Reason for update	Plan, version and section subject to minor update
EPBC Act 2020/8839 variation, dated 14 January 2025.	Contamination Management Sub-Plan (Version D), updated to Version E: • Section 1.1 Background and Project Description updated to reflect approval of the variation to EPBC 2020/8839 dated 14 January 2025 • Section 2.2 Objectives updated to reflect that EPBC 2020/8839 was varied on 14 January 2025.
Construction Bushfire Management Plan	
Consistency Assessment – Proposed Design and Boundary Changes	Construction Bushfire Management Plan (Version E), updated to Version F: • Figure 1.1: Project location. Figure updated to reflect revised construction footprint. • Figure 1.2: Project layout. Figure updated to reflect revised construction footprint. • Figure 4.2: Project Bushfire Prone Land Map. Figure updated to reflect revised construction footprint. • Figure 6.1: Assembly Points and Evacuation Route. Figure updated to reflect revised construction footprint.
EPBC Act 2020/8839 variation, dated 14 January 2025.	Construction Bushfire Management Plan (Version E), updated to Version F: • Section 1.1 Background and Project Description updated to reflect approval of the variation to EPBC 2020/8839 dated 14 January 2025 • Section 2.2 Objectives updated to reflect that EPBC 2020/8839 was varied on 14 January 2025.
Construction Air Quality Management Plan	
Consistency Assessment – Proposed Design and Boundary Changes	Construction Air Quality Management Plan (Version E), updated to Version F: • Figure 1.1: Project location. Figure updated to reflect revised construction footprint. • Figure 1.2: Project layout. Figure updated to reflect revised construction footprint. • Figure 4.1: Receptors for construction impacts. Figure updated to reflect revised construction footprint.
EPBC Act 2020/8839 variation, dated 14 January 2025.	Construction Air Quality Management Plan (Version E), updated to Version F • Section 1.1 Background and Project Description updated to reflect approval of the variation to EPBC 2020/8839 dated 14 January 2025 • Section 2.2 Objectives updated to reflect that EPBC 2020/8839 was varied on 14 January 2025.
Construction Waste and Resource Management Sub-Plan	
Consistency Assessment – Proposed Design and Boundary Changes	Construction Waste and Resource Management Sub-Plan (Version D), updated to Version E: • Figure 1.1: Project location. Figure updated to reflect revised construction footprint.

Reason for update	Plan, version and section subject to minor update
	• Figure 1.2: Project layout. Figure updated to reflect revised construction footprint.
EPBC Act 2020/8839 variation, dated 14 January 2025.	Construction Waste and Resource Management Sub-Plan (Version D), updated to Version E: • Section 1.1 Background and Project Description updated to reflect approval of the variation to EPBC 2020/8839 dated 14 January 2025 • Section 2.2 Objectives updated to reflect that EPBC 2020/8839 was varied on 14 January 2025.

APPENDIX B Secondary CoA and REMMs

B1: NSW Infrastructure Secondary CoA

No.	Requirement	Timing	Document Reference
E11	Flood information including flood reports, models and geographic information system outputs, and work as executed information from a registered surveyor certifying finished ground levels and the dimensions and finished levels of all structures within the flood prone land, must be provided to the relevant Council, OEH and the SES in order to assist in preparing relevant documents and to reflect changes in flood behaviour as a result of the SSI. The Council, OEH and the SES must be notified in writing that the information is available no later than one month following the completion of construction. Information requested by the relevant Council, OEH or the SES must be provided no later than six months following the completion of construction or within another timeframe agreed with the relevant Council, OEH and the SES.	One month following the completion of construction	Section 1.6.3 Flood extent maps Detailed Design drawings Table 6.1 SW22
E31	Before the commencement of any work, erosion and sediment controls must be installed and maintained in accordance with the publication Managing Urban Stormwater: Soils & Construction (4th edition, Landcom 2004) commonly referred to as the 'Blue Book'.	Prior to construction	Section 6.1 SW02
E75	The SSI must be designed, constructed and operated so as to maintain the NSW Water Quality Objectives where they are being achieved as at the date of this approval, and contribute towards achievement of the NSW Water Quality Objectives over time where they are not being achieved as at the date of this approval, unless an EPL in force in respect of the SSI contains different requirements in relation to the NSW Water Quality Objectives, in which case those requirements must be complied with.	Prior to construction	Appendix D (Refer to EPL once received)
E77	Work on waterfront land must be carried out in accordance with controlled activity guidelines.	During construction	Section 6.6 Table 6.1 SW10
E78	Unless an EPL is in force in respect to the SSI and that licence specifies alternative criteria, discharges from construction water treatment plants to surface waters must not exceed:	During construction	No treatment plants are proposed for construction. The water quality parameters prescribed within the EPL will be adhered to and the Construction Dewatering and Discharge Procedure will be updated once received.
	(a) the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2018 (ANZG 2018) default guideline values for toxicants at the 90 per cent species protection level		
	(b) for physical and chemical stressors, the guideline values set out in Tables 3.3.2 and 3.3.3 of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000		
	(c) for bioaccumulative and persistent toxicants, the ANZG 2018 values at a minimum of 95 per cent species protection level. Where the ANZG 2018 does not provide a default guideline value for a particular pollutant, the approaches set out in the ANZG 2018 for deriving guideline values, using interim guideline values and/or using other		

No.	Requirement	Timing	Document Reference
	lines of evidence such as international scientific literature or water quality guidelines from other countries, must be used.		
E79	If stormwater discharges are proposed during construction, a Water Pollution Impact Assessment commensurate with the potential risk and consistent with the National Water Quality Guidelines must be prepared and submitted to the Planning Secretary for information. The assessment at a minimum must:	During construction	Stormwater discharges to waterways are not proposed during construction. However, should discharges direct to water courses be required, the procedures outlined in Appendix D will be implemented.
	(a) Provide details of the discharge locations and receiving waterways		
	(b) Characterise the expected discharge quality under typical and worst-case conditions for all pollutants present at levels that pose a risk of non-trivial harm to human health or the environment		
	(c) Assess the potential impact of discharges on the environmental values of the receiving waterway, including typical through to worst-case scenarios with reference to the relevant Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018) for slightly to moderately disturbed ecosystems for standard receiving environments; and		
	(d) Demonstrate that all practical and reasonable measures to avoid discharges (e.g. stormwater reuse or tinkering for offsite disposal) and minimise water pollution and protect human health and the environment from harm are investigated and implemented.		

B2: Secondary REMMs

No.	Requirements	Timing	Document reference
BIO07	Sediment controls will be developed and implemented at Anzac Creek crossing.	Prior to construction During construction	Section 6.1 Section 6.6 Table 6.1 SW11 SW12
BIO15	Re-vegetation of cleared areas as quickly as possible following construction.	During construction	Table 6.1 SW04
BIO16	Screening of water that is used for dust suppression.	During construction	Table 6.1 SW04
BIO22	Use of natural erosion controls incorporating organic materials, micro water capture and contour shaping.	During construction	Section 6.1
BIO23	Diversion of clean water around construction areas, rather than through them.	During construction	Section 6.1
BIO24	Stabilisation and rehabilitation of works areas as soon as practicable.	During construction	Section 6.1 SW04
BIO25	Siting of sediment basins to manage run-off from construction areas and use of captured water for dust suppression.	During construction	Section 6.1 SW05 SW06 Section 6.2
BIO26	Management of sedimentation via sediment and erosion control plans for the entire construction footprint.	During construction	Section 6.1 SW01
WAR04	An Erosion and Sediment Control Plan (ESCP) will be prepared in accordance with Managing Urban Stormwater: Soils and Construction – Volume 1 (Landcom 2004) for the construction phase of the Project.	Prior to and during construction	Section 6.1 SW01 Appendix F
WAR05	Stormwater re-use is to be prioritised over potable water for site water usage where possible.	During construction	Section 6.1
WAR07	Culvert works are to be scheduled during periods of lower rainfall where possible to limit contact with stormwater. Cofferdams and diversions will be installed to provide dry working disturbed areas within Anzac Creek.	During construction	Section 6.6
WAR08	Construction sediment basins will be designed to the 80th percentile 5-day rainfall event. Basin design will also consider the outcomes of the Targeted Site Investigation.	During construction	Section 6.2.1
WAR09	Implementation of diversion channels and drains will be constructed to divert water around the Project Site for up to the 10-year ARI design storm event.	During construction	Section 6.1 Section 6.6Table 6.1 SW04
WAR14	Where areas of the Project site is constrained at tie-ins to existing roads (e.g. areas where the terrain is flat, and levels limit the use of some water management measures). At these areas, where	During construction	Section 6.2.1

No.	Requirements	Timing	Document reference
	practical, alternative water management measures will be implemented.		
WAR16	Outlet structures within Anzac Creek will be constructed in accordance with NRAR's Guideline for outlet structures on waterfront land (NSW Office of Water 2012).	Prior to construction During construction	Section 6.6 Table 6.1 SW10
WAR17	A hydrogeological assessment will be undertaken to assess the impacts of the excavations on the underlying aquifer and determine where the base of the excavation is with respect to site groundwater levels.	Prior to construction	Section 6.7 Table 6.1 SW20
WAR18	Each stormwater retention excavation work will be subject to assessment to determine if an impermeable liner is required in order to protect the underlying groundwater quality.	Prior to construction During construction	Section 6.7
AIR16	Revegetation of earthworks and exposed areas/soil stockpiles to stabilise surfaces will be undertaken as soon as practicable.	During construction	Table 6.1 SW04

APPENDIX C Construction Surface Water Quality Monitoring Program

SSI-10053

MOOREBANK AVENUE REALIGNMENT WORKS

APPENDIX C

Construction Surface Water Monitoring Program

22 JANUARY 2025

NATIONAL INTERMODAL CORPORATION

MOOREBANK AVENUE REALIGNMENT WORKS

CONSTRUCTION SURFACE WATER MONITORING PROGRAM

Author [redacted]

Checker

Approver

Report No 01

Date 22/01/2025

Revision Text E

TECHNICAL SPECIALIST DETAILS

Name	Qualification and Experience
[redacted]	[redacted]

REVISIONS

Revision	Date	Description	Prepared By	Approved By
A	27/02/2023	First draft for client review	[redacted]	
B	26/05/2023	Response based on National Intermodal comments		
C	23/06/2023	Response based on National Intermodal comments		
D	31/08/2023	Response based on ER comments		
E	22/01/2025	Updated to reflect revised construction footprint		

CONTENTS

ANNEXURES

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND DEFINITIONS

Acronym	Definition
BTEXN	Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene
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.
CSWMP	Construction Soil and Water Management Plan
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
EPL	Environment Protection Licence
ER	Environmental Representative
Infrastructure Approval	SSI 10053 or NSW CoA
Low Impact Work	As defined in the Infrastructure Approval, and which Includes activities like survey work, investigative drilling, minor clearing, installation of mitigation measures etc. The low impact work described in this definition becomes construction when the Construction Environmental Management Plan is approved. This also applies to low impact work that has already commenced.
MARW	Moorebank Avenue Realignment Works
MIP	Moorebank Intermodal Precinct, which includes MPE and MPW
Monitoring Program	This Surface Water Monitoring Program
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.
NATA	National Association of Testing Authorities
National Intermodal	National Intermodal Corporation
NTU	Nephelometric Turbidity Units
PAH	Poly-cyclic aromatic hydrocarbons
PFAS	Per and poly-fluoroalkyl substances
PCB	Polychlorinated Biphenyls
Planning Secretary	Secretary to the DPE

Acronym	Definition
Project Site	Refers to the construction footprint area which is approximately 18.96 hectares and includes access for the construction of road embankments and cuttings, temporary and permanent fencing, temporary and permanent water quality control basins, ancillary facilities, access roads and construction side roads. It is generally bounded by the Defence Joint Logistics Unit (DJLU), MPE, Boot Land and the Sydney Trains owned land adjacent to the East Hills Railway.
REMM	Revised Environmental Management Measures
RtS	Response to Submissions
SSI	State significant infrastructure
TfNSW	Transport for NSW
The Project	Moorebank Avenue Realignment Works
The Proponent	National Intermodal Corporation
TSS	Total Suspended Solids

1 INTRODUCTION

1.1 Context

This Construction Surface Water Monitoring Program ('Monitoring Program') has been developed in accordance with NSW Revised Environmental Management Measure (REMM) WAR03. It describes the environmental surface water monitoring activities to be undertaken during construction of the Moorebank Avenue Realignment Works (the Project). The purpose of this Monitoring Program is to:

- Provide procedures to monitor surface water impacts during construction of the Project
- Assess the effectiveness of the water management system
- Identify and quantify water quality impacts to receiving waters
- Meet the requirements of the REMM for the Project
- Meet any relevant legal and other requirements for the Project.

SMART (Specific, Measurable, Achievable, Realistic and Timely) principles have been considered in the preparation of this Monitoring Program. See Section 6.8 in the Construction Soil and Water Management Plan (CSWMP) for more information.

This Monitoring Program is to be read in conjunction with the CSWMP. Where details within both plans overlap, these have been retained in the CSWMP only and reference to sections within the CSWMP have been made for ease of reference within this Monitoring Program.

1.2 Background and Project Description

National Intermodal Corporation (National Intermodal) plans to realign a section of Moorebank Avenue. The Project involves the realignment of an existing two-kilometre section of Moorebank Avenue, from 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 East Precinct (MPE site) and the Moorebank West Precinct (MPW site).

1.3 Responsibilities

Site personnel or sub-contractors with suitable experience and qualifications will undertake the monitoring outlined in this Monitoring Program.

The Construction Contractor is responsible for ensuring that all legal and other requirements described in this Monitoring Program are met.

1.4 Approval, Review and Modification

This Monitoring Program will be reviewed every six months and as required. Any amendments will be documented in subsequent revisions of this Monitoring Program. A copy of the updated Monitoring Program and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure outlined in the CEMP. Site personnel with responsibilities relevant to surface water monitoring will be informed of any amendments to the Monitoring Program and training provided where required.

1.5 Guidelines, Policies and Specification

The main guidelines, specifications and policy documents relevant to this Monitoring Program include:

- Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DECC, 2008)
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ, 2000)
- Code of Practice for Water Management - Road Development and Management (RTA, 1999)
- AS/NZS 5667.1.1988 (R2016) Water quality - Sampling Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples

1.6 Revised Environmental Management Measures

The applicable REMM relevant to the development of this Monitoring Program is listed in Table 1.1.

Table 1.1: Monitoring Program Requirements

No.	Requirements	Document reference
REMM WAR03	A surface water monitoring program for the construction phase of the Project will be developed as part of the SWMP. Monitoring locations will target discharge locations such as temporary sediment basins and receiving waters.	This Monitoring Program

2 BASELINE DATA

Pre-construction baseline data has been collected since 2013 for Anzac Creek. Baseline data has been complied into the following reports:

- Moorebank Precinct East Stage 2: Biodiversity Monitoring in Anzac Creek Spring 2022 Survey (Bio-Analysis, 2023)
- Moorebank Precinct East (MPE) Stage 2: Baseline Aquatic Ecological Monitoring Report and Biodiversity Monitoring Strategy (Biosis, 2018)
- Moorebank Intermodal Terminal Project: Environmental Impact Statement – Surface Water Assessment (Parsons Brinckerhoff, 2014)
- SIMTA Moorebank Intermodal Terminal Facility: Flora and Fauna Assessment (Hyder, 2013).

The Moorebank Precinct East (MPE) Stage 2: Baseline Aquatic Ecological Monitoring Report and Biodiversity Monitoring Strategy (Biosis, 2018) provides the baseline data for the Project which is provided in Annexure 1. General water quality sampling along Anzac Creek has been undertaken from 2013 with the most recent monitoring undertaken in Spring 2022 (Bio-Analysis 2023). This is summarised in Table 2.1.

Table 2.1: Previous Water Quality Sampling Summary

Water Quality Sampling Report	Observations
Moorebank Precinct East Stage 2: Biodiversity Monitoring in Anzac Creek Spring 2022 Survey (Bio-Analysis, 2023)	• Aluminium, nickel and copper concentrations were observed to exceed guideline values in Anzac Creek • pH and dissolved oxygen were lower than the ANZECC (2000) guideline range • Turbidity exceeded the ANZECC guideline value • Total nitrogen occasionally exceed ANZECC guideline value.
MPE Stage 2: Baseline Aquatic Ecological Monitoring Report and Biodiversity Monitoring Strategy (Biosis, 2018)	• Most physico-chemical water quality parameters are within ANZECC guidelines for low land aquatic ecosystems in south-eastern Australia • pH and dissolved oxygen were occassionally lower than the ANZECC guideline range • Turbidity exceeded the ANZECC guideline value.
Moorebank Intermodal Terminal Project: Environmental Impact Statement – Surface Water Assessment, prepared (Parsons Brinckerhoff, 2014)	• No major exceedances of metals that indicate unusual or long-term trends of concern • Aluminium concentrations were observed to exceed guideline values in one sample on Anzac Creek
SIMTA Moorebank Intermodal Terminal Facility: Flora and Fauna Assessment (Hyder, 2013)	• Total nitrogen and total phosphorus occasionally exceed ANZECC guideline values • Anzac Creek was observed to exceed guideline values more frequently, which was attributed to runoff from the Royal Australian Engineers golf course

2.1 Receiving Surface Water Quality

Pre-construction surface water quality to date has been assessed against the ANZECC and ARMCANZ water quality guidelines (2000) including trigger values for protection of slightly disturbed south-eastern Australian lowland river ecosystems (i.e. systems at < 150 metres altitude).

3 MONITORING PROCEDURES

3.1 Monitoring Criteria

The EPL will stipulate specific conditions related to water management including monitoring requirements. Water quality parameters upon receipt of the EPL will be adhered to and this Monitoring Program will be updated as required. These criteria will be used to assess potential impacts to surface water receiving environments.

Procedures for monitoring discharges and dewatering events are addressed in the Discharge Management Plan (Appendix D of the CSWMP).

3.2 Surface Water Monitoring Locations

The Project surface water monitoring sites are listed in Table 3.1. These monitoring locations are based on baseline data provided in the Biosis 2018 report. Surface water monitoring has previously been undertaken prior to construction of MPE Stage 2 and continues to be undertaken seasonally.

The monitoring locations will be reviewed prior to construction and monitoring locations closer to the Project alignment may be proposed. Locations will be reviewed with the intention of identifying sites that most accurately identify water quality changes due to the Project itself, rather than external influences in the catchment (especially in downstream samples) (see Figure 3.1).

Table 3.1: Proposed Monitoring Locations

ID	Location	Waterway	Catchment
SWML 1	-33.961109, 150.922984	Anzac Creek	N/A (not indicated in the EIS/RtS)
SWML 2	-33.960533, 150.928408	Anzac Creek	N/A (not indicated in the EIS/RtS)
SWML 3	-33.948835, 150.937309	Anzac Creek	Outlet C
SWML 4	-33.946449, 150.937092	Anzac Creek	Outlet B

Monitoring locations and changes to the number of locations may also be refined based on monitoring results, adaptive management outcomes and upon receipt of the EPL (refer to Section 4.1). The CSWMP will be updated to reflect these changes.

3.3 Surface Water Monitoring Frequency

3.3.1 Routine Sampling Frequency

Receiving water samples will be analysed for the analytes identified in Table 3.2 at least monthly during construction.

3.3.2 Wet Weather Sampling

Wet weather sampling events are defined as 24.4 mm or more of rain within 24 hours recorded at the Bankstown AWS Bureau of Meteorology (BoM) gauge (#066137). The trigger is designed to capture one wet weather sampling event per 6-month period. Sampling will occur once within the following 24 hours of the rain event. If rainfall events are regularly less than 24.4 mm, opportunistic wet weather monitoring will be undertaken to enable wet weather data to be collected.

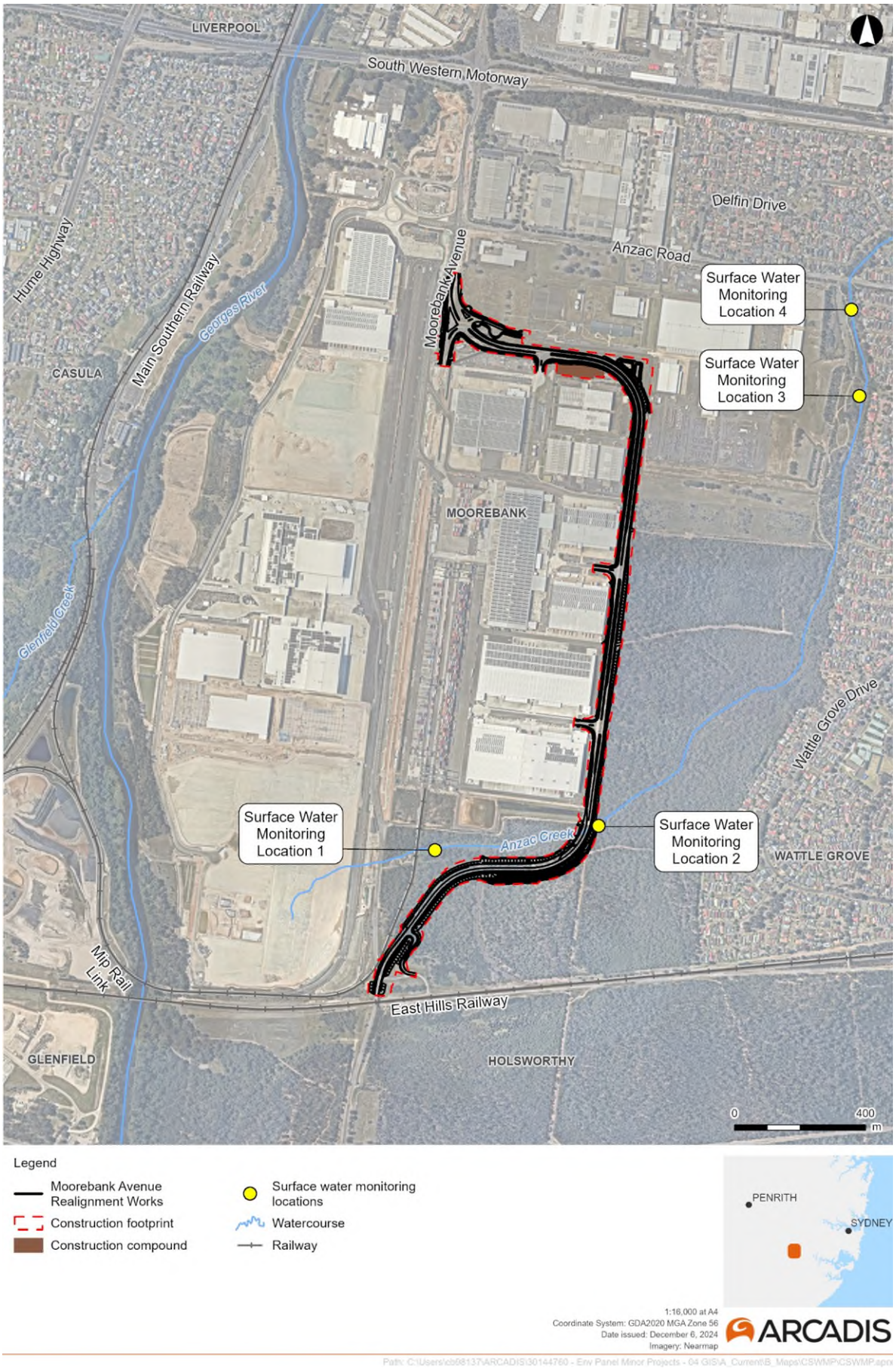


Figure 3.1: Proposed Monitoring Locations

3.4 Monitoring Analytes

The Revised Water Assessment (Appendix D of the RtS) recommended an analytical suite for the Project. These are presented in Table 3.2.

Table 3.2: Recommended Analytes

Category	Parameters	Analysis Method
Physical and chemical stressors	Dissolved oxygen, electrical conductivity, pH, total dissolved solids, turbidity	In situ with a calibrated hand-held water quality meter
	Total suspended solids (TSS)	Analysis undertaken at National Association of Testing Authorities (NATA) accredited laboratory
Nutrients	Ammonia (NH_3), nitrate (NO_2), nitrite (NO_3), total Kjeldahl nitrogen (TKN), total nitrogen (TN), soluble reactive phosphorus (SRP), total phosphorus (TN)	Analysis undertaken at NATA accredited laboratory
Dissolved metals	Aluminium, arsenic, boron, cadmium, chromium, copper, iron, lead, manganese, nickel, zinc	Analysis undertaken at NATA accredited laboratory
Other	Total hardness, oil and grease, Total Recoverable Hydrocarbons (TRH), BTEXN, polycyclic aromatic hydrocarbons (PAH), PFAS	Analysis undertaken at NATA accredited laboratory

3.5 Sampling Methodology

Water quality sampling will be conducted in accordance with:

- Australian Standard 5667:1998 Water Quality – Sampling, Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples (AS/NZS 5667.1:1998)
- Australian Standard 5667:1998 Water Quality – Sampling, Part 6: Guidance on sampling of rivers and streams (AS/NZS 5667.6:1998)
- Appointed consultant standard operating procedures (SOP) for surface water quality sampling, which complies with procedures detailed in the ANZECC & ARMCANZ (2000) guidelines and the NSW EPA's Approved Methods for the Sampling and Interpretation of Results of Water Pollutants (NSW EPA, 2004).

In situ water quality parameters will be recorded and grab samples collected from each site for laboratory analysis.

3.5.1 In Situ Water Quality Measurement

In situ field measurements of water quality are to be undertaken at all monitoring locations following a wet weather event and during the monthly site inspection by the Construction Contractor.

The following physical and chemical stressors (with the exception of total suspended solids) will be monitored *in situ* with a calibrated hand-held water quality meter for instantaneous results. All other parameters will be analysed at a laboratory accredited by the National Association of Testing Authorities (NATA).

- Temperature (°C)
- pH (pH units)
- Electrical Conductivity (µS/cm)

- Dissolved Oxygen (mg/L and % saturation)
- Turbidity (NTU).

Relevant site descriptions and notes will be taken for each site and visual observations made of:

- Visual oil and grease
- Occurrence of algal scum
- Streamflow
- Water clarity
- Water colour, odour and any other notable observations.

Photos will be taken to record the visual appearance of each water quality sample site at the time of sampling. Where appropriate, photos of the stream bank will also be taken to provide a record of bank stability, geomorphology and riparian vegetation condition.

3.5.2 Surface Water Sampling

Grab samples will be collected near the *in-situ* monitoring point to ensure representative sampling. At each site, several sub-samples will be taken from 100 - 200 mm depth below the surface using a long-handled sampling pole and bottle. The sub-samples will be combined in a bucket to form a 'composite' sample from which the sample bottles for analyses are filled. The bucket and the sampling bottle will be washed between sampling sites to minimise the potential for cross contamination.

Water quality samples will be transported with ice in an ice box to a NATA accredited laboratory, under Chain of Custody (CoC) requirements. Samples are analysed for the following:

- Microbiological public health indicator: Thermotolerant Coliforms
- Water quality indicators:
  - TSS - sediment runoff indicator
  - Nutrients - NH_3, NO_2, NO_3, TKN, TN, TP, SRP - nutrient indicators that are attributable to runoff impacts
  - Chlorophyll-a - algal indicator; algae proliferate in water if enriched by nutrients
  - Oil and grease - associated with runoff from construction activities related to roads
- Major urban pollutants: including ultra-trace Polychlorinated Biphenyls (PCBs); organochlorine and organo-phosphorus pesticides; fumigants; halogenated aliphatic and aromatic compounds; BTEXN (Benzene, Toluene, Ethylbenzene, Xylene, Naphthalene); phenols and poly-cyclic aromatic hydrocarbons (PAHs). These pollutants are associated with runoff from construction activities in relation to roads and certain landscapes
- Heavy metals: Arsenic (As), Cadmium (Cd), Chromium (Cr), Copper (Cu), Lead (Pb), Mercury (Hg), Nickel (Ni) and Zinc (Zn). These metals are associated with runoff from construction activities from certain peri-urban landscapes such as the Project area.

3.5.3 Sediment Basin Sampling

Testing of water will be undertaken prior to discharge in accordance with the Dewatering and Discharge Procedure, included as Appendix D of CSWMP. The Dewatering and Discharge Procedure also details discharge criteria and under what circumstances water can be discharged and the location of the discharge.

Any sump or trenched depressions containing substantial water will be monitored and pumped into the closest sediment basin by the Construction Contractor, if possible. If the water cannot be relocated to a nearby sediment basin, the water will be used for dust suppression or removed from site via a licenced liquid waste facility provider.

3.5.4 NTU and TSS Correlation

Turbidity is measured in Nephelometric Turbidity Units (NTU) and is a measurement of how light scatters when it is aimed at water and bounces off the suspended particles. It is not a measurement of the particles themselves, TSS provides this data can only be undertaken in a laboratory.

The Turbidity/TSS relationship is interpreted by linear regression analysis, but the relationship between TSS and turbidity is unique to each instrument and each construction site. Instruments will therefore be calibrated prior to each measurement.

To obtain a correlation:

Step 1: An *in-situ* test of turbidity and a grab sample must be taken. The grab sample will be sent to a NATA accredited laboratory to test for TSS. Monitoring will be undertaken before, during and after rainfall events

Step 2: Plot the correlation between turbidity and TSS

Step 3: Determine the correlation between turbidity and TSS based on TSS requirement. Dewatering can be undertaken based *on in-situ* turbidity measurements once correlation has been made. If correlation is not undertaken, a sample for TSS must be taken for each discharge.

Upon receipt of the EPL, this will determine the criteria parameter limits to meet for NTU and/or TSS and will be used for water sampling.

3.6 Calibration of Hand-held Meters

As identified in Table 3.2, a hand-held water quality meter will be used on site to spot check water quality to identify potential risks to surface water sources. Water quality meters will be calibrated in accordance with the manufacturers guidelines.

4 COMPLIANCE REQUIREMENT

4.1 Adaptive Management

This section outlines the procedures to identify and implement additional mitigation measures where criteria set out in this Monitoring Program are exceeded and found to be directly attributable to the Project:

- Analysis of the results by the Construction Contractor, in consultation with the Principals Representative and Construction Contractor Environmental Advisor, will be undertaken to determining possible causes for the exceedance, including identifying the specific activity responsible for the issue
- Site inspection by the Construction Contractor and Principals Representative
- Identified issues will be raised with the relevant personnel
- Identification and agreement of actions and/or additional mitigation measures to resolve or mitigate the exceedance
- Implement actions to rectify or mitigate the exceedance, including stop work arrangements where necessary or if directed by the ER
- Identifying and implementing additional mitigation measures.

Mitigation measures and preventative / corrective actions will be developed and the procedure for dealing with non-compliance with environmental management controls outlined in Section 7.2 of the CEMP. The Construction Contractor will be required to verify and document the effectiveness of any management measures or preventative / corrective actions implemented to avoid further exceedances.

The Construction Contractor will communicate regularly to ensure plans are co-ordinated and water quality impacts are minimised. The timing for any improvement will be agreed between the relevant Construction Contractor and Principals Representative (and ER if required) based on the level of risk or reoccurrence.

5 RECORDS

The Construction Contractor will maintain records of relevant data for each sampling event. This will include but not be limited to:

- Date and time for the sampling event at each location
- Water quality test results
- NATA chain of custody and NATA laboratory results
- Summary of monthly rainfall data and/or significant rainfall and storm events (if wet weather sampling)
- Compliance with the relevant criteria
- Calibration certificates
- Any other EPA licence requirements
- Analysis of the results and recommendations arising from the monitoring.

The Construction Contractors will report on sampling events and monitoring results in the Soil and Water Monitoring Reports to be prepared for the Project.

ANNEXURE 1 Baseline Data (Biosis, 2018)

Baseline surface water quality monitoring results for autumn 2018 in Anzac Creek are provided in the table below.

Figure	Parameter
Baseline Data 1	Field parameters (pH, EC, DO, turbidity, nutrients)
Baseline Data 2	Sediment metal results
Baseline Data 3	Sediment PFAS results
Baseline Data 4	Water PFAS results
Baseline Data 5	Metals

Baseline data 1 – Water quality field monitoring results (autumn, 2018)

Physicochemical parameter	NSW water quality and river flow objectives: Freshwater (Georges River Catchment)	AQ11	AQ12
Field measurements			
pH (pH units)	6.5-8.5	6.61	7.01
Dissolved Oxygen (% Saturation)	85-110	38	62
Electrical Conductivity (µS/cm)	125-2200	287	354
Temperature (°C)	-	26.72	18.49
Turbidity (NTU)	6-50	68	91
Nutrients (µg/L)			
Total Phosphorous	25	580	-
Total Nitrogen	350	8200	-
Total Kjeldahl Nitrogen	-	8200	-

Baseline data 2 – Sediment metal results (autumn 2018)

Physicochemical parameter	ISQG Trigger value	AQ1	AQ2	AQ4	AQ14
Total metals (mg/kg)					
Arsenic	20	<5	<5	<5	<5
Barium		110	110	60	<10
Beryllium		<1	<1	1	<1
Boron		<50	<50	<50	<50
Cadmium	1.5	<1	<1	<1	<1
Chromium	80	23	19	21	3
Cobalt		8	4	6	<2
Copper	65	31	40	12	<5
Lead	50	91	36	44	<5
Manganese		45	252	69	16
Mercury	0.15	<0.1	<0.1	<0.1	<0.1
Nickel	21	14	11	9	<2
Selenium		<5	<5	<5	<5
Vanadium		48	35	54	10
Zinc	200	93	103	96	17

Baseline data 3 – Sediment PFAS sample results (autumn 2018)

Physicochemical parameter	Urban/residential investigation levels (DEE 2016)	AQ1	AQ2	AQ4	AQ14
Perfluoroalkyl Sulfonic Acids (mg/kg)					
Perfluorobutane sulfonic acid (PFBS)		<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexane sulfonic acid (PFHxS)		0.0036	0.0008	0.0007	<0.0002
Perfluorooctane sulfonic acid (PFOS)	32	0.0444	0.0037	0.0061	0.0005
Perfluoroalkyl Carboxylic Acids (mg/kg)					
Perfluorobutanoic acid (PFBA)		<0.001	<0.001	<0.001	<0.001
Perfluoropentanoic acid (PFPeA)		<0.0002	<0.0002	<0.0002	<0.0002
Perfluorohexanoic acid (PFHxA)		<0.0002	<0.0002	<0.0002	<0.0002
Perfluoroheptanoic acid (PFHpA)		<0.0002	<0.0002	<0.0002	<0.0002
Perfluorooctanoic acid (PFOA)	29	0.0003	<0.0002	<0.0002	<0.0002
Fluorotelomer Sulfonic Acids (mg/kg)					
4:2 Fluorotelomer sulfonic acid (4:2 FTS)		<0.0005	<0.0005	<0.0005	<0.0005
6:2 Fluorotelomer sulfonic acid (6:2 FTS)		<0.0005	<0.0005	<0.0005	<0.0005
8:2 Fluorotelomer sulfonic acid (8:2 FTS)		<0.0005	<0.0005	<0.0005	<0.0005
10:2 Fluorotelomer sulfonic acid (10:2 FTS)		<0.0005	<0.0005	<0.0005	<0.0005
PFAS Sums (mg/kg)					
Sum of PFHxS and PFOS		0.048	0.0045	0.0068	0.0005
Sum of PFAS (WA DER List)		0.0483	0.0045	0.0068	0.0005

Baseline data 4 – Water PFAS sample results (autumn 2018)

Physicochemical parameter	95% species protection (DEE 2016)	AQ11
Perfluoroalkyl Sulfonic Acids (µg/L)		
Perfluorobutane sulfonic acid (PFBS)		<0.02
Perfluorohexane sulfonic acid (PFHxS)		0.02
Perfluorooctane sulfonic acid (PFOS)	0.13	0.03
Perfluoroalkyl Carboxylic Acids (µg/L)		
Perfluorobutanoic acid (PFBA)		<0.1
Perfluoropentanoic acid (PFPeA)		<0.02
Perfluorohexanoic acid (PFHxA)		<0.02
Perfluoroheptanoic acid (PFHpA)		<0.02
Perfluorooctanoic acid (PFOA)	220	<0.01
Fluorotelomer Sulfonic Acids (µg/L)		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)		<0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)		<0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)		<0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)		<0.05
PFAS Sums (µg/L)		
Sum of PFHxS and PFOS		0.05
Sum of PFAS (WA DER List)		0.05

Baseline data 5 – dissolved metals results (Autumn 2018)

Physicochemical parameter	ANZECC (2000) 90% protection criteria	AQ11
Dissolved metals (µg/L)		
Aluminium	80	260
Arsenic	42 (Arsenic as V)	<1
Barium	-	2
Beryllium	-	<1
Boron	680	<50
Cadmium	0.4	<0.1
Chromium	6	<1
Cobalt	-	<1
Copper	1.8	2
Iron	-	450
Lead	5.6	<1
Manganese	2500	3
Mercury	1.9 (inorganic Mercury)	<0.1
Molybdenum	-	<1
Nickel	13	<1
Selenium	18	<10
Strontium	-	52
Vanadium	-	<10
Zinc	15	<5
Total petroleum hydrocarbons (µg/L)		
C6 - C9 Fraction	-	<20
C10 - C14 Fraction	-	<50
C15 - C28 Fraction	-	<100
C29 - C36 Fraction	-	<50
C10 - C36 Fraction (sum)	-	<50
Total recoverable hydrocarbons - NEPM 2013 Fractions (µg/L)		
C6 - C10 Fraction	-	<20
C6 - C10 Fraction minus BTEX (F1)	-	<20
>C10 - C16 Fraction	-	<100
>C16 - C34 Fraction	-	<100
>C34 - C40 Fraction	-	<100
>C10 - C40 Fraction (sum)	-	<100
BTEXN (µg/L)		
Benzene	1300	<1
Toluene	-	<2
Ethylbenzene	-	<2
meta- & para-Xylene	-	<2
ortho-Xylene	470	<2
Total Xylenes	-	<2
Sum of BTEX	-	<1
Naphthalene	85	<5

APPENDIX D Dewatering and Discharge Procedure

SSI-10053

MOOREBANK AVENUE REALIGNMENT WORKS

APPENDIX D

Construction Dewatering and Discharge Procedure

31 AUGUST 2023

NATIONAL INTERMODAL CORPORATION

MOOREBANK AVENUE REALIGNMENT WORKS

DEWATERING AND DISCHARGE PROCEDURE

Author	[redacted]	
Checker		
Approver		

Report No 01

Date 31/08/2023

Revision Text D

TECHNICAL SPECIALIST DETAILS

Name	Qualification and Experience
[redacted]	[redacted]

REVISIONS

Revision	Date	Description	Prepared By	Approved By
A	28/02/2023	First draft for client review	[redacted]	
B	26/05/2023	Update following National Intermodal review		
C	23/06/2023	Update following National Intermodal review		
D	31/08/2023	Update following ER review		

CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND DEFINITIONS

Acronym	Definition
ARI	Annual Recurrence Interval
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
Construction	Includes all work required to construct the Project as described in the EIS and RtS (NSW CoA A1) including commissioning trials of equipment and temporary use of any part of the Project but excluding Low Impact Work which is carried out or completed before approval of the CEMP.
CSWMP	Construction Soil and Water Management Plan (CSWMP),
DEC	Department of Environment and Conservation (now DPE)
DJLU	Defence Joint Logistics Unit
DPE	Department of Planning and Environment (formerly DPIE)
DPI	Department of Primary Industries
DPIE	Department of Planning, Industry and Environment (now DPE)
EES	NSW Environment, Energy and Science (part of DPE)
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMS	Environmental management system
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	NSW Environment Protection Authority
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence
ER	Environmental Representative
ESCP	Erosion and Sediment Control Plan
EWMS	Environmental Work Method Statement
Infrastructure Approval	SSI 10053 or NSW CoA
Low Impact Work	As defined in the Infrastructure Approval, and which Includes activities like survey work, investigative drilling, minor clearing, installation of mitigation measures etc. The low impact work described in this definition becomes construction when the Construction Environmental Management Plan is approved. This also applies to low impact work that has already commenced.
MARW	Moorebank Avenue Realignment Works
MIP	Moorebank Intermodal Precinct, which includes MPE and MPW
MPE	Moorebank Precinct East
MPE Site	Comprises the MPE Stage 1 Project as approved by SSD 14-6766 for the development of the intermodal terminal facility (IMT) at Moorebank and MPE Stage 2 as approved under SSD 7628 (as modified) and MPE Concept Approval (MP 10_0193) for the construction and operation of warehousing and distribution facilities and upgrades to approximately 2.1 kilometres of Moorebank Avenue.

Acronym	Definition
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
Planning Secretary	Secretary to the DPE
Project Site	Refers to the construction footprint which is approximately 18.96 hectares and includes access for the construction of road embankments and cuttings, temporary and permanent fencing, temporary and permanent water quality control basins, ancillary facilities, access roads and construction side roads. It is generally bounded by the Defence Joint Logistics Unit (DJLU), MPE, Boot land and the Sydney Trains owned land adjacent to the East Hills Railway.
REMM	Revised Environmental Management Measures
RtS	Response to Submissions
SDS	Safety Data Sheets
SEARs	Secretary Environmental Assessment Requirements
SSI	State significant infrastructure
TfNSW	Transport for NSW
The Project	Moorebank Avenue Realignment Works
TSI	Targeted Site Investigation
WMP	Water Management Plan
WPIA	Water Pollution Impact Assessment

1 INTRODUCTION

1.1 Context

This Dewatering and Discharge Procedure ('the Procedure') has been developed in accordance with NSW Revised Environmental Management Measure (REMM) WAR06. This Procedure provides guidance to ensure that site dewatering activities are completed in a manner that does not cause harm to the environment during construction of the Moorebank Avenue Realignment Works (the Project). The purpose of this Procedure is to:

- Provide procedures to discharge water during construction of the Project
- Meet the requirements of the Revised Environmental Management Measures for the Project
- Meet any relevant legal and other requirements for the Project.
- Implement industry standard methods for dewatering
- Provide a clear methodology for the management of water discharges from the Project Site
- Ensure that water discharges from site are compliant with the:
  - Environmental Protection Licence (EPL)
  - Construction Soil and Water Management Plan.

SMART (Specific, Measurable, Achievable, Realistic and Timely) principles have been considered in the preparation of this Procedure. See Section 6.8 in the Construction Soil and Water Management Plan (CSWMP) for more information.

This Procedure is to be read in conjunction with the CSWMP. Where details within both plans overlap, these have been retained in the CSWMP only and reference to sections within the CSWMP have been made for ease of reference within this Procedure.

1.2 Background and Project Description

National Intermodal Corporation (National Intermodal) plans to realign a section of Moorebank Avenue. The Project involves the realignment of an existing two-kilometre section of Moorebank Avenue, from 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 East Precinct (MPE site) and the Moorebank West Precinct (MPW site).

1.3 Responsibilities

Site personnel or sub-contractors with suitable experience and qualifications who are trained and authorised will undertake the dewatering and discharge activities outlined in this Procedure.

The Construction Contractor is responsible for ensuring that all legal and other requirements described in this Procedure are met.

1.4 Approval, Review and Modification

This Procedure will be reviewed every six months and as required. Any amendments will be documented in subsequent revisions of this Procedure. A copy of the updated Procedure and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure outlined in the CEMP. Site personnel with responsibilities relevant to dewatering will be informed of any amendments to the Procedure and training provided where required.

1.5 Guidelines, Policies and Specification

The main guidelines, specifications and policy documents relevant to this Procedure include:

- Protection of the Environment Operations Act 1997 (POEO Act)
- Managing Urban Stormwater Soils and Construction (Landcom, 2004)
- TfNSW Water Discharge and Reuse Guideline (TfNSW, 2016)
- National Water Quality Guidelines.

1.6 Requirements

The applicable NSW CoA and REMMs relevant to the development of this Plan are listed in Table 1.1.

Table 1.1: Dewatering Requirements

No.	Requirements	Document reference
NSW CoA E75	The SSI must be designed, constructed and operated so as to maintain the NSW Water Quality Objectives where they are being achieved as at the date of this approval, and contribute towards achievement of the NSW Water Quality Objectives over time where they are not being achieved as at the date of this approval, unless an EPL in force in respect of the SSI contains different requirements in relation to the NSW Water Quality Objectives, in which case those requirements must be complied with.	Section 2 Section 2.4 Section 3
NSW CoA E78	Unless an EPL is in force in respect to the SSI and that licence specifies alternative criteria, discharges from construction water treatment plants to surface waters must not exceed:	Section 2 Section 2.4
	(a) the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2018 (ANZG 2018) default guideline values for toxicants at the 90 per cent species protection level;	Section 2.3.2
	(b) for physical and chemical stressors, the guideline values set out in Tables 3.3.2 and 3.3.3 of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000; and	Section 2.3.2
	(c) for bioaccumulative and persistent toxicants, the ANZG 2018 values at a minimum of 95 per cent species protection level. Where the ANZG 2018 does not provide a default guideline value for a particular pollutant, the approaches set out in the ANZG 2018 for deriving guideline values, using interim guideline values and/or using other lines of evidence such as international scientific literature or water quality guidelines from other countries, must be used.	Section 2.3.2
NSW CoA E79	If stormwater discharges are proposed during construction, a Water Pollution Impact Assessment commensurate with the potential risk and consistent with the National Water Quality Guidelines must be prepared and submitted to the Planning Secretary for information. The assessment at a minimum must:	Section 2.3 Construction Water Quality and Discharge Impact Assessment
	a) Provide details of the discharge locations and receiving waterways;	
	b) Characterise the expected discharge quality under typical and worst-case conditions for all pollutants present at levels that pose a risk of non-trivial harm to human health or the environment;	
	c) Assess the potential impact of discharges on the environmental values of the receiving waterway, including typical through to worst-case scenarios	

No.	Requirements	Document reference
	with reference to the relevant Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG 2018) for slightly to moderately disturbed ecosystems for standard receiving environments; and	
	d) Demonstrate that all practical and reasonable measures to avoid discharges (e.g. stormwater reuse or tinkering for offsite disposal) and minimise water pollution and protect human health and the environment from harm are investigated and implemented.	
REMM WAR06	A dewatering and discharge procedure is to be incorporated in the SWMP. Recommended discharge criteria is provided in Section 5.8 of the Water Assessment.	This Procedure

2 DISCHARGING WATER

2.1 Approach

The Construction Contractors approach to dewatering will generally follow the below hierarchy:

- Investigate opportunities for reuse. Onsite reuse may include applications such as dust suppression, earthworks compaction, vegetation establishment/rehabilitation, and plant/vehicle wash-down
- Investigate opportunities of discharging water to land to allow the water to infiltrate into the ground, thus avoiding direct discharge to, or pollution of, waters
- Discharge offsite. Onsite reuse or land discharge may be limited by climatic or site conditions (i.e. saturated ground) and water may need to be discharged to meet the sediment basins requirements (i.e. reinstating capacity) identified in the Blue Book (Landcom, 2004).

2.2 Environmental Work Method Statement

The Construction Contractor will develop an EWMS to manage and control dewatering activities in a manner that does not cause harm to the environment, including where construction water may be discharged into natural waterways.

EWMS incorporate appropriate mitigation measures and controls and identifies key procedures to be used concurrently with the EWMS. EWMS are specifically designed to communicate requirements, actions, processes and controls to construction personnel using plans, diagrams and simply written instructions. EWMS for use by the Construction Contractor is provided in Appendix F of the CEMP.

2.3 Water Quality Assessment and Criteria

A Construction Water Quality and Discharge Impact Assessment has been prepared to accompany the EPL application detailing proposed water quality criteria for off-site discharge. The Project EPL will stipulate specific conditions related to water management including dewatering and discharge requirements and this will be updated in this Dewatering and Discharge Procedure upon receipt of the EPL. Prior to any water being discharged, water quality parameters will be adhered to.

Sampling collection and monitoring is described in the Soil and Water Monitoring Program (Appendix C) and will be carried out in accordance with the Approved Methods for Sampling and Analysis of Water Pollutants in New South Wales (DEC, 2004) and any EPL requirements once received.

It is noted that where water quality parameters cannot be met, treatment of water will occur in accordance with Section 2.4 or water must be taken to an appropriately licensed offsite discharge facility.

Water quality testing will be undertaken less than 24 hours prior to a controlled discharge and daily for any continued controlled discharge.

2.3.1 Onsite Reuse

Onsite reuse includes reuse of water from sediment basins for onsite purposes only i.e. dust suppression. Parameters for onsite reuse of water are detailed in Table 2.1.

Table 2.1: Onsite Reuse Parameters

Parameter	Project Limits	Method of Assessment
Oil and grease	Not visible	Visual assessment

Parameter	Project Limits	Method of Assessment
pH	6.5-8.5	Water quality meter

If all criteria above are met, then the water may be authorised for reuse by the Construction Contractor. If the criteria are not met, treatment of water will occur in accordance with Section 2.4.

Onsite reuse can only occur if:

- Runoff generated by the reuse is to be minimised and controlled entirely within the site boundary
- Appropriate sediment controls are installed and maintained in accordance with the Blue Book
- There is no potential for discharged water to reach any watercourse (within or outside the site)
- No erosion is caused from the discharge
- Weather conditions are dry as wet conditions could lead to additional runoff.

Offsite discharge to land can only occur if:

- When the discharge occurs solely as a result of rainfall measured at the premises which exceeds a total of 24 mm of rainfall over any consecutive 5 day period
- Landholder permission is obtained
- Appropriate controls are installed at the discharge point and maintained in accordance with the Blue Book
- No erosion is caused from the discharge.

2.3.2 Offsite Discharges to Waterways and Drainage Channels

Stormwater discharges to waterways are anticipated to be minimal during construction. Water cannot be discharged off-site to water without an EPL in force.

Should discharge off-site be required, the water will be tested in accordance with criteria limits set out in Table 2.2 and will follow the dewatering procedure detailed in Section 2.5. Upon the receipt of the EPL, this Dewatering and Discharge Procedure will be updated with the criteria parameter limits.

Table 2.2: Parameters for off-site Discharge to Water

Parameter	ANZECC Limits	Method of Assessment
pH	6.5-8.5	Water quality meter
Total Suspended Solids	50 mg/L	Laboratory analysis and/or NTU and TSS correlation detailed in Construction Surface Water Monitoring Program
Turbidity	50 NTU	Water quality meter
Oil and grease	Not visible	Visual assessment
Colour	No visible discolouration	Visual assessment

.

2.3.3 Discharge, Inspection and Monitoring

Prior to the commencement of dewatering, the Construction Contractor will:

- Issue a Permit to Discharge

- Inspect the entire system, including intakes and outlets, pumping and discharge locations.

During discharge, the Construction Contractor will:

- Supervise dewatering activities at all times
- Inspect the entire system, including intakes and outlets, pumping and discharge locations
- Take hourly readings at the discharge point to ensure the criteria parameters for turbidity continue to be met
- Record all hourly readings in the Permit to Discharge
- STOP WORKS if any negative environmental impact such as flooding, erosion or dirty water discharge is observed.

2.4 Water Treatment

The Construction Contractor will identify the methods for treating water if the water does not meet the discharge criteria. This will include measures for treatment of pH, a flocculation procedure to manage total suspended solids (TSS), and methods to remove petroleum hydrocarbons, metals or other pollutants.

Where flocculation is necessary to settle suspended sediments in basins, the proposed coagulant will be applied as the flocculating agent to settle the sediments within 24 hours of the conclusion of each rain event causing runoff. Before applying a flocculating agent, the amount of the agent that is appropriate for the volume to be treated, the sediment type and the prevailing weather conditions will be determined.

The Construction Contractor will ensure that coagulants and other water treatment chemicals are appropriately stored on site. Bulk coagulants will be covered and positioned within erosion and sediment controls away from areas with the potential for water runoff. All treatment chemicals will be stored in appropriately bunded and covered locations that are locked to prevent unauthorised access. Requirements of the Safety Data Sheets will be followed.

2.5 Summary of Dewatering Procedure

Table 2.3 and Figure 2.1 detail the process for flocculation, dewatering and pumping of sediment basins.

Table 2.3: Dewatering Procedure

No.	Actions Required	Responsibility	When
General			
1	The Construction Contractor will develop an Environmental Work Method Statement (EWMS) for dewatering based on the requirements of the plan. Dewatering will be undertaken in accordance with the EWMS and this plan.	Construction Contractor's Environment Advisor	Prior to discharge
2	Those responsible for dewatering will be trained and authorised in the dewatering technique developed in the EWMS and this plan.	Construction Contractor's Environment Advisor	Prior to discharge
3	No discharge of water to be undertaken without a signed Permit to Discharge.	All Site Staff	During construction
Water Quality Analysis			

No.	Actions Required	Responsibility	When
1	Water quality analysis must be undertaken by trained and competent personnel using only approved and calibrated equipment on all water required to be discharged offsite.	Construction Contractor's Environment Advisor	Prior to discharge
2	Water quality analysis to be assessed against the discharge criteria established within the Dewatering and Discharge Procedure and updated criteria upon receipt of the EPL	Construction Contractor's Environment Advisor	Prior to discharge
3	If required adjust turbidity or pH to bring levels to within discharge criteria and re-test, or reapply until discharge criteria met: • Gypsum or similar for turbidity • Add acid/alkali for pH Dosage rates for gypsum to be determined on site by the Construction Contractors Environment Advisor based on site conditions. Dosage rate to be followed once determined.	Construction Contractor's Environment Advisor and Site Supervisor	Prior to discharge
4	Once discharge criteria have been met, a permit to discharge must be obtained and signed by the Construction Contractor's Environment Advisor and site staff that are trained and authorised undertaking the dewatering process. The discharge permit must be kept on site during the dewatering process.	Construction Contractor's Environment Advisor	Prior to discharge
5	Water quality monitoring results to be logged on the discharge permit.	Construction Contractor's Environment Advisor	Prior to discharge
Prior to Discharge			
1	The discharge location is to be confirmed and agreed i.e. onsite, offsite to land or offsite to water. The discharge location is to be inspected to ensure that the location is stabilised and additional erosion will not occur as a result of the discharging activities. Additional controls to be put in place if required.	Construction Contractor's Environment Advisor and Site Supervisor	Prior to discharge
2	Appropriate erosion and sediment controls will be established to minimise the potential for scour and erosion from dewatering activities.	Site Supervisor	Prior to discharge
Dewatering Technique			
1	Dewatering shall be undertaken with a power pump (e.g. flex drive pump), syphon, or High Efficiency Sediment (HES) basin, provided an appropriate risk assessment has been undertaken as part of the Dewatering Environmental Work Method Statement.	Site Supervisor	Prior to discharge
2	Where fuel powered pumps are used, the pump must be placed on a drip tray and water must be visually monitored for any oily film or residue by the operator or controller of the pump.	Site Supervisor	Prior to discharge

No.	Actions Required	Responsibility	When
3	Pump intakes shall be positioned (or suspended) above the floor of the excavation or sump to eliminate sediment pickup.	Site Supervisor	Prior to discharge
4	Where a permanent dewatering sump is to be setup, additional filtration is to be installed at the pump intake, where required.	Site Supervisor	Prior to discharge
5	Where watery slurry material is to be removed, a 'sucker truck' or sludge pump shall be used.	Site Supervisor	Prior to discharge
During Discharge			
1	The dewatering process to be attended at all times and discharge point to be monitored at least hourly.	Site Supervisor	During discharge
2	Water discharged to a sediment basin or storage tank must not cause any overflow of the basin or tanks to the surrounding work site or environment.	Site Supervisor	During discharge
3	The Site Supervisor will ensure the correct dewatering, treatment and discharge of water occurs.	Site Supervisor	During discharge

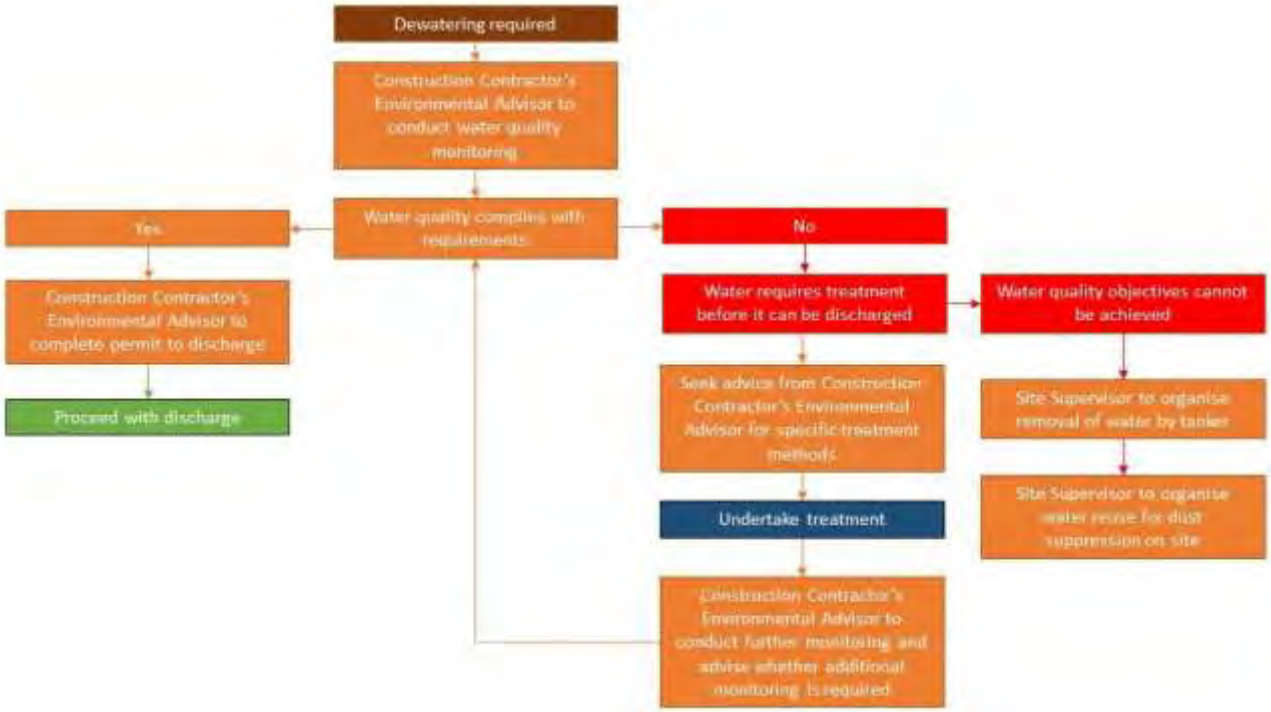


Figure 2.1: Dewatering Procedure Flowchart

3 RECORDS

The Construction Contractors will maintain records of relevant data, including records of water quality management and water discharge (Permit to Discharge).

A record will be maintained for each discharge that will include:

- Date and time for each discharge at each location
- Water quality test results for each discharge
- Personnel approving the dewatering activities
- Evidence of discharge monitoring, or risk assessment and mitigation measures used to eliminate the risks of pollution or erosion
- Details of aquatic fauna captured and relocated after dam dewatering has occurred
- Any other EPA licence requirements.

The Construction Contractors will report on site discharge monitoring results in the Soil and Water Monitoring Reports to be prepared for the Project. Details of the reporting are outlined in the Construction Soil and Water Monitoring Program (refer Appendix C of the CSWMP).

APPENDIX E Flood Emergency Response

The Project Site 1% AEP existing flooding conditions undertaken for 85% detailed design of the Project is shown in Figure E.1. Flood mapping shows that mainstream flooding along Anzac Creek is relatively well confined to the creek line for events of 1% AEP and the nearby MPE basin in the southern portion of the Project Site.

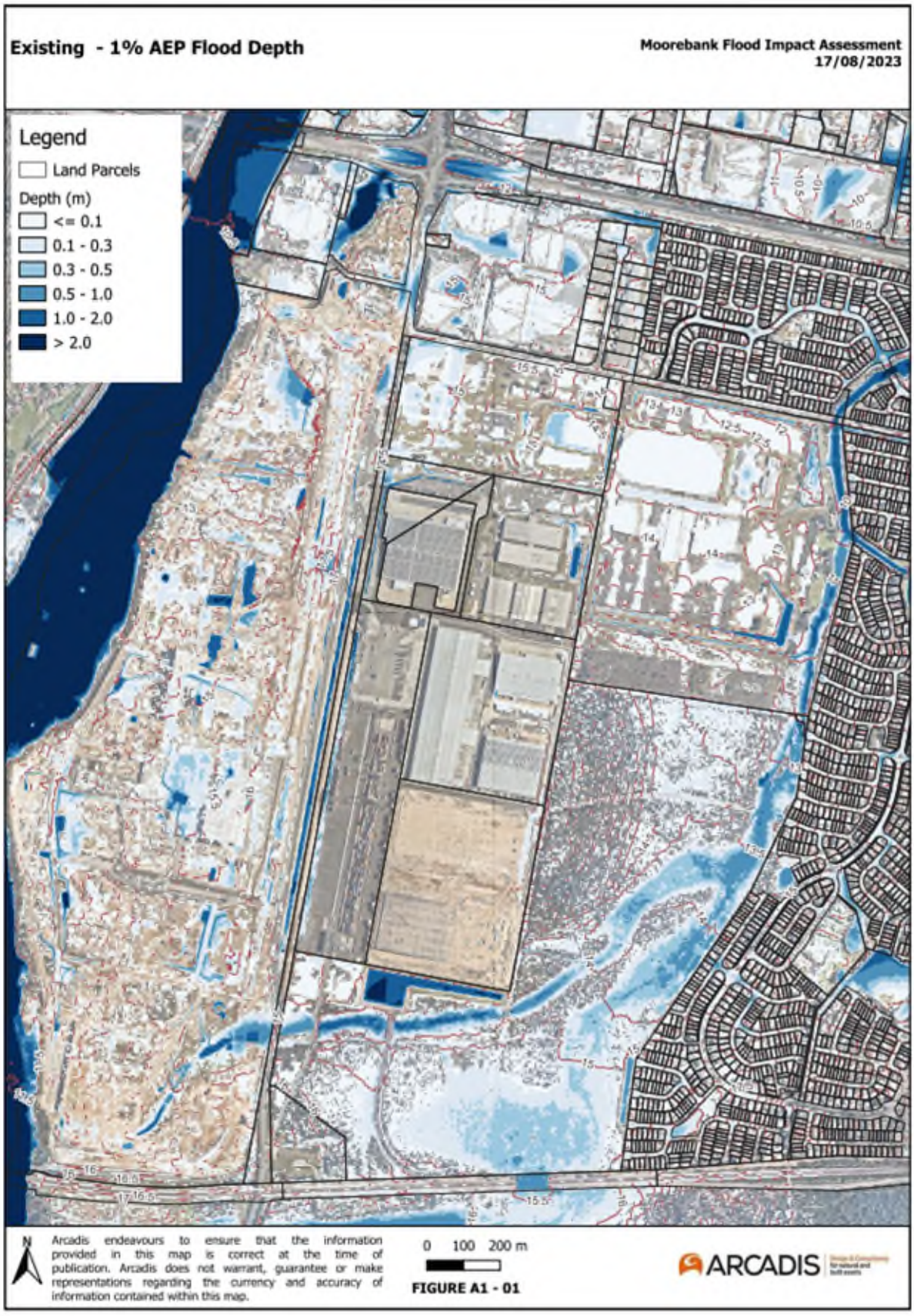


Figure E.1: Existing 1% AEP Flooding Conditions (Arcadis 85% Detailed Design)

Management actions for flood emergency response plan are summarised below.

Pre-flood Actions

The following actions will be undertaken as preventative measures to prepare for flooding on the Project Site:

- Daily monitoring of weather forecasts and flood alerts, using the Bureau of Meteorology (BoM)
- Training in flood emergency response will be provided to key personnel including Construction Contractor
- Activities that may affect existing drainage systems during construction will be planned and carried out so that existing hydraulic capacity of these systems is maintained where practicable
- Site planning regular site inspections which include the following tasks:
  - Minimise obstructions within flood prone areas, including stockpiles
  - Locate site compounds, stockpiles, waste containers, chemicals and dangerous goods above flood prone areas
  - Locate plant and equipment above flood prone areas
  - Install and maintain appropriate
  - Erosion and sediment controls in accordance with the CSWMP.

Preliminary Flood Response

The following actions will be undertaken on becoming are of a potential flooding event through monitoring BOM forecasts or an alert/warning being raised:

- Alert all site personnel to changed weather conditions and the potential need to cancel deliveries, cease site movements and evacuate site
- If site conditions permit, site inspections which include the following tasks:
  - Secure all loose materials
  - Relocate waste containers, chemicals and dangerous goods above flood prone areas
  - Relocate plant and equipment above flood prone areas.

During Flood Actions

The key principles of emergency flood response, according to the NSW State Flood Plan (March, 2018) include the following:

- Protection and preservation of human life (including the lives of responders and the community) is the highest priority
- Evacuation is the primary response strategy for people impacted by flood.

If localised heavy rainfall occurs with associated observation of rising water level on-site or adjacent waterway, site personnel will be directed to follow the Construction Contractors' incident response management plans.

- The BoM will issue Flood Warnings for the Georges River catchment through their website. They will also issue Severe Thunderstorm Warnings and Severe Weather Warnings for weather which may cause flooding in the Georges River catchment.

- The State Emergency Service (SES) augments this information to coordinate public information management strategies and provide information to the community relating to the potential impacts of flooding and what actions need to be undertaken. The SES will issue Local Flood Bulletins, Evacuation Warnings, Evacuation Orders and All Clears for areas impacted by floods in the Georges River catchment and share these on the SES website.
- Local radio stations and other media outlets also provide information updates and advice.
- The Construction Contractor will regularly consult these resources to stay abreast of any flood threats that may arise.

During the flood event, the following will be undertaken:

- Continue to monitor the BoM website / app for warnings, ABC radio broadcasts, local emergency services social media pages, and local news outlets
- Follow all advice and instructions given by emergency services
- Ensure all occupants on-site are informed of the incident response procedures (i.e. evacuation routes, assembly areas)
- Implementation of the flood mitigation measures as detailed in Table 6.1.

Post-flood Action

Following flooding of the Project Site, the initial response will be to determine whether or not it is safe to return to work. A safety walk through will be undertaken by the Construction Contractor and Site Manager. The team will assess the following:

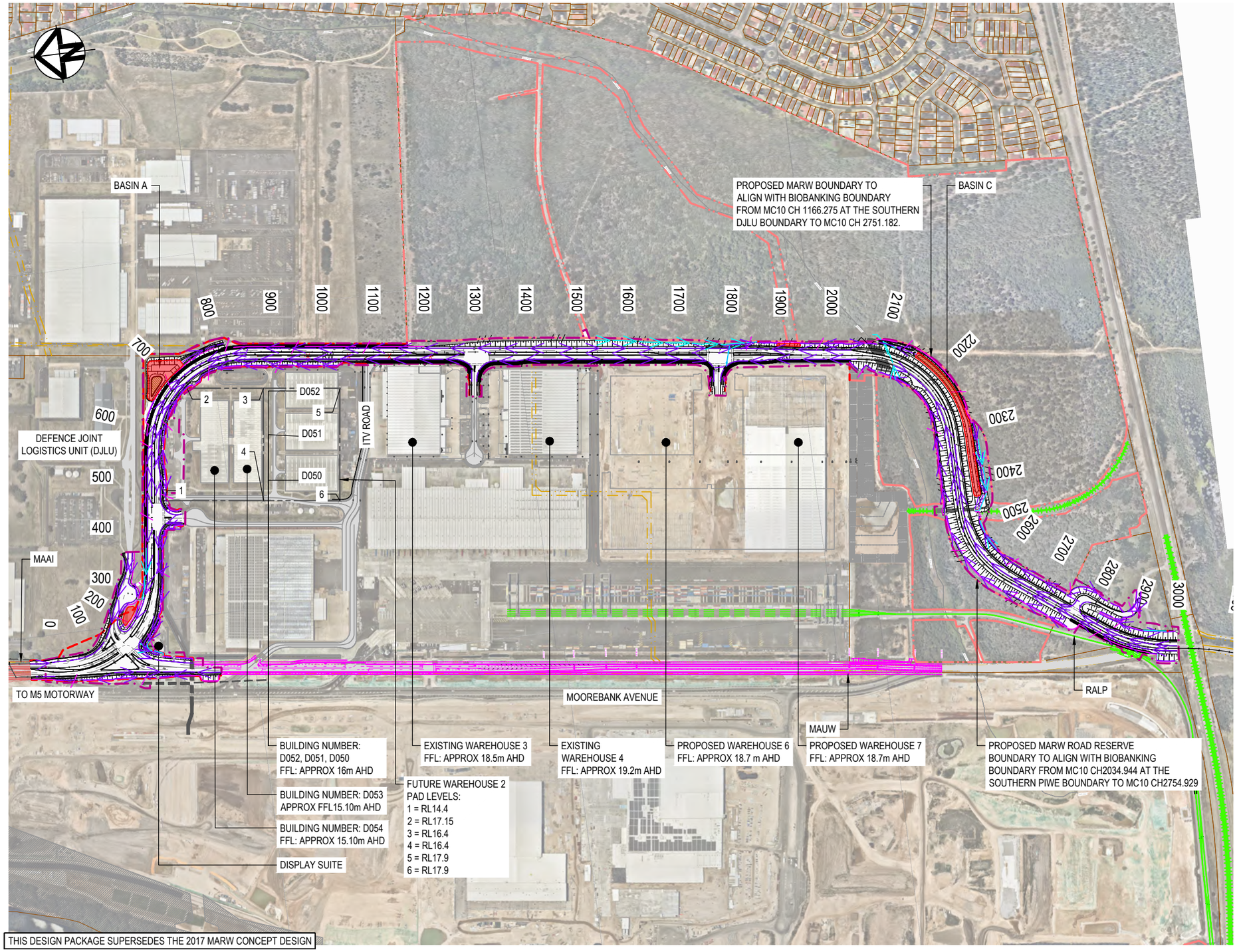
- Likelihood of flood damage to access roads and construction works
- Determine whether flood waters have receded
- Power boxes and electrical equipment that have been inundated or water affected. The power is to remain off until assessed by the electrician.

Return to Work

Once it is deemed safe to return to work, the following will be undertaken:

- Any equipment, materials or debris moved by the flood water will be returned to correct area, or disposed of in accordance with the CWRMP, if damaged beyond repair/use
- Check stockpiles for erosion or losses.
- Restore erosion and sediment control devices as per this CSWMP
- Temporary onsite structures or partly constructed structures will be checked for erosion or other water damage prior to entering them or continuing work
- Determine whether any water held in excavations can be pumped to sediment basins/holding tanks for treatment prior to discharge.
- Undertake water testing/sampling in line with the CSWMP.

APPENDIX F Preliminary Erosion and Sediment Control Plan



THIS DESIGN PACKAGE SUPERSEDES THE 2017 MARW CONCEPT DESIGN

SEDIMENT AND SOIL EROSION

1. THE SEDIMENT & EROSION CONTROL PLAN PRESENTS CONCEPTS ONLY. THE CONTRACTOR SHALL AT ALL TIMES BE RESPONSIBLE FOR THE ESTABLISHMENT & MANAGEMENT OF A DETAILED SCHEME MEETING COUNCILS DESIGN, OTHER REGULATORY AUTHORITY REQUIREMENTS AND MAKE GOOD PAYMENT OF ALL FEES.
2. THE CONTRACTOR SHALL INSTIGATE ALL SEDIMENT AND EROSION CONTROL MEASURES IN ACCORDANCE WITH STATUTORY REQUIREMENTS AND IN PARTICULAR THE 'BLUE BOOK' (MANAGING URBAN STORMWATER SOILS AND CONSTRUCTION), PRODUCED BY THE DEPARTMENT OF HOUSING AND COUNCILS POLICIES. THESE MEASURES ARE TO BE INSPECTED AND MAINTAINED ON A DAILY BASIS.
3. THE SITE SUPERINTENDENT SHALL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE LOCATED AS INSTRUCTED IN THE DRAWINGS AND ADHERE TO ALL REGULATORY AUTHORITY REQUIREMENTS.
4. THE CONTRACTOR SHALL INFORM ALL SUB CONTRACTORS OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS.
5. WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE SHALL BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE;
   - 5.1. CONSTRUCT TEMPORARY STABILISED SITE ACCESS INCLUSIVE OF SHAKE DOWN / WASH PAD.
   - 5.2. INSTALL ALL TEMPORARY SEDIMENT FENCES AND BARRIER FENCES. WHERE FENCES ADJACENT EACH OTHER, THE SEDIMENT FENCE CAN BE INCORPORATED INTO THE BARRIER FENCE.
   - 5.3. INSTALL SEDIMENT CONTROL MEASURES AS OUTLINED ON THE APPROVED PLANS.
6. UNDERTAKE SITE DEVELOPMENT WORKS SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF MINIMUM WORKABLE SIZE.
7. AT ALL TIMES AND IN PARTICULAR DURING WINDY AND DRY WEATHER, LARGE UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL ENSURING CONFORMITY TO REGULATORY AUTHORITY REQUIREMENTS.
8. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) SHALL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
9. WATER SHALL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS THE CATCHMENT AREA HAS BEEN STABILISED AND/OR ANY LIKELY SEDIMENT BEEN FILTERED OUT.
10. TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES SHALL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE STABILISED / REHABILITATED.
11. LLOW FOR GRASS STABILISATION OF EXPOSED AREAS, OPEN CHANNELS AND ROCK BATTERS DURING ALL PHASES OF CONSTRUCTION.
12. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED TO ENSURE THAT THEY OPERATE EFFECTIVELY. REPAIRS AND/OR MAINTENANCE SHALL BE UNDERTAKEN REGULARLY AND AS REQUIRED, PARTICULARLY FOLLOWING RAIN EVENTS.
13. RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER SHALL BE DISPOSED OF IN ACCORDANCE WITH REGULATORY AUTHORITY REQUIREMENTS. CONTRACTOR TO PAY ALL FEES AND PROVIDE EVIDENCE OF SAFE DISPOSAL.
14. IF A TEMPORARY SEDIMENT BASIN IS REQUIRED, ENSURE SAFE BATTER SLOPES IN ACCORDANCE WITH THE GEOTECHNICAL REPORT. MAINTAIN ADEQUATE STORAGE VOLUME IN ACCORDANCE WITH PLANS. TEMPORARY PUMP 'CLEAN FLOCCULATED' WATER TO COUNCILS STORMWATER SYSTEM . ENSURE WHOLE SITE RUN-OFF IS DIRECTED TO TEMPORARY SEDIMENT BASIN.

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 160 320m
1 : 8000

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:8000	Drawn HSP	
Original Size	A3	Designed RM	
Height Datum	AHD	Checked DBA	
Grid	MGA94 - 56	Approved DKI	

Filename: MARW-ARC-CV-DD-DWG-1270.dwg

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN OVERALL PLAN

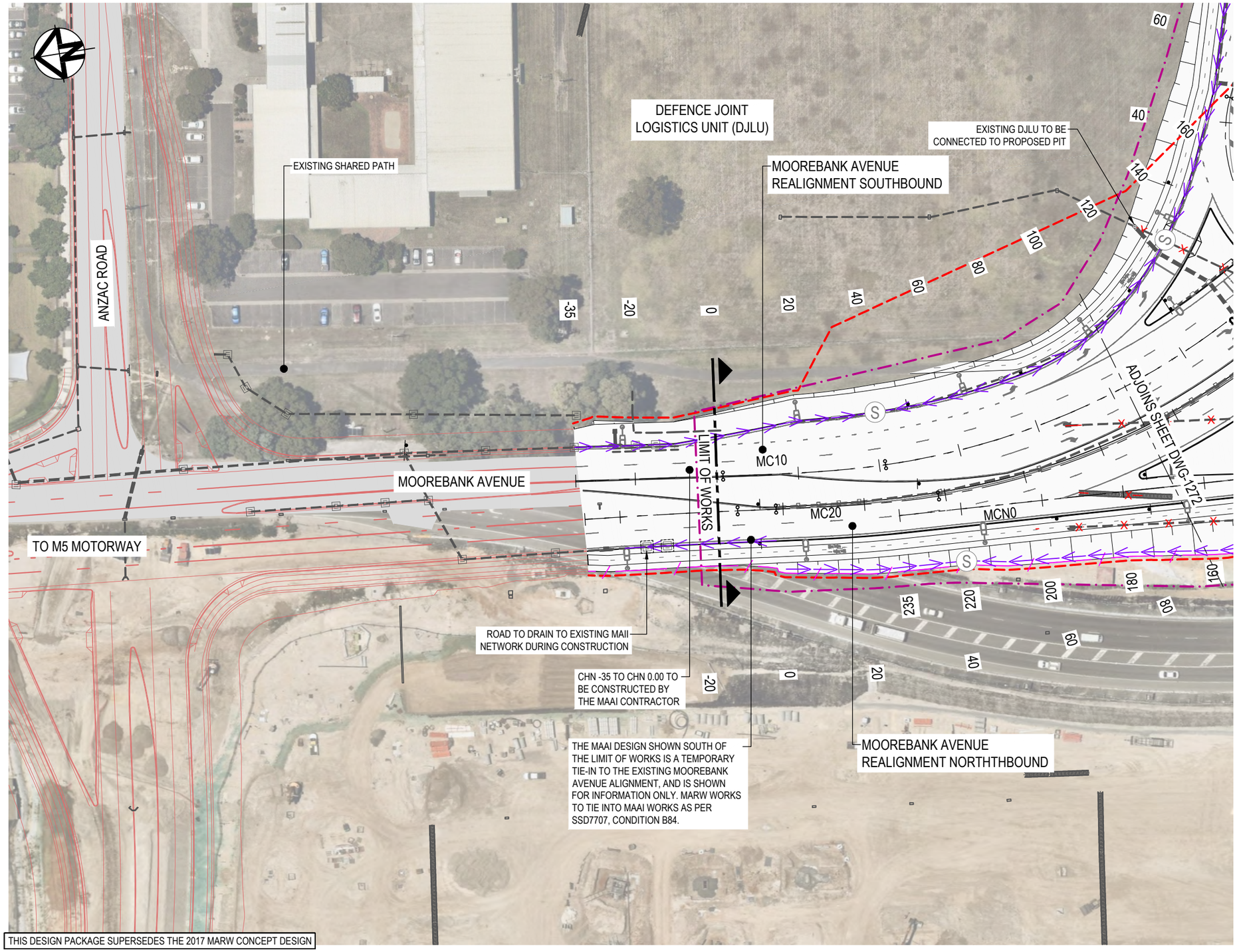
ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1270 Issue B

50mm on Original

Date Plotted: 30 Aug 2023 - 01:55AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1270.dwg



THIS DESIGN PACKAGE SUPERSEDES THE 2017 MARW CONCEPT DESIGN

LEGEND

GENERAL

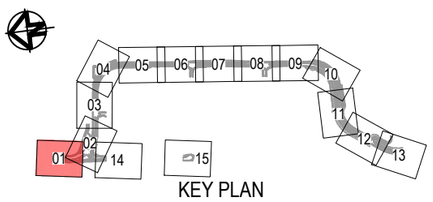
- ROAD CONTROL LINE
- PROPOSED ROAD DESIGN
- PROPOSED RETAINING WALL
- EXISTING RETAINING WALL
- EXISTING PROPERTY BOUNDARY
- EXISTING ROAD RESERVE BOUNDARY
- PROPOSED MARW BOUNDARY
- ENVIRONMENTAL BIOBANKING FOOTPRINT
- EIS CONSTRUCTION FOOTPRINT
- WAREHOUSE PAD
- PROPOSED TL4 THRIE BEAM SAFETY BARRIER
- PROPOSED TYPE F CONCRETE BARRIER
- PROPOSED NOISE WALL
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED CULVERT
- PROPOSED FLOOD RELIEF CULVERT
- EXISTING CULVERT
- BASIN

EROSION AND SEDIMENT

- BATTER SHOOT
- CLEAN WATER DIVERSION
- DIRTY WATER DIVERSION
- LEVEL SPREADER
- SEDIMENTATION FENCE
- SEDIMENTATION POND
- SILT TRAP
- TEMPORARY DRAINAGE
- GROSS POLLUTANT TRAP
- DROP INLET SEDIMENT FILTER
- CHECK DAM

NOTES

1. FOR GENERAL DRAINAGE NOTES, REFER TO MARW-ARC-CV-DWG-1231.
2. FOR TYPICAL DRAINAGE DETAILS REFER TO CV-DD-DWG 1221 TO CV-DD-DWG 1224.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. EROSION AND SEDIMENT CONTROL PLANS ARE PRELIMINARY ONLY AND SUBJECT TO CHANGE IN ACCORDANCE WITH CONSTRUCTION STAGING PLAN.



KEY PLAN

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 20 40m

1 : 1000

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn HSP	
Original Size	A3	Designed RM	
Height Datum	AHD	Checked DBA	
Grid	MGA94 - 56	Approved DKI	
Filename:	MARW-ARC-CV-DD-DWG-1271.dwg		

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN SHEET 1 OF 14

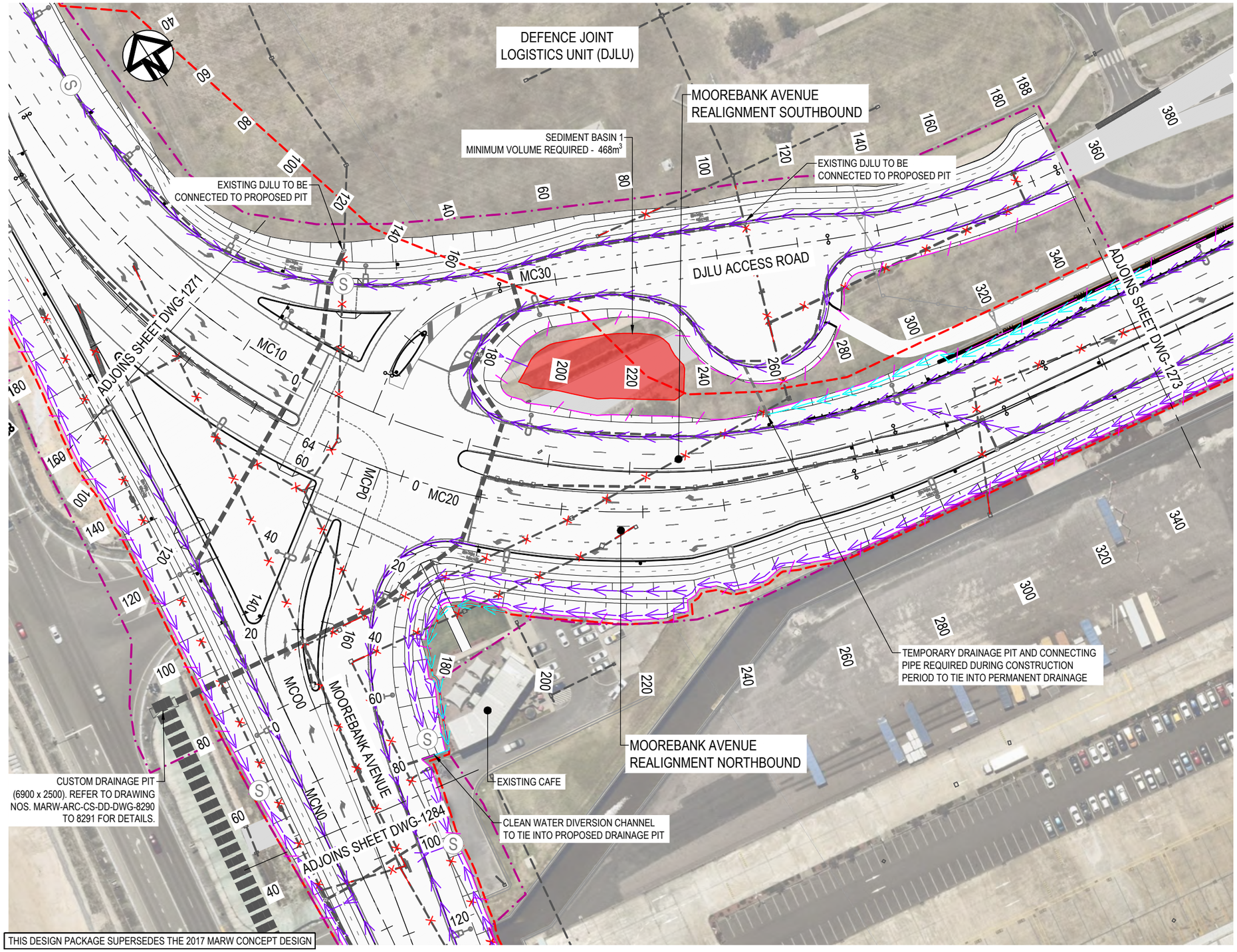
ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1271 Issue B

50mm on Original

Date Plotted: 30 Aug 2023 - 01:56AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1271.dwg



LEGEND

GENERAL

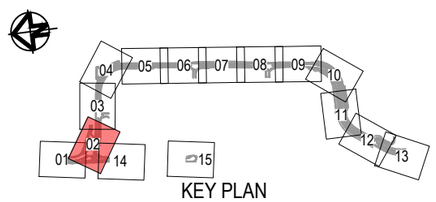
- ROAD CONTROL LINE
- PROPOSED ROAD DESIGN
- PROPOSED RETAINING WALL (RW)
- EXISTING RETAINING WALL (RW)
- EXISTING PROPERTY BOUNDARY
- EXISTING ROAD RESERVE BOUNDARY
- PROPOSED MARW BOUNDARY
- ENVIRONMENTAL BIOBANKING FOOTPRINT
- EIS CONSTRUCTION FOOTPRINT
- WAREHOUSE PAD
- PROPOSED TL4 THRIE BEAM SAFETY BARRIER
- PROPOSED TYPE F CONCRETE BARRIER
- PROPOSED NOISE WALL (NW)
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED CULVERT
- PROPOSED FLOOD RELIEF CULVERT
- EXISTING CULVERT
- BASIN

EROSION AND SEDIMENT

- BATTER SHOOT
- CLEAN WATER DIVERSION
- DIRTY WATER DIVERSION
- LEVEL SPREADER (LS)
- SEDIMENTATION FENCE
- SEDIMENTATION POND
- SILT TRAP (S)
- TEMPORARY DRAINAGE (D)
- GROSS POLLUTANT TRAP
- DROP INLET SEDIMENT FILTER
- CHECK DAM

NOTES

1. FOR GENERAL DRAINAGE NOTES, REFER TO MARW-ARC-CV-DWG-1231.
2. FOR TYPICAL DRAINAGE DETAILS REFER TO CV-DD-DWG 1221 TO CV-DD-DWG 1224.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. EROSION AND SEDIMENT CONTROL PLANS ARE PRELIMINARY ONLY AND SUBJECT TO CHANGE IN ACCORDANCE WITH CONSTRUCTION STAGING PLAN.



KEY PLAN

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 20 40m
1 : 1000

50mm on Original

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

Scales	1:1000	Current Issue Signatures	
		Drawn HSP	
Original Size	A3	Designed RM	
Height Datum	AHD	Checked DBA	
Grid	MGA94 - 56	Approved DKI	
Filename:	MARW-ARC-CV-DD-DWG-1272.dwg		

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

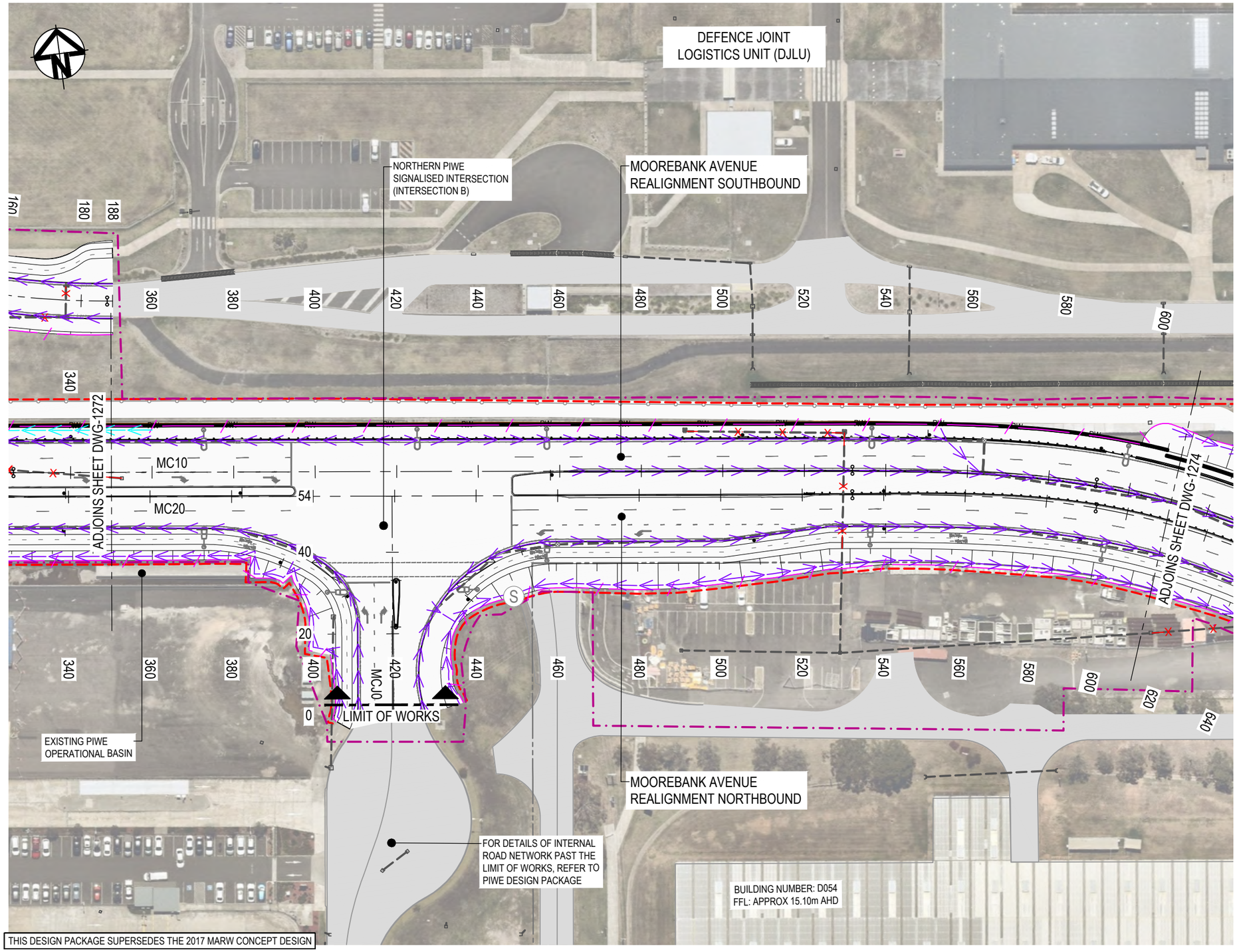
Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN SHEET 2 OF 14

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1272 Issue B

Date Plotted: 30 Aug 2023 - 01:56AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1272.dwg



LEGEND

GENERAL

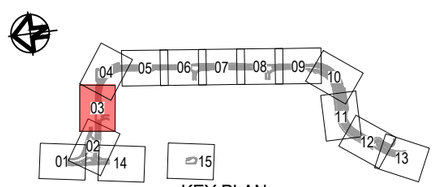
- ROAD CONTROL LINE
- PROPOSED ROAD DESIGN
- PROPOSED RETAINING WALL
- EXISTING RETAINING WALL
- EXISTING PROPERTY BOUNDARY
- EXISTING ROAD RESERVE BOUNDARY
- PROPOSED MARW BOUNDARY
- ENVIRONMENTAL BIOBANKING FOOTPRINT
- EIS CONSTRUCTION FOOTPRINT
- WAREHOUSE PAD
- PROPOSED TL4 THRIE BEAM SAFETY BARRIER
- PROPOSED TYPE F CONCRETE BARRIER
- PROPOSED NOISE WALL
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED CULVERT
- PROPOSED FLOOD RELIEF CULVERT
- EXISTING CULVERT
- BASIN

EROSION AND SEDIMENT

- BATTER SHOOT
- CLEAN WATER DIVERSION
- DIRTY WATER DIVERSION
- LEVEL SPREADER
- SEDIMENTATION FENCE
- SEDIMENTATION POND
- SILT TRAP
- TEMPORARY DRAINAGE
- GROSS POLLUTANT TRAP
- DROP INLET SEDIMENT FILTER
- CHECK DAM

NOTES

1. FOR GENERAL DRAINAGE NOTES, REFER TO MARW-ARC-CV-DWG-1231.
2. FOR TYPICAL DRAINAGE DETAILS REFER TO CV-DD-DWG 1221 TO CV-DD-DWG 1224.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. EROSION AND SEDIMENT CONTROL PLANS ARE PRELIMINARY ONLY AND SUBJECT TO CHANGE IN ACCORDANCE WITH CONSTRUCTION STAGING PLAN.



KEY PLAN

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 20 40m
1 : 1000

50mm on Original

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn HSP	
Original Size	A3	Designed RM	
Height Datum	AHD	Checked DBA	
Grid	MGA94 - 56	Approved DKI	
Filename:	MARW-ARC-CV-DD-DWG-1273.dwg		

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

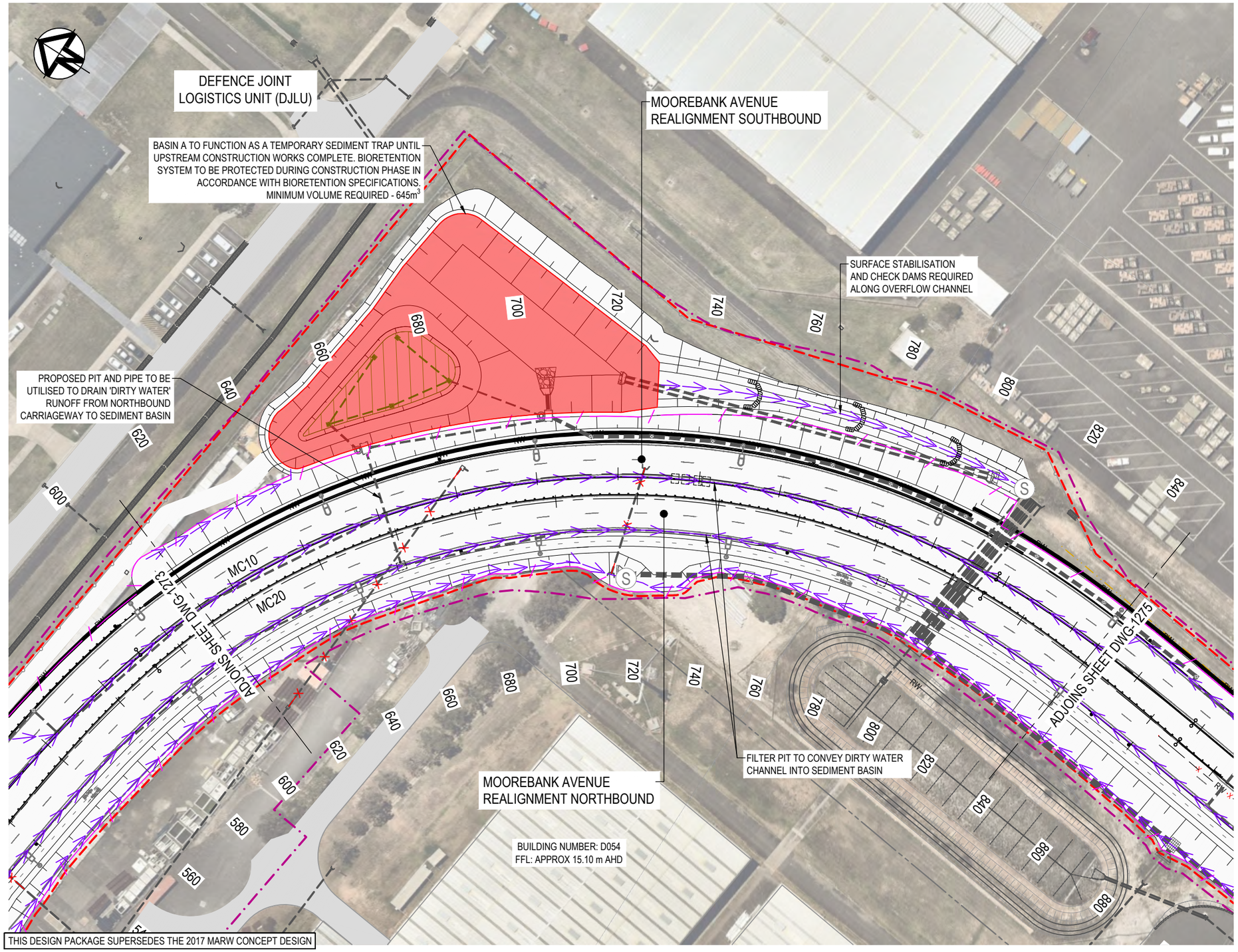
Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN SHEET 3 OF 14

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1273 Issue B

Date Plotted: 30 Aug 2023 - 01:57AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1273.dwg



THIS DESIGN PACKAGE SUPERSEDES THE 2017 MARW CONCEPT DESIGN

LEGEND

GENERAL

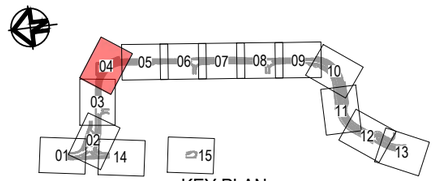
- ROAD CONTROL LINE
- PROPOSED ROAD DESIGN
- PROPOSED RETAINING WALL
- EXISTING RETAINING WALL
- EXISTING PROPERTY BOUNDARY
- EXISTING ROAD RESERVE BOUNDARY
- PROPOSED MARW BOUNDARY
- ENVIRONMENTAL BIOBANKING FOOTPRINT
- EIS CONSTRUCTION FOOTPRINT
- WAREHOUSE PAD
- PROPOSED TL4 THRIE BEAM SAFETY BARRIER
- PROPOSED TYPE F CONCRETE BARRIER
- PROPOSED NOISE WALL
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED CULVERT
- PROPOSED FLOOD RELIEF CULVERT
- EXISTING CULVERT
- BASIN

EROSION AND SEDIMENT

- BATTER SHOOT
- CLEAN WATER DIVERSION
- DIRTY WATER DIVERSION
- LEVEL SPREADER
- SEDIMENTATION FENCE
- SEDIMENTATION POND
- SILT TRAP
- TEMPORARY DRAINAGE
- GROSS POLLUTANT TRAP
- DROP INLET SEDIMENT FILTER
- CHECK DAM

NOTES

1. FOR GENERAL DRAINAGE NOTES, REFER TO MARW-ARC-CV-DWG-1231.
2. FOR TYPICAL DRAINAGE DETAILS REFER TO CV-DD-DWG 1221 TO CV-DD-DWG 1224.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. EROSION AND SEDIMENT CONTROL PLANS ARE PRELIMINARY ONLY AND SUBJECT TO CHANGE IN ACCORDANCE WITH CONSTRUCTION STAGING PLAN.



KEY PLAN

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 20 40m
1 : 1000

50mm on Original

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn HSP	
Original Size	A3	Designed RM	
Height Datum	AHD	Checked DBA	
Grid	MGA94 - 56	Approved DKI	
Filename:	MARW-ARC-CV-DD-DWG-1274.dwg		

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

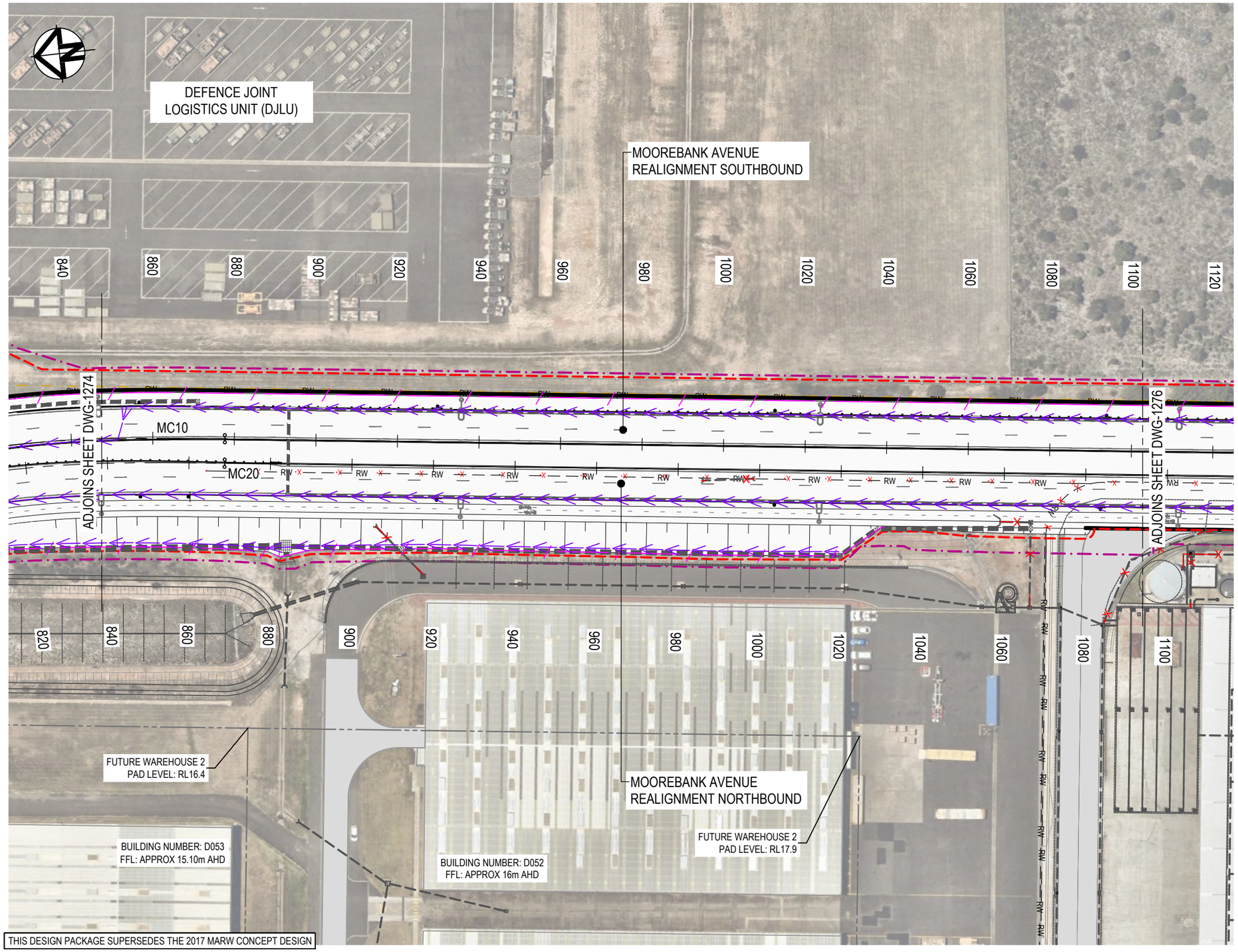
Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN SHEET 4 OF 14

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1274 Issue B

Date Plotted: 30 Aug 2023 - 01:58AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1274.dwg



THIS DESIGN PACKAGE SUPERSEDES THE 2017 MARW CONCEPT DESIGN

LEGEND

GENERAL

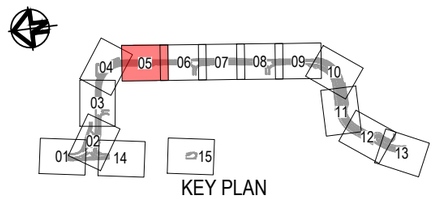
- ROAD CONTROL LINE
- PROPOSED ROAD DESIGN
- PROPOSED RETAINING WALL
- EXISTING RETAINING WALL
- EXISTING PROPERTY BOUNDARY
- EXISTING ROAD RESERVE BOUNDARY
- PROPOSED MARW BOUNDARY
- ENVIRONMENTAL BIOBANKING FOOTPRINT
- EIS CONSTRUCTION FOOTPRINT
- WAREHOUSE PAD
- PROPOSED TL4 THRIE BEAM SAFETY BARRIER
- PROPOSED TYPE F CONCRETE BARRIER
- PROPOSED NOISE WALL
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED CULVERT
- PROPOSED FLOOD RELIEF CULVERT
- EXISTING CULVERT
- BASIN

EROSION AND SEDIMENT

- BATTER SHOOT
- CLEAN WATER DIVERSION
- DIRTY WATER DIVERSION
- LEVEL SPREADER
- SEDIMENTATION FENCE
- SEDIMENTATION POND
- SILT TRAP
- TEMPORARY DRAINAGE
- GROSS POLLUTANT TRAP
- DROP INLET SEDIMENT FILTER
- CHECK DAM

NOTES

1. FOR GENERAL DRAINAGE NOTES, REFER TO MARW-ARC-CV-DWG-1231.
2. FOR TYPICAL DRAINAGE DETAILS REFER TO CV-DD-DWG 1221 TO CV-DD-DWG 1224.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. EROSION AND SEDIMENT CONTROL PLANS ARE PRELIMINARY ONLY AND SUBJECT TO CHANGE IN ACCORDANCE WITH CONSTRUCTION STAGING PLAN.



KEY PLAN

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 20 40m

1 : 1000

50mm on Original

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

Scales	1:1000	Current Issue Signatures	
		Drawn	HSP
Original Size	A3	Designed	RM
Height Datum	AHD	Checked	DBA
Grid	MGA94 - 56	Approved	DKI
Filename:	MARW-ARC-CV-DD-DWG-1275.dwg		

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN SHEET 5 OF 14

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1275 Issue B

Date Plotted: 30 Aug 2023 - 01:59AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1275.dwg

DEFENCE JOINT LOGISTICS UNIT (DJLU)

MOOREBANK AVENUE REALIGNMENT SOUTHBOUND

CENTRAL PIWE SIGNALISED INTERSECTION (INTERSECTION C)

1080 1100 1120 1140 1160 1180 1200 1220 1240 1260 1280 1300 1320 1340 1360

ADJOINS SHEET DWG-1275

ADJOINS SHEET DWG-1277

MC10

MC20

198

180

160

140

120

MCK0

EARTHWORK TO BE LOCALLY GRADED TO EASTERN VERGE PRIOR TO PIT CONSTRUCTION

LIMIT OF WORKS

MOOREBANK AVENUE REALIGNMENT NORTHBOUND

EXISTING WAREHOUSE 3
FFL: 18.5 mAHD

FOR DETAILS OF INTERNAL ROAD NETWORK PAST THE LIMIT OF WORKS, REFER TO PIWE DESIGN PACKAGE

THIS DESIGN PACKAGE SUPERSEDES THE 2017 MARW CONCEPT DESIGN

LEGEND

GENERAL

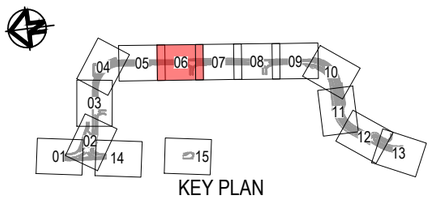
- ROAD CONTROL LINE
- PROPOSED ROAD DESIGN
- PROPOSED RETAINING WALL
- EXISTING RETAINING WALL
- EXISTING PROPERTY BOUNDARY
- EXISTING ROAD RESERVE BOUNDARY
- PROPOSED MARW BOUNDARY
- ENVIRONMENTAL BIOBANKING FOOTPRINT
- EIS CONSTRUCTION FOOTPRINT
- WAREHOUSE PAD
- PROPOSED TL4 THRIE BEAM SAFETY BARRIER
- PROPOSED TYPE F CONCRETE BARRIER
- PROPOSED NOISE WALL
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED CULVERT
- PROPOSED FLOOD RELIEF CULVERT
- EXISTING CULVERT
- BASIN

EROSION AND SEDIMENT

- BATTER SHOOT
- CLEAN WATER DIVERSION
- DIRTY WATER DIVERSION
- LEVEL SPREADER
- SEDIMENTATION FENCE
- SEDIMENTATION POND
- SILT TRAP
- TEMPORARY DRAINAGE
- GROSS POLLUTANT TRAP
- DROP INLET SEDIMENT FILTER
- CHECK DAM

NOTES

1. FOR GENERAL DRAINAGE NOTES, REFER TO MARW-ARC-CV-DWG-1231.
2. FOR TYPICAL DRAINAGE DETAILS REFER TO CV-DD-DWG 1221 TO CV-DD-DWG 1224.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. EROSION AND SEDIMENT CONTROL PLANS ARE PRELIMINARY ONLY AND SUBJECT TO CHANGE IN ACCORDANCE WITH CONSTRUCTION STAGING PLAN.



KEY PLAN

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 20 40m
1 : 1000

50mm on Original

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

Scales	1:1000	Current Issue Signatures	
		Drawn	HSP
Original Size	A3	Designed	RM
Height Datum	AHD	Checked	DBA
Grid	MGA94 - 56	Approved	DKI
Filename:	MARW-ARC-CV-DD-DWG-1276.dwg		

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

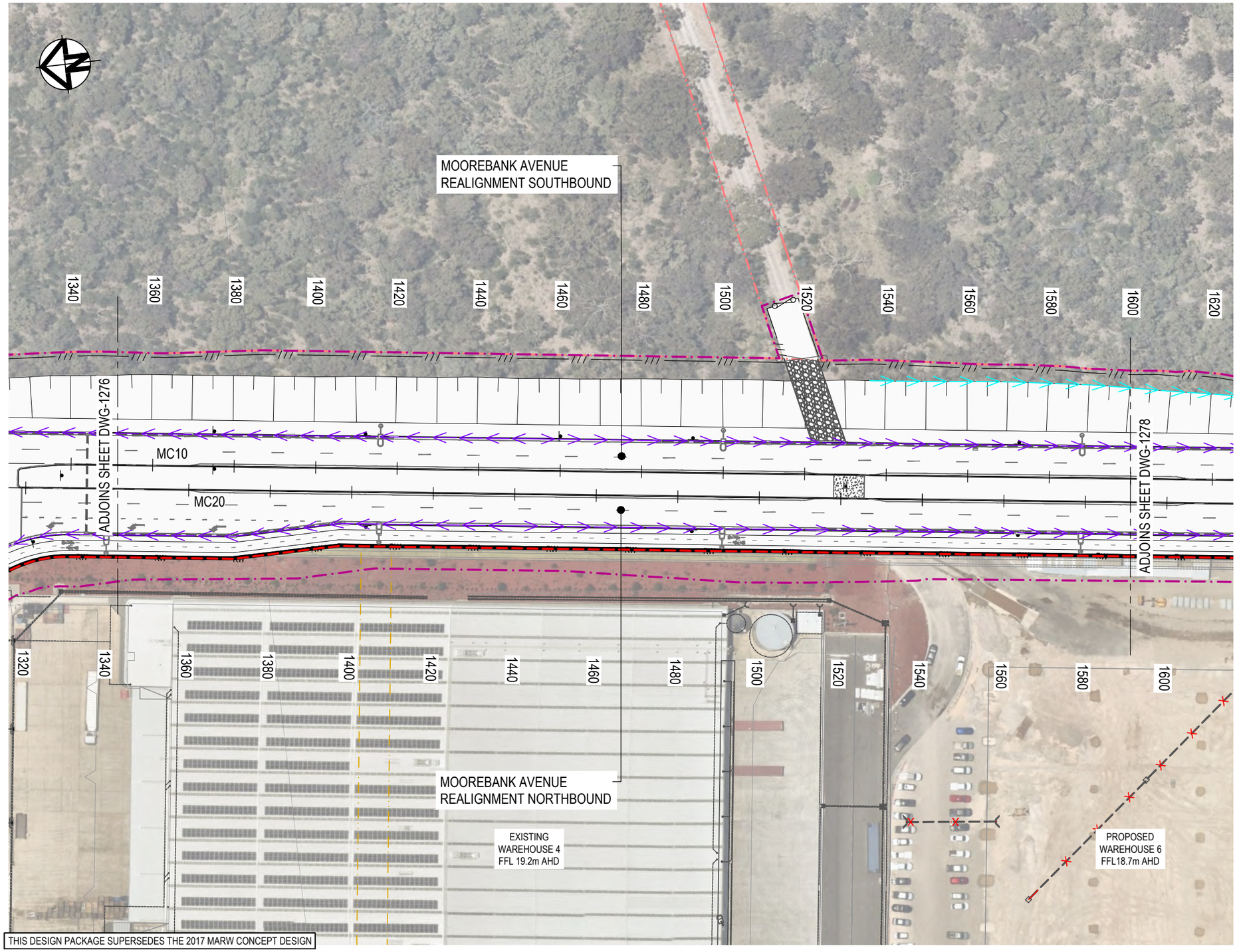
Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN SHEET 6 OF 14

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1276 Issue B

Date Plotted: 30 Aug 2023 - 02:00AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1276.dwg



THIS DESIGN PACKAGE SUPERSEDES THE 2017 MARW CONCEPT DESIGN

LEGEND

GENERAL

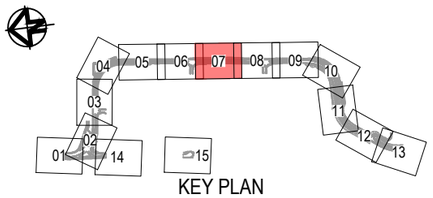
- ROAD CONTROL LINE
- PROPOSED ROAD DESIGN
- PROPOSED RETAINING WALL (RW)
- EXISTING RETAINING WALL (RW)
- EXISTING PROPERTY BOUNDARY
- EXISTING ROAD RESERVE BOUNDARY
- PROPOSED MARW BOUNDARY
- ENVIRONMENTAL BIOBANKING FOOTPRINT
- EIS CONSTRUCTION FOOTPRINT
- WAREHOUSE PAD
- PROPOSED TL4 THRIE BEAM SAFETY BARRIER
- PROPOSED TYPE F CONCRETE BARRIER
- PROPOSED NOISE WALL (NW)
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED CULVERT
- PROPOSED FLOOD RELIEF CULVERT
- EXISTING CULVERT
- BASIN

EROSION AND SEDIMENT

- BATTER SHOOT
- CLEAN WATER DIVERSION
- DIRTY WATER DIVERSION
- LEVEL SPREADER (LS)
- SEDIMENTATION FENCE
- SEDIMENTATION POND
- SILT TRAP (S)
- TEMPORARY DRAINAGE (D)
- GROSS POLLUTANT TRAP
- DROP INLET SEDIMENT FILTER
- CHECK DAM

NOTES

1. FOR GENERAL DRAINAGE NOTES, REFER TO MARW-ARC-CV-DWG-1231.
2. FOR TYPICAL DRAINAGE DETAILS REFER TO CV-DD-DWG 1221 TO CV-DD-DWG 1224.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. EROSION AND SEDIMENT CONTROL PLANS ARE PRELIMINARY ONLY AND SUBJECT TO CHANGE IN ACCORDANCE WITH CONSTRUCTION STAGING PLAN.



KEY PLAN

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 20 40m
1 : 1000

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn	HSP
Original Size	A3	Designed	RM
Height Datum	AHD	Checked	DBA
Grid	MGA94 - 56	Approved	DKI
Filename:	MARW-ARC-CV-DD-DWG-1277.dwg		

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN SHEET 7 OF 14

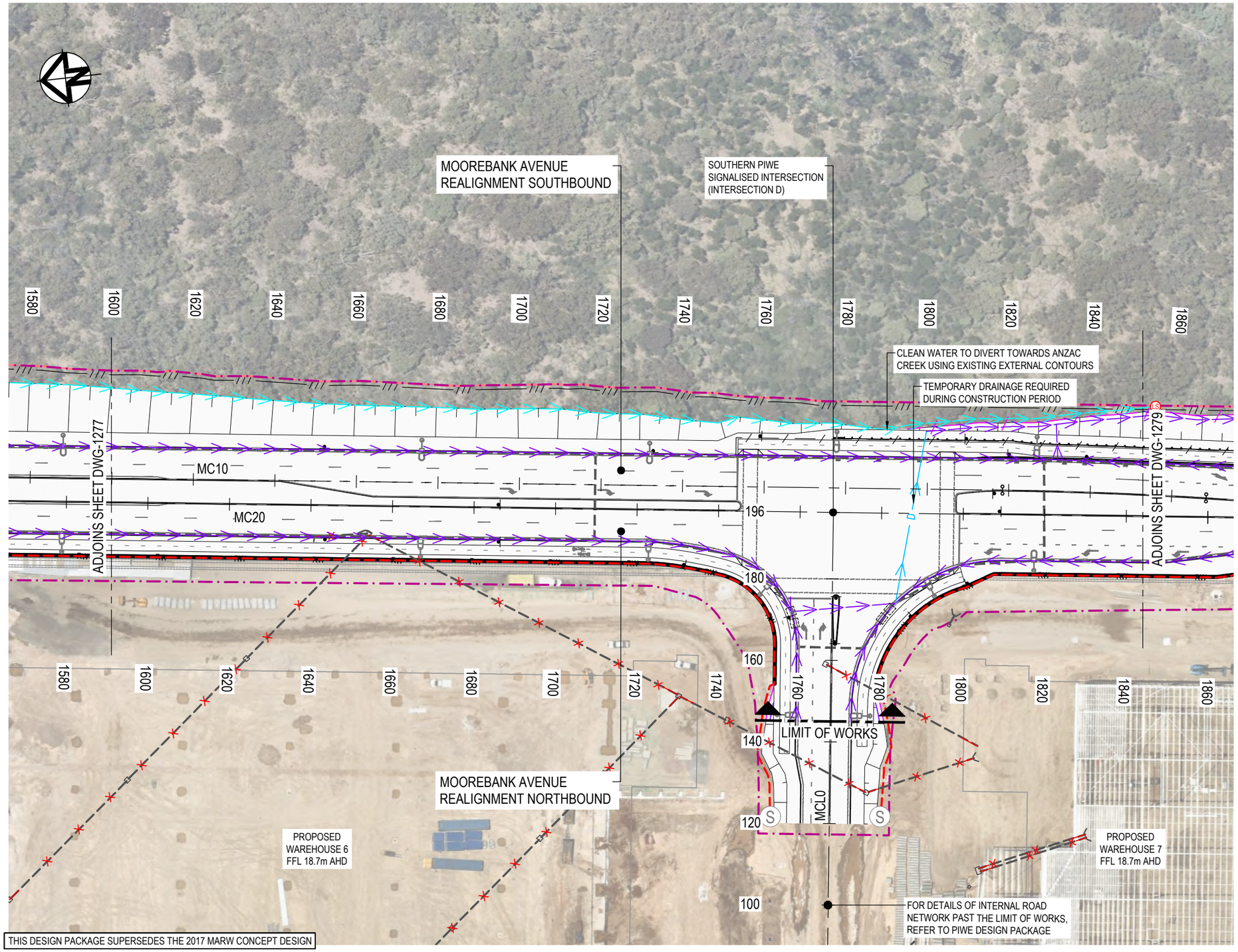
ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1277 Issue B

50mm on Original

Date Plotted: 30 Aug 2023 - 02:01AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1277.dwg



THIS DESIGN PACKAGE SUPERSEDES THE 2017 MARW CONCEPT DESIGN

LEGEND

GENERAL

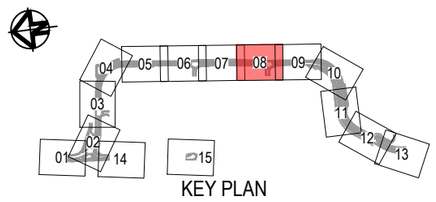
- ROAD CONTROL LINE
- PROPOSED ROAD DESIGN
- PROPOSED RETAINING WALL (RW)
- EXISTING RETAINING WALL (RW)
- EXISTING PROPERTY BOUNDARY
- EXISTING ROAD RESERVE BOUNDARY
- PROPOSED MARW BOUNDARY
- ENVIRONMENTAL BIOBANKING FOOTPRINT
- EIS CONSTRUCTION FOOTPRINT
- WAREHOUSE PAD
- PROPOSED TL4 THRIE BEAM SAFETY BARRIER
- PROPOSED TYPE F CONCRETE BARRIER
- PROPOSED NOISE WALL (NW)
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED CULVERT
- PROPOSED FLOOD RELIEF CULVERT
- EXISTING CULVERT
- BASIN

EROSION AND SEDIMENT

- BATTER SHOOT
- CLEAN WATER DIVERSION
- DIRTY WATER DIVERSION
- LEVEL SPREADER (LS)
- SEDIMENTATION FENCE
- SEDIMENTATION POND
- SILT TRAP (S)
- TEMPORARY DRAINAGE
- GROSS POLLUTANT TRAP
- DROP INLET SEDIMENT FILTER
- CHECK DAM

NOTES

1. FOR GENERAL DRAINAGE NOTES, REFER TO MARW-ARC-CV-DWG-1231.
2. FOR TYPICAL DRAINAGE DETAILS REFER TO CV-DD-DWG 1221 TO CV-DD-DWG 1224.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. EROSION AND SEDIMENT CONTROL PLANS ARE PRELIMINARY ONLY AND SUBJECT TO CHANGE IN ACCORDANCE WITH CONSTRUCTION STAGING PLAN.



KEY PLAN

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 20 40m
1 : 1000

50mm on Original

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn	HSP
Original Size	A3	Designed	RM
Height Datum	AHD	Checked	DBA
Grid	MGA94 - 56	Approved	DKI
Filename:	MARW-ARC-CV-DD-DWG-1278.dwg		

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

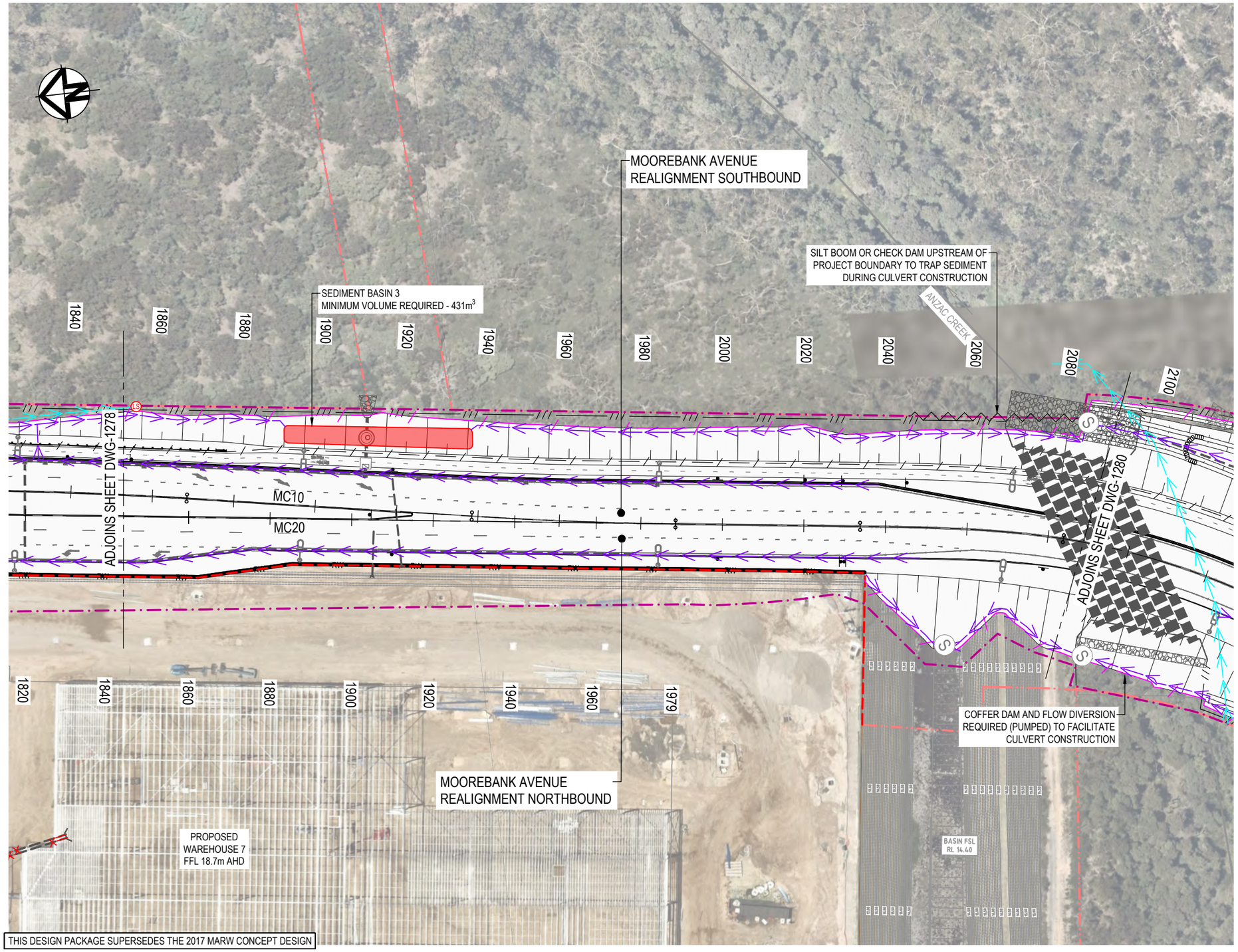
Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN SHEET 8 OF 14

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1278 Issue B

Date Plotted: 30 Aug 2023 - 02:01AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1278.dwg



THIS DESIGN PACKAGE SUPERSEDES THE 2017 MARW CONCEPT DESIGN

LEGEND

GENERAL

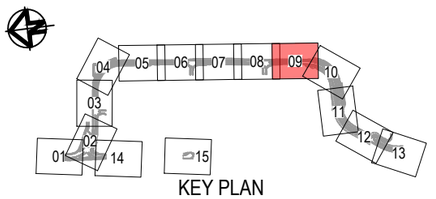
- ROAD CONTROL LINE
- PROPOSED ROAD DESIGN
- PROPOSED RETAINING WALL (RW)
- EXISTING RETAINING WALL (RW)
- EXISTING PROPERTY BOUNDARY
- EXISTING ROAD RESERVE BOUNDARY
- PROPOSED MARW BOUNDARY
- ENVIRONMENTAL BIOBANKING FOOTPRINT
- EIS CONSTRUCTION FOOTPRINT
- WAREHOUSE PAD
- PROPOSED TL4 THRIE BEAM SAFETY BARRIER
- PROPOSED TYPE F CONCRETE BARRIER
- PROPOSED NOISE WALL (NW)
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED CULVERT
- PROPOSED FLOOD RELIEF CULVERT
- EXISTING CULVERT
- BASIN

EROSION AND SEDIMENT

- BATTER SHOOT
- CLEAN WATER DIVERSION
- DIRTY WATER DIVERSION
- LEVEL SPREADER (LS)
- SEDIMENTATION FENCE
- SEDIMENTATION POND
- SILT TRAP (S)
- TEMPORARY DRAINAGE (D)
- GROSS POLLUTANT TRAP
- DROP INLET SEDIMENT FILTER
- CHECK DAM

NOTES

1. FOR GENERAL DRAINAGE NOTES, REFER TO MARW-ARC-CV-DWG-1231.
2. FOR TYPICAL DRAINAGE DETAILS REFER TO CV-DD-DWG 1221 TO CV-DD-DWG 1224.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. EROSION AND SEDIMENT CONTROL PLANS ARE PRELIMINARY ONLY AND SUBJECT TO CHANGE IN ACCORDANCE WITH CONSTRUCTION STAGING PLAN.



KEY PLAN

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 20 40m
1 : 1000

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn	HSP
Original Size	A3	Designed	RM
Height Datum	AHD	Checked	DBA
Grid	MGA94 - 56	Approved	DKI
Filename:	MARW-ARC-CV-DD-DWG-1279.dwg		

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN SHEET 9 OF 14

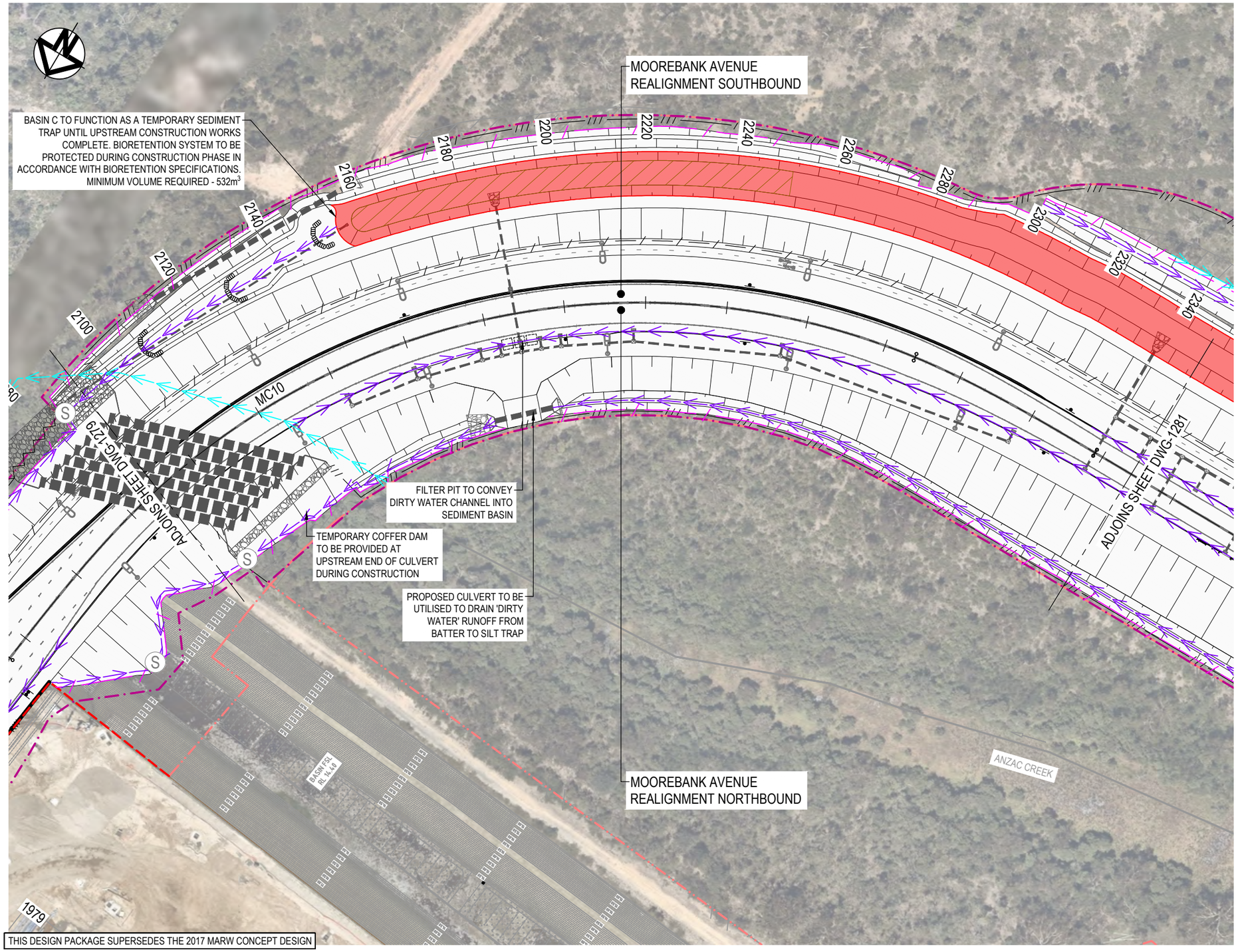
ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1279 Issue B

50mm on Original

Date Plotted: 30 Aug 2023 - 02:02AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1279.dwg



LEGEND

GENERAL

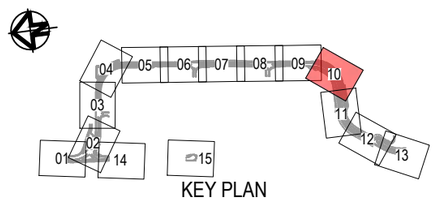
- ROAD CONTROL LINE
- PROPOSED ROAD DESIGN
- PROPOSED RETAINING WALL (RW)
- EXISTING RETAINING WALL (RW)
- EXISTING PROPERTY BOUNDARY
- EXISTING ROAD RESERVE BOUNDARY
- PROPOSED MARW BOUNDARY
- ENVIRONMENTAL BIOBANKING FOOTPRINT
- EIS CONSTRUCTION FOOTPRINT
- WAREHOUSE PAD
- PROPOSED TL4 THRIE BEAM SAFETY BARRIER
- PROPOSED TYPE F CONCRETE BARRIER
- PROPOSED NOISE WALL (NW)
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED CULVERT
- PROPOSED FLOOD RELIEF CULVERT
- EXISTING CULVERT
- BASIN

EROSION AND SEDIMENT

- BATTER SHOOT
- CLEAN WATER DIVERSION
- DIRTY WATER DIVERSION
- LEVEL SPREADER (LS)
- SEDIMENTATION FENCE
- SEDIMENTATION POND
- SILT TRAP (S)
- TEMPORARY DRAINAGE (D)
- GROSS POLLUTANT TRAP
- DROP INLET SEDIMENT FILTER
- CHECK DAM

NOTES

1. FOR GENERAL DRAINAGE NOTES, REFER TO MARW-ARC-CV-DWG-1231.
2. FOR TYPICAL DRAINAGE DETAILS REFER TO CV-DD-DWG 1221 TO CV-DD-DWG 1224.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. EROSION AND SEDIMENT CONTROL PLANS ARE PRELIMINARY ONLY AND SUBJECT TO CHANGE IN ACCORDANCE WITH CONSTRUCTION STAGING PLAN.



KEY PLAN

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 20 40m
1 : 1000

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn HSP	
Original Size	A3	Designed RM	
Height Datum	AHD	Checked DBA	
Grid	MGA94 - 56	Approved DKI	
Filename:	MARW-ARC-CV-DD-DWG-1280.dwg		

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN SHEET 10 OF 14

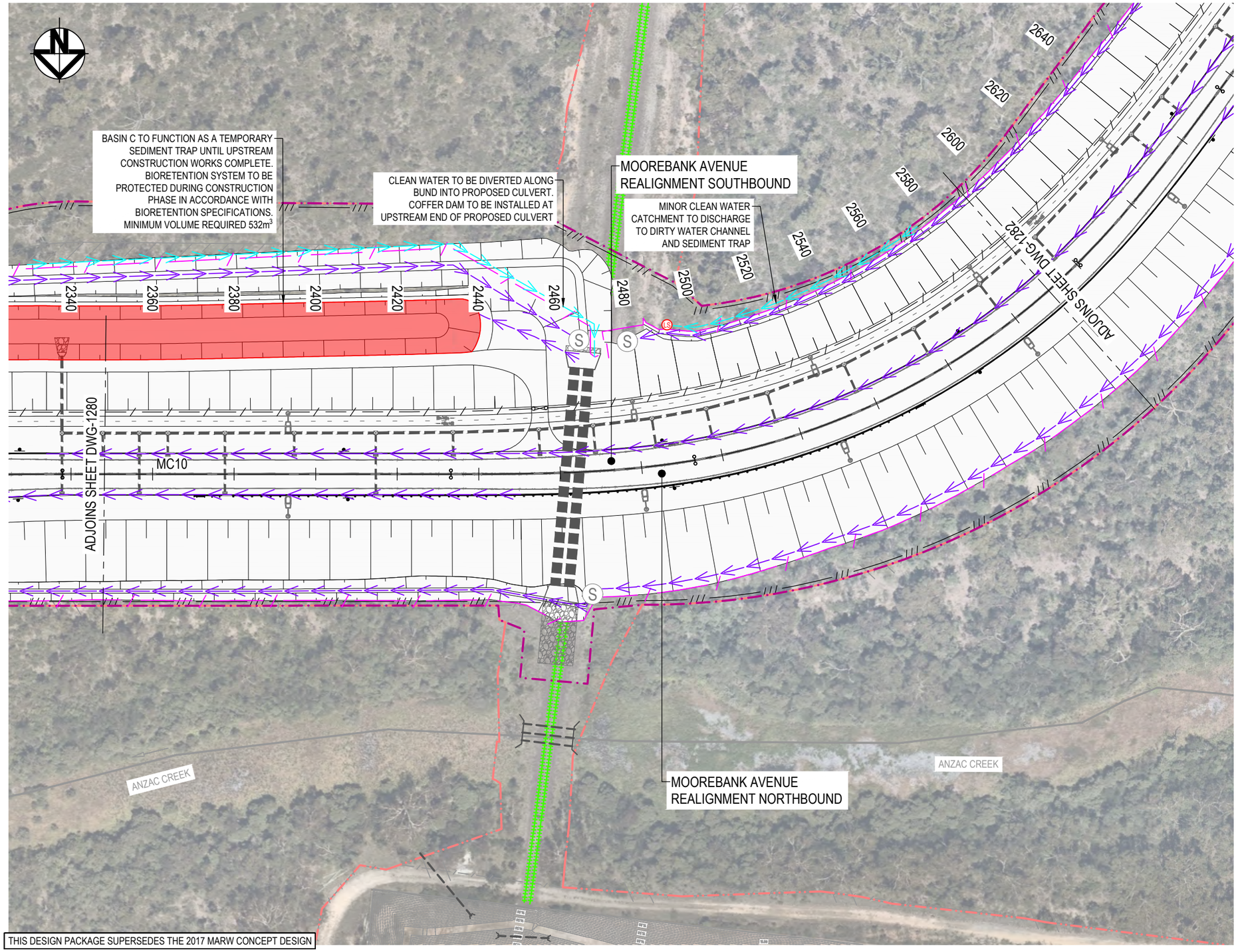
ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1280 Issue B

50mm on Original

Date Plotted: 30 Aug 2023 - 02:03AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1280.dwg



LEGEND

GENERAL

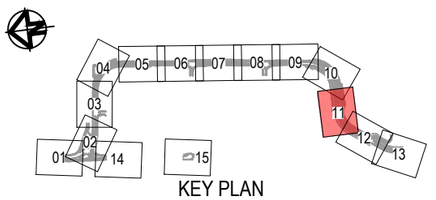
- ROAD CONTROL LINE
- PROPOSED ROAD DESIGN
- PROPOSED RETAINING WALL (RW)
- EXISTING RETAINING WALL (RW)
- EXISTING PROPERTY BOUNDARY
- EXISTING ROAD RESERVE BOUNDARY
- PROPOSED MARW BOUNDARY
- ENVIRONMENTAL BIOBANKING FOOTPRINT
- EIS CONSTRUCTION FOOTPRINT
- WAREHOUSE PAD
- PROPOSED TL4 THRIE BEAM SAFETY BARRIER
- PROPOSED TYPE F CONCRETE BARRIER
- PROPOSED NOISE WALL (NW)
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED CULVERT
- PROPOSED FLOOD RELIEF CULVERT
- EXISTING CULVERT
- BASIN

EROSION AND SEDIMENT

- BATTER SHOOT
- CLEAN WATER DIVERSION
- DIRTY WATER DIVERSION
- LEVEL SPREADER (LS)
- SEDIMENTATION FENCE
- SEDIMENTATION POND
- SILT TRAP (S)
- TEMPORARY DRAINAGE (D)
- GROSS POLLUTANT TRAP
- DROP INLET SEDIMENT FILTER
- CHECK DAM

NOTES

1. FOR GENERAL DRAINAGE NOTES, REFER TO MARW-ARC-CV-DWG-1231.
2. FOR TYPICAL DRAINAGE DETAILS REFER TO CV-DD-DWG 1221 TO CV-DD-DWG 1224.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. EROSION AND SEDIMENT CONTROL PLANS ARE PRELIMINARY ONLY AND SUBJECT TO CHANGE IN ACCORDANCE WITH CONSTRUCTION STAGING PLAN.



KEY PLAN

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 20 40m
1 : 1000

50mm on Original

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn HSP	
Original Size	A3	Designed RM	
Height Datum	AHD	Checked DBA	
Grid	MGA94 - 56	Approved DKI	
Filename:	MARW-ARC-CV-DD-DWG-1281.dwg		

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN SHEET 11 OF 14

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1281 Issue B

Date Plotted: 30 Aug 2023 - 02:04AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1281.dwg

MOOREBANK AVENUE
REALIGNMENT SOUTHBOUND

SYDNEY TRAINS
ACCESS ROAD

CLEAN WATER SAG POINT WILL DISCHARGE TO DIRTY WATER CHANNEL AND SEDIMENT BASIN

CLEAN WATER SAG POINT WILL DISCHARGE TO DIRTY WATER CHANNEL AND SEDIMENT BASIN

2560 2580 2600 2620 2640 2660 2680 2700 2720 2740 2760 2780 2800 2820 2840 2860

20 40 60 80 100 120 140 160 180 200

0

MC10

MC40

ADJOINS SHEET DWG-1281

ADJOINS SHEET DWG-1283

RALP

MOOREBANK AVENUE
REALIGNMENT NORTHBOUND

MOOREBANK AVENUE

THIS DESIGN PACKAGE SUPERSEDES THE 2017 MARW CONCEPT DESIGN

LEGEND

GENERAL

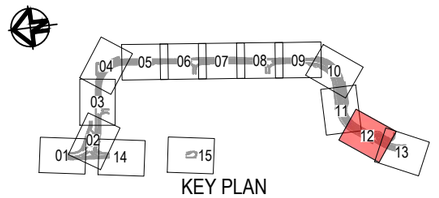
- ROAD CONTROL LINE
- PROPOSED ROAD DESIGN
- PROPOSED RETAINING WALL (RW)
- EXISTING RETAINING WALL (RW)
- EXISTING PROPERTY BOUNDARY
- EXISTING ROAD RESERVE BOUNDARY
- PROPOSED MARW BOUNDARY
- ENVIRONMENTAL BIOBANKING FOOTPRINT
- EIS CONSTRUCTION FOOTPRINT
- WAREHOUSE PAD
- PROPOSED TL4 THRIE BEAM SAFETY BARRIER
- PROPOSED TYPE F CONCRETE BARRIER
- PROPOSED NOISE WALL (NW)
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED CULVERT
- PROPOSED FLOOD RELIEF CULVERT
- EXISTING CULVERT
- BASIN

EROSION AND SEDIMENT

- BATTER SHOOT
- CLEAN WATER DIVERSION
- DIRTY WATER DIVERSION
- LEVEL SPREADER (LS)
- SEDIMENTATION FENCE
- SEDIMENTATION POND
- SILT TRAP (S)
- TEMPORARY DRAINAGE (D)
- GROSS POLLUTANT TRAP
- DROP INLET SEDIMENT FILTER
- CHECK DAM

NOTES

1. FOR GENERAL DRAINAGE NOTES, REFER TO MARW-ARC-CV-DWG-1231.
2. FOR TYPICAL DRAINAGE DETAILS REFER TO CV-DD-DWG 1221 TO CV-DD-DWG 1224.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. EROSION AND SEDIMENT CONTROL PLANS ARE PRELIMINARY ONLY AND SUBJECT TO CHANGE IN ACCORDANCE WITH CONSTRUCTION STAGING PLAN.



KEY PLAN

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 20 40m
1 : 1000

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn	HSP
Original Size	A3	Designed	RM
Height Datum	AHD	Checked	DBA
Grid	MGA94 - 56	Approved	DKI
Filename:	MARW-ARC-CV-DD-DWG-1282.dwg		

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN SHEET 12 OF 14

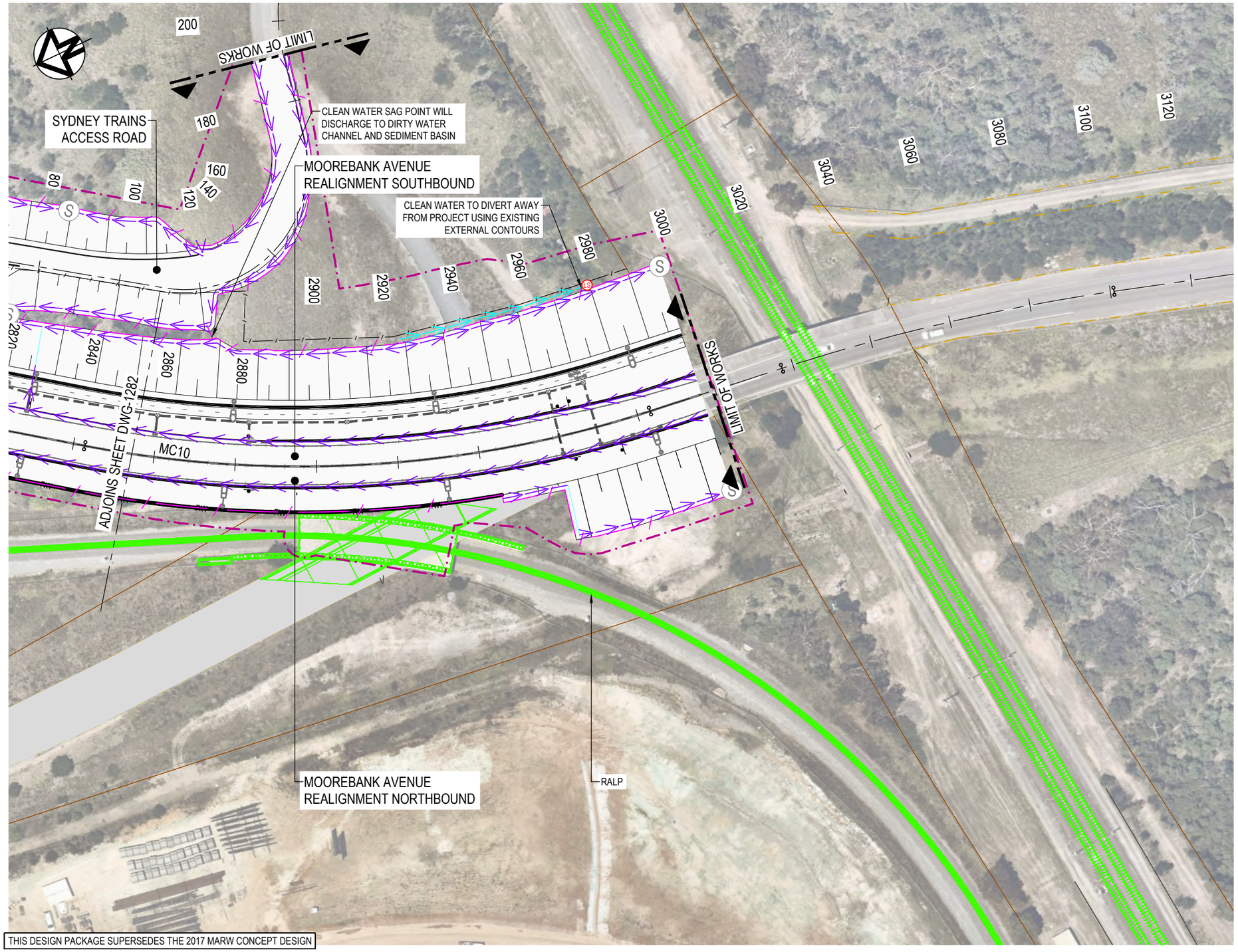
ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1282 Issue B

50mm on Original

Date Plotted: 30 Aug 2023 - 02:05AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1282.dwg



THIS DESIGN PACKAGE SUPERSEDES THE 2017 MARW CONCEPT DESIGN

LEGEND

GENERAL

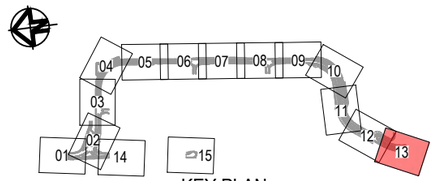
- ROAD CONTROL LINE
- PROPOSED ROAD DESIGN
- PROPOSED RETAINING WALL
- EXISTING RETAINING WALL
- EXISTING PROPERTY BOUNDARY
- EXISTING ROAD RESERVE BOUNDARY
- PROPOSED MARW BOUNDARY
- ENVIRONMENTAL BIOBANKING FOOTPRINT
- EIS CONSTRUCTION FOOTPRINT
- WAREHOUSE PAD
- PROPOSED TL4 THRIE BEAM SAFETY BARRIER
- PROPOSED TYPE F CONCRETE BARRIER
- PROPOSED NOISE WALL
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED CULVERT
- PROPOSED FLOOD RELIEF CULVERT
- EXISTING CULVERT
- BASIN

EROSION AND SEDIMENT

- BATTER SHOOT
- CLEAN WATER DIVERSION
- DIRTY WATER DIVERSION
- LEVEL SPREADER
- SEDIMENTATION FENCE
- SEDIMENTATION POND
- SILT TRAP
- TEMPORARY DRAINAGE
- GROSS POLLUTANT TRAP
- DROP INLET SEDIMENT FILTER
- CHECK DAM

NOTES

1. FOR GENERAL DRAINAGE NOTES, REFER TO MARW-ARC-CV-DWG-1231.
2. FOR TYPICAL DRAINAGE DETAILS REFER TO CV-DD-DWG 1221 TO CV-DD-DWG 1224.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. EROSION AND SEDIMENT CONTROL PLANS ARE PRELIMINARY ONLY AND SUBJECT TO CHANGE IN ACCORDANCE WITH CONSTRUCTION STAGING PLAN.



KEY PLAN

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 20 40m
1 : 1000

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn	HSP
Original Size	A3	Designed	RM
Height Datum	AHD	Checked	DBA
Grid	MGA94 - 56	Approved	DKI
Filename:	MARW-ARC-CV-DD-DWG-1283.dwg		

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN SHEET 13 OF 14

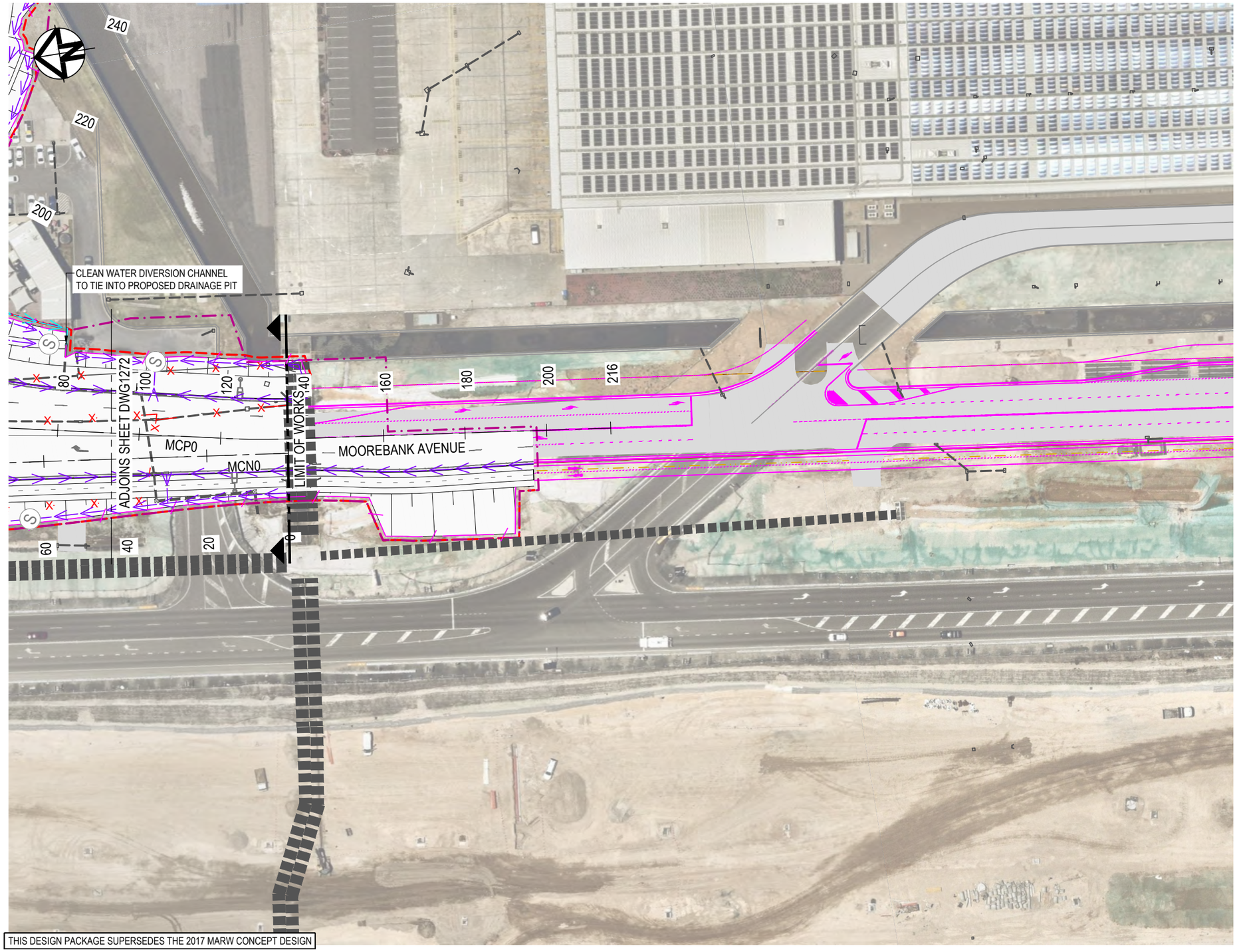
ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1283 Issue B

50mm on Original

Date Plotted: 30 Aug 2023 - 02:06AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1283.dwg



THIS DESIGN PACKAGE SUPERSEDES THE 2017 MARW CONCEPT DESIGN

LEGEND

GENERAL

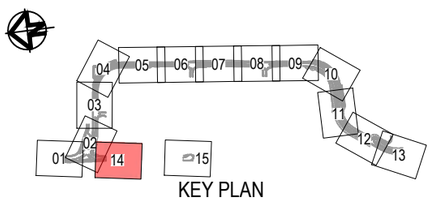
- ROAD CONTROL LINE
- PROPOSED ROAD DESIGN
- PROPOSED RETAINING WALL (RW)
- EXISTING RETAINING WALL (RW)
- EXISTING PROPERTY BOUNDARY
- EXISTING ROAD RESERVE BOUNDARY
- PROPOSED MARW BOUNDARY
- ENVIRONMENTAL BIOBANKING FOOTPRINT
- EIS CONSTRUCTION FOOTPRINT
- WAREHOUSE PAD
- PROPOSED TL4 THRIE BEAM SAFETY BARRIER
- PROPOSED TYPE F CONCRETE BARRIER
- PROPOSED NOISE WALL (NW)
- EXISTING DRAINAGE TO BE REMOVED
- PROPOSED CULVERT
- PROPOSED FLOOD RELIEF CULVERT
- EXISTING CULVERT
- BASIN

EROSION AND SEDIMENT

- BATTER SHOOT
- CLEAN WATER DIVERSION
- DIRTY WATER DIVERSION
- LEVEL SPREADER (LS)
- SEDIMENTATION FENCE
- SEDIMENTATION POND
- SILT TRAP (S)
- TEMPORARY DRAINAGE (D)
- GROSS POLLUTANT TRAP
- DROP INLET SEDIMENT FILTER
- CHECK DAM

NOTES

1. FOR GENERAL DRAINAGE NOTES, REFER TO MARW-ARC-CV-DWG-1231.
2. FOR TYPICAL DRAINAGE DETAILS REFER TO CV-DD-DWG 1221 TO CV-DD-DWG 1224.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. EROSION AND SEDIMENT CONTROL PLANS ARE PRELIMINARY ONLY AND SUBJECT TO CHANGE IN ACCORDANCE WITH CONSTRUCTION STAGING PLAN.



KEY PLAN

Issue	Description	Date
B	85% DETAILED DESIGN SUBMISSION	30.08.2023
A	ISSUED TO CLIENT	26.06.2023

0 20 40m
1 : 1000

Client: NATIONAL INTERMODAL

Status: DETAILED DESIGN
NOT TO BE USED FOR CONSTRUCTION

		Current Issue Signatures	
Scales	1:1000	Drawn HSP	
Original Size	A3	Designed RM	
Height Datum	AHD	Checked DBA	
Grid	MGA94 - 56	Approved DKI	
Filename:	MARW-ARC-CV-DD-DWG-1284.dwg		

Project: MOOREBANK AVENUE REALIGNMENT WORKS (MARW)

Title: PRELIMINARY CONSTRUCTION SOIL AND WATER MANAGEMENT PLAN SHEET 14 OF 14

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 225 St Georges Terrace
PERTH WA 6000
ABN 76 104 485 289
Tel No: +61 8 9213 6700
www.arcadis.com/au

Project No. 30100351

Drawing No. MARW-ARC-CV-DD-DWG-1284 Issue B

50mm on Original

Date Plotted: 30 Aug 2023 - 02:06AM File Name: C:\pw_working_folder\arcadis-au-04\dms24557\MARW-ARC-CV-DD-DWG-1284.dwg