXO or EOM

Stop, think, act. If you are unsure whether an item is UXO or EOM treat it as UXO until informed otherwise. Follow the initial steps in the incident flow chart. Only the items shown in Section 3 are covered by this hazard flow chart.

The UXO Coordinator should contact the UXO Specialist for advice if unsure of the item identification.

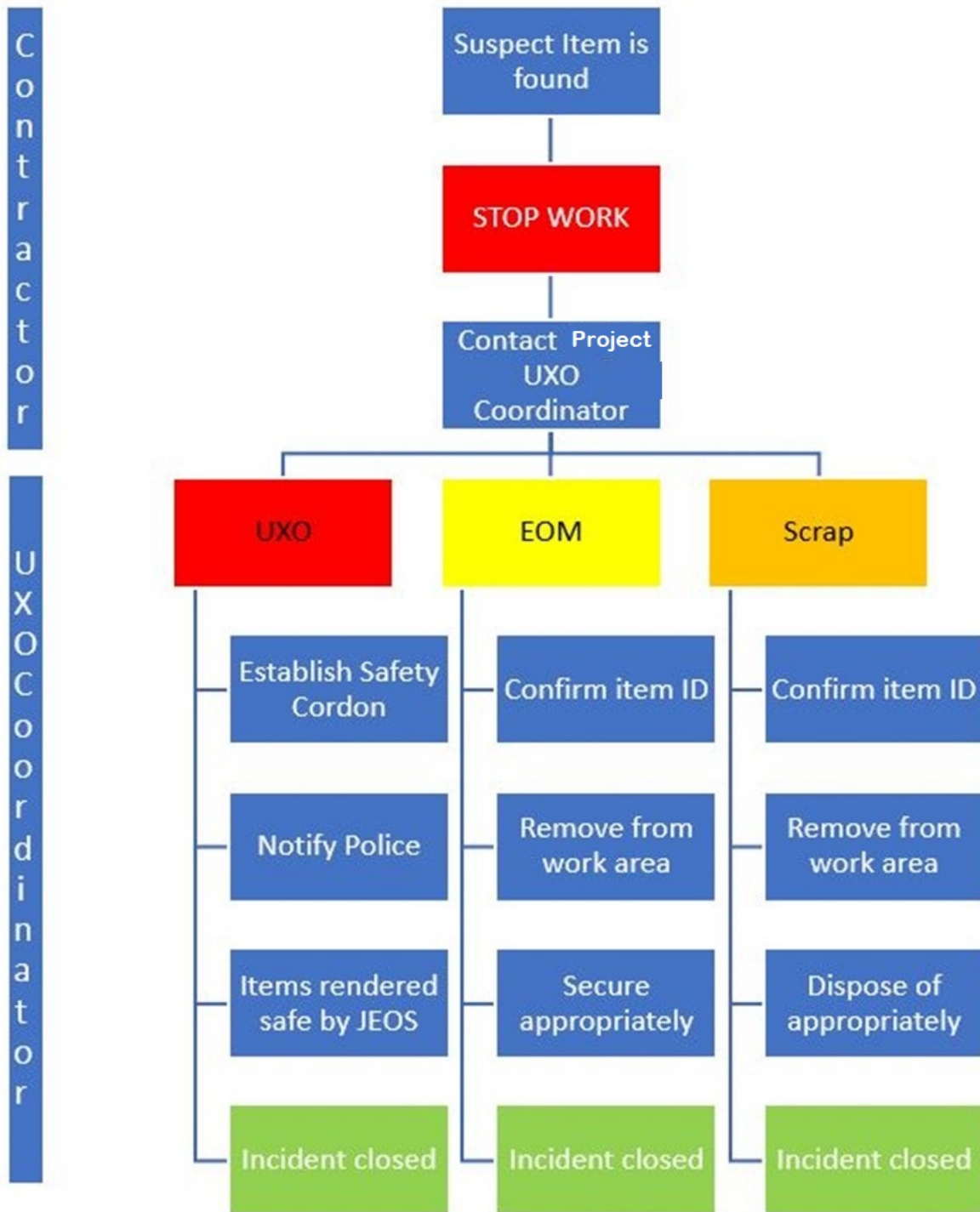


Figure 7: Incident Flow Chart

The designated Project UXO Coordinator will be responsible for determining how the incident is actioned using the incident flow chart and Section 3 as a guide to aid in identifying items found.



Appendix B UXO Coordinator Actions

B.1 UXO Item found

If the item found is identified as potential UXO the work area must be cleared and an initial cordon of 50 metres radius put in place. The item is to be clearly marked without physically disturbing the item any further. If possible, take photographs of the item from several angles

The NSW Police should be informed via triple zero that a potential UXO item has been found. The NSW Police will contact either the NSW Police Bomb Squad or the Joint Explosives Ordnance Support who will deal with the incident. They will want to know the following information.

1. The location of the item and how is it marked
2. A full description of the item (Do not go back to the item)

Follow their advice in regard to extending or collapsing cordons and any other requirements.

B.2 EOM Item Found

If the item found is identified as EOM, expended small arms blank ammunition or expended smoke grenade (noting the PPE requirements for handling smoke grenades, then these items can be placed into a 20 litre plastic sealable bucket and removed from the work site. These items can be mixed and are not hazardous. All other items must be further identified by the UXO Coordinator using Section 3. If the UXO Coordinator is unsure with regard to identification then further advice should be sought from the UXO Specialist, or the process under Section B1 above should be followed.

Once the bucket is full or on completion of a set of work the Project UXO Coordinator should contact Joint Explosive Ordnance Support (JEOS) NSW to arrange a suitable pick up or drop off time and date. The number to call is 02 4728 0019 and follow with an email request to JEOS.NSWACT@defence.gov.au.

B.3 Scrap Item Found

If the item found is identified as scrap metal, then it can be removed from the worksite and disposed of to a local recycling metal merchant.

D1: Contamination Register

AEC or unexpected find	Location / description	Management / mitigation measures	Assessment / investigation report reference