

Your ref: SSI-10053
Our ref: 12548884

02 November 2022

Lee McCourt
Team Leader – Infrastructure Management
NSW Department of Planning and Environment
Locked Bag 5022
Parramatta NSW 2124

Moorebank Avenue Realignment (SSI-10053) – Environmental risk assessment (Condition A19), combination of plans (Condition A6) and endorsement of nominated plans by the Environmental Representative (Condition C8)

Dear Lee

Pursuant to planning conditions A14 (e), A19, C3 and C6 of SSI-10053, on behalf of National Intermodal Corporation (National Intermodal), GHD Pty Ltd (GHD) have prepared an environmental risk assessment to inform the preparation of the Moorebank Avenue Realignment Works (MARW) Construction Environmental Management Plan (CEMP) and sub-plans, and to nominate the relevant government agencies and stakeholders to be consulted on the preparation of the sub-plans. Refer Appendix B for an overview of the risk assessment and the MARW environmental risk register.

The risk assessment has been endorsed by Maurice Pignatelli, as independent Environmental Representative (ER) for MARW, see Appendix A, and is provided here for the information of the Planning Secretary as per Condition A19.

In addition to the above and pursuant to planning conditions A6 and C8, National Intermodal are seeking the Planning Secretary's agreement on the following items:

1. Combination of plans required by the terms of SSI-10053 (Condition A6)
2. Endorsement of nominated plans by the ER (Condition C8)

This risk assessment was first submitted to the Planning Secretary for the purposes outlined above on 20/9/22. This risk assessment has been updated in response to the Request for Additional Information received from Lee McCourt (Team Leader, Infrastructure Management, Department of Planning and Environment) on 24/10/22 and the telephone conversation held between Amy Porter (Department of Planning and Environment) and Jamie Crawford (National Intermodal) on 27/10/22.

1. Combination of plans

Condition A6 allows for the combination of any strategy, plan or program required by the terms of the approval with the agreement of the Planning Secretary. A number of management plans are proposed to be combined based on them being prepared to address the same environmental aspect and to streamline construction management plans for ease of use in delivery of the project:

- Soil and Water Management Plan. This plan would include a combination of the following management plans:
 - Water Management Plan
 - Construction Soil and Water Management Plan
 - Erosion and Sediment Control Plan
 - Flood Emergency Response and Evacuation Plan
- Construction Heritage Management Plan. This plan would include a combination of the following management plans:
 - Historic Heritage Management Plan
 - Aboriginal Heritage Management Plan

The combination of plans is confirmed in the MARW environmental risk assessment located in Appendix B. The ER has endorsed the above proposed combination of plans, refer to Appendix A.

2. Endorsement of nominated plans by the ER

Condition C8 allows for the nomination of subplans to be endorsed by the ER, rather than subject to approval by the Planning Secretary, where the assessment of the predicted level of environmental risk and potential level of community concern supports this approach. In addition, following consultation with NSW Department of Planning and Environment, it is recommended that the Planning Secretary only holds an approval role for CEMP and Sub-plan documentation where a residual risk to that aspect is identified as 'High' or 'Very High'.

Therefore, the following management plans, prepared for low to moderate residual risk aspects (refer to the MARW environmental risk assessment in Appendix B) are proposed to be endorsed by the ER and do not require the approval of the Planning Secretary:

- Flora and Fauna Management Plan
- Bushfire Management Plan
- Construction Traffic and Access Management Plan
- Contamination Management Plan
- Soil and Water Management Plan
- Construction Heritage Management Plan
- Construction Air Quality Management Plan
- Construction Waste and Resource Management Plan, incorporating the Spoil Management Plan

In accordance with the express nomination of separate conditions, the following management plans are proposed to be endorsed by the ER and submitted to the Planning Secretary for approval:

- Construction Environmental Management Plan, as required by Condition C2
- Construction Noise and Vibration Management Plan, incorporating the Construction Noise and Vibration Monitoring Program, as required by Condition C14
- Community Communication Strategy, as required by Condition B6

The endorsement of nominated plans by the ER is confirmed in the MARW environmental risk assessment located in Appendix B.

The ER has endorsed the above proposal for approval pathway of plans required by SSI-10053, as indicated in the ER endorsement letter located in Appendix A.

We request the Planning Secretary agree to the above proposal for combination of plans and approval pathway of plans for MARW (SSI-10053).

Regards



Demelza Scott
Senior Environmental Scientist

+61 2 63936410
demelza.scott@ghd.com

Copy to: Kylie Hargreaves; Jamie Crawford; Gail Hall

Appendix A

**Environmental Representative
endorsement of MARW risk
assessment**



Our Reference: 2205: L1v2
Your Reference: 12548884

1 November 2022

GHD Pty Ltd
Demelza Scott
133 Castlereagh Street
Sydney NSW 2000

**SSI 10053 - Moorebank Avenue Realignment Project (MARW)
MARW Environmental Risk Assessment
Environmental Representative (ER) endorsement**

Dear Demelza

Condition A19 - Endorsement of the MARW risk assessment

Pursuant to Condition A19, I confirm that I have reviewed the Moorebank Avenue Realignment Project – Environmental Risk Assessment letter (MARW risk assessment) dated 31 October 2022 (Ref: 12548884), prepared by GHD Pty Ltd.

In my opinion, the MARW risk assessment is consistent with the requirements of Condition A14(e) and is suitable for informing:

- Condition C3 – Preparation of the Construction Environmental Management Plans (CEMP)
- Condition C6 – Consultation arrangement for the CEMP subplans
- Condition C8 – Approval and endorsement requirements for the CEMP subplans.

Condition A6 - Endorsement of combination of plans

I endorse the proposal to amalgamate subplans as outlined in Section 1 of the GHD letter.

Approval for this proposal must be sought from the Planning Secretary, as per Condition A6.

Condition C8 – Endorsement of approval pathways for sub-plans

I endorse the proposal as outlined in Section 2 of the GHD letter and the environmental risk register, for sub-plan approval.

Approval for this proposal must be sought from the Planning Secretary, as per Condition C8.

Yours sincerely,

Maurice Pignatelli
Environmental Representative – MARW
OptimE Pty Ltd



Appendix B

MARW Environmental risk assessment



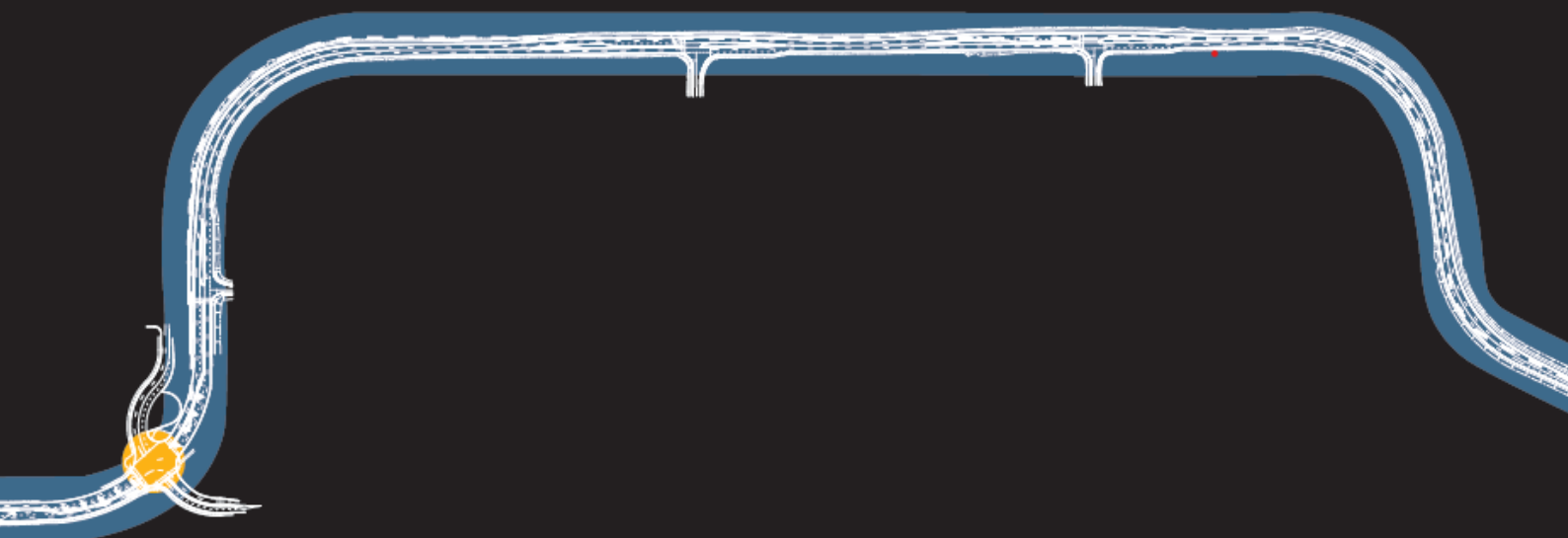
Environmental Risk Assessment

Moorebank Avenue Realignment Works

National Intermodal Corporation

31 October 2022

→ The Power of Commitment



Project name	Moorebank Avenue Relocation Works (MARW)						
Document title	Environmental Risk Assessment Moorebank Avenue Realignment Works						
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S4	0	D Scott	I Teda		A Horton		8-09-22
S4	1	D Scott	I Teda		A Horton		14-09-22
S4	2	D Scott	I Teda		A Horton		31-10-22

GHD Pty Ltd | ABN 39 008 488 373

133 Castlereagh Street, Level 15

Sydney, New South Wales 2000, Australia

T +61 2 9239 7100 | **F** +61 2 9239 7199 | **E** sydmal@ghd.com | **ghd.com**

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1. Introduction

1.1 Purpose of this report

A risk assessment has been prepared to address the conditions of State Significant Infrastructure approval (SSI) 10053 for the Moorebank Avenue Realignment Works (MARW) Project outlined in Table 1.1 for endorsement by the independent Environmental Representative and submission to the Planning Secretary for information in accordance with Condition A19.

Table 1.1 Purpose of risk assessment

Condition	Requirement	Relevance
A6	A strategy, plan or program (or the like) required by the terms of this approval may be combined with any other strategy(ies), plan(s) or program(s) with the agreement of the Planning Secretary.	Proposed combination of plans required by SSI-10053 is identified in the risk assessment.
A14 (e)	For the purposes of informing Conditions C3, C9 and 0 (sic, Condition C6), include an assessment of the predicted level of environmental risk and potential level of community concern posed by the construction activities required to construct each stage of the SSI. With respect to (e) above, the risk assessment must use an appropriate process consistent with AS/NZS ISO 31000: 2018 Risk Management – Guidelines.	Risk assessment has been developed to inform preparation of the CEMP and subplans required by SSI-10053.
A19	If staging is not proposed, a risk assessment, consistent with the requirements of Condition A14(e) must be prepared for the purposes of informing Conditions C3, C9 and 0 (sic, Condition C6). The risk assessment must be endorsed by the ER and then submitted to the Planning Secretary no later than one month before the commencement of construction or no later than one month before the lodgment of any CEMP or CEMP subplan.	Risk assessment has been developed to inform preparation of the CEMP and subplans required by SSI-10053. This letter is seeking the endorsement of the ER as per Condition A19.
C6	CEMP Sub-plans as identified in documents listed in Condition A1 must be prepared in consultation with relevant government agencies and stakeholders. Relevant government agencies and stakeholders must be nominated in the risk assessment matrix submitted to the Planning Secretary required in accordance with Condition A14 or A19. Details of all information requested by an agency during consultation must be provided to the Planning Secretary as part of any submission of the relevant CEMP Sub-plan, including copies of all correspondence from those agencies as required by Condition A5.	Consultation identified in SSI-10053 is documented in the risk assessment. Details of information requested during consultation will be incorporated into the relevant CEMP subplan.
C8	With the exception of any CEMP Sub-plans expressly nominated by the Planning Secretary to be endorsed by the ER, all CEMP sub-plans must be submitted to the Planning Secretary for approval. <i>Note: The Planning Secretary will consider the assessment of the predicted level of environmental risk and potential level of community concern required under Condition A14(e) when deciding whether any CEMP Sub-plans may be endorsed by the ER.</i>	Nomination of CEMP subplans to be endorsed by the ER based on risk, as per Condition C8, is identified in the risk assessment.

1.2 Scope and limitations

This report: has been prepared by GHD for National Intermodal Corporation and may only be used and relied on by National Intermodal Corporation for the purpose agreed between GHD and National Intermodal Corporation as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than National Intermodal Corporation arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section(s) 1.3 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

GHD has prepared this report on the basis of information provided by National Intermodal Corporation and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.3 Assumptions

In preparing the MARW environmental risk assessment, GHD have assumed the following:

- There have been no material changes to the project since preparation of the Environmental Impact Statement (EIS) / Response to Submissions (RtS)
- The risks identified and risk ratings provided are based on the information available at the time of preparation of this report
- The SSI-10053 conditions stipulated in Table 1.1 are the conditions considered as part of this report

2. Development of the risk assessment

The Moorebank Avenue Realignment EIS (EMM 2021a) identified environmental issues, potential impacts associated with both construction and operation of the project, and mitigation measures to address the identified risks. This risk analysis was used as the basis for a more comprehensive risk assessment to inform preparation of the MARW Construction Environmental Management Plan (CEMP) and the associated subplans.

The risk assessment process outlined in AS ISO 31000: 2018 *Risk Management Guidelines* was used for the development of the MARW risk assessment.

Risks identified in the EIS risk analysis were reviewed and adjusted based on changes to the project since the EIS was prepared and written as risk statements that could be assessed using a risk matrix. Risks were assessed for likelihood and consequence (with three consequence categories of environment, community or regulatory), prior to implementation of identified mitigation measures, to provide an inherent risk rating. This risk rating was reviewed post implementation of identified mitigation measures and a residual risk rating determined for each risk.

The MARW Environmental Risk Assessment is provided as Attachment 1.

2.1 Mitigation measures

Mitigation measures from the Moorebank Avenue Realignment RtS (EMM 2021b) have been referenced in the risk assessment as controls to manage the identified risks. Mitigation measures have been omitted from the risk assessment where they:

- Have been deemed not applicable based on a change with the project or technical specialist advice since the RtS was prepared
- Weren't measurable actions to mitigate the risks but rather 'objectives'. In these instances, the objectives were reviewed, where other mitigation measures were already presented in the risk assessment which were more specific / measurable actions to address the same risk then no further action was taken, otherwise reference was included to the relevant subplan which includes procedures to achieve the objective
- Are not related to construction of the project

The mitigation measures that have been omitted from the risk assessment and the justification for their omission is provided in Table 2.1.

Table 2.1 *Mitigation measures omitted*

Mitigation measure	Justification
BIO05 Minimisation of clearing during construction, wherever possible.	Removed from risk assessment as a mitigation measure as is a high-level objective and the Biodiversity Management Plan and other mitigation measures address this objective.
CON03 A clearance survey and removal of EOW observed in and around the southern portion of the Project site.	The Unexploded Ordnance (UXO) / Explosive Ordnance Materials (EOM) subconsultant RPS Group advised that a clearance survey and removal of EOW was not required prior to works commencing and that the project should utilise an unexpected finds protocol and an UXO Coordinator should be present during works in the southern portion of the MARW project site. The executive summary from the UXO Management Plan and figure identifying the highest risk area of the alignment is provided as Attachment 2. An alternative mitigation measure has been included in the risk assessment.
ABH06 Where the heritage consultant changes through the Project, suitable hand over should be undertaken to minimise loss or mistranslation of the intent of the information, findings and future steps in heritage management occur.	Removed from risk assessment as not a direct mitigation measure for managing risk of damage to heritage items during the project.

Mitigation measure	Justification
SOC03 Provision of signage which provides informative and motivating messaging about physical activity.	Removed from risk assessments as not a direct mitigation measure related to construction of MARW.

2.2 Combination of plans

As outlined in Table 1.1, Condition A6 of SSI-10053 allows for the combination of any strategy, plan or program required by the terms of the approval with the agreement of the Planning Secretary. A number of management plans are proposed to be combined based on them being prepared to address the same environmental aspect and to streamline construction management plans for ease of use in delivery of the project:

- Soil and Water Management Plan. This plan would include a combination of the following management plans:
 - Water Management Plan
 - Construction Soil and Water Management Plan
 - Erosion and Sediment Control Plan
 - Flood Emergency Response and Evacuation Plan
- Construction Heritage Management Plan. This plan would include a combination of the following management plans:
 - Historic Heritage Management Plan
 - Aboriginal Heritage Management Plan

2.3 Consultation applicable to sub-plans

To satisfy Condition C6, stakeholders and relevant government agencies requiring consultation, as specified in SSI-10053, have been identified in the risk assessment against the relevant subplan including reference to the condition which required the consultation.

2.4 Approval of sub-plans

Condition C8 allows for the nomination of subplans to be endorsed by the ER, rather than subject to approval by the Planning Secretary, where the assessment of the predicted level of environmental risk and potential level of community concern supports this approach. In addition, following consultation with the NSW Department of Planning and Environment, it is recommended that the Planning Secretary only holds an approval role for CEMP and Sub-plan documentation where a residual risk to that aspect is identified as 'High' or 'Very High'.

Therefore, the following management plans, prepared for low to moderate residual risk aspects (refer to the MARW environmental risk assessment in Attachment 1) are proposed to be endorsed by the ER and do not require the approval of the Planning Secretary:

- Flora and Fauna Management Plan
- Bushfire Management Plan
- Construction Traffic and Access Management Plan
- Contamination Management Plan
- Soil and Water Management Plan
- Construction Heritage Management Plan
- Construction Air Quality Management Plan
- Construction Waste and Resource Management Plan, incorporating the Spoil Management Plan

In accordance with the express nomination of separate conditions, the following management plans are proposed to be endorsed by the ER and submitted to the Planning Secretary for approval:

- Construction Environmental Management Plan, as required by Condition C2
- Construction Noise and Vibration Management Plan, incorporating the Construction Noise and Vibration Monitoring Program, as required by Condition C14
- Community Communication Strategy, as required by Condition B6

Attachments

Attachment 1

MARW Environmental Risk Assessment

MARW Project
Environmental Risk Register

Environmental aspect	Risk	Likelihood	Consequence	Consequence Category	Risk rating score	Risk Rating	Measure ID (EIS/RTS)	Mitigation measure	Residual risk rating	Consultation applicable to subplans (Condition C6) Combining of subplans (Condition A6)	Approval of subplans - based on risk profile of aspect (Condition C8)
General environmental compliance	Construction Environmental Management Plan (CEMP) and sub-plans not compliant with conditions of consent.	Possible	Major	Regulatory or Legal Breach	9	Moderate	N/A	This risk assessment would be submitted and approved by the ER, then to DPE one month prior to the project commencing as per Condition A19. CEMP and sub-plans would be submitted to the project ER as per condition A31. And approved by the Planning Secretary prior to implementation as per condition C2 and C8.	Low	N/A	Endorsed by the ER and submitted to the Planning Secretary for APPROVAL.
Biodiversity	Loss of biodiversity as a result of construction	Possible	Major	Environment	9	Moderate	BIO01	A biodiversity management plan will be developed for the Project post-approval and will be encompassed within the CEMP. The biodiversity management plan will provide details for the ongoing management and maintenance of biodiversity protection measures during the construction phase of the Project.	Low	Flora and Fauna Management Plan Consultation with DPI Fisheries on FFMP - particularly around riparian vegetation clearance and impacts to waterways.	Flora and Fauna Management Plan Endorsed by the ER.
	Unauthorised clearance of vegetation outside of the approved development footprint	Almost certain	Major	Environment	15	High	BIO02	Work compounds, temporary laydown and stockpile areas will be located within the existing MPE construction site and/or within the road construction footprint.	Moderate		
	Loss of threatened species habitat and threatened ecological communities	Almost certain	Major	Environment	15	High	BIO03	Survey and fencing of the Biobanking site boundary to be the first works completed. The construction footprint avoids direct impacts on the Biobanking site, to ensure this the inclusion of details about the Biobanking site boundary, and the importance of avoiding impacts within these lands as part of worker induction program.			
							BIO04	Use of the existing road network to minimise requirement for removal of native vegetation, minimising fragmentation to existing areas.			
							BIO08	Exclusion zones will be established around retained vegetation, including fencing and signage.			
	Spread of weeds across the project alignment potentially impacting upon neighbouring property Failure to comply with biosecurity obligations	Possible	Minor	Environment	3	Low	BIO09	Pre-clearing surveys will be conducted prior to clearing, including translocation of fauna into areas of retained vegetation.	Low		
							BIO10	Vegetation clearing will be undertaken in accordance with the two-stage process.			
							BIO11	Hollows logs and limbs will be retained for placement within the Biobanking site retained vegetation.			
							BIO12	Weed control prior to construction works will be undertaken, where possible.			
							BIO13	Weeds will be actively controlled in areas where significant weeds occur.			
							BIO14	Construction of wash-down stations at a suitable location.			
							BIO15	Re-vegetation of cleared areas as quickly as possible following construction.			
	BIO16	Screening of water that is used for dust suppression.									
	BIO17	Appropriate disposal and management of weeds during clearing works.									
	Increase in predatory pest species as a result of the construction of the project	Possible	Moderate	Environment	6	Moderate	BIO18	Waste to be stored appropriately in inaccessible bins and disposed off-site.	Low		
	Light, vibration and noise pollution leading to a modification of animal behaviour	Possible	Minor	Environment	3	Low	BIO19	No waste will be left outside in open areas accessible to feral animals.	Low		
	Changes to runoff regimes and sedimentation having impacts on waterways	Likely	Moderate	Environment	8	Moderate	BIO20	Use of directional lighting to retain lighting within works area and road alignment and to minimise light spill as much as possible.	Low		
BIO21							Siting of infrastructure away from sensitive receiving environments such as Anzac Creek.				
BIO22							Use of natural erosion controls incorporating organic materials, micro water capture and contour shaping.				
BIO23							Diversion of clean water around construction areas, rather than through them.				
BIO24							Stabilisation and rehabilitation of works areas as soon as practicable.				
BIO25							Siting of sediment basins to manage run-off from construction areas and Use of captured water for dust suppression.				
BIO26							Management of sedimentation via sediment and erosion control plans for the entire construction footprint.				
BIO06	Detailed design will seek to minimise changes to runoff regimes that may impact Anzac Creek and the natural drainage lines that flow into Boot Land.										
BIO07	Sediment controls will be developed and implemented at Anzac Creek crossing.										
Fragmentation and fauna movement restrictions and exclusion in the boot land as a result of the construction of Moorebank Avenue	Almost certain	Major	Environment	15	High	BIO27	Incorporating the construction of a dry culvert allowing for local fauna populations to pass between fragmented areas ensuring all available habitats are accessible during all types of weather events. Construction of fauna fencing to guide fauna towards the culvert entrances to maximise the effectiveness of the culvert.	Moderate			
Injury and/or death of native fauna through interactions with construction vehicles/plant	Almost certain	Major	Environment	15	High	BIO28	Incorporating the construction of a dry culvert allowing for local fauna populations to pass between fragmented areas ensuring all available habitats are accessible during all types of weather events. Construction of fauna fencing to guide fauna towards the culvert entrances to maximise the effectiveness of the culvert.	Moderate			
						BIO29	To mitigate the risk of fauna vehicle mortality during construction a driver's code of conduct is to be prepared and implemented, with a recommended maximum speed limit of 40 km per hr within Boot Land in the morning period (prior to 7 am and after 5 pm).				
						BIO30	Mammal exclusionary fencing will be included in development of the detailed design.				
Bushfire	Increased bushfire risk as a result of the construction activities	Unlikely	Minor	Environment	2	Low	BUS01	A Bushfire Management Plan (BMP) will be developed for the Project post-approval and will be encompassed within the CEMP. BMP will provide details for the ongoing management and maintenance of bushfire protection measures during the construction phase of the Project, and will encompass the provisions outlined within Section 3.4 to Section 3.8 of the BFHA (Appendix C) including: • APZ locations and management details (if required); • access provisions such as access locations and alternative emergency access; • management of potential ignition sources; • landscaping requirements including indicative design layout and vegetation density thresholds; • water supplies (e.g. static water supply, location of hydrants etc); • details regarding bushfire emergency management procedures (refer BHF26); and • any other essential bushfire safety requirements.	Low	Bushfire Management Plan Revised management measure BUS06 requires consultation with the Rural Fire Service and FRNSW during construction to ensure emergency access is maintained during and after construction, there are also a number of proposed mitigation measures in the BMP that may impact on FRNSW.	Bushfire Management Plan Endorsed by the ER.
	Damage to newly constructed road assets as a result of bushfire in the area	Unlikely	Minor	Environment	2	Low	BUS02	Where temporary construction compounds as well as temporary stockpile and laydown areas require access roads, on-site parking, and hardstand/loading areas, these facilities will be located in the most appropriate location in order to establish defensible space for fire-fighting purposes, as well as to mitigate the potential for ignition of surrounding bushland from project sources.	Low		
							BUS03	Temporary construction buildings will also have fully compliant fire safety systems in accordance with AS and National Construction Code requirements and as appropriate to the building type, including some or all of the following features: • fire extinguishers; • fire hose reels; • fire hydrant systems; and • automatic sprinkler systems.			
							BUS04	Temporary construction compound will be constructed and routinely serviced to comply with the specific requirements, as relevant to the structure type.			
							BUS05	Road furniture (e.g. safety barriers, kerbs, fencing, signposting, bus facilities), line marking and lighting will be designed in accordance TNSW standards and guidelines, as well as in accordance with the relevant AS.			
	Construction works impeding responder access to manage fire situations	Unlikely	Major	Environment	6	Moderate	BUS06	Consultation with RFS and Fire and Rescue NSW (FRNSW) will be undertaken during construction to ensure emergency access is maintained during and after construction.	Moderate		
							BUS07	All site offices will be accessible via access roads suitable for firefighting appliances similar to NSW RFS category 1 tankers.			
							BUS08	All access roads and tracks must be inspected annually and management actions undertaken if roads and tracks are considered unsuitable for emergency vehicle passage (inspect for erosion, fallen timber, locked gates, and dead end tracks). Where locked gates are required, keys will be provided to RFS and FRNSW (if required).			
							BUS09	Gates will be kept in good condition for entry and exit of fire fighting vehicles.			
							BUS10	Ongoing maintenance to ensure a minimum 4 m vertical clearance through the removal of overhanging branches or objects that would prevent access within the Project site.			
							BUS11	All pumps and water sources will be maintained in working order, clearly marked and easy to find.			
							BUS12	All fittings will be compatible with RFS and FRNSW fire trucks.			
							BUS13	Security clearances, communication and access arrangements will be kept updated and confirmed with RFS and FRNSW in readiness for upcoming season.			
							BUS14	APZs and/or defensible space will be kept free of obstacles to provide access for RFS and FRNSW fire-fighting appliances and personnel.			
	Diesel generators and associated fuel storage tanks will be designed, housed, and maintained so as not serve as an unacceptable risk to surrounding forest. Diesel generators and associated fuel storage tanks will be located away from the hazard, wherever possible.						BUS15	Diesel generators and associated fuel storage tanks will be designed, housed, and maintained so as not serve as an unacceptable risk to surrounding forest. Diesel generators and associated fuel storage tanks will be located away from the hazard, wherever possible.	Low		
BUS16							Hazardous materials will be located away from the hazard wherever possible.				
BUS17							Equipment will be maintained in good working order.				
BUS18							Plant and equipment will be fitted with appropriate spark arrestors, where practical, and limiting vehicle movement over long grass.				
BUS19							All vehicles will be provided with portable fire extinguishers that comply with relevant AS.				
BUS20							Site staff will be informed of the site rules including designated smoking areas and putting rubbish in designated bins.				

Environmental aspect	Risk	Likelihood	Consequence	Consequence Category	Risk rating score	Risk Rating	Measure ID (EIS/RTS)	Mitigation measure	Residual risk rating	Consultation applicable to subplans (Condition C6) Combining of subplans (Condition A6)	Approval of subplans - based on risk profile of aspect (Condition C8)
Environmental aspect	Hot work activities during construction start a fire	Possible	Major	Environment	9	Moderate	BUS21	Hot work permits will be obtained where required and no hot works on total fire bans and/or conditions associated with severe fire weather.	Low		
							BUS22	Adequate storage and handling requirements for potentially flammable substances in accordance with relevant guidelines.			
							BUS23	Emergency services will be immediately notified of the location and nature of any accidental ignition of surrounding vegetation and/or structures, that was unable to be successfully extinguished.			
							BUS24	The Project will assist RFS/FRNSW in the investigation of the cause of any unplanned fires in proximity to the Project, should they occur.			
							BUS25	The contractor will appropriately design landscape treatments along the road corridor to reduce potential fuel risk, including use of low combustibility vegetation and regular maintenance (through slashing) and in accordance with TINSW guidelines and relevant AS.			
	Construction works not providing access to water for fire fighting, increasing potential impact of a fire	Unlikely	Major	Environment	6	Moderate	BUS26	The temporary construction compound will be constructed and routinely serviced to comply with the specific requirements, as relevant to the structure type and to be determined by the contractor at the detailed design stage.	Moderate		
							BUS27	The road alignment will be designed in accordance with TINSW standards and guidelines, as well as in accordance with AS (refer to Chapter 2 of the EIS), which will include the provisions of fire hydrants.			
	Lack of awareness of bushfire emergency response procedures Failure of contractor to provide training, run drills, monitor fire danger rating etc, resulting in inadequate response to bushfire events	Possible	Moderate	Environment	6	Moderate	BUS28	Where applicable and as suitable for the scale and size of the development type, emergency management procedures will be developed for the construction phase of the Project, in line with the requirements and approach of: • A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan (NSW RFS 2014); and • Australian Standard 3745-2010 Planning for emergencies in facilities (Standards Australia 2010).	Low		
							BUS29	Emergency management procedures will be reviewed after incidents of bushfire or other fires as well as annually at the end of each bushfire season and amended, if required, to improve the effectiveness of the plan.			
							BUS30	Bushfire awareness training/induction will be provided to all new staff members and contractors, prior to and during the bushfire season for bushfire specific awareness and regularly for other fire awareness (e.g. structure fire and ignition sources).			
BUS31							Details of requirements for pre-season fire drills will be provided during staff briefings.				
BUS32							Formal meetings will be conducted with relevant stakeholders prior to the bushfire season, when higher fire weather is forecast or there are fire events in the surrounding area. Potential participants to include staff, contractors, neighbouring community representatives and external fire authorities and land managers (e.g. RFS and FRNSW).				
BUS33							Fire weather warnings, severe weather warnings and total fire bans will be communicated daily during the bushfire danger season to all staff, contractors, and visitors at the Project. Information can be found on the fire information page (Fire danger ratings and total fire bans) of the RFS website.				
BUS34							The recognition of very high or greater fire danger days triggering will be used as a requirement to view the fire information page (Fires Near Me, Major fire updates) on the RFS website (NSW RFS 2020).				
BUS35							Staff, contractors, and visitors will be made aware of and required to respond accordingly to the three levels of alert under the national bushfire warning system (Advice, Watch and Alert, Emergency Warning).				
Traffic and transport	Poor management of construction traffic, traffic arriving to site all at once, causing queuing on local roads Not enough car parking is provided for the project and parking occurs along local streets impeding access for residents and commercial premises	Almost certain	Moderate	Community Experience and Satisfaction	10	High	TRA01	A Construction Traffic and Access Management Plan (CTAMP) will be developed for the Project post-approval and will be encompassed within the CEMP. The CTAMP will provide details for the ongoing management and maintenance of traffic management and mitigation measures during the construction phase of the Project.	Moderate	Construction Traffic and Access Management Plan No consultation specified in EIS/RTS documentation, or SSI approval, due to the use of and tie ins with existing roads in the vicinity of the project, consultation with Liverpool City Council, Campbelltown City Council, Emergency Services, Department of Defence and Transport for NSW is recommended.	Construction Traffic and Access Management Plan Endorsed by the ER.
	Vehicles using routes to the site which haven't been approved or taking shortcuts along lower order roads Access to surrounding land owners being blocked by construction traffic Unclear signage causing issues with movement in and around the project site	Likely	Moderate	Community Experience and Satisfaction	8	Moderate	TRA02	Prior to the commencement of construction, traffic control plans (TCPs) will be developed and will be encompassed within the traffic management plan. TCPs shall be developed in accordance with the AS and the RMS Traffic Control at Work Sites Manual - Version 5 (RMS 2018).	Low		
							TRA03	All traffic controllers engaged on-site will be accredited by TINSW, and act in accordance with TINSW Standard Conditions, including: • no stopping of traffic on public streets; and • no stopping of pedestrians in anticipation of truck movements. Pedestrians may only be held for short periods, for their safety, whilst a truck is entering or leaving the site.			
							TRA04	No marshalling or queuing of trucks will be permitted on the public road.			
							TRA05	A Road Occupancy Licence application will be submitted to the Transport Management Centre for approval prior to any road closures.			
	Delays to permits causing delays to construction and opening	Almost certain	Minor	Regulatory or Legal Breach	5	Moderate	TRA07	A Section 87 (NSW Roads Act 1993) approval will be obtained for the proposed traffic signal intersections on MAR. Any proposed changes or removal of existing traffic signals along the existing Moorebank Avenue alignment will require TINSW approval in accordance with Section 87 of the NSW Roads Act 1993.	Low		
							TRA08	Where construction compounds require priority control traffic signals, an approval will be sought pursuant to the NSW Roads Act 1993			
							TRA09	The existing Works Authorisation Deed for the Moorebank Avenue Upgrade works will be amended with regard to specific design and maintenance requirements.			
	Inappropriate road safety controls causes accidents on or around Moorebank Avenue	Possible	Moderate	Regulatory or Legal Breach	6	Moderate	TRA06	Safety barriers will be installed for the sections of the new route which is closest to the new terminal rail line to prevent any chance of a vehicle on the new road losing control and crashing onto the rail track below.	Low		
							TRA11	Road Safety Audits will be undertaken in accordance with the Guide to Road Safety Part 6: Managing Road Safety Audits (Austroads 2019a) and Guide to Road Safety Part 6A: Implementing Road Safety Audits (Austroads 2019b) by an independent TINSW accredited road safety auditor			
Bus stops are not accessible to all users	Possible	Moderate	Regulatory or Legal Breach	6	Moderate	TRA10	New bus stops will be designed to meet the requirements of the Commonwealth Disability Discrimination Act 1992.	Low			
Noise and vibration	Noise impacts to sensitive receivers from high noise generating activities	Likely	Moderate	Community Experience and Satisfaction	8	Moderate	NVI01	A Construction Noise and Vibration Management Plan (CNVMP) will be developed for the Project post-approval and will be encompassed within the CEMP. The CNVMP will provide details for the ongoing management and maintenance of noise and vibration management and mitigation measures during the construction phase of the Project. The CNVMP will include training and procedures for promoting noise awareness by construction workers and personnel; a complaint lodgement procedure to ensure that members of the public and local residents are able to report noise issues; and an ongoing review process and plan for responding to noise complaints.	Moderate	Construction Noise and Vibration Management Plan The following components of the CNVMP require consultation: - Construction noise and vibration monitoring program to be prepared in consultation with Liverpool City Council (Condition C12) - Out-of-Hours-Work Protocol to be developed in consultation with the ER (Condition E21)	Construction Noise and Vibration Management Plan Endorsed by the ER and submitted to the Planning Secretary for APPROVAL.
							NVI02	The Project will regularly reinforce (such as at toolbox talks) the need to minimise noise and vibration.			
							NVI03	The Project will review and implement feasible and reasonable mitigation measures that reduce construction noise levels.			
							NVI04	Avoidance of portable radio use, public address systems or other methods of site communication that may unnecessarily impact upon nearby residents.			
							NVI05	Routes for the delivery of materials and parking of vehicles to minimise noise will be used, where feasible.			
							NVI06	Where possible, the Project will avoid the use of equipment that generates impulsive noise.			
							NVI07	Residents will be notified prior to the commencement of intensive works.			
	Noise impacts at sensitive receivers from noisy plant and equipment	Likely	Moderate	Community Experience and Satisfaction	8	Moderate	NVI08	Where possible, quieter plant and equipment will be used based on the optimal power and size to most efficiently perform the required tasks.	Moderate		
							NVI09	Plant and equipment will be operated in the quietest and most efficient manner.			
							NVI10	Regular inspection and maintenance of plant and equipment will be undertaken to minimise noise and vibration level increases, to ensure that all noise and vibration reduction devices are operating effectively.			
							NVI11	Where possible, use broadband audible reverse alarms, as opposed to beepers on plant and equipment.			
							NVI12	When not in use, plant and equipment will be turned-off. Where possible, works are to be scheduled to minimise plant and equipment occurring concurrently.			
Vibration impacts at sensitive receivers from plant and equipment	Unlikely	Minor	Community Experience and Satisfaction	2	Low	NVI10	Regular inspection and maintenance of plant and equipment will be undertaken to minimise noise and vibration level increases, to ensure that all noise and vibration reduction devices are operating effectively.	Low			
Vibration impacts on infrastructure (including heritage buildings) surrounding the project	Unlikely	Minor	Community Experience and Satisfaction	2	Low	N/A	Undertake a dilapidation survey prior to construction works occurring to determine the existing condition of the East Hills Bridge. If the bridge is considered a sensitive structure following the dilapidation report and works are within the minimum working distance of East Hills Bridge, then alternative construction methodologies and verification monitoring would be required.	Low			
Contamination	Migration of contaminated material to surface water and groundwater as a result of the project	Likely	Major	Environment	12	High	CON01	Contamination Management Plan (CMP) will be developed for the Project post-approval and will be encompassed within the CEMP. The CMP will provide details for the ongoing management and maintenance of contamination management and mitigation measures during the construction phase of the Project.	Low	Contamination Management Plan N/A - no consultation specified in EIS/RTS documentation, or	Contamination Management Plan Endorsed by the ER
							CON02	Classification and appropriate removal/disposal of the stockpiled materials observed in and around the southern portion of the Project site.			
							N/A	Implement an UXO / EOM unexpected finds protocol and an UXO Coordinator should be present during works in the southern portion of the MARW project site.			
							CON04	Targeted investigation of any areas of soil/sediment disturbance proposed as part of the development (i.e. assessment of soils/sediments required to be excavated to assess waste classification or re-use suitability).			

Environmental aspect	Risk	Likelihood	Consequence	Consequence Category	Risk rating score	Risk Rating	Measure ID (EIS/RTS)	Mitigation measure	Residual risk rating	Consultation applicable to subplans (Condition C6) Combining of subplans (Condition A6)	Approval of subplans - based on risk profile of aspect (Condition C8)
	Asbestos and contaminated material handled and disposed of inappropriately	Possible	Moderate	Environment	6	Moderate	CON05	Preparation of an Unexpected Finds Protocol to be encompassed within the CEMP.	Low	SSI approval	
	Exposure of acid sulphate soils during construction results in increased contaminated material to be managed as part of the project	Unlikely	Moderate	Environment	4	Moderate	CON06	Where Acid Sulfate Soils are encountered at the site works an Acid Sulfate Soils Management will be prepared and implemented.	Low		
	Migration of sulphuric soil material to surface water and groundwater as a result of the project	Possible	Moderate	Environment	6	Moderate	CON05	Preparation of an Unexpected Finds Protocol to be encompassed within the CEMP.	Low		
Water	Failure to identify water source and needs for the project causes delays and cost implications	Possible	Moderate	Regulatory or Legal Breach	6	Moderate	WAR01	A Water Management Plan (WMP) will be developed for the Project post-approval and will be encompassed within the CEMP. The WMP will provide details for the ongoing management and maintenance of water management and mitigation measures during the construction phase of the Project.	Low	Soil and Water Management Plan incorporating a Water Management Plan, Construction Soil and Water Management Plan, Erosion and Sediment Control Plan, and Flood Emergency Response and Evacuation Plan N/A - no consultation specified in EIS/RTS documentation, or SSI approval	Soil and Water Management Plan Endorsed by the ER.
	Discharge of sediment laden water to the environment during construction Poor quality discharges from adjacent developments, existing road infrastructure and upstream land uses into the project site has a cumulative impact on the quality of discharges to the downstream environment	Possible	Moderate	Environment	6	Moderate	WAR02	A Construction Soil and Water Management Plan (SWMP) will be prepared in accordance with Managing Urban Stormwater: Soils and Construction – Volume 1 (Landcom 2004) for the construction phase of the Project and will be encompassed within the CEMP. A recommended monitoring program is provided in Section 5.8 of the Water Assessment.	Low		
							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.			
							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.			
							WAR05	Stormwater re-use is to be prioritised over potable water for site water usage where possible.			
							WAR06	A dewatering and discharge procedure is to be incorporated in the SWMP. Recommended discharge criteria is provide in Section 5.8 of the Water Assessment.			
							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.			
							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.			
							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.			
	Downstream impacts on water quality during operation of the project	Unlikely	Moderate	Environment	4	Moderate	WAR10	Bioretention basins are proposed to attenuate stormwater runoff from the Project site for up to the 100-year ARI design storm event.	Low		
							WAR11	Bioretention basins will include bioretention systems to achieve pollutant reduction targets and provide spill containment.			
							WAR12	Longitudinal and transverse drainage will be in accordance with design criteria set out in best practice guidelines and have minimal impact on peak discharge and afflux effects.			
							WAR13	Scour protection will be provided to reduce erosion and sedimentation at stormwater discharge outlets for up to the 50-year ARI design storm event.			
							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 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).			
	Flooding from creek inundates construction area, and causes damage to project site and/or newly constructed road	Possible	Major	Environment	6	Moderate	WAR15	A Flood Emergency Response and Evacuation Plan or equivalent will be prepared and implemented for the construction phase of the Project to minimise hazard to construction personnel, construction plant/equipment and downstream watercourses.	Moderate		
	Delays to project due to unforeseen interception of groundwater	Possible	Moderate	Regulatory or Legal Breach	6	Moderate	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.	Low		
							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.			
							WAR19	Further design documents will reference and consider the Sydney Basin Central Groundwater Source.			
Reduction in amenity for downstream users of Anzac Creek and Georges River	Unlikely	Minor	Community Experience and Satisfaction	2	Low	WAR02	A Construction Soil and Water Management Plan (SWMP) will be prepared in accordance with Managing Urban Stormwater: Soils and Construction – Volume 1 (Landcom 2004) for the construction phase of the Project and will be encompassed within the CEMP. A recommended monitoring program is provided in Section 5.8 of the Water Assessment.	Low			
Changes to runoff regimes and sedimentation having impacts on waterways	Likely	Moderate	Environment	8	Moderate	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.	Low			
Historic heritage	Damage to historic heritage items	Unlikely	Major	Community Experience and Satisfaction	6	Moderate	HIH01	A Historic Heritage Management Plan (HHMP) will be developed for the Project post-approval and will be encompassed within the CEMP. The HHMP will provide details for the ongoing management and maintenance of historic heritage management and mitigation measures during the construction phase of the Project.	Low		
							HIH02	If unanticipated finds, including potential relics, is found during Project activities, work in the vicinity (i.e. within 10 m) will cease until an assessment of the find is made by an archaeologist. An Unexpected Finds Protocol will be developed for the Project and encompassed within the CEMP.			
	Damage to human remains during unexpected finds	Unlikely	Major	Community Experience and Satisfaction	6	Moderate	HIH03	Where human remains (including skeletal material) are found work will halt, and the remains will not be tampered with. The police and coroner will be contacted for investigation, which may include the involvement of Heritage NSW and advice from a physical anthropologist.	Low		
	Visual impact on heritage properties surrounding the project	Possible	Moderate	Community Experience and Satisfaction	6	Moderate	HIH04	Where possible, trees that provide visual shielding to Glenfield Farm will be retained to minimise visual impacts to viewsheds from the farm, particularly in the southern sector where the Project would traverse vegetated land.	Low		
Aboriginal heritage	Damage to Aboriginal heritage items	Possible	Minor	Community Experience and Satisfaction	3	Low	ABH01	Prior to ground disturbance, an Aboriginal Heritage Management Plan (AHMP) must be developed by a heritage specialist in consultation with the Aboriginal stakeholders and consent authority to provide the post-approval framework for managing Aboriginal heritage within the study area. The CHMP should include the following issues: <ul style="list-style-type: none"> processes, timing, and communication methods for maintaining Aboriginal community consultation and participation through the remainder of the Project; procedures for identifying and managing any culturally modified trees and/or vegetation with cultural values identified within the study area as the Project progresses; descriptions and methods of any additional investigative and/or mitigative archaeological actions that may be required prior to works commencing or during the Project. These may include cultural inductions for all personnel and subcontractors outlining the past history and sensitivity of the region, archival recording, archaeological excavation and/or cultural monitoring for any areas where the surface impacts of the Project intersect the identified Aboriginal objects and/or sites, and/or areas of archaeological sensitivity, and any additional requirements identified by the Aboriginal community; description and methods of actions to minimise any inadvertent impacts to identified Aboriginal objects and/or sites and areas of archaeological sensitivity outside of the construction footprint. This should include, but not be limited to, cultural inductions for all personnel and subcontractors outlining their location and significance, fencing and clear marking of heritage sites and zones of interest in close proximity to proposed works, appropriate screening for sensitive and gender-specific areas, and any additional requirements identified by the Aboriginal community. A suitable regime of monitoring these activities should also be outlined, including locations, methods, personnel and timing; description and methods for undertaking further Aboriginal heritage assessment, investigation and mitigation of any areas of the Project footprint that have changed following completion of the preliminary Aboriginal heritage assessment and/or during the final design and construction phases of the Project; description and methods of post-excavation analysis and reporting of any archaeological investigations and activities implemented as part of the AHMP. For excavations, these should include suitable collection and processing of stone artefacts, and chronological, soil, and environmental samples; procedures for managing the unexpected discovery of Aboriginal objects, sites and/or human remains during the Project; procedures for the curation and long-term management of cultural materials recovered as part of the works outlined in the AHMP and any preceding stages associated with the Project; and processes for reviewing, monitoring, and updating the AHMP as the Project progresses. 	Low		
							ABH06	Where the heritage consultant changes through the Project, suitable hand over should be undertaken to minimise loss or mistranslation of the intent of the information, findings and future steps in heritage management occur.			
	Reduction in local cultural landscape as a result of the project	Unlikely	Moderate	Community Experience and Satisfaction	8	Moderate	AHB02	The CEMP (or equivalent) will include the consideration of the cultural landscape throughout the Project and as part of the rehabilitation of the study area.	Low		
	Failure to consult with Aboriginal stakeholders during the project leading to decreased relationship with local community	Likely	Moderate	Community Experience and Satisfaction	8	Moderate	ABH03	Consultation with Aboriginal stakeholder will be maintained during the finalisation of the assessment process and throughout the Project.	Low		
							ABH04	A copy of the PAHA will be lodged with AHIMS and be provided to each of the Aboriginal stakeholders.			
Failure to record new Aboriginal relics as per the AHIMS site recording requirements, leads to loss of information	Likely	Moderate	Regulatory or Legal Breach	4	Moderate	ABH05	AHIMS Site Recording Forms for the newly identified Aboriginal objects and/or sites within the Project area and areas of archaeological sensitivity should be submitted to the AHIMS database once their validation has been completed.	Low			

Environmental aspect	Risk	Likelihood	Consequence	Consequence Category	Risk rating score	Risk Rating	Measure ID (EIS/RTS)	Mitigation measure	Residual risk rating	Consultation applicable to subplans (Condition C6) Combining of subplans (Condition A6)	Approval of subplans - based on risk profile of aspect (Condition C8)
Air quality	Generation of dust and air emissions impacting sensitive receivers	Possible	Moderate	Community Experience and Satisfaction	6	Moderate	AIR01	An Air Quality Management Plan (AQMP) will be developed for the Project post-approval and will be encompassed within the CEMP. The AQMP will provide details for the ongoing management and maintenance of air quality management and mitigation measures during the construction phase of the Project.	Low	Construction Air Quality Management Plan N/A - no consultation specified in EIS /RTS documentation, or SSI approval	Construction Air Quality Management Plan Endorsed by the ER.
							AIR06	Regular site inspections will be undertaken with results recorded within a logbook.			
							AIR21	Daily on-site and off-site inspections, where receptors are nearby, will be undertaken to monitor dust. The inspection results will be recorded in a specific log. Inspections will include regular dust soiling checks of surfaces such as street furniture and cars.			
							AIR22	At the commencement of each day's activities, the local meteorological forecast will be reviewed, including the timing of notable increases in wind speed and/or temperature. Appropriate increased intensity or additional mitigation measures will be planned for the day based on this forecast review. The likely meteorological conditions and implications for dust emissions and impacts will be discussed at the morning toolbox meeting.			
							AIR23	Site inspections will occur at increased frequencies when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. Should notable visual dust emissions be observed leaving the Project site, increased intensity or additional mitigation measures will be deployed.			
	AIR24	Policies will be implemented which aim to minimise emissions from the vehicles visiting the Project, such as queue management, and restrictions on idling and the use of auxiliary equipment									
	Poor relationship with the local community and stakeholders due to inadequate management of complaints and incidents received during construction	Possible	Moderate	Community Experience and Satisfaction	6	Moderate	AIR02	Prior to commencement of construction activities, the Project will develop appropriate communications to notify the potentially impacted residences of the Project (duration, types of works, etc), relevant contact details for environmental complaints reporting.	Low		
							AIR03	A complaints logbook will be maintained throughout the construction phase which should include any complaints related to dust. Where a dust complaint is received, the details of the response actions to the complaint should be detailed in the logbook.			
							AIR04	The Project will record any exceptional incidents that cause dust and/or air emissions, either on or off site, and the action taken to resolve the situation in the logbook.			
	Dust impacts to health and amenity of surrounding receptors	Possible	Moderate	Community Experience and Satisfaction	6	Moderate	AIR05	The Project will hold regular meetings with the operators of other high-risk construction sites within 500 m of the Project site boundary (if applicable) to ensure that cumulative particulate matter emissions are minimised.	Low		
							AIR07	Shade cloth barriers to site fences will be erected around potentially dusty activities such as trench excavations and material stockpiles where practicable.			
							AIR08	Site fencing and barriers will be kept clean using wet methods.			
							AIR09	A maximum-speed-limit of 20 km/h on all internal roads and work areas during construction will be implemented.			
							AIR11	Water carts will be deployed to ensure that exposed areas and topsoils/subsoil are kept moist.			
							AIR12	Adequate water supply on the construction site will be provided for effective dust/particulate matter suppression/mitigation.			
							AIR13	Working practices will be modified to limit clearing, stripping and spoil handling during periods of adverse weather (hot, dry and windy conditions) and when dust is seen leaving the Project site.			
							AIR14	The extent of clearing of vegetation and topsoil will be limited to the designated footprint required for construction and appropriate staging of any clearing.			
							AIR15	Drop heights from loading or handling equipment will be minimised.			
							AIR16	Revegetation of earthworks and exposed areas/soil stockpiles to stabilise surfaces will be undertaken as soon as practicable.			
AIR17							Water-assisted dust sweeper(s) will be utilised to remove, as necessary, any material tracked out of the Project site.				
AIR18	Dry sweeping of large areas will be avoided.										
AIR20	All trucks delivering fill or leaving the Project site with spoil material will have their load covered.										
AIR10	Proper maintenance and tuning of all equipment engines will be undertaken.										
AIR19	Trips and trip distances will be controlled and reduced where possible, for example by coordinating delivery and removal of materials to avoid unnecessary trips.										
Social	Increase in complaints on the project due to poor consultation with local community and stakeholders	Likely	Moderate	Community Experience and Satisfaction	8	Moderate	SOC01	Implementation of a monitoring and management framework to ensure that the identified positive and negative impacts are monitored over time to measure the effectiveness or otherwise of the proposed management measures.	Low	Community Communication Strategy N/A - no consultation specified in EIS /RTS documentation, or SSI approval	Community Communication Strategy Submitted to the Planning Secretary for APPROVAL as per Condition B6.
							SOC05	Conduct ongoing consultation with stakeholders and the community during Project construction and implement a complaint handling procedure.			
	Positive impacts to livelihood of local residents from employment opportunities on the project	Likely	Minor	Community Experience and Satisfaction	4	Moderate	SOC02	Implementation of a local participation strategy and plan as a part of the construction strategy.	Low		
Increase in business for local commercial premises due to construction workforce	Possible	Minor	Community Experience and Satisfaction	3	Low	SOC04	Continued use of local procurement mechanisms.	Low			
Visual	Reduction in visual amenity of the local area resulting from construction of the project	Possible	Moderate	Community Experience and Satisfaction	6	Moderate	VIS01	Wherever feasible, ancillary sites will be located where they would have least visual impact.	Low	N/A	N/A
							VIS02	Detailed design of structural elements, including noise barriers, retaining walls and retaining wall finishes, will be in accordance with Beyond the Pavement, urban design policy, procedure and design principles (Roads and Maritime, 2013) and the associated design guidelines.			
							VIS03	Consideration to the design of the new retaining walls will be given in order to minimise the apparent height of the walls, including planting to the base of the wall and terracing.			
							VIS04	New retaining walls will be designed to have a finish that relates to the character of the surrounding landscape.			
							VIS05	Where there is sufficient space, operational water quality devices will be designed with consideration of reducing visual impacts.			
							VIS07	The removal of existing vegetation within the road corridor will be minimised.			
							VIS08	The potential for planting of shrub species in medians and verges will be considered in detailed design, where the width of the median allows, taking into account clear zone requirements for headlight glare screening.			
	VIS09	Screen planting will be provided where feasible to proposed retaining walls to screen the Project from sensitive adjacent land uses where applicable.									
	Light spill impacts due to poor lighting installation	Possible	Moderate	Community Experience and Satisfaction	6	Moderate	VIS06	The design of temporary and permanent lighting will be undertaken in accordance with AS 1158.1- 1986 and would avoid unnecessary light spill on adjacent residents or sensitive receivers.	Low		
Waste and resource management	Waste handled and disposed of inappropriately	Possible	Moderate	Regulatory or Legal Breach	6	Moderate	WAS01	A CWRMP will be prepared for the Project and encompassed within the CEMP. The CWRMP will outline appropriate management procedures and include, but not be limited to: • identification of the waste types and volumes that are likely to be generated by the Project; • adherence to the waste minimisation hierarchy principles of avoid/reduce/reuse/recycle/dispose; • waste management procedures to manage the handling and disposal of waste, including unsuitable material or unexpected waste volumes; and • identification of reporting requirements and procedures for tracking of waste types and quantities.	Low	Construction Waste and Resource Management Plan N/A - no consultation specified in EIS /RTS documentation, or SSI approval	Construction Waste and Resource Management Plan Endorsed by the ER.
							WAS02	A Spoil Management Plan (SMP) will be prepared for the Project as part of the construction waste and resource management plan. The SMP will outline appropriate management procedures for the generation and importation of spoil. It will include, but not be limited to: • procedures for classification of spoil; • identification of spoil reuse measures; • spoil stockpile management procedures; • spoil haulage routes; • spoil disposal and reuse locations; and • imported spoil sources and volumes.			
	Generation of large volumes of unsuitable fill or unexpected finds of contamination that require storage and disposal and can't be reused on the project	Possible	Minor	Environment	3	Low	WAS03	Suitable areas will be identified to allow for contingency management of unexpected waste materials, including contaminated materials. Suitable areas will be required to be hardstand or lined areas that are appropriately stabilised and bunded, with sufficient area for stockpile storage.	Low		
	Migration of waste from site impacting neighbouring properties (e.g. windblown litter)	Possible	Minor	Environment	3	Low	WAS01	CWRMP	Low		
Sustainability	Failure to achieve sustainability objectives of the project	Possible	Minor	Environment	3	Low	SUS01	Excavated material will be reused of as much as possible from cut activities associated with the Project.	Low	N/A	N/A
							SUS02	Recycled materials and sources such as crushed pavement for select fill, fly ash as an additive to concrete production and reclaimed water will be used wherever possible.			
							SUS03	The Project will explore options for green energy usage for ancillary facilities and measures to minimise greenhouse gas emissions.			
							SUS04	The removal of trees and the area of disturbance around riparian habitat and waterways will be minimised as far as possible.			
Cumulative	Lack of coordination with other major projects causes cumulative impacts on local residents and commercial	Possible	Moderate	Community Experience and	6	Moderate	CUM01	NIC will liaise with the relevant project manager of major projects in the vicinity of the Project to coordinate disruptive activities (e.g. tie in works on the existing Moorebank Avenue) to minimise cumulative impacts.	Low	N/A	N/A
							NV113	Coordinate with MPW and MPE projects to minimise cumulative construction impacts where practical.			

Environmental aspect	Risk	Likelihood	Consequence	Consequence Category	Risk rating score	Risk Rating	Measure ID (EIS/RTS)	Mitigation measure	Residual risk rating	Consultation applicable to subplans (Condition C6) Combining of subplans (Condition A6)	Approval of subplans - based on risk profile of aspect (Condition C8)
	premises			Satisfaction			AIR05	The Project will hold regular meetings with the operators of other high-risk construction sites within 500 m of the Project site boundary (if applicable) to ensure that cumulative particulate matter emissions are minimised.			

Likelihood Descriptors		Consequence Descriptors				Risk Matrix						
Category	Description			Category	Environment	Description	Regulatory or Legal Breach	Likelihood	Consequence			
									Severe	Major	Moderate	Minor
									4	3	2	1
Almost Certain	The risk scenario will occur in most instances and is unavoidable due to site activities.							5	VH	H	H	M
Likely	The risk scenario is likely to occur and is a consequence of site activities.			Severe	Critical long term environmental harm or catastrophic irreversible environmental harm. OR Major scale damage or loss in a medium sensitive environment, or large scale damage or loss in a highly sensitive environment.	A deluge of customer complaints about up to 6 months with normal background rates for the mode or service increasing by a factor of 3 or more.	Substantial breach resulting in prosecution, fines and/or litigation. Licence or accreditation restricted or conditional affecting ability to operate.	4	VH	H	M	M
Possible	The risk scenario may occur.			Major	Serious medium term environmental harm. OR Major scale damage or loss in a low sensitive environment, or large scale damage or loss in a medium sensitive environment, or moderate scale damage or loss in a highly sensitive environment.	A substantial and sustained uplift in the rate of customer complaints.	Systemic non-compliance/major breach resulting in enforcement action and/or prohibition notices. Substantial fine and no disruption to services.	3	H	M	M	L
Unlikely	The risk scenario is unlikely to occur and site activities may contribute to the risk scenario.			Moderate	Significant short term environmental harm. OR Large scale damage or loss in a low sensitive environment, or moderate scale damage or loss in a medium sensitive environment, or minor scale damage or loss in a highly sensitive environment.	A stream of complaints.	Moderate non-compliance. Subject to comment and monitoring from applicable regulator. Small fine and no disruption to services.	2	M	M	M	L
Rare	The risk scenario will rarely occur and site activities do not normally contribute to the risk scenario.			Minor	Unreasonable short term impacts or interference with no lasting detrimental effects. OR Moderate scale damage or loss in a low sensitive environment, or minor scale damage or loss in a medium sensitive environment.	Isolated complaints.	Low-level non-compliance with legal and/or regulatory requirement or duty. Investigation and/or report to authority.	1	M	L	L	L

Attachment 2

Extract from UXO Management Plan

EXECUTIVE SUMMARY

The following UXO Management Plan is to provide contractors working at the Moorebank Avenue Relocation Works (MARW) with an understanding of the former Military uses of the site from 1940 to 1980 approximately. The potential for unexploded ordnance (UXO) to be present within the boundaries of the MARW is considered to be very low. The existence of explosive ordnance materials (EOM) is also considered to be very low, proportionate to the land area of the site.

The “Boot Land” site, see Figure 1, has been an area of undisturbed bush land wedged between larger military establishments and ranges since at least WW2. To the north there was the Moorebank Ammunition Depot and Anzac Rifle Range, to the west the School of Military Engineering and the former DNSDC Stores Depot, to the east and south the Holsworthy Ranges.

It has been used for military training by the Australian Defence Force leading to numerous blank 7.62 cartridges and other military wastes, such as batteries, ration pack waste. As urbanisation moved into the area the ANZAC rifle range was decommissioned to form the now Wattle Grove residential area, and the stop butt material spread along one of the roads within the site. This “road of bullets” was remediated in 2015 along with the other major military use area a former ungazetted grenade range used primarily for hand thrown grenades.

The 11.53Ha grenade range area, shown in Figure 2 was remediated to a depth of 100mm in 2015. The target being a Mills 36 Hand Grenade Detonator Assembly. The search method used, F3 Minelab detectors, meant that any complete hand grenades, a much larger target, would have been found at a greater depth giving assurance that the likelihood of any complete remnant UXO in this area is very low. ANZAC creek borders the north of the former grenade range and EOM was still being found on the surface up to the edge of the creek vegetation which was not disturbed. Evidence of EOM from the grenade range was also reported inside the fence line of the adjacent former stores depot indicating that some EOM may be found during the works on the creek line itself. It is unlikely that complete grenades will be found in this area as it is outside of the known main use area. The requirement to carry out a UXO survey and vegetation reduction in the creek area is not considered necessary.

Outside of Area C shown in Figure 1 there is not expected to be any UXO or major EOM contamination. Some small arms ammunition cartridges may exist all over the rest of the site but are all expected to be expended blank rounds, non-expended blank rounds are a low hazard if handled correctly.

Despite there being some concerns regarding potential UXO or EOM being present in natural ground levels that have been covered by imported fill, in part of the former grenade range, this is considered low risk as the imported fill area is to the south of the former grenade range main area and will form part of the planned detention basin area. To mitigate this and any other potential UXO or EOM finds a suitable person is to be nominated as the MARW UXO Coordinator for the works and has to be conversant with the details in Section 3 and Appendix A and B and be on site during the excavation activities in this area. No further UXO investigations are considered required for the MARW works to proceed as planned.

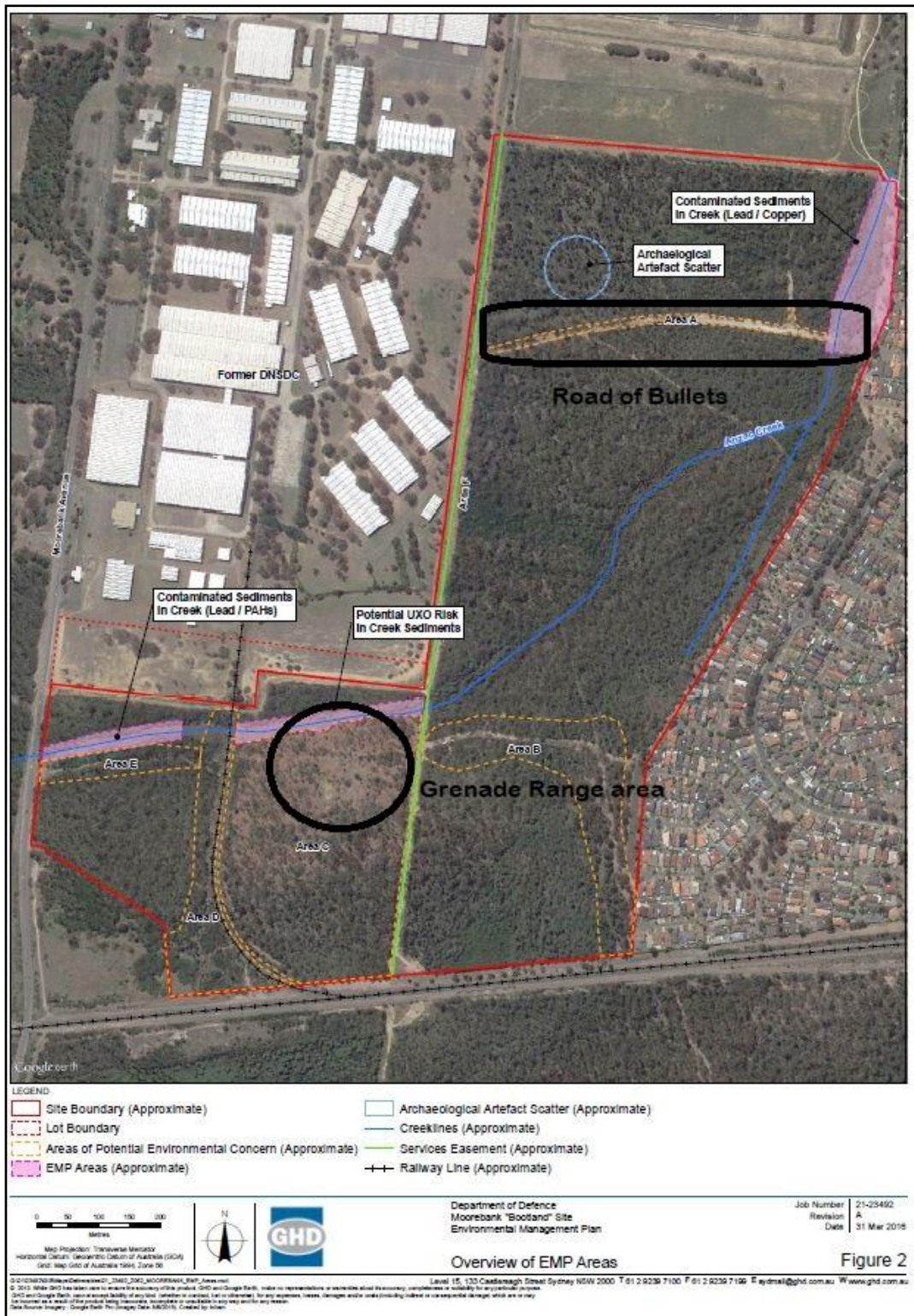


Figure 2: Location of Grenade Range and Road of Bullets

1.1.1 Type of ordnance used on Grenade Range

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



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