Karen Harragon
Director – Social and Other Infrastructure Assessments
NSW Department of Planning and Environment
27/ 320 Pitt Street, Sydney, NSW, 2000

8/09/2017

Response to submissions and outstanding information – Moorebank Precinct West Concept MOD 1 (SSD 5066 MOD 1) / Moorebank Precinct West Stage 2 (SSD 7709)

Dear Karen,

This letter provides a detailed response to the items raised in the *Moorebank Precinct West – Response to Submissions and outstanding information* letter (DP&E request), issued on 28 August 2017.

This letter should be read in conjunction with the *Response to submissions and outstanding information – Moorebank Precinct West Concept MOD 1 (SSD 5066 MOD 1) / Moorebank Precinct West Stage 2 (SSD 7709)* letter, issued to the Department on 31 August 2017, and provided as **Attachment A** of this letter.

As previously raised, it is assumed your letter is seeking additional information to support the continued assessment by the NSW Department of Planning and Environment (DP&E) of both the Moorebank Precinct West Concept Modification (SSD 5066 MOD 1) (MPW Concept Mod) and Moorebank Precinct West Stage 2 (SSD 7709) (MPW Stage 2 Proposal).

On this basis, we presume that the DP&E has accepted both the MPW Concept Mod Supplementary Response to Submissions (RtS) (MPW Concept Mod SRtS, prepared by Arcadis, dated August 2017) and MPW Stage 2 RtS (prepared by Arcadis, dated August 2017).

Please see below and the related attachments to this letter for a detailed response to the specific issues raised in the DP&E request.

Re-exhibition of the Proposal

Please refer to **Attachment A** for our response with regards to this matter.

Additional information required

A tabulated response to the requests for additional information, provided in the Attachment to the DP&E response has been provided in **Attachment B** of this letter. **Attachment C** to **Attachment G** of this letter provides further additional information, to support the responses provided in **Attachment B**.

The Final Compilation of Mitigation Measures (FCMM) contained within Section 8 of the MPW Stage 2 RtS have been amended and provided as **Attachment F** of this letter, to support DP&E's continued assessment and determination. This section incorporates mitigation measures previously identified and detailed in the management plans attached to both the EIS and RtS.

We have provided a response to all information requested in the DP&E request before the required timeframe of close of business Monday 18 September 2017.

SIMTA would welcome a further meeting with DP&E, and/or independent technical specialists to discuss and resolve any further issues raised prior to the receipt of additional information being sought of SIMTA by DP&E.

Agency comments and technical specialist reviews

Where required, a response to comments raised by agencies, as included in Attachment A of the DP&E request, have been included in **Attachment B** of this letter.

The DP&E request (28 August 2017) noted that further information would be requested of SIMTA progressively over the coming weeks. This letter responds only to those items provided as an Attachment to the current DP&E request.

An additional table 'Moorebank Precinct – Intermodals – Request for Information (6 September 2017)' was received from DP&E on 7 September. This letter does not respond directly to this table; however, we note that a number of items provided in this additional table have been addressed by the information provided in **Attachment B** of this letter.

Detail of land owner's consent

SIMTA's letter to the Department (dated 31 August 2017) noted that an update regarding the status of landowners' consent would be provided no later than 18 September 2017. This matter was discussed at the regular Approvals meeting between representatives of SIMTA and the DP&E on 5 September 2017. During the meeting, DP&E identified that further clarification on landowners' consent matters would be provided. It was identified that the requirement related to the provision of landowners' consent for the modification application and not to the provision of satisfactory arrangements.

At this point in time, no further clarification has been received.

By way of interim update, landowners' consent has been sought from the following parties for the MPW Stage 2 SSD Application:

- Department of Defence; letter issued by SIMTA to MIC on 27 July 2017.
- Department of Investment and Regional Development; letter issued by SIMTA to MIC on 27 July 2017.
- Liverpool City Council; letter issued by SIMTA on 3 August 2017.
- Roads and Maritime Services; letter issued by SIMTA on 3 August 2017.

Consultation regarding Landowner's consent for the SSD Application remains ongoing.

Satisfactory arrangements

SIMTA is continuing discussions with Roads and Maritime Services (Roads and Maritime) and Transport for NSW (TfNSW) for the provision of State, regional and local infrastructure to ensure that there is suitable capacity on the transport network to accommodate traffic impacts from both the development operations and background traffic growth.

Development contributions

SIMTA has recently consulted with Liverpool City Council (LCC) regarding landowner's consent for the MPW Stage 2 Proposal. It is intended that these discussions would also include developer contributions with a meeting to be undertaken with LCC in the near future.

Yours sincerely,

Michael Yiend

Development Director

Qube Holdings Ltd

CC. Michael Yiend (Qube Property Management Services Pty Ltd), Nathan Cairney (Tactical Group), Steve Ryan (Tactical Group), Claire Vahtra (Arcadis), Westley Owers (Arcadis).

ATTACHMENT A - ***Moorebank Precinct West Concept MOD 1 (SSD 5066 MOD 1) / Moorebank Precinct West Stage 2 (SSD 7709)*** **letter, issued to the Department on 31 August 2017**

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31/07/2017

Moorebank Precinct West (MPW) Stage 2 (SSD 7709) Response to Submissions

SSD16-7709

Dear Karen,

This letter, and its attachments, provides a response to the issues identified by the NSW Department of Planning and Environment (NSW DP&E) and independent experts engaged by NSW DP&E and the Government Architect's Office NSW during their preliminary assessment of the MPW Stage 2 Environmental Impact Statement (EIS) (herein referred to as the MPW Stage 2 EIS).

Specifically, **Attachment A** of this letter provides a tabulated response to the issues identified by NSW DP&E, as provided to Qube Property Management Services dated 16 December 2016, together with the additional issues subsequently provided on 4 April 2017.

Responses provided to the issues identified by NSW DP&E in **Attachment A** should be read and considered in conjunction with the MPW Stage 2 Response to Submissions Report (MPW Stage 2 RtS) to be submitted. The MPW Stage 2 RtS includes detailed responses to issues raised by other Government agencies, stakeholders, local interest groups, nearby landowners and community members as relevant to the Proposal. To support the address of issues raised by NSW DP&E, a Noise Technical Memorandum (Wilkinson Murray, 2017) has been prepared and provided as **Attachment B** of this letter. Responses to issues raised by the Government Architects Office NSW are provided in **Attachment C** of this letter.

It should be noted that following exhibition of the MPW Stage 2 EIS, the Proposal has been amended as described in Section 6 of the MPW Stage 2 RtS. The amendments include:

- Alignment of the operational hours for warehouses to the IMT facility and port freight operations to enable freight movements outside of peak traffic times.
- Drainage works:
  - Inclusion of the OSD (Basin 10) and relocation of another OSD (Basin 3) along the eastern boundary of the operational area, adjacent to the western verge of Moorebank Avenue
  - Re-sizing of OSD basins along the western boundary of the operational area
  - Reduction to the widths of selected OSD outlet channels
  - Provision of an additional covered drain within the Endeavour Energy easement
- Identification of container wash-down facilities and de-gassing areas within the IMT facility

- Illuminated backlit signage within the warehousing area
- Inclusion of an upgraded layout for the Moorebank Avenue/Anzac Road intersection
- Adjustments to warehouse layouts.

Additionally, approval for subdivision in the Proposal is no longer sought as subdivision would be undertaken as part of future stages of the MPW Project

To assist NSW DP&E's assessment of the issues raised during the public exhibition period, and the potential environmental impact of the amendments to the Proposal the following documentation will be appended to the MPW Stage 2 RtS:

- Community response reference table (Appendix A)
- Revised Architectural drawings (Appendix B)
- Revised Landscape design statement and plans (Appendix B)
- Operational traffic sensitivity analysis – M5 Motorway/ Moorebank Avenue interchange (Appendix C)
- Addendum operational traffic impact assessment (Appendix C)
- Revised construction traffic impact assessment (Appendix C)
- Addendum noise impact assessment (Appendix D)
- Noise technical memorandum (Appendix D)
- Addendum air quality impact assessment (Appendix E)
- Addendum health risk assessment (Appendix F)
- Updated Biodiversity Assessment Report (BAR) (Appendix G)
- Addendum stormwater and flooding impact assessment (Appendix H)
- Revised Stormwater and Drainage Design Drawings (Appendix H)
- Addendum visual impact assessment (Appendix I)
- Addendum heritage impact assessment (Appendix J)
- Best Practice review – air quality and noise (Appendix K)
- Stockpile management protocol (Appendix L)
- Environmental Work Methods Statement – Pre-construction stockpiling (Appendix M)
- DCP compliance table (Appendix N)
- Consolidated project description (Appendix O)
- Consolidated cumulative construction program (Appendix P).

Should you have any additional clarification or issues you wish to discuss regarding the MPW Stage 2 Proposal, and the information relating to the MPW Stage 2 RtS, please feel free to contact Steve Ryan from Tactical Group (0406 995 822).

Yours sincerely

Claire Vahtra
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ATTACHMENT A – RESPONSE TO ISSUES RAISED IN NSW DP&E SUBMISSION

MPW STAGE 2 SUBMISSIONS: DP&E KEY ISSUES - 16 DECEMBER 2016

Aspect	Comment	Response	Reference
Earthworks			
Importation of 1,600,000m^3 of fill	Additional information is requested to identify the need and provide a justification for the proposed volume of imported fill and the raising of final site levels. It is noted that the Response to Submissions to the Concept Plan Modification provides some information on this. The Department notes that the following is stated in the EIS: • *The Environmental Impact Assessment (EIS) prepared for the MPW Concept Approval (SSD_5066) identified that fill material required for the development of the MPW site would be largely sourced from excavations within the MPW site and hence imported fill volumes for the MPW Project would be small. Subsequent civil design development for the MPW Project has identified that fill required to be imported to the MPW site is estimated at 1,600,000 cubic metres (m3) (p13); and* • *The MPW Concept Approval proposed a cut-fill balance for the MPW site. Additional design development was undertaken which identified that this was not the most suitable option for stormwater management on the MPW site. As a result, the site is to be raised to improve*	The MPW Concept Plan EIS (Parsons Brinckerhoff, 2014), Response to Submissions (RtS) (Parsons Brinckerhoff, 2015) and supplementary response to submissions (Parsons Brinckerhoff, 2015) noted that only a minor quantity of fill (approximately 43,134m^3) would be imported as part of the early works stage of the MPW Project, and that no fill would be imported to the MPW site as part of future stages of the development. The MPW Concept Plan Approval did not include the provision to import fill at any stage of construction of the MPW Project. The concept design presented in the MPW Concept Plan EIS focused on optimising a cut and fill balance across the MPW site to minimise the requirement for fill to be imported or excess spoil to be exported. It was also acknowledged in the MPW Concept Plan EIS that "*should the Project be granted Stage 1 SSD approval, detailed engineering studies would be prepared to determine the optimal design for the Project*". Progressive detailed design (i.e. "detailed engineering studies") undertaken for the Proposal has determined that the importation of fill is required for the functionality of the internal site drainage system. During the public display of the MPW Concept EIS, Bankstown City Council raised concern about the location of the MPW Project relative to areas of high flood risk. The MPW Concept Approval RtS reiterated that the MPW Project's operations on the MPW site would be located out of the high and medium flood risk zones of the Georges River catchment. Additionally, in response to the issue raised by Bankstown City Council, the MPW Concept Approval RtS also clarified that no development (or any vegetation clearing) is proposed as part of the MPW Project for the area of high flood risk, identified along the lower	MPW Concept Plan EIS (Parsons Brinckerhoff, 2014) MPW Concept Response to Submissions Report (Parsons Brinckerhoff, 2015) MPW Concept Supplementary Response to Submissions Report (Parsons Brinckerhoff, 2015) Section 6 of the MPW Concept Modification 1 Response to Submissions Report (Arcadis, 2015) Section 6 and Section 12, and Appendix R of the EIS

Aspect	Comment	Response	Reference
	stormwater drainage across the site. Further, this raising is to be undertaken to reduce the potential of encountering unknown or unexpected contamination (p160). It is requested that further details are submitted to quantify and assess the errors in the calculation of required fill volume in the original MPW Concept Approval (SSD 5066) EIS, the subsequent civil design development that has resulted in the proposed importation of 1,600,000m³ fill and the effect of the permitted and proposed site levels on stormwater drainage and contamination – for example detail how the stormwater drainage system will be improved with the importation of the fill.	terraces of the Georges River that exceeds the 1% AEP for a significant flood event. The response included a commitment that the internal site drainage system would be designed to convey flows from the 10% Annual Exceedance Probability (AEP) flood, in accordance with Liverpool City Council's Drainage Design Specification Section D5.04. The response also noted that for events above the 10% AEP, the MPW site will be designed to safely convey overland flow to the detention ponds which will be designed to attenuate the runoff from the site to pre-development levels up to the 1% AEP flood level. Detailed design development has determined that the importation of 1,600,000m^3 of fill is required to facilitate appropriate design gradients of the stormwater and drainage system to fulfil the commitment for the MPW site to safely convey stormwater flows from the site to pre-development levels up to the 1% AEP flood level. In addition, this adjustment is also needed to ensure that the underground pit and pipe/conduit system can be designed with the appropriate gradients to facilitate underground drainage east to west across the MPW site into the onsite detention basins. As the site is generally flat, importation of fill is required to adequately address the stormwater and drainage requirements and an adjustment is required to the building formation level across an area covering approximately 150 hectares. Pre-development surface levels across the MPW site are undulating, hence a varying depth of fill will be required to be placed across the site, to establish the required gradient for overland flows to drain (by gravity) across the MPW site and towards the onsite detention basins. Existing material on the MPW site may be suitable for reuse in some areas provided it is treated to remove unsuitable materials and blended with other suitable materials and re-placed to meet the requirements of AS3798. As the volume required to adjust the building formation level is not available from within the MPW site, the importation of clean general fill is required.	

Aspect	Comment	Response	Reference
Stockpiles			
Imported Fill Sources	Insufficient information is provided in relation to the source and composition of the proposed 1,600,000m³ of imported fill. While it is noted that 'clean fill' is proposed, additional information should also be provided detailing the type and composition of the proposed fill. Also, proposed procedures for inspecting, testing and sorting the imported fill and protocols for materials not permitted at the facility should be provided.	As detailed in Section 4.3.3 of the EIS, clean general fill would be sourced from the construction of other Sydney infrastructure projects. For the purpose of the Proposal EIS, and this response, clean general fill is defined as Material meeting the NSW Environment Protection Authority's (EPA) resource recovery orders and exemptions including Virgin Excavated Natural Material (VENM) and Excavated Natural Material (ENM) as defined below: • VENM is natural material (such as clay, gravel, sand, soil or rock fines): - that has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial, mining or agricultural activities, - that does not contain sulfidic ores or soils, or any other waste, - and includes Excavated Natural Material (ENM) that meets such criteria for VENM as may be approved from time to time by a notice published in the NSW Government Gazette. • ENM, refers to naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that: - has been excavated from the ground - contains at least 98% (by weight) natural material - does not meet the definition of VENM - does not include material located in a hotspot; that has been processed, contains acid sulphate soils or potential acid sulphate soils. The clean general fill to be imported to the Proposal site will come with relevant classification certificates verifying that it is VENM/ENM and suitable for use as clean fill on the MPW site. In addition, a stockpile management protocol has been prepared for the Amended Proposal and provided at Appendix L of the MPW Stage 2 RtS, and would be included as part of the CEMP. As part of the materials characterisation process included in the stockpile management protocol, fill to be imported to the MPW site would be subject to random testing to verify the classification certificates.	Section 4.3.3 of the EIS Appendix L of the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
Fill Stockpiles	Insufficient information is provided in relation to the proposed stockpiling of the imported fill. It is stated in the EIS (p76-78) that imported fill would be stockpiled on a level earthworks pad and that the stockpiles would not exceed ten metres in height from the final site levels, with battered slopes at gradients of 1:3. Additional information and plans should be submitted addressing the following: • The height of the proposed earthworks pad to AHD and detail of any other works required in preparation for the receipt of imported fill, including stabilisation; • The location, height and profile of the stockpile(s) of the 400,000m³ of fill imported during Works Period A 'Pre-construction stockpiling' of Stage 2, including cross-section and contour plans; • The location, height and profile of the stockpile of the 1,600,000m³ of fill following importation of the 1,200,000m³ of fill during Works Period C 'Bulk Earthworks' of Stage 2, including cross-section and contour plans; • The location, height, profile and proposed management of stripped native topsoil and imported capping material stockpiles, including contour plans; • Specific details of proposed stockpile watering and other erosion control measures; • Details of proposed stockpile seeding and maintenance, including proposed seed species; • The proposed stockpile removal methods, sequencing and timing; and	<u>Location, height and profile of stockpiles</u> The stockpiling of clean general fill will be within the construction footprint of the Proposal, as shown in Figure 4-8 of the EIS. As described in Section 4.3.3 of the EIS, fill would be stockpiled across the MPW site, adjacent to areas of placement works to minimise material handling. Notwithstanding this, the primary stockpile area during Works Periods A and Works Period C would be in the central part of the MPW site. This area has been designated as an initial area for the depositing of fill once brought to the MPW site. Fill would be transferred throughout the Proposal site periodically as the earthworks activities are undertaken. The final location and profile of stockpiles during Works Period A and Works Period C within the Proposal site would be determined during detailed design and would be subject to the preferred construction method of the construction contractor, once appointed. In accordance with Section 4.3.3 of the EIS, all stockpiles on the MPW site across all relevant works periods would not exceed ten metres in height from the final site levels, with battered walls at gradients of 1:3. As the stockpiles would be in constant transition, i.e. established and then decommissioned as fill is spread throughout the Proposal site, providing specific dimensions (other than the controls identified above) is not considered appropriate. The cut to fill operation, comprising excavation, transporting, crushing, screening and spreading of excavated material on site, would be undertaken concurrently with the placement of imported fill. Earthworks plant would be used to spread and compact the material on site. Appropriate erosion and sediment controls, and dust suppression measures would be implemented to manage potential air quality, erosion and sedimentation impacts during the earthworks period (refer to Section 22 of the EIS). To respond to the comments provided and give further detail, a Stockpile Management Protocol has been prepared for the Proposal (refer to Appendix L of the MPW Stage 2 RtS). This Protocol provides a process for the establishment of stockpiles to ensure that the environmental impacts are minimised during construction. The Protocol would be included and further developed as part of the CEMP. It includes principles of stockpile management and how these principles would be applied throughout construction of the Proposal, including materials characterisation, materials handling, stockpile	Figure 4-8, Sections 4.3.3, 8 and 22 of the EIS Appendix L of the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
	• Details of proposed rehabilitation of land formerly subject to the fill stockpile(s) upon completion of placement.	water management and stockpile stabilisation. These measures would ensure that suitable management of the stockpiles is undertaken, thereby reducing the environmental impacts of the Proposal during construction. Excavated soil, deemed unsuitable for re-use on site would be temporarily stockpiled within the construction footprint and then transferred off-site. All soil to be transferred off-site would be tested and deposited at a suitable collection facility based on its waste disposal classification. <u>Stockpile watering and erosion control measures</u> Temporary sedimentation basin(s) would be established to manage potential water quality impacts resulting from stockpiling and appropriate erosion and sediment controls, such as silt screen fencing, temporary surface diversion structures and dust suppression measures, would be established prior to the commencement of stockpiling on the site, in accordance with an Erosion and Sediment Control Plan (ESCP), which would form part of the CEMP (refer to Section 22 of the EIS and Section 8 of the MPW Stage 2 RtS). <u>Stockpile seeding and maintenance</u> Long-term stockpiling of clean fill material is expected to be a practice used sparingly during the construction of the Proposal. Any imported clean fill material that would be subject to long-term stockpiling within the Proposal site, would be subject to stabilisation works, to minimise the potential for erosion. This would likely involve hydroseeding or other suitable measures. As active stockpiles can still possess several faces that are inactive for extended periods of time, the same approach to stabilise these faces would be employed where expected to be inactive for extended periods of time. <u>Stockpile removal methods, sequencing and timing</u> Once clean fill required for construction has been imported to the Proposal site and stockpiled (where required), it is not intended that this imported fill would be removed/ transported off-site, unless in the unlikely circumstance that selective testing of imported fill identifies unsuitable material. It is intended that stockpiles would be progressively removed by spreading the fill material across the Proposal site to achieve final elevations. The sequencing and timing of the placement of fill would be subject to the preferred construction methodology of the construction contractor (once appointed).	

Aspect	Comment	Response	Reference
		Mitigation measure OD in Table 22-1 of the EIS states that *'The construction and/or operation of the Proposal may be delivered in a number of stages. If construction and/or operation is to be delivered in stages a Staging Report would be provided to the Secretary prior to commencement of the initial stage of construction and updated prior to the commencement of each stage as that stage is identified*.' The Proposal, inclusive of stockpiling and placement of fill material would be undertaken in accordance with this mitigation measure, and implemented in accordance with the CEMP for the Proposal. <u>Rehabilitation of land subject to fill stockpiles upon completion of placement</u> As the areas within which materials would be stockpiled would become part of the built form of the MPW site (either as part of the Proposal or in a future stage), including areas of hardstand and landscaping, no rehabilitation specific to stockpiling is expected. Further, stockpiling of clean fill would not result in the need for remediation of key stockpiling areas. It is noted that some contaminated fill, excavated from the Proposal site, may be stockpiled however contamination migration would be controlled within the CEMP therefore ensuring that these areas would not require remediation. In the southern portion of the Proposal site, there are areas where placement of fill would occur to final site levels; however, hardstand and warehousing would not be constructed. At these locations, exposed surfaces would be stabilised through the use of hydroseeding, the application of a bitumen emulsion or a similar stabilisation method.	
Placement of Imported Fill	It is unclear where the final placement of the imported fill would occur and what the final levels of the fill on the site will be. Plans of native and imported fill final placement and final contour plans (RL) of pre and post site levels are to be submitted and include an indicative timeline. Additional information and plans detailing proposed rehabilitation of cut/fill areas to adequately accommodate proposed landscaping elements should also be provided. Details of seeding and maintenance of any disturbed area on the site that will not be subject to building platforms or hard or soft landscaping during Stage 2 are also to be provided.	<u>Site levels and fill placement</u> Existing site levels were included in the Survey Plan of the Proposal site, provided at Appendix C of the EIS. All fill required during construction of the Proposal site would be imported, and would be placed in accordance with the site levels shown on drawing no. C-MICS2-SSD-111-AA003760-05 in the Revised Stormwater and Drainage Design Drawings at Appendix H of the MPW Stage 2 RtS. The importation of fill would be undertaken in Works Periods A and C which would have an approximate duration of 3 and 24 months respectively. As indicated by the duration of Works Period C, placement of fill would be undertaken throughout the construction of the Proposal. The specific staging of fill placement would be determined as part of the CEMP for the Proposal.	Section 22, Appendix C and Appendix R of the EIS Section 8, Appendix B, Appendix H and Appendix L of the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
		<u>Rehabilitation of cut/fill areas to adequately accommodate proposed landscaping</u> On completion of the Proposal, areas would comprise hard stand and landscaping (both temporary and permanent), Once the final site levels are achieved, landscaping would be completed in accordance with the Landscape Design Statement (refer to Appendix B of the MPW Stage 2 RtS). Where practicable, topsoil would be stockpiled during vegetation clearance, and re-used as part of the Proposal for landscaping works. To the south of the warehousing area, the Proposal site would be subject to bulk earthworks to adjust the building formation level, and then stabilised to minimise erosion. Stabilisation works at this location is likely to include either hydro-seeding or the application of a bitumen emulsion to protect and seal the surface. A Stockpile Management Protocol has been prepared for the Proposal, which provides a process for the establishment of stockpile to ensure that the environmental impacts are minimised during construction (refer to Appendix L of this EIS). The Stockpile Management Protocol would be developed further and included in the CEMP for the Proposal (refer to Section 22 of the EIS and Section 8 of the MPW Stage 2 RtS). The Stockpile Management Protocol includes principles of stockpile management and how these principles would be applied throughout construction of the Proposal, including materials characterisation, materials handling, stockpile water management and stockpile stabilisation. Long-term stockpiling of clean fill material is not expected to be common practice across the Proposal site during construction. Any imported clean fill material that would be subject to long-term stockpiling within the Proposal site (i.e. more than 10 days), would be subject to stabilisation works, to minimise the potential for erosion. This would likely involve hydroseeding or a similar surface stabilisation process. The CEMP for the Proposal would include measurements relating to inspection and maintenance of long-term stockpiles and areas of cut/ fill relating to watering control.	

Aspect	Comment	Response	Reference
		The OEMP for the Proposal would include requirements specific to the monitoring and ongoing maintenance of final landscaping within he Proposal site.	
Imported Engineering Fill/Ballast	Section 5.2 'Construction Phase Emissions' of the AQIA (p35) states that in addition to the 1,600,000m³ of fill "*An additional 100,000 cubic metres of engineering fill/ballast would be imported for the IMT construction*". Section 4.3.3 'Construction methods' of the EIS (p79) states: *The construction methodology for the IMT facility and Rail link connection would comprise [inter alia]:* • Importation and placement of engineering fill • Compaction of engineering fill • Importation and placement of ballast material Section 18.4.1 'Construction GHG Emissions' of the EIS (p484) references the "Importation and placement of engineering fill and ballast material" in relation to Construction works Period D – Moorebank Avenue intersection works and internal road network. The EIS needs to clarify any impacts from this further 100,000m3 of fill, for example timing, truck movements to and from site and impacts on final site levels. Confirmation that these deliveries are included in the traffic modelling is required. All relevant sections or appendices of the EIS should also be updated.	100,000m^3 of engineering fill/ballast would be imported to the Proposal site in addition to the 1,600,000m^3 of fill to be imported, as described in the Air Quality Impact Assessment of the EIS. As detailed in Table 4-6 of the EIS, the ballast material would be imported during works period E – IMT facility and Rail link connection construction. The number of construction vehicle movements for Works Period C was provided in Table 4-10 of the EIS. The importation of ballast material, undertaken in Works Period E would be accommodated within the estimated truck movements described in Table 4-10, and no additional traffic modelling would be required to assess the traffic impacts of the Proposal. The importation of 100,00 m^3 of engineering fill/ballast for construction of the IMT and Rail link connection has been incorporated into all relevant assessments undertaken for the Proposal including greenhouse gas, noise, air quality and traffic (refer to Sections 7-20 of the EIS) In the instance that the importation of ballast material is required concurrently with the importation of fill material, the number of daily traffic movements would not exceed those provided in Table 7-3 of the EIS. As discussed above the importation of ballast is not anticipated to result in additional traffic numbers and therefore additional assessment is not required. Construction traffic movements during construction of the Proposal would be managed in accordance with the CTMP for the Proposal.	Table 4-6, Table 4-10, Table 7-3 and Section 7-20 of the EIS

Aspect	Comment	Response	Reference
Proposed Site Facilities			
Batching Plant	Figure 4-8 'Construction Layout' (p72) identifies two batching plant location options. Option 1 is located to the north of the IMT facility area. Option 2 is combined with materials crushing and is located to the west of the Earthworks compound. Section 4.3.3 'Construction Methods' of the EIS (p77) states that: *A temporary batch plant for construction of the IMT facility, would be established during this works period. Two locations for the temporary batch plant have been identified, one at the northern extent of the IMT facility and the other at the southern extent. The sites for the temporary batch plant would be cleared and levelled and hardstand established. The silos for the temporary batch plant would be up to 25 metres in height and it is estimated that the plant would be operational on site for a period of approximately 18 months.* Additional information is required in order to establish whether the establishment and operation of batching plants is consistent with the Concept Plan approval. Also, if consistent, either one or both batching plant location option should be nominated. Accordingly, additional information needs to be submitted updating the Visual Amenity section of the EIS and the Impact Assessment (Appendix Q) in regard to the impacts associated with the proposed batching plant location(s). Any other relevant sections or appendices of the EIS should also be updated.	<u>Consistency with the Concept Plan Approval</u> Section 8 of the MPW Concept Approval EIS (Parsons Brinckerhoff, 2014) provides information regarding project development phasing and construction. Section 8.8.9 of the MPW Concept Approval EIS includes an indicative list of major plant and equipment to be used during the construction phases of the MPW Project, and states that the actual quantity and types of equipment would depend on availability and the Project contractor's preferred working method. Although a concrete batching plant is not specifically listed in this table, section 8.8.11 notes that: '*water would be required during construction for dust suppression, compaction and pavement stabilisation during earthworks, concrete batching, washing of plant and equipment and watering of landscaped areas, and for staff facilities (including toilets, hand washing and drinking)*'. This indicates that the establishment and use of a concrete batching plant was considered as part of the MPW Concept Approval, and would be included as part of the 'establishment of construction facilities'. As such, the use of a concrete batching plant is considered consistent with the MPW Concept Plan approval. The inclusion of this batching plant within the MPW Concept Approval is further supported by the approach to construction vehicle movements which did not account for vehicle movements for the importation of concrete to the site, i.e. in the instance that concrete batching operations would occur off-site. <u>Batching plant location</u> Construction of the Proposal would require the establishment of one concrete batching plant. It is not the intention to operate two concrete batching plants (i.e. one at each indicative location) at the same time; and the inclusion of the two potential locations provides sufficient flexibility to the construction contractor for the Proposal. The final location of the concrete batching plant would be subject to the construction contractor's construction methodology, once appointed. Based on existing site conditions and environmental constraints of the Proposal site and surrounds, the EIS nominated two potential locations for the batching plant for the construction contractor (once appointed). It is intended that once the	Section 8.8.11 of the MPW Concept EIS Sections 8, 9 and 22 of the EIS Appendix N, Appendix O and Appendix T of the EIS

Aspect	Comment	Response	Reference
		construction contractor is appointed that would select from one (only) of these locations. The relevant environmental assessments prepared to support the EIS included a worst case assessment of the potential environmental impacts associated with the operation of one concrete batching plant. Construction noise modelling, detailed in section 8 and Appendix N of the EIS demonstrated that the use of the concrete batching plant during construction of the Proposal would not result in the exceedance of construction noise management levels. Similarly, the air quality modelling for construction of the Proposal as detailed in section 9 and appendix O demonstrated that construction of the Proposal, including the use of the concrete batching plant would not result in exceedance of the relevant air quality criteria, It is expected that the potential noise and air quality impacts of construction of the Proposal, including those related to the use of the concrete batching plant would be effectively minimised and managed with the implementation of the mitigation measures included in section 22 of the EIS and section 8 of the MPW stage 2 response to submissions report. The Visual Impact Assessment included in the EIS (Appendix T of the EIS) included an assessment of the visual impacts of the Proposal during construction. The establishment and decommissioning of ancillary facilities including the concrete batch plant have been considered as part of this assessment. The visual impact assessment noted that the most visible elements are likely to be equipment such as cranes and piling rigs, which may be visible from areas including Moorebank Avenue, the nearby passenger rail line and nearby residential areas of Casula and Wattle Grove. However, given the low to medium rise nature of construction works, it is unlikely that these works would be overly intrusive and that any visual impacts would be localised and temporary. The visual impact assessment provided at Appendix T of the EIS recommends a number of mitigation measures that would be implemented to reduce the overall visual impact during construction of the Proposal. These mitigation measures are considered suitable to minimise the temporary and localised visual impacts associated with construction of the Proposal (refer also to Section 22 of the EIS and Section 8 of the RtS). Based on the potential impacts expected from construction of the Proposal, the visual impact assessment for the use of the concrete batching plant as presented in the EIS is considered to be adequate for the purpose of addressing the SEARs.	

Aspect	Comment	Response	Reference
Materials Washing	Section 4.3.7 'Construction Ancillary Facilities' of the EIS (p84-85) states that: *The Earthworks Compound would be located to the west of Moorebank Avenue, near the site access off Chatham Avenue, as shown in Figure 4-8. This compound would be in close proximity to the proposed Pre-construction and Bulk earthworks stockpiling site. The compound would have an area of approximately 41,000 m2 and would generally include, but not be limited to, offices, car parking, equipment storage and laydown areas and materials screening, crushing and washing facilities.* Materials washing is not referred to elsewhere in the EIS, information regarding the consistency of this use with the Concept Plan and details of the impacts of this use are to be submitted.	Section 8.8.11 of the MPW Concept Approval EIS states that water would be required during construction for dust suppression, compaction and pavement stabilisation during earthworks, concrete batching, washing of plant and equipment and watering of landscaped areas, and for staff facilities (including toilets, hand washing and drinking). Although materials washing is not explicitly stated, this activity would be required to undertake the earthworks aspects of the construction of the Proposal. Water which would be used for the purpose of materials washing would be captured by the Proposal site's drainage system, and treated prior to discharge into the Georges River in accordance with the measures outlined in the Stormwater and Flooding Assessment, provided at Appendix R of the EIS, and in accordance with an Environment Protection Licence which is required for the materials crushing, the materials washing of which is a related activity, for construction of the Proposal.	Section 8.8.11 of the MPW Concept EIS.
Warehousing	MPW Concept Approval (SSD 5066) EIS permitted the construction of approximately 100,000m² in Stage 2. The application proposes approximately 215,000m² of warehousing. Additional information should be submitted that identifies the need and justification for the construction of the additional 115,000m² during Stage 2.	Since the preparation of the MPW Concept Approval EIS, the previously proposed phasing of the MPW Project has changed, to align with constructability and operational efficiencies at the MPW site, i.e. Phases A, B, C and Full Build are now condensed into Stage 2 and Stage 3. This alternative approach would facilitate for additional warehousing to be operating on the MPW site earlier, thereby providing greater opportunity for the transfer of containers to on-site warehousing rather than external sources. This would contribute to a reduction in the amount of traffic generated by the Proposal at this stage, as opposed to a smaller warehousing operation identified for Stage 2, within the MPW Concept Approval EIS. These amendments to the MPW Concept Approval were included as part of the MPW Concept Plan Modification Response to Submissions Report (Arcadis, 2016), which has recently completed public exhibition. The amendments to staging have been undertaken to better structure and sequence the development from both an operational efficiency with environmental impacts to be managed through the implementation of mitigation measures (MPW Concept Approval Conditions of Approval and Revised Environmental Management Measures and additional mitigation measures provided for the Amended Modification Proposal).	MPW Concept Approval EIS MPW Concept Plan Modification Response to Submissions Report.

Aspect	Comment	Response	Reference
		The approach to staging is considered suitable in the context of the efficiencies that can be created and the presence of no additional significant environmental impacts, above those identified in the MPW Concept Approval.	
Air Quality			
Modelling	The Department notes: • The modelling used in the consultant's report was an US model, not the EPA approved • Gaussian Plume Dispersion model. The US model used was linear and leaves out topography and a number of other parameters; • A review of the cumulative impacts around the area including Glenfield Waste facility would be pertinent; • More information is required on the $PM_{2.5}$ and PM_{10} contour models. There is currently no safe threshold for fine particulate matter and background $PM_{2.5}$ in the report exceeds the annual average concentration in the *National Environment Protection (Ambient Air Quality) Measure*. The Department notes that Council's submission also raised concerns with the air quality assessment potentially underestimating the emissions to air. In addition, it is noted that the EPA also raised concerns with the Air Quality Impact Assessment including inconsistency in the tabulated emission inventory, and best management practices to be adopted including implementation of measures to reduce the impact of emissions.	<u>Air quality modelling selection</u> Dispersion model selection is discussed in detail in Section 3.4.7 of the Air Quality Impact Assessment at Appendix O of the EIS. This is also discussed in Section 9 of the EIS. As detailed in Section 3.4.7, dispersion modelling for the Proposal was undertaken using AERMOD, which is the US EPA's recommended steady-state plume dispersion model for regulatory purposes, and is designed to model a variety of pollutant source types in a diverse range of settings, including rural and urban, as well as flat and complex terrain. AERMOD replaced the Industrial Source Complex (ISC) model in the US in December 2006. The revised version of the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW Department of Environment and Conservation, 2005) notes that AUSPLUME v 6.0 or later is the approved dispersion model for use in most simple, near-field applications in NSW, where coastal effects and complex terrain are of no concern, such as the Proposal site. The mathematical basis for AUSPLUME is the Victorian EPA's Plume Calculation Procedure (EPA Victoria, 1985) which is an extension of the USEPA's ISC Model, which, as stated above was replaced by AERMOD. AERMOD has previously been approved by the NSW EPA for use in NSW on a number of projects, and is likely to be included in the NSW EPA's impending review of the Approved Methods. In addition, the use of AUSPLUME v.6 was replaced by AERMOD in 2014 by the Victorian EPA. AERMOD, ISC and AUSPLUME are all Gaussian plume dispersion models; however, compared to ISC and AUSPLUME, AERMOD represents a more advanced, new-generation model, which requires additional meteorological and land used inputs to provide more refined predictions. In addition, dispersion modelling using AERMOD enables the basic dispersion model to be modified to more effectively account for a variety of meteorological factors and surface characteristics	Sections 9 and 19 of the EIS Appendix O and Appendix P of the EIS

Aspect	Comment	Response	Reference
		Cumulative air quality impacts Section 9 and Appendix O of the MPW Stage 2 EIS include an assessment of existing and future air emission sources which may contribute toward the condition of the local air shed, affecting ambient background air quality. The following sources have been considered as key existing surrounding air emissions sources: • Traffic emissions from the wider road network, including the South Western Motorway (M5) • Emissions from diesel locomotives using the Southern Sydney Freight Line (SSFL) and the East Hills rail line • Existing commercial and industrial facilities including the Greenhills Industrial Estate and Moorebank Business Park to the north • Emissions from aircraft at Bankstown Airport to the northeast • The Glenfield Waste Facility to the southwest of the site. In addition to this, Section 19 of the EIS (and Appendix O of the EIS) provides a cumulative assessment of potential future developments which may result in further air emissions in the locality, these include: • The Glenfield Waste Facility proposed Materials Recycling Facility (SSD 13_6249) to the southwest of the site • The MPE Stage 1 Project (SSD 14-6766) to the immediate east of the site. The cumulative assessment took into account the combined effect of existing baseline air quality, other local sources of emissions (as detailed above), reasonably foreseeable future emissions and any indirect or induced effects. The cumulative construction scenario included construction of the Proposal concurrently with the MPE Stage 1 Project. The cumulative operational scenario considered the cumulative air quality impacts of the operation of the Proposal concurrently with the operation of the MPE Stage 1 Project; i.e. a combined 750,000 TEU throughput, and other existing surrounding air emissions sources. The modelling results indicate that dust, TSP, PM_{10} and $PM_{2.5}$ emissions at sensitive receivers around the Proposal comply with all relevant impact assessment criteria during cumulative construction. The annual average	

Aspect	Comment	Response	Reference
		background concentrations of $PM_{2.5}$ already exceeds the NEPM AAQ reporting standard, meaning that cumulative predictions are also above the standard at all receptors. It is noted, however, that the incremental increases in $PM_{2.5}$ emissions created from the Proposal and MPE Stage 1 result in relatively minor increases to the annual average (<0.4 µg/m³ at all sensitive receptors), when compared to background concentration levels. The results of the cumulative assessment indicated that the cumulative operation of the Proposal would comply with the relevant assessment criteria. The dispersion modelling predictions indicate that the risk of cumulative air quality impacts generated by the Proposal are low. <u>$PM_{2.5}$ and PM_{10} contour models</u> We acknowledge that there is a lack of evidence for a concentration threshold for particulate matter (PM) below which health effects do not occur. However, the Commonwealth Government, in their Impact Statement for the variation to the AAQ NEPM state that the overall health outcomes for population are driven by large scale exposure to background concentrations, rather than relatively small scale exposure to higher concentrations at localised 'hot spots'[1]. The cumulative concentrations of PM_{10} and $PM_{2.5}$ predicted in the report are dominated by existing background concentrations, with small incremental increases predicted in the immediate vicinity of the Proposal. The greatest health gains for the region will be achieved from measures that reduce background exposure for large populations, for example by reducing vehicle emissions. The Proposal, which replaces freight transport by truck with freight transport by rail, has a role to play in reducing road transport emissions on a regional airshed scale thus being a positive contribution to the greatest potential for health gains for the existing regional airshed background exceedances. The increased annual incidences for the health endpoints evaluated as part of the Human Health Risk Assessment (Appendix P of the EIS), due to the cumulative Proposal related to PM_{10} and $PM_{2.5}$ exposure were all well below one case per year. The most sensitive health end point for PM_{10} emissions is asthma, and the cumulative Proposal could be predicted to contribute an additional 0.1 asthma-related emergency department visits per year among 1-14 year olds in the most sensitive suburb (Wattle Grove). $PM_{2.5}$ emissions could	

[1] Commonwealth of Australia (2014). Draft Variation to the National Environment Protection (Ambient Air Quality) Measure. Impact Statement. Prepared for National Environment Protection Council.

Aspect	Comment	Response	Reference
		be predicted to result in an additional 0.1 incidence of premature mortality per year due to all causes or cardiopulmonary disease among 30+ year-olds in Casula and Moorebank (equivalent to one additional incidence of premature mortality every 10 years).	
Construction Phase Emissions - Crushing	Section 4.3.7 'Construction Ancillary Facilities' of the EIS (p86-87) states that the crushing and screening of demolition waste stockpiled during Early Works (Stage 1) and oversized bounders contained in imported fill would occur during the Bulk Earthworks phase. Crushing and screening emissions are not considered in the Air Quality Impact Assessment (EIS Appendix O) (AQIA). Additional information should be submitted to address this omission. Any other relevant sections or appendices of the EIS should also be updated.	Due to an oversight, crushing and screening was not included in the emissions inventory, however it is noted that it is a relatively minor source and a very small percentage of total emissions (wheel generated dust and wind erosion are the dominant sources). As an example, the inclusion of this source would increase the total PM_{10} emissions by 1.7%. This does not change the modelling results or conclusion of the report.	Sections 9 of the EIS Appendix O of the EIS
Construction Phase Emissions – Wind Erosion	Section 5.2 'Construction phase emissions' of the AQIA (p35-36) states that emissions are based upon, inter alia, the assumption that a total area of 36ha is assumed to be exposed for wind erosion. The Department notes that the pre-construction and bulk earthworks stockpiling area is 36ha. The worst case construction wind erosion estimates should also take into account: • That final placement of fill and associated works would occur outside of the 36ha stockpiling area; • Prior to or during 'Work Period B – Site Preparation Activities' all vegetation would be cleared from the entire Proposal Site, including the footprints of the Stage 2 elements of the proposal (Moorebank Avenue intersection, the Intermodal Terminal Facility, Rail Link Connection and the Northern Warehousing) and Stage 3 elements of the proposal (IMEX rail terminal site and the southern warehousing area).	The construction footprint for the Proposal, as shown in Figure 4-8 of the EIS comprises an area approximately 165 ha in size. To assume that this entire area is an active area for wind erosion would be overly conservative, for the following reasons. Emission factors for wind erosion are expressed as "*kg of dust emitted per hectare per hour*". This means that, for every hour of the year, there is an assumption that the entire area modelled is subject to wind erosion (in this case 36 ha) and actively emitting dust for every hour of the year. Exposed surfaces associated with the Proposal would be "limited reservoir" surfaces, characterised by a finite availability of erodible material. That is, emissions would decay soon after an erosion event (typically after a wind gust) and emissions would not be expected again until that surface is disturbed again. Therefore, the assumption that 36 ha are actively disturbed and emitting for every hour of the year is considered a conservative assumption, especially for short-term (24-hour) impacts. Work Period B would involve site preparation activities, however vegetation from the entire Proposal site would not be cleared. Firstly, only the areas of the site where works are scheduled to occur in the short term would be stripped of	Section 22 and Appendix O of the EIS

Aspect	Comment	Response	Reference
	Accordingly, the entire Proposal Site would be exposed to wind erosion during the representative worst case construction scenario. Further, Section 13.2.3 'Potential Impacts' of the EIS (p 390) states that the soils of the Proposal Site are of the Berkshire Park Group and have very high wind erosion potential if stripped of vegetation. As such, additional information should be submitted to amend the worst case construction wind erosion estimates and address the mitigation measures given the site soil conditions. Any other relevant sections or appendices of the EIS should also be updated.	vegetation. Secondly, vegetation stripping for work areas would occur shortly before bulk earthworks and limited to the immediate area for those works. Nevertheless, to address this comment we have performed some sensitivity analysis on this source. We have revised emission estimates to include the entire 165 ha for wind erosion, however we have retained the assumption that 36 ha is 'active' and the remaining 129 ha is inactive (i.e. previously cleared areas during site preparation). For the inactive exposed areas, a 65% control is applied to the emission estimates, based on a 'crusting' control factor measured for soil stockpiles. Revised modelling was performed for the revised emission rates and for completeness, crushing and screening were also included, to address the previous comment from DPE. The revised modelling for this sensitivity analysis predicted no additional exceedances of the impact assessment criteria and no change to the conclusions of the AQIA, as follows: • The maximum predicted 24-hour PM_{10} concentration increases from 5.1 µg/m³ to 7.4 µg/m³ and the cumulative 24-hour PM_{10} concentration increases from 48.5 µg/m³ to 48.9 µg/m³. • The receptor maximum annual average PM_{10} concentration increases from 1.5 µg/m³ to 1.9 µg/m³ and the cumulative annual average PM_{10} concentration increases from 20.9 µg/m³ to 21.3 µg/m³. • The maximum predicted 24-hour $PM_{2.5}$ concentration increases from 2.7 µg/m³ to 2.8 µg/m³ and the cumulative 24-hour $PM_{2.5}$ concentration increases from 24.5 µg/m³ to 24.6 µg/m³. • The receptor maximum annual average $PM_{2.5}$ concentration is unchanged at 8.8 µg/m³. • The receptor maximum annual average TSP concentration increases from 2.0 µg/m³ to 2.4 µg/m³ and the cumulative concentration increases from 50.4 µg/m³ to 50.8 µg/m³. • The receptor maximum annual average dust deposition increases from 0.5 g/m²/month to 0.6 g/m2/month. • The receptor maximum annual average dust deposition increases from 0.5 g/m2/month to 0.6 g/m2/month.	

Aspect	Comment	Response	Reference
		Notwithstanding, the increase in PM_{10} as a result of this scenario would not result in an increase above the PM_{10} criteria, as described in the National Environment Protection (Ambient Air Quality) Measure standards for particles (Commonwealth Department of the Environment, 2015). . In terms of the Berkshire Park Group soil type and the high propensity for wind erosion, this has been considered and would be managed through the preparation and implementation of the Construction Air Quality Management Plan (refer to Section 22 of the EIS). This Construction Air Quality Management Plan is to be based on the Air Quality Management Plan provided at Appendix O of the EIS. This Air Quality Management Plan identifies a number of measures for the management of dust during the relevant stages of development of the Proposal.	
Noise and vibration			
Policy and criteria	Generally INP is used for operational phases, it should be clarified whether these values were used for the construction stages;	Section 8.2.1 of the EIS summarises the noise and vibration assessment methods used in the assessment. Section 8.2.1 states: The CadnaA acoustic noise prediction model software was used to model construction noise impacts. Sound power levels were then compared against the noise management levels derived from the Rating Background Levels and criteria set out under the NSW EPAs *Interim Construction Noise Guideline (DECC, 2009)*.	Section 8.2.1 of the EIS
Rail Sidings			
Rail sidings	Paragraph 1 and 2 under the subheading 'Rail Sidings and Associated Infrastructure' (p58) contain unclear statements regarding the proposed number of 900m and 1,800m sidings. Paragraph 1 references five 1,800m entry sidings and four 900m handlings sidings, whereas paragraph 2 notes that the four eastern most entry sidings would be 1,800m and the five western most handling sidings would be 900m. Figure 4-2 'IMT Facility Layout' (p57) and Drawing Numbers 115123_A_SSD_1000 and 115123_A_SSD_1001 depict the western most	The rail sidings to be provided would include five handling sidings 900m in length and four entry sidings 1,800m in length. These are shown in drawing 115123_A_SSD_1000 of the revised architectural drawings at Appendix D of the MPW Stage 2 RtS.	Drawing 115123_A_SSD_1000 Appendix D of the MPW Stage 2 RtS.

Aspect	Comment	Response	Reference
	1,800m entry siding dividing into five handling sidings approximately 900m to the south of the locomotive shifter. Clarification as to the number and length of entry and handlings sidings should be provided. Clarification should also be provided regarding the labelling of the sidings in Figure 4-3 'Rail Link Connection Access Tracks'.		
Biodiversity and Vegetation Clearing			
	The MPW Concept Approval (SSD 5066) EIS referenced phased vegetation clearing. Section 8.8.1 'Project construction footprint' EIS stated that "*Construction of the Project would occur progressively through defined phases, as outlined in the previous sections of this chapter. This approach avoids the need to remove vegetation and expose areas of the Project site long before development begins*". Whilst the phases of development were amended by the 'Moorebank Intermodal Terminal Supplementary Response to Submissions Report', no changes to phased vegetation clearance have been proposed. Section 4.2.8 'Ancillary Works' (p67) of the EIS states that "*All vegetation on the Proposal Site would be removed prior to or during the site preparation phase of construction for the Proposal (as discussed in Section 4.3 of this EIS)".* Section 2.1 'Site Context' (p21) of the EIS states that "*The MPW Site (the Proposal site) includes the entire site for which Concept Approval was granted, as shown in Figure 1-1*". Accordingly, the clearing of all vegetation on the Proposal Site would result in clearance beyond the Stage 2 construction footprint. The land upon which the IMEX rail terminal site and the southern warehousing area would be constructed during Stage 3 would be also cleared of vegetation.	As discussed amendment to the staging of the MPW Concept Approval was included as part of the MPW Concept Plan Modification RtS (Arcadis, 2016), which has recently completed a second public exhibition. The amendments to staging have been undertaken to better structure and sequence the development from an operational efficiency perspective, with environmental impacts to be managed through the implementation of mitigation measures (MPW Concept Approval Conditions of Approval and Revised Environmental Management measures and additional mitigation measures provided for the Modification Proposal). The approach to staging is considered suitable in the context of the efficiencies that can be created and the presence of no additional significant environmental impacts, above those identified in the MPW Concept Approval. The clearing of the Proposal site, although altering the sequencing of clearing activities, would not result in additional environmental impacts above those assessed within the MPW Concept Approval. This approach is considered generally consistent with the intent of the MPW Concept Approval, in particular Condition No. D17 which refers to the preparation of a Biodiversity Offset Strategy within 12 months of the commencement of Early Works. The MPW Early Works includes a number of activities to be undertaken on the MPW site, however does not include the clearance of threatened species or ecological communities and therefore does not, itself, trigger the need for biodiversity offsets under the FBA (refer to Section 1.4.1 of the EIS for further discussion regarding Early Works inclusions). Specifically, the Early Works would not impact on the types of vegetation identified in Section 9.3.1 of the FBA or on threatened species, populations or habitats identified in Section 9.3.2 of the FBA. Impacts would meet the criteria specified in Section 9.4 of the FBA	MPW Concept Modification RtS. Sections 1.4.1 and 22 of the EIS

Aspect	Comment	Response	Reference
	Additional information should be submitted that identifies the need and justification for the proposed clearance of all vegetation on the Proposal Site prior to or during Work Period B – Site Preparation Activities.	(i.e. the circumstances in which determination of an offset is not required). Therefore, the timing of this condition, requiring an offset within 12 months of commencement of Early Works requires a consideration of the entire impact (clearance of vegetation) and associated offset for the MPW Project prior to the approval of other future stages (the Proposal included). As a result of this condition the Biodiversity Offset Strategy would consider all impacts identified for the MPW Project, thereby securing offsets earlier than would be regularly undertaken for a SSD project. Overall, the securing of offsets earlier ensures that impacts of the Proposal have been suitably mitigated thereby facilitating for clearing to commence earlier than was anticipated in the MPW Concept Approval EIS. With the implementation of the offset strategy, and other associated biodiversity mitigation measures, the impacts of the Proposal would be addressed and therefore clearing of the MPW site as part of the Proposal is considered suitable. Undertaking all vegetation clearance on the MPW site as part of the Proposal, including land outside of the MPW Stage 2 operational area is to enable earthworks to establish a level building platform. This level building platform would then facilitate the development of future stages to be undertaken. The exact staging of construction works across the Proposal site is not currently known, and would be subject to the preferred construction contractor's construction methodology. As such, exact staging was not able to be confirmed. Notwithstanding this, any clearing that is to be undertaken would be done so in accordance with the detailed mitigation measures (refer to Section 22 of the EIS) and the CEMP and associated sub-plans. Mitigation measure OD in Table 22-1 of the EIS states that *'The construction and/or operation of the Proposal may be delivered in a number of stages. If construction and/or operation is to be delivered in stages a Staging Report would be provided to the Secretary prior to commencement of the initial stage of construction and updated prior to the commencement of each stage as that stage is identified*.' The Proposal, inclusive of vegetation clearance would be constructed in accordance with this mitigation measure, which would be implemented as part of the CEMP for the Proposal. This further information would be provided to DP&E prior to construction.	

Aspect	Comment	Response	Reference
Koala Habitat Protection	The proposed drainage channels through the Conservation Area would result in vegetation clearance that was not approved under the MPW Concept Approval (SSD 5066). Additional information should be submitted addressing the State Environmental Planning Policy No 44—Koala Habitat Protection (Koala SEPP). The Department notes that the site has an area of greater than 1 hectare, the Liverpool Local Government area is listed in Schedule 1 of the Koala SEPP, the Biodiversity Assessment Report (EIS Appendix Q) identifies the site as containing Koala habitat and two of the tree species that are present on the site (Forest Red Gum and Scribbly Gum) are listed as 'Feed Tree Species' in Schedule 2 of the SEPP.	Section 11 and Appendix Q of the EIS provides an assessment of the potential impact of the Proposal on koala habitat (feed tree species). The potential for koalas to occur in the MPW Stage 2 study area was determined using information obtained from the TSPD. It was determined that the probability of koalas occurring within the MPW Stage 2 study area is "unlikely", based on the lack of *Core* or *Potential* habitat for koala and barriers to koala movement. Only one koala feed species listed under Schedule 2 of SEPP 44, *Eucalyptus tereticornis* (Forest Red Gum) was recorded on the MPW site. Koala feed trees for the Central Coast KMA recorded in the MPW Stage 2 study area included two primary feed tree species, *Eucalyptus parramattensis* and *Eucalyptus tereticornis*. One secondary food tree species, *Eucalyptus baueriana*, was also recorded in low densities. Accordingly, no further surveys for koalas within the MPW Stage 2 study area were required.	Section 11 and Appendix Q of the EIS
Stormwater and Flooding			
Referencing throughout the stormwater and flooding assessment	It has been identified that some figures, cross-sections, photo numbers etc are numbered inconsistently and incorrectly, e.g:		Appendix R of the EIS Section 7 and Appendix H of the MPW Stage 2 RtS
	• Table 1-1: drawing numbers and/ or titles need to be included for cross-referencing	References provided in Table 1-1 of the Stormwater and Flooding Assessment (Appendix R of the EIS) to sections of the report remain relevant (refer to Appendix R of the EIS). Revised Stormwater and Drainage Design Drawings for the Proposal have also been revised in accordance description of the Amended Proposal (section 6 of the MPW Stage 2 response to submissions report), and are provided in Appendix H of the MPW Stage 2 RtS	
	• Section 5, photo numbers inconsistent, figure numbers start at 5-2.	Both photos and figures presented in Section 5 of the Flooding and Stormwater Report (refer to Appendix R of the EIS) are consistent and commence with 5-1.	
	• Cross-section numbers on drawings C-MIC2-SSD-116 and 117 are inconsistent with those indicated on plans C-MIC2-SSD-111 and 112	Cross section numbering does not appear inconsistent with drawings provided in the EIS (Appendix R of the EIS). These plans and cross section drawings have been revised in accordance with Amended Proposal components and are provided in Appendix H of the MPW Stage 2 RtS.	
	• There is no Figure 5.1 as referenced in Section 5.2.3 in order to locate the culverts referred to.	Figure 5-1 is provided on page 18 of the Stormwater and Flooding Report (Appendix R of the EIS), as referenced in Section 5.2.3. Locations A, B, C, D,	

Aspect	Comment	Response	Reference
	The existing stormwater catchment plans does not include the location of culverts D, C, Locations 'B', 'C' etc.	E and F are clearly labelled in Figure 5-1 (refer to p.18 of Appendix R to the EIS)	
	• Include figure number A1-1 and title on Concept Master in Appendix D and include basin numbers.	The basin numbers have been included in the Revised Stormwater and Drainage Design Drawings at Appendix H of the MPW Stage 2 RtS. Other basins located within the MPE Stage 2 site are provided within the MPE Stage 2 EIS.	
finished surface contour levels	As previously requested, finished surface contour levels to AHD need to be provided along with cross-sections showing levels to AHD (in addition to depth of fill) for comparison with surrounding existing surface levels. Finished surface levels for the railway line to AHD are also to be provided.	Bulk earthworks plans (C-MIC2-SSD-111 and 112) were included as part of Appendix R of the EIS, and have been revised and included as part of the Revised Stormwater and Drainage Design Drawings in Appendix H of the MPW Stage 2 RtS. The plans provide the required depth of cut/fill proposed across the MPW site. Cross sections (C-MIC2-SSD-116 and 117 - refer to Appendix H of the MPW Stage 2 RtS) show both existing and proposed levels to AHD across the site.	Appendix R of the EIS Appendix H of the MPW Stage 2 RtS
Post development conditions	Section 5.2.1 notes that existing DRAINS modelling was adjusted to represent post development conditions as outlined in Figure 5-2 and design drawings. Figure 5-2 only appears to include MPE Stage 1 as a sub-catchment, not MPE Stage 2 which includes raising Moorebank Avenue by approximately 2 m and raising the MPE site adjacent to Moorebank Avenue. Dot point 3, states detention storages were sized in relation to "Proposal site earthworks". Please clarify. A flooding and stormwater assessment is to be provided which takes into account the final landform of both MPW and MPE following proposed filling of both sites and raising Moorebank Avenue. Figure C-MIC-SSD_406 Stormwater Drainage Proposed Catchment Plan for MPE appears to be inconsistent with the untitled plan showing proposed catchment boundaries, OSDs, flow paths and basin discharges.	As stated in Section 1.4 of the EIS, the MPE Stage 1 Project is subject to a separate approval (SSD 6766) and has been assessed where applicable within the Stormwater and Flooding Assessment undertaken for the Proposal (refer to Appendix R of the EIS). The MPW site in its anticipated final landform has also been assessed within this assessment. The MPE Stage 2 Proposal will be assessed for flooding and stormwater within the MPE Stage 2 EIS. Notwithstanding this, Appendix D of the Stormwater and Flooding Assessment – Ultimate Master Plan Layout (Refer to Appendix R of the EIS) provides the indicative on-site detention storages which are to mitigate any potential flow increases from the Moorebank Precinct, which includes the MPE Stage 2 area. Formal assessment of MPE Stage 2 development will accompany its development application. With regards to Figure C-MIC-SSD_406 Stormwater Drainage Proposed Catchment Plan, there is no inconsistency. It is clearly titled to be for MPW proposed development (when MPE will be largely existing catchment boundaries, while also accommodating MPE Stage 1 as indicated).	Section 1.4 and Appendix R of the EIS

Aspect	Comment	Response	Reference
	Section 5.2.2 outlet channels. The width of the conservation zone impacted by each of the basin outlet channels is around 60 m. The use of gabions and reno-mattresses (indicated in Figure 5-3 and photo 5-6) is not best practice. The landscape plans in Appendix E appear to indicate rock rubble scour protection in the base of the channel from basin 5. Landscape drawings (cross sections with the same horizontal and vertical scales) are to be provided demonstrating consistency with water sensitive urban design principles and conservation values for each of the permanent basin outlet channels (5, 6 and 8).	As outlined within Section 11.4 of the EIS, the separation in the riparian corridor vegetation as a result of the proposed basin outlets would range from 50 m to 70 m during construction, and from 20 m to 40 m following revegetation. The existing terrain at outlet locations, as described, is rugged and steep, and includes both vertical and near vertical drops. To construct channels in these locations to ensure scour protection and water quality is maintained, a range of flatly graded areas, batters, and drop structures to complement existing grades is required. Gabions and reno mattresses are best practice channel options in these terrain conditions. The alternative of a non-engineered/non-stabilised solution will result in massive waterway scouring as seen along the existing open channel located which extends through the Proposal site from Moorebank Avenue to the Georges River (refer to photos 5-2 to 5-5 of Appendix R of the EIS). Water Sensitive Urban Design (WSUD) principles outlined within Section 12.4 of the EIS include gross pollutant traps (GPTs) and rain gardens (bioretention systems) forming the base of the OSD basins. OSD landscape plans provided in Appendix B of the MPW Stage 2 RtS (refer to sheet 004 of Appendix B), show typical basin cross sections (basin 5) and the overflow channel sections. These drawings include provision for planting within basins (i.e. for bioretention), and embankment stabilisation. As mentioned, the basin plans provided in Sheet 004 of Appendix B of the MPW Stage 2 RtS for Basin 5 are typical for all basins proposed within the conservation area. Further general design detail for basins and raingardens, including cross sections is provided in Revised Stormwater and Drainage Design Drawings provided in Appendix H of the MPW Stage 2 RtS.	Sections 11.4 and 12.4 and Appendix R of the EIS
Cross-sections	The civil works cross-sections indicate fill up to 4 m adjacent to the conservation zone as well as vertical walls to basins 5 and 6 and a vertical profile to the north of Basin 8. The landscape drawings in Appendix E only indicate bank treatments and treatment of the basin outlet channel adjacent to the Stage 2 warehousing. Drawings, including landscape plans, are to be provided for the entire area impacted by Stage 2 earthworks including details on retaining structures, bank slopes and stabilisation adjacent to the conservation zone.	Revised landscape drawings in accordance with Proposal Amendments are provided in Appendix B of the MPW Stage 2 RtS. Bank stabilisation methods provided in revised Landscape Plans (refer to Appendix B of the MPW Stage 2 RtS) for Basin 5 includes the planting of native vegetation appropriate to the fluctuating hydrology and provenance of the area, and potential provision of an eco-blanket to assist in stabilisation and seed germination. These designs are typical of stabilisation works elsewhere within the conservation area as part of the Proposal.	Appendix B of the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
Noise barrier	Section 5.2.6 Noise Barrier. It is noted that to maintain flows to basin 5, "a continuous gap of 0.3 m minimum…" is required between the underside of the noise barriers and the finished surface level and that vehicle access through the noise barrier will be required for basin maintenance. The current concept with the noise wall adjacent to basin 5 does not appear to be feasible. Details are to be provided to demonstrate that this layout does not compromise the function of the noise wall and function and maintenance of basin 5.	A 0.3 m gap along the base of the noise walls is standard practice and would allow surface drainage to flow underneath. The extent and location of the proposed noise wall is outlined within Section 8.4 (Figure 8.4) of the EIS. As identified in mitigation measure No. 2D in Section 22 of the EIS, *a noise wall would be installed along a portion of the western boundary of the Proposal site in the general location identified in Figure 7-1 of the Noise Impact Assessment (Appendix N of this EIS). The height, extent, and staged implementation of the noise wall would be confirmed, based on further noise modelling undertaken during detailed design.* A design solution to achieve basin 5 maintenance access while maintaining acoustic integrity of the wall would be provided during detailed design development, which may include the establishment of a staggered noise barrier arrangement at the location(s) where access is required As discussed above, if the design solution includes a staggered noise wall, it would be designed to provide the appropriate level of noise attenuation to minimise operational noise impacts on nearby noise-sensitive receivers.	Section 8.4 of the MPW Stage 2 RtS
Stormwater management	Section 5.3 refers to Early Works, rather than Stage 2 and references inclusion of an "indicative stormwater management plan including catch drains, drainage swales, sediment basins and indicative top of stockpiling". Figure SKC-MIC-001 "Erosion and Sediment Control Plan" is inadequate. More detail is required on how imported material will be stockpiled, e.g. as discussed earlier, sequencing of stockpiling over the area indicated, along with progressive erosion and sediment control plans showing existing ground levels and stockpile heights to AHD, stockpile slopes and separation of 'clean' and 'dirty water'. Drawings C-MIC2-SSD-101 and 102 appear to only indicate details for the completed, filled warehouse development and remaining fill stockpile area.	Section 5.3 refers to Early Works to provide context on the conditions pertaining to the site at the commencement of construction of the Proposal (i.e. some of the MPW site would be disturbed by Early Works). The text in Section 5.3 does not reference an indicative stormwater management plan, as suggested, but rather indicates that the drawings contained in Appendix B of the Stormwater and Flooding Assessment Report (Appendix R of the EIS) include indicative stormwater management elements, including the indicative top of pile gradings. Stockpiles will be managed in accordance with Blue Book Guidelines (Landcom, 2004 and DECC, 2008), and as outlined in section 12.5.1 of the EIS, will: • Be located away from flow paths on appropriate impermeable surfaces, to minimise potential sediment transportation; • Be stabilised if the exposed face of the stockpile is inactive more than ten days; and • Be formed with sediment filters in place immediately downslope.	Section 12 and Appendix R of the EIS

Aspect	Comment	Response	Reference
		Supplementary information relating to stockpile site management for Proposal construction, including details regarding stockpile heights, slopes and soil and water quality management is detailed above in “Item 2 Stockpiles” within this table (refer also to Appendix L of the MPW Stage 2 RtS). Preliminary Erosion and Sediment Control Plans provided as part of the EIS, (refer to Appendix R of the EIS) provide a general overview of flow conveyance during site operations, including indicative locations of diversion bunds, sediment fencing, check dams, sediment basins and outlets. Revised Stormwater and Drainage Design Drawings (refer to Appendix H of the MPW Stage 2 RtS) provide further details regarding the stormwater management to be undertaken during construction. The intention of this document is to guide preparation of Soil and Water Management Plan (SWMP) and Erosion and Sediment Control Plans (ESCP) during detailed design, which are to be prepared as part of the CEMP progressively in accordance with the various construction activities and work periods scheduled.	
Culvert and channel	Section 5.6.2 MPE Culvert and Channel. Reference is made to “the Proposal” rail levels being 0.6 m higher than the MPE levels, and potential lowering of the MPW proposal levels and then potential raising Moorebank Avenue to allow flows greater than 100 ARI flows to sheet across the road. As consistent description of the proposal is to be provided and as per previous comments, a plan is to be provided showing finished surface levels to AHD for the combined MPE and MPW sites. As reference is made to these potential works, it is assumed the stormwater and flooding assessment does not take into account raising of Moorebank Avenue. Please confirm.	The reference to ‘The Proposal’ within Section 5.6.2 of the Stormwater and Flooding Report (refer to Appendix R of the EIS) has been included to discuss interfacing options with the Proposal site, and future stagings of the Moorebank Precinct (e.g. MPE and Moorebank Avenue). The Proposal area culvert (extending from Moorebank Avenue westward to the Georges River) has been analysed and sized to be approximately 15 metres wide. This Section 5.6.2 simply advises that a culvert size reduction may be appropriate should MPE/Moorebank Avenue be raised. This alternative is to be investigated further during detailed design works. Notwithstanding this, the current culvert would be suitable to convey water from both Moorebank Avenue and the MPE site in the event of Moorebank Avenue being upgraded as discussed in MPE Stage 2 (SSD 7068, subject to separate approval). Proposed finished surface levels for the Proposal site are provided within civil plans (refer to drawings C-MIC2-SSD-116 and 117) in Appendix H of the MPW Stage 2 RtS.	Appendix R of the EIS Appendix H of the MPW Stage 2 RtS.

Aspect	Comment	Response	Reference
Water Quality	To demonstrate that adequate site area has been provided for water quality management structures (including maintenance access), as well as onsite detention, plans are to be provided which show the: • indicative location of gross pollutant traps • the location and area of bioretention systems • the volume of detention basins. Section 6.4, Table 6-5 "raingarden details" (for the operational phase) makes reference to basin 3A, Figure C-MIC2-SSD-002 notes this a temporary basin. Please clarify.	The Stormwater and Drainage Design Drawings (refer to Section R of the EIS) included details of the stormwater infrastructure to be installed for the Proposal site. Revised Stormwater and Drainage Design Drawings have been included in the MPW Stage 2 RtS (refer to Appendix H of the MPW Stage 2 RtS). In summary, these plans include the following: • Gross pollutant traps which would be provided at basin inlets for all permanent basins during operation. • As discussed in Section 12.4 of the EIS, it is proposed that rain gardens (i.e. bioretention systems) would form the base of the OSD basins. The location of detention basins under the Proposal, and general raingarden design drawings are included in the Revised Stormwater and Drainage Design Drawings (refer to Appendix H of the MPW Stage 2 RtS). • Indicative volumes of the OSDs for the Proposal are provided in Table 12-9 of the EIS. Updated OSD volumes have been provided in Section 6 of the RtS. The EIS included Basin 3A as a temporary basin which would be utilised until future stages are developed (refer to Appendix R of the EIS). As discussed in Section 6 of the RtS, Basin 3A (which was previously temporary) has been relocated to the Moorebank Avenue frontage and been renamed as Basin 3. Basin 3 would be established during the construction of the Proposal (as a sediment basin), however would be utilised as a permanent OSD during operation of the Proposal (refer to Appendix H of the RtS). .	Section 12 and Appendix R of the EIS Sections 6 and 7 and Appendix H of the MPW Stage 2 RtS.
Construction	Section 6.5 Construction. Further detailed information and drawings are required to address management of stockpiled materials.	Stockpile management aspects specific to the Proposal site, including stockpile location, height and profile, along with stockpile stabilisation and water quality considerations are detailed in "Item 2 Stockpiles" at the beginning of this table. In addition to the management measures provided in the EIS (refer to Section 22 of the EIS), the Stockpile Management Protocol (refer to Appendix L of the MPW Stage 2 RtS) provides further details on the management of stockpiles during construction of the Proposal. This protocol would be further developed as part of the CEMP for the Proposal (refer to Section 8 of the MPW Stage 2 RtS).	Section 22 of the EIS Section 8 and Appendix H of the MPW Stage 2 RtS.

Aspect	Comment	Response	Reference
	Section 7 Conclusion. Please clarify the following statement. The DRAINs modelling results indicate that: - "The northern Moorebank Avenue widening (extending from the M5 Motorway to the north of Anzac Road) can be aligned, and in conjunction with stormwater system upgrades, mitigate potential adverse flood impacts." This section of Moorebank Avenue is an RMS road, what works are proposed by RMS/SIMTA (in addition to the Anzac Road/ Moorebank Avenue intersection), when will these works take place, what are the interdependencies?	As outlined in Section 4.1 of the EIS, the Proposal would involve upgrading the Moorebank Avenue / Anzac Road intersection, which would include widening works from the M5 Motorway to the north of Anzac Road to facilitate site access/egress. As such, analysis of Moorebank Avenue with respect to flooding and stormwater, as presented in Section 5.2.3 of the Stormwater and Flooding Assessment (refer to Appendix R of the EIS) has considered the existing conditions and recommendations of how to best design the proposed intersection to alleviate potential flooding and cross drainage impacts. Section 6 of the MPW Stage 2 RtS, also includes an updated layout for the Moorebank Avenue/Anzac Road intersection. Further impact assessment for stormwater (and other potential impacts) is included in Section 7 of the MPW Stage 2 RtS.	Section 4.1 and Appendix R of the EIS. Section 6 and section 7 of the MPW Stage 2 RtS.
Hydraulic modelling and on-sire detention	The results of hydraulic modelling of the onsite detention channel outlets are required prior to determination of the Stage 2 proposal to demonstrate that the location, length and slope of the channels is adequate to provide effective energy dissipation and scour protection. It is noted that the Geotechnical Interpretive Report (Appendix S), Section 3.5 states that "An area of soil erosion was observed on the western bank of the Georges River, this suggests that soils formed in the local area can be prone to erosion when exposed to concentrated water flow or where not otherwise protected."	As outlined in Section 12.4 of the EIS, each of the proposed basins discharging to the Georges River would include outlet channels that are: • To be configured with energy dissipaters and scour protection • In traversing the overbank areas of the Georges River, are to be no higher than existing ground surface levels (to avoid adverse flood impacts) • Aligned with no less than a 45-degree entry angle into the Georges River channel. Revised Landscape Plans are provided in Appendix B of the MPW Stage 2 rts It is likely that these outlet channels will include gabion and reno-mattress elements that accommodate grass and low vegetation. Hydraulic modelling of OSD outlet channels (using HEC-RAS software) is to be undertaken during detailed design, to facilitate the design of the channels and demonstrate their effectiveness with respect to energy dissipation and scour protection elements. Cross sections for the channels have been provided in the Revised Stormwater and Drainage Design Drawings (at Appendix H of the MPW Stage 2 RtS).	Section 12 and Appendix R of the EIS. Appendix H of the MPW Stage 2 RtS.

Aspect	Comment	Response	Reference
TUFLOW modelling	Section 7 Conclusion, dot point 4 states: "The next stages of design and analysis should include 2-dimension rainfall-runoff modelling analysis of the Moorebank Avenue corridor (e.g. using TUFLOW software to more adequately quantify flow regimes for existing conditions and Proposal site development conditions) so as to facilitate design of the northern Moorebank Avenue widening and channel system (at the MPE culvert crossing location) and confirm hydraulic performance and stormwater/flood mitigation adequacy." This implies adequate modelling has not been undertaken to assess and mitigate impacts. Please clarify.	Adequate modelling has been undertaken to assess and mitigate impacts for this stage of design. The Stormwater and Flooding Assessment Report (refer to Appendix R of the EIS) modelled the stormwater run-off for the Proposal site using DRAINS software. As stated, during detailed design the initial culvert sizing (based on the DRAINS modelling) could be refined with the use of 2-dimensional flood routing software, to enable a more discrete representation of floodplain storage and flow distributions. When considered in conjunction with future MPE/Moorebank Avenue staging options (as discussed in Section 5.6.2 of the Appendix R of the EIS), this measure may result in a reduction of culvert/channel size estimates. Notwithstanding this, the modelling provided is considered detailed, complete and adequate for the assessment of the Proposal.	Appendix R of the EIS.
Geotechnical			
Consideration of fill	The Geotechnical Interpretive Report does not address imported fill (the 1.6 million cubic metres) apart from a 1 m thick structural fill earthwork platform (which is additional to this). Section 6.3 states "Based on our current understanding of design earthworks levels (Arcadis, 2016a – see full reference below) sufficient volume exists within the areas of filling to accommodate the full volume of excavated material from cut areas whilst still maintaining allowance for an overlying Structural Fill layer." In particular Section 6.7 Cut and Fill Batter Slopes, Table 12: Recommended Batter Slopes and Section 6.8 Structures for Stormwater Detention Ponds are to be updated taking into account the properties of the imported fill and fill depths.	Design earthworks levels that are mentioned in Section 6.3 of the GIR (referenced as Arcardis, 2016a) refer to the *MPW Intermodal Terminal Facility – Stage 2 Land Preparation Main Works – Bulk Earthworks Cut and Fill Plan* (DwgLPMW-ARC-CV-SKC-0022-01). This drawing details a cut/fill plan that shows fill depths to be greater than 1 metre depth, and overall reflects the importation of approximately 1.6 million cubic metres of fill. The structural fill layer referred to as part of the Geotechnical Interpretive Report relates to the need for 1,000mm of consistent suitable fill material at the uppermost layer of the bulk earthworks (which forms part of the 1.6 million cubic metres of fill), which would be located immediately below the pavement layer. Design refinement since this document was issued has seen revisions to bulk earthworks plans. Updated plans have been included as part of the Revised Stormwater and Drainage Design Drawings provided in Appendix H of the MPW Stage 2 RtS.	Appendix S of the EIS

Aspect	Comment	Response	Reference
Visual impact			
Consideration of proposed vegetation clearance.	The Visual Impact Assessment does not take into consideration the proposed vegetation clearance associated with the drainage channels through the Conservation Area. Additional plans should be submitted demonstrating the visual impact of the proposed construction period, including the fill stockpile(s), cranes and batching plant(s). Consideration should be given to vegetating and staging the deposition and removal of the fill stockpile(s) to limit the impact of the proposal when viewed from the west. Council noted that the previous assessment of the MPE site utilised 20 viewpoints to assess visual impact while the current assessment utilised eight viewpoints. It was suggested that a more thorough review for visual impact should be conducted.	<u>Visual impact of vegetation clearance through the Conservation Area for drainage channels</u> The visual impact assessment prepared to support the Proposal (refer to Appendix T of the EIS) included consideration of drainage channels within the conservation area. As a result of shielding from retained vegetation, topography, distance of surrounding properties and the irregular dimensions (i.e. not directly straight as viewed from Casula) views along drainage channels to the Proposal site would be limited. There is the potential for Views 2 and 3 to experience a moderate impact from the removal of vegetation for drainage channels. However, given the design of the channels, they would not be directly east-west in orientation, there would be no direct views of the channels through to the Proposal site, thereby minimising potential impacts to visual amenity. The proposed channels would be designed to minimise impacts by incorporating native revegetation features (refer to the Revised Landscape Plans included in Appendix B). 'Soft' engineering principles have been applied where possible, to integrate the basins with the conservation area, and retain connectivity as much as practicable. Further, it is intended that some revegetation would also be included within the basin areas (these are water detaining structures and are not envisaged to retain water for lengthy durations) which would also minimise impacts to the visual amenity at nearby sensitive receivers. The Revised Stormwater and Drainage Design Drawings (refer to Appendix H of the EIS) provide cross sections along two of the channels from the Proposal site, through the conservation area and across the Georges River to Casula. These cross sections further highlight the topographical, distance and shielding that would be provided such that there would be unlikely to be any direct views to the Proposal site along the channels. Further, the Amended Proposal includes a reduction in the width of channels through the conservation zone where possible to minimise impacts of channels in relation to visual amenity and biodiversity impacts (refer to Section 6 and Appendix H of the MPW Stage 2 RtS).	Appendix T of the EIS Appendix B and Appendix I of the MPW Stage 2 RtS.

Aspect	Comment	Response	Reference
		Visual impact of the construction period The visual impact assessment prepared to support the EIS (Appendix T, Reid Campbell 2016) included an assessment of the visual impacts of the Proposal during construction. The establishment and decommissioning of construction ancillary facilities, and the presence of construction plant and equipment have been considered as part of this assessment. The visual impact assessment noted that the most visible elements are likely to be equipment such as the concrete batching plant, cranes and piling rigs, which would be visible from areas including Moorebank Avenue, the nearby passenger rail line and nearby residential areas of Casula and Wattle Grove. However, given the low rise nature of construction works, it is unlikely that these works would be overly intrusive and that any visual impacts would be localised and temporary. In addition, it is expected that construction plant and equipment would be continually moving around the Proposal site during construction. As such, it is not considered practicable to provide plans demonstrating the visual impact of the proposed construction period, as the visual impact would be consistently varied with the progressive construction works across the Proposal site. The visual impact assessment recommends a number of mitigation measures that would be implemented to reduce the overall visual impact during construction of the Proposal. These mitigation measures are considered suitable to minimise the temporary and localised visual impacts associated with construction of the Proposal. Based on the potential impacts expected from construction of the Proposal, no the visual impact assessment presented in the EIS is considered to be adequate for the purpose of addressing the SEARs and the submission. Viewpoints used in visual impact assessment It is acknowledged that previous environmental assessments of the MPW Project included viewpoints of 20 locations. Photomontages of the Proposal at 12 of these 20 locations were omitted from the EIS as they were for the purpose of assessing impacts of the rail link which is not relevant to the Proposal. The visual impact assessment prepared for the Proposal is therefore considered to be adequate for the purpose of addressing the SEARs.	

Aspect	Comment	Response	Reference
Lighting	It is proposed that during the pre-construction stockpiling and bulk earthworks phases clean fill would be imported to site between 6am and 10pm Monday to Friday. The bulk earthworks phase is proposed for a 36-month period. Section 15.5.1 of the EIS (p449) states that "*Construction lighting, on both ancillary facilities and plant and equipment, would be designed and located to minimise the effects of light spill on surrounding sensitive receivers, including residential areas and the proposed conservation area*". However, The Light Spill Assessment contained in the Visual Impact Assessment (Appendix Q) does not include assessment or temporary or fixed lighting employed during the construction period. Given that clean fill would be imported to site until 10pm Monday to Friday (including during winter months), additional information should be submitted detailing the location, type and spill of any temporary or fixed lighting proposed during the construction period. Additional information should also be submitted detailing lighting control for vehicles operating above the existing ground level when depositing, relocating or removing material in the proposed fill stockpile(s). The Department notes that Section 15.4.1 'Construction' of the EIS does not adequately address vehicle light associated with construction.	During evening and night time construction of the Proposal, lighting may be required within placement areas, ancillary facilities, and on plant and equipment. Given the considerable distance to residential receivers, the impacts of light spill during construction are expected to be minor as it would be localised and temporary in nature. The EIS (refer to Section 22 of the EIS) included a number of measures to manage light spill during construction including: • Construction lighting, on both ancillary facilities and plant and equipment, would be designed and located to minimise the effects of light spill on surrounding sensitive receivers, including residential areas and the proposed conservation area. • Where required for construction works, cut-off and directed lighting would be used and lighting location considered to ensure glare and light spill are minimised. • Elements within the construction area would be located to minimise visual impacts as far as feasible and reasonable, e.g. setting back large equipment from site boundaries. These mitigation measures are considered suitable to address the potential light spill impacts during construction of the Proposal.	Section 22 of the EIS. Section 8 of the MPW Stage 2 RtS.

Aspect	Comment	Response	Reference
Human Health			
	Section 19.2.2 'Assessment Approach' states (p498) in regard to human health that "Construction phase impacts for the Proposal would be temporary in nature and effectively controlled and therefore were not assessed in detail in this Section". Construction, including the importation of 1,600,000m³ of fill and bulk earthworks, is proposed for 36 months and should be assessed in detail in regard to the cumulative impact on human health. The EPA submission made note of the potential of sleep disturbance which may impact on human health. EPA viewed both Moorebank Projects as the one facility and noted that the proponent should predict cumulative noise impact of the two projects in as a whole. Section 10 'Human Health' in the EIS and the Human Health Risk Assessment (Appendix P) do not include the air quality and noise impacts of the construction phase. Additional information should be submitted to address this omission.	Consistent with previous assessment for the Moorebank Precinct (MPE Stage 1 Project), the health risk assessment (HRA) focuses on the operational phase of the assessment (refer to Section 10 and Appendix P of the EIS). Although both long term and short term exposures are assessed, emissions generated during the operational phase are more significant in terms of health, as the source of emissions are predominantly diesel combustion. During construction, emissions are dominated by crustal derived particulate matter (PM), which is considered to be less harmful to long term health than combustion derived PM (during operations). Of note is that modelling predictions for the key pollutant $PM_{2.5}$ for construction are very similar to the modelling predictions for the operational phase (receptor max increment of 0.5 and 0.4 µg/m³ respectively), and the short term health outcomes would also be very similar. For all other pollutants (NO_x, SO_2 etc), the potential impacts during construction would be less than during operation, as there are less diesel emissions expected during construction, and therefore short term health outcomes would be less and not long term during construction. Finally, the critical health outcome of "lifetime cancer risk" is only applicable to the operational phase. For these reasons, we do not believe an assessment of conduction emissions is necessary. As discussed in Section 6 of the EIS, it is also noted that during consultation, NSW Health were informed of the approach and had an opportunity to comment on the approach and outcome during adequacy assessment and public exhibition. NSW did not raise any concerns to the approach undertaken for the HRA.	Section 6 of the EIS.
Architectural Drawings			
Section referencing	In Drawing Number 115123_A_SSD_0013 'Site Sections –Terminal, Warehouse and Rail Link' the site section references do not match the inset key plan references.	The section labels on the inset plan 01 (009) and 02 (009) should be taken to mean 01 (0013) and 02 (0013) as on the main plan. Further, these drawings have been revised to include the Proposal Amendments (refer to Section 6 and Appendix B of the MPW Stage 2 RtS).	Appendix B of the MPW Stage 2 RtS

Independent Expert Comments

Aspect	Comment	Response	Reference
Noise Issues			
Ambient noise monitoring	Provide ambient noise monitoring data charts and/or raw electronic data from locations L1 to L3 as referenced from the MPW Concept Plan EIS (precise reference not provided and seemingly no longer available online);	Ambient noise monitoring data, in the form of noise logger plots were included in Appendix B of *Technical Paper 2: Noise and Vibration Impact Assessment* (SLR Consulting, 2014); prepared to support the Moorebank Intermodal Terminal Concept EIS. (https://majorprojects.affinitylive.com/public/246a966ba837c880137b190133ac9dd7/050%20Technical%20Paper%202_%20Noise%20and%20vibration%20(Part%20B).pdf).	Appendix B of the MPW Concept Approval EIS.
Construction site plan	Provide separate site plan showing each of the seven construction stages' equipment placements used in the model, relative to surrounding land-uses;	As discussed in Section 8.4 of the EIS, a total sound power level (SWL) was developed for each works period that was representative of all plant in the period operating simultaneously. Each SWL was then modelled as a single area source based on the footprint of the work period. These source regions are provided in Appendix D of the MPW Stage 2 RtS. For the works period involving Moorebank Avenue, the total SWL of all plant as a single area source was modelled over the region shown on the figure. Since that works period also involved the internal roads on the MPW site, activities on the MPW site were also modelled, and then the highest predicted noise levels for each catchment was presented. For the additional covered drain within the Endeavour Energy easement, as identified for the Amended Proposal, plant items were modelled as a line source, as shown in the figure provided at Appendix D of the MPW Stage 2 RtS.	Section 8.4 of the EIS. Appendix D of the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
Operational site plan	As for item 2, provide same for operational noise sources (eg route for trucks on site for day, evening and night scenarios, and position of all major noise sources such as the reach stackers, other container handling equipment and locomotives);	Information in relation to the location of operational infrastructure including rail lines and warehousing, and operational truck routes are shown in Section 4 of the EIS. For clarity, the following operational equipment would generally be associated with the use of the following operational areas: • IMT – reach stackers, container handling equipment, heavy vehicle movements and loading and unloading and locomotives • Warehousing – container handling equipment, heavy and light vehicle movements loading and unloading • Internal road network and truck holding areas – heavy and light vehicle movements. A full list of operational noise sources included in the noise assessment is included in Section 8 and Appendix N of the EIS.	Section 4, section 8 and Appendix N of the EIS.
Meteorological conditions	Clarify meteorological conditions used in modelling for the night time period (see section 7.1.2 of the noise impact assessment (NIA));	Night time operational noise levels were predicted for two meteorological scenarios; calm and adverse. 'Calm' meteorological conditions used for night-time operational noise modelling were based on Pasquill-Gifford stability class D (CONCAWE Weather Category 4) which is characterised by no wind and a mild temperature lapse. 'Adverse' meteorological conditions used for night-time operational noise modelling were based on Pasquill-Gifford stability class F (CONCAWE Weather Category 6), which is characterised by source to receiver winds up to 3m/s and/or temperature inversion. These conditions are considered consistent with Section 5 of the *Industrial Noise Policy* (INP) (NSW EPA, 2000) to assess operational activities.	Section 5 of the NSW EPA *Industrial Noise Policy*

Aspect	Comment	Response	Reference
Locomotives	Clarify representation of locomotives on site as referenced at Section 7.2.2 of the NIA that states "...a combined SWL of 111dBA," Confirming if this is for the eight modelled locomotives on site or per locomotive;	The combined sound power level (SWL) of 111dBA represents all eight modelled locomotives combined. As presented in Table 7-1 of the Noise and Vibration Impact Assessment (Appendix N of the EIS), the continuous sound power levels, adopted for assessment purposes, for stationary and (slowly) moving locomotives are 100 dBA and 106 dBA, respectively. When considered over an amenity assessment period, the locomotives would spend more time idling than they would moving. Therefore, the combined SWL of 111 dBA is considered to be a conservative representation of the combined SWL of the locomotives. Alternatively, the intrusiveness modelling scenario, presented in Section 7.2.3, assumes that eight locomotives are all moving on the site in a worst-case 15-minute period, and assigns a combined SWL of 115 dBA for the locomotives.	Appendix N of the EIS.
Rail track curvature	Confirm rail track curvature radii between the site and SSFL connection (eg provide a 2-D alignment map to scale or in digital format that can be used to measure radii);	An assessment of the impacts from the operation of the Rail Link connection to the Southern Sydney Freight Line is included in the MPE Stage 1 Approval (SSD 14-6766) and is outside the scope of this Proposal. The Proposal seeks approval to operate on, and not for the construction of, the Rail link.	MPE Stage 1 EIS (SSD 14-6766)
Existing rail noise	Section 8.2.2 implies that existing rail traffic noise is significant and that the additional movements are not significant in terms of volumes when compared to existing. An analysis of existing rail noise levels at the three residential areas should be provided and the expected change in rail noise due to the Proposal demonstrated to "unlikely to noticeably increase due to the Proposal". For example, the reference to 77 Leacocks Lane and Lot 21 Leacocks Lane noise levels is unclear (stated as 3 to 5 dB increase because of the relative shielding to the track for these two locations). It is unclear if this issue is limited to this location or a small number or properties or if this issue extends across many properties;	An assessment of rail noise from the Proposal has been included in Section 8 and Appendix N of the EIS. A projected rail noise impact assessment has been undertaken and is included at Appendix D of the MPW Stage 2 RtS. Based on the corrected measurements as included in the Noise Technical Memorandum, provided at Attachment B of this memorandum, the predicted $L_{Aeq,period}$ rail noise levels at nearby noise sensitive as a result of the Proposal comply with the RING criteria for private non-network rail lines at all receivers, except Casula. Therefore, a more detailed assessment of L_{Aeq} rail noise levels in Casula was considered warranted, and requires that the existing levels of rail noise be established at this location only. Rail noise modelling indicates that the $L_{Aeq,period}$ rail noise levels from the Proposal would comply with the RING criteria for “private non-network rail lines” in Wattle Grove and Glenfield, but would exceed the night time criterion by up to 4 dB in Casula. These criteria are considered particularly stringent to the extent that the existing L_{Aeq} and L_{Amax} noise levels are already above the criteria. L_{Aeq} and L_{Amax} rail noise levels at the most sensitive residential receivers near the Rail link are predicted to exceed the established noise goals. However, due to the proximity of these receivers to the Southern	Section 8 and Appendix N of the EIS. Appendix D of the MPW Stage 2 RtS.

Aspect	Comment	Response	Reference
		Sydney Freight Line, rail movements associated with the Proposal are not expected to result in a noticeable change to the existing L_{Aeq} and L_{Amax} rail noise levels. Further rail noise monitoring has been undertaken in February 2017 to greater establish existing rail noise levels at Casula, which would be representative of noise levels at 77 Leacocks Lane and Lot 21 Leacocks Lane. Existing levels of rail noise have been established at a number of locations in Casula, including the area where the *Rail Infrastructure Noise Guideline* (RING) criterion is predicted to be exceeded. At the rail noise monitoring locations, it is demonstrated that the Proposal would result in an increase in the night time $L_{Aeq,period}$ rail noise level of less than 2 dB, which is considered unlikely to be noticeable and does not warrant mitigation. It should be noted that the existing rail noise levels are greater than the contribution from the Proposal. The existing rail noise levels that have been established as part of the additional monitoring are representative of a number of properties near the Proposal, including 77 Leacocks Lane and Lot 21 Leacocks Lane, Casula.	
Locomotive movements	Confirm whether it will be an average of eight locomotives (as per Section 7.2.2) or seven trains (as per Section 8.2.3) per day at the site. Confirm what the typical and maximum train movements will be to/from site across the daytime and night time periods, and provide an assessment of these;	A description of the Proposal including the proposed rail movements is included in Section 4 of the EIS. During normal site operations it is anticipated that two trains would be on site at any one time, with eight locomotives present on site at any one time. Operations at the IMT facility would accommodate up to 12 train movements per day (6 in each direction). An assessment of the potential noise impacts from train movements is included in Section 8 and Appendix N of the EIS. The statement that 7 trains would access the site per day, as per Section 8.2.3 of the NVIA included in Appendix N, is incorrect.	Section 8 and Appendix N of the EIS

Aspect	Comment	Response	Reference
Mitigation of rail noise	Confirm what, if any, feasible and reasonable mitigation or management was considered to abate noise level exceedances identified in Section 8 due to train movements, or justify why these would not be adopted;	A detailed discussion of the potential noise impacts from the Proposal and the requirement for mitigation is included in Section 8 and Appendix N of the EIS and has been updated in the Noise Technical Memorandum, at Appendix D of the MPW Stage 2 RtS. As part of the Noise Technical Memorandum, additional monitoring of existing rail noise levels at nearby noise sensitive receivers was undertaken. Increases in rail noise from the Proposal on nearby noise sensitive receivers were validated using the additional monitoring undertaken. The Noise Technical Memorandum demonstrates compliance with the established RING criteria for private non-network rail lines at the monitoring locations, with the exception of RM1 (Casula), where the predicted evening and night time L_{Aeq} rail noise levels from the Proposal exceed the RING criterion for a private non-network rail line by 1.2 dBA and 3.9 dBA, respectively. However, at this location, the Proposal would result in an increase in the total evening and night time L_{Aeq} rail noise levels of less than 2 dBA, which is considered unlikely to be noticeable, and therefore mitigation is not considered necessary. The predicted increase in total rail noise levels during the evening, with the Proposal, at RM2 (Casula) is more than 2 dBA. However, the predicted L_{Aeq},evening rail noise level at RM2, due to the Proposal alone, would comply with the RING criterion for a private non-network rail line. As the increase in rail noise is not likely to be noticeable, and the increase in rail noise from the Proposal would not result in an exceedance of the RING criteria at this location no mitigation is considered necessary.	Section 8 and Appendix N of the EIS.

Aspect	Comment	Response	Reference
Road traffic noise levels	Existing road traffic noise levels should be provided in addition to the quote increases in Section 9;	Road noise levels for the Proposal have been assessed in accordance with the *NSW Road Noise Policy* (RNP)(DECCW, 2011). The RNP states that: *For existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding 'no build option'.* Increases in road traffic noise levels along the M5 Motorway, Moorebank Avenue, and Anzac Road as a result of the Proposal are considerably less than 2 dBA. In accordance with the RNP, no mitigation of traffic noise levels is considered necessary. As the Proposal is unable to affect existing road noise levels, existing road noise levels are not considered relevant to the Proposal.	NSW *Road Noise Policy* (DECCW, 2011)
Cumulative construction noise	Confirm no cumulative construction noise is expected during out of hours periods or provide an assessment of such as per the standard hours cumulative assessment at Section 10.4 of the NIA;	Both the MPW and MPE projects have identified the potential of out-of-hours (OOH) construction activities. Therefore, it is foreseeable that OOH construction activities associated with both projects could occur concurrently. OOH works for construction of the MPE Stage 1 Project would comprise low noise generating activities, generally in accordance with OOH works detailed in the ICNG, and would be undertaken in accordance with the night-time construction noise management levels prescribed in Table 9-4 of the MPE Stage 1 EIS (Arcadis, 2015). The OOH works as part of the construction of the MPE Stage 1 Project are expected to be low noise generating activities, and would be undertaken in consultation with the relevant authorities and in accordance with the CEMP for the MPE Stage 1 Project. OOH works as part of the Proposal are expected to comprise materials delivery and direct placement or stockpiling. The construction noise levels during OOH works period 1 (6am to 7am weekdays), OOH works period 2 (6pm to 10pm weekdays), OOH works period 3 (7am to 8am Saturday) and OOH works period 4 (1pm to 6pm Saturday) are not predicted to exceed Proposal specific noise criteria at sensitive receivers. The cumulative construction of the Proposal during OOH periods with the MPE Stage 1 Project would be managed through the implementation of the CEMP for the Project, which would include an out of hours protocol that would take into consideration cumulative out of hours construction works.	Table 9-4 of the MPE Stage 1 EIS.

Aspect	Comment	Response	Reference
Vibration impacts	Provide confirmation on why the SEARs item 6 f) was not addressed in full in respect of the listed guidelines ie DoP 2008 and EPA's vibration guideline. Alternatively, provide a detail vibration impact assessment from proposed construction activities to demonstrate vibration impacts are not likely as stated (eg provide offset distances from typical plant and activities and compare these to actual separation distances to sensitive receivers including residences and other structures); and	Table 6-10 in Section 6.6 of the NVIA presents the safe working distances, as presented in the Construction Noise Strategy (TCA, 2012), for vibration intensive plant most likely to be used during the construction of the Proposal. The safe working distances in TCA (2012) have been developed specifically to satisfy the requirements of the EPA's vibration guideline – Assessing Vibration: a technical guide (DECCW, 2006) as requested by the SEARs. At the time of preparing the NVIA, no sensitive buildings or land uses, for cosmetic damage or human response, had been identified within the safe working distances of the identified construction plant. In response to submissions received for the Proposal, a Noise Technical Memorandum has been developed to further assess the potential for vibration impact on Kitchener House. The assessment investigates potential impacts from a wider range of construction plant and considers relevant international standards for vibration impacts on historic buildings. The construction activities most likely to generate vibration at Kitchener House would be the use of vibration-intensive equipment for road works along Moorebank Avenue, namely the use a vibratory roller. Based on the construction footprint for works on Moorebank Avenue, there is potential for construction plant to be operated approximately 20 metres from Kitchener House, which, depending upon the type and size of plant, could come within the safe working distance of Kitchener House. Additional mitigation measures for the Construction works anticipated to encroach within 20m of Kitchener house have been proposed to be included in the Construction Environmental Management Plan (CEMP) to ensure that the current of Kitchener House is not worsened by the construction works and the potential construction vibration impacts are adequately managed by the construction contractor. No other buildings are predicted to be affected by vibration during construction of the Proposal. Development Near Rail Corridors and Busy Roads – Interim Guideline (DoP, 2008) provides guidance on the assessment and mitigation of noise and vibration impacts for developments that would introduce new sensitive receivers into areas near existing transport infrastructure. The Proposal would not create new sensitive receivers near existing transport infrastructure, and therefore, DoP 2008 is not considered relevant to the NVIA for the Proposal.	Appendix N of the EIS Appendix D of the MPW Stage 2 RtS.

Aspect	Comment	Response	Reference
Mitigation measures	Confirm which mitigation measures listed in Table 11-1 would be adopted for the Proposal.	Table 11-1 in the NVIA (Appendix N of the EIS) contains REMMs relevant to the noise and vibration assessment. All REMMs listed in Table 11-1 would be implemented where reasonable and feasible for the Proposal as required by the MPW Concept Approval (SSD 5066). In addition to this, a number of mitigation measures for noise which would be implemented for the Proposal are included in Section 22 of the EIS.	Section 22 and Appendix N of the EIS.
Traffic/Transport Issues			
Construction Traffic Impact Assessment (Rev B) Key Gaps	Section 2.2, p16: • The AM and PM peak hour time periods are not clearly defined.	For the Construction Traffic Impact Assessment, including Section 2.2, the AM peak is defined as 8-9 am while the PM peak is defined as 5-6 PM.	Section 2.2 of the EIS Construction Traffic Impact Assessment (CTIA) (Appendix M)
	Section 2.2, p16: • Traffic impacts during both construction traffic peak periods and local road network peak periods should be assessed.	Assumptions have been undertaken around construction traffic generation, including the distribution of traffic throughout the day which has been discussed in detail in Section 4.3 of the CTIA (refer to Appendix M of the EIS). The assumed distribution of construction traffic has been used to calculate impacts to the local road network. The impact of construction traffic has been considered in the context of the AM and PM peak periods on the local road networks, as described in Section 2.2. Further, a Construction Traffic Impact Assessment (CTIA) has been included in Appendix C of the MPW Stage 2 RtS to provide an assessment of the Amended Proposal (refer also to Section 6 of the MPW Stage 2 RtS). This CTIA has also considered construction traffic in the context of the AM and PM peak periods.	Section 2.2 and section 4.3 of the CTIA (Appendix M of the EIS) Section 6 and Appendix C of the MPW Stage 2 RtS
	Section 3.3, Ancillary compounds, p18: • A statement is made that “An area would be made available in the northern portion of the Proposal site to provide worker parking, once the Moorebank Avenue / Anzac Avenue intersection upgrade is complete. Whilst	The provision of working parking during construction has been described in Section 4.3.7 and is shown in Figure 4-8 of the EIS. At the commencement of construction, parking would be primarily provided in the southern portion of the Proposal site. This parking site would have an	Section 4.3.7 and Figure 4-8 of the EIS.

Aspect	Comment	Response	Reference
	in the Ancillary compounds section, it is unclear if this is also proposed to apply to other worker parking. In any case, parking for workers prior to the completion of the Moorebank Avenue / Anzac Avenue intersection needs to be identified.	area of approximately 1,700 m^2 and would be accessed and egressed via the existing site access off Moorebank Avenue onto Chatham Avenue. Following the construction of the proposed site access at the Moorebank Avenue/ Anzac Road intersection, primary parking for light vehicles on the Proposal site would be predominantly located in the northern portion of the site. This parking site would have an area of up to approximately 3.7 ha (as required) and would be accessed and egressed via the proposed site access. Additional car parking would also be available within the proposed compounds and compounds established for the construction of each warehousing (refer to Section 4.3.7 of the EIS). The construction car parking provision provided for the Proposal is considered suitable based on the number of vehicle trips anticipated on a daily basis during construction.	
	Section 3.3, p20: • States all proposed access points are indicative. However, the access points proposed need to be clearly set out in the application. An assessment of the adequacy of each from a capacity and safety perspective needs to be included e.g. SIDRA analysis, sight distance assessment etc.	Details of the Proposal including access points during construction are provided in Section 4.3 of the EIS. The Construction Traffic Impact Assessment (CTIA) is a supplementary report to the EIS which assess the traffic impacts associated with construction specifically. The CTIA is not intended to provide the detailed description of the Proposal for which the proponent is seeking approval. • The performance of each of the intersections hat provide access to the Proposal sire during construction (i.e Moorebank Avenue/ Anzac Road and Moorebank Avenue/ Chatham Avenue) have been assessed in the CTIA prepared to support the EIS and the revised CTIA included at Appendix C f the MPW Stage 2 RtS. The performance of these intersections have been assessed with consideration of the predicted construction vehicle movements to be generated during each construction works period, and the proportion of this traffic using each site access point has been considered in the assessment of potential construction traffic impacts to identify the Level of Service at these locations, and nearby intersections on the road network. During the peak construction period, the intersections which provided access to the Proposal site would perform at a Level of Service D or greater, which is considered to be an acceptable Level of Service. The results of the modelling of construction traffic impacts at these locations is provided in the revised CTIA at appendix C of the MPW Stage 2 RtS.	Section 4.3 of the EIS. Revised CTIA at Appendix C of the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
	Section 3.4, p20: • The report indicates that certain works and activities are proposed to be undertaken outside standard hours. Limited information is provided in relation to these works. Further information is required in relation to works being applied for as part of this application (or if further applications will be submitted for specific out of hours works).	Details of the Proposal including the potential for out of hours works are provided in Section 4.3 of the EIS. The Construction Traffic Impact Assessment (CTIA) is a supplementary report to the EIS which assess the traffic impacts associated with construction specifically. The CTIA is not intended to provide the detailed description of the Proposal for which the proponent is seeking approval.	Section 4.3 of the EIS.
	Section 4.1 Construction Traffic Movements, p24 & Appendix A, Table A-4 & Section 4.3 Peak Hour Traffic Generation, p25: • The estimates of daily traffic movements are not substantiated other than by reference to a number of workers and a number of truck loads. These need to be broken down and related to the extent of works e.g. number truckloads of fill related to the volume of imported / exported fill etc. • No allowance has been made for tradespersons to enter and exit the site multiple times per day which would be expected for at least some trades. • The distillation of peak hour movements from daily movements is not fully explained. • It is unclear if the peak construction traffic movements coincide with the peak external road traffic periods. • It is unclear what traffic movements are assumed for the MPE traffic, noting the base volumes are from 2015.	The following details are provided for the construction traffic movements (refer to Section 7 and Appendix M of the EIS): • The estimation of truck movements has been calculated based on the amount of fill that can be imported per truck along with the capacity of the estimated that the peak daily capacity of the Proposal site to accept imported fill materials • Light vehicles numbers provided in Section 4.1 of the EIS have included consideration of all activities including tradespersons travelling to and from the site • Peak hour movements have been estimated based on our understanding of the likely distribution of traffic movements to be undertaken during this time. In particular, the importation of fill, included in Works Periods A and C are to be generally undertaken over extended construction hours to spread the heavy vehicle movements and enable movements during AM and PM peak periods to be minimised. • AM peak is defined as 8-9 am while the PM peak is defined as 5-6 PM. Peak construction traffic movements would occur around 5-7 AM and 4-5 PM. Construction traffic peaks are not predicted to coincide with peaks on the local road network. • The traffic movements for the MPE Stage 1 Project have been based off the information included in the MPE Stage 1 EIS (SSD 6766), which has been approved and therefore forms the basis for construction movements for this project.	Section 4.1, Section 7 and Appendix M of the EIS

Aspect	Comment	Response	Reference
	Section 4.2, p25: • No construction staff traffic at all is assigned to Cambridge Avenue. It is expected that some drivers would use this road.	As discussed in Section 7 and Appendix M of the EIS, the majority of staff cars, approximately 90%, would travel from the north via Moorebank Avenue. Approximately 10% are expected to use Anzac Road. It is not intended that construction staff traffic would travel to and/ or from the Proposal site via Cambridge Avenue. The CEMP developed for the Proposal would include measures to managed construction traffic where required.	Section 7 and Appendix M of the EIS
	Section 5.2-5.7, Traffic Impacts p29-33: • No information is provided with respect to the SIDRA analyses, including assumptions and settings. All non-default settings and assumptions should be highlighted and justified. The SIDRA files should be submitted with the report to enable review. • SIDRA analysis should be completed for all proposed construction access points	Traffic data and assumptions used for the assessment of construction traffic have been included in Appendix A of the CTIA (refer to Appendix M of the EIS, and Appendix C of the MPW Stage 2 RtS). During construction, site access would be provided through the Moorebank Avenue / Anzac Road and Moorebank Avenue/ Chatham Avenue intersections. SIDRA analysis has been undertaken for these intersection and the results were presented in Section 5 of the CTIA (refer to Appendix M of the EIS). A revised CTIA has been prepared as part of the MPW Stage 2 RtS (refer to Appendix C of the RtS), to provide an assessment, which takes into account revised traffic modelling scenarios and construction of the revised Moorebank Avenue/ Anzac Road intersection layout in the Amended Proposal. Traffic modelling to assess the construction traffic impacts of the Proposal has been undertaken as part of the revised CTIA included in Appendix C of the MPW Stage 2 RtS. This modelling included the use of the Moorebank Avenue / Anzac Road intersection in its existing configuration with the addition of a 4th leg on the western approach to provide access to the Proposal site after some enhancements have been made to the intersection to provide improved access for heavy vehicles accessing the site. The existing Chatham Avenue/ Moorebank Avenue intersection would operate at an acceptable LoS in the AM and PM peak with construction of the Proposal. The SIDRA analysis indicated that construction traffic from the proposed access point at Chatham Avenue would not adversely impact through traffic along Moorebank Avenue.	Appendix M of the EIS Appendix C of the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
	Section 5.9 Road Access Restriction, p34-35: • This section needs to provide more information in regards to how such restrictions will be implemented and enforced. • The proposed Road Safety Audit, including mitigation measures should be provided with the Construction Traffic Impact Assessment to enable its adequacy to be assessed.	A discussion of restrictions provided during the construction of the Proposal is included in Section 5.9 of the CTIA (refer to Appendix M of the EIS). Restrictions would be implemented and enforced through: • Signposting • Consideration of restrictions when developing delivery and haul routes in operation and logistical plans • Inclusion of restrictions in site inductions for truck operators • Establishment of communication protocols for community feedback on issues relating to construction vehicle driver behaviour and construction related matters. A Preliminary Construction Traffic Management Plan has been provided at Appendix M of the EIS. These restrictions (and others as necessary) would be included in the Construction Traffic Management Plan to be provided as part of the CEMP for the Proposal. Outcomes from the Road Safety Audit would be incorporated into the Construction Traffic Management Plan to be prepared for the Proposal (refer to Section 22 of the EIS and Section 8 of the MPW Stage 2 RtS).	Section 22 and Appendix M of the EIS. Section 8 of the MPW Stage 2 RtS.
Construction Traffic Impact Assessment (Rev B) - Other Gaps and Initial Observations	Figures are generally quite small and lack key details, such as road and street names and facilities referenced in the text (e.g. Cambridge Avenue, Bapaume Road, location of ABB). Larger, more clearly annotated Figures should be provided throughout.	The images included throughout the EIS have been amended to ensure better clarity with improved detail. Amended images have been included in Appendix C of the MPW Stage 2 RtS.	Appendix C of the MPW Stage 2 RtS
	Section 1.5, p13: The construction activities indicate the Subdivision of the MPW site as the final activity in the list. It would be expected that this would occur earlier, at least prior to the construction of the warehouses and possibly the IMT.	The bullet point list provided in Section 1.5 of the Construction Traffic Impact Assessment has been included to provide an overview of construction activities and is not intended to be indicative of program. As discussed in Section 6 of the MPW Stage 2 RtS, subdivision of the Proposal site is not to be undertaken as part of the Proposal. It is acknowledge that the subdivision proposed in the EIS would not be consistent with the minimum lot requirements outlined in the Liverpool LEP. As such, the subdivision of the MPW site should it occur in the future, would be undertaken as part of a separate planning application.	Section 1.5 of the EIS CTIA (Appendix M of the EIS) Section 6 of the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
		It is anticipated that subdivision of the MPW site would be undertaken as part of future stages of the MPW Project.	
	Section 2.1, p15: It is unclear if Moorebank Road south of Anzac Avenue is proposed to be dedicated or will remain a private road carrying through traffic as part of the project.	Moorebank Avenue south of Anzac Road would continue to operate as a publicly accessible, private road (as existing) for the Proposal (refer to Section 7 and Appendix M of the EIS).	Section 7 and Appendix M (Operational Traffic and Transport Impact Assessment (OTIA)) of the EIS.
	Section 2.2 Traffic Volumes: Reliance is placed on traffic count surveys undertaken for MPE, MPW and Roads and Maritime's wider Liverpool Moorebank Arterial Road Investigations traffic model in 2015. The counts relied upon should be supplied and any manipulation of the data highlighted and justified.	Traffic count data used for the traffic component of the EIS assessment was based on 2015 counts extracted from the LMARI model (AIMSUM model dated March 2016 (Do-Nothing version) and supplemented by 2014/2015 traffic counts from the Moorebank Precinct East (MPE) (SIMTA) Stage 1 Project; however, the RMS LMARI's traffic data is the primary traffic data source. No other alterations to the model were undertaken to the data and the original data is provided. The MPW Stage 2 traffic model has been provided to TfNSW in mid March 2017, as requested in the meeting undertaken with TfNSW (and DP&E) on 9/03/2017. It is anticipated that additional TfNSW comments would be provided on 23 March 2017 with additional responses from SIMTA to follow in the week of 30 March 2017.	Section 7 and Appendix M (OTTIA) of the EIS.
	Table 3-1, p17: The table is spread over two pages. Given it relates to overlapping phases of construction, it should be presented on a single page to assist the reader.	Noted.	Appendix M (CTIA) of the EIS.

Aspect	Comment	Response	Reference
	Section 3.3 Ancillary compounds, p18 & Section 3.5.5 Batching Plant p23: It is noted that these are indicative and two locations are shown. However it is unclear in this report if one or both are being applied for. This should be clarified.	Construction of the Proposal would require the establishment of one concrete batching plant. It is not the intention to operate two concrete batching plants (i.e. one at each indicative location) at the same time; and the inclusion of the two potential locations provides sufficient flexibility to the construction contractor for the Proposal. The final location of the concrete batching plant would be subject to the construction contractor's construction methodology, once appointed. Based on existing site conditions and environmental constraints of the Proposal site and surrounds, the EIS nominated two potential locations for the batching plant for the construction contractor (once appointed). It is intended that once the construction contractor is appointed that would select from one (only) of these locations. The final location of the concrete batching plant would be subject to the construction contractor's construction methodology, once appointed. Based on existing site conditions and environmental constraints of the Proposal site and surrounds, the EIS nominated two potential locations of the batching plant for the construction contractor (once appointed) to select from. The relevant environmental assessments prepared to support the EIS included a worst case assessment of the potential environmental impacts associated with the operation of the concrete batching plant at these locations.	Appendix M (CTIA) of the EIS

Aspect	Comment	Response	Reference
	Section 3.3, p20 & Section 3.5, p22: Statements are made that the stockpile sites will be rehabilitated upon completion of the works. However it is unclear what is intended.	As the areas within which materials would be stockpiled would become part of the built form of the MPW site (either as part of the Proposal or in a future stage), including areas of hardstand and landscaping, no rehabilitation specific to stockpiling is expected. Further, stockpiling of clean fill would not result in the need for remediation of key stockpiling areas. It is noted that some contaminated earthworks material, excavated during cut excavations for the Proposal site, may be stockpiled, however contamination migration would be controlled within the CEMP therefore ensuring that the areas underlying the contaminated stockpiles would not require remediation. In the southern portion of the Proposal site, there are areas where placement of fill would occur to final site levels; however, hardstand and warehousing would not be constructed. At these locations, exposed surfaces would be stabilised through the use of hydroseeding, the application of a bitumen emulsion or a similar stabilisation method.	Appendix M (CTIA) of the EIS.
	Section 5.7.1 Potential carriageway closures, p33: It notes that these works would be subject to separate traffic management plan. It should probably state subject to a separate permit application, as such works will need to be separately assessed (as they do not appear to form part of this application) and in any case is very vague.	All roadworks for which the approval is sought are included in Section 4 of the EIS as updated by Section 6 of the MPW Stage 2 RtS. Construction traffic movements to and from the Proposal site would be undertaken in accordance with the final Construction Traffic Management Plan (CTMP), which would form part of the CEMP for the Proposal. It is intended that the CTMP would be prepared by updating the Preliminary Construction Traffic Management Plan (PCTMP), which was provided at Appendix M of the MPW Stage 2 EIS.	Section 4 and Appendix M of the EIS Section 6 of the MPW Stage 2 RtS
	Section 5.8 Public Transport, p33: Discussion is very vague and works impacting Moorebank Avenue should be specifically identified and the Construction Traffic Impacts and mitigation measures clearly identified.		
	Section 6 Conclusions, p36: Should include a summary of the proposed mitigation measures to aid conditioning.	A summary of mitigation measures for the construction traffic impact assessment is provided in Section 5.12 on page 34 of the Construction Traffic Impact Assessment (Appendix M of the EIS). A summary of all the mitigation measures for the Proposal is provided in Section 22 of the EIS, and updated for the Amended Proposal in Section 8 of the MPW Stage 2 RtS, including additional mitigation measures identified as part of the revised CTIA prepared to support the MPW Stage 2 RtS.	Section 22 and Appendix M (CTIA) of the EIS Section 8 of the MPW Stage 2 RtS.

Aspect	Comment	Response	Reference
	Table A-6, p50: refers to Scenarios 1 and 2. It is unclear what these are.	A description of Scenario 1 and 2 has been provided in Section 5.5 and Section 5.6 of the Construction Traffic Impact Assessment. This assessment has been updated by the CTIA provided at Appendix C of the MPW Stage 2 RtS (refer also to Sections 6 and 7 of the MPW Stage 2 RtS).	Section 6, Section 7 and Appendix C of the MPW Stage 2 RtS.
Operational Traffic Impact Assessment (Rev F) - Key Gaps	No SIDRA files nor summaries have been provided. Output summaries and the actual SIDRA files are required to check inputs and assumptions.	As identified in Appendix M of the EIS, SIDRA was used only to determine the performance of existing intersections, AIMSUN was used for the assessment of the operation of the Proposal. Data for the SIDRA analysis of existing intersection performance and AIMSUN results for the operational traffic performance is provided within Appendix M of the EIS.	Appendix M of the EIS.
	No concept drawings are including illustrating the proposed intersection upgrades. These are necessary to check the proposed upgrades are feasible and don't have unforeseen impacts.	Appendix G of the EIS provides concept drawings for the layout of the proposed Moorebank Avenue/Anzac Road intersection. Appendix H of the MPW Stage 2 RtS provides concept drawings for the revised layout of the Moorebank Avenue/Anzac Road intersection. The Moorebank Avenue/Anzac Road intersection is the only intersection upgrade included within the Proposal. The Operational Traffic and Transport Impact Assessment (Appendix M of the EIS) suggests a number of network improvements, which are not included in the Proposal, although they are considered necessary as a result of unacceptable levels of service at these intersections through background traffic growth (refer also to Section 7.6 of the EIS). As described in Section 20.3.4 of the EIS, developer contribution discussions to address traffic impacts would be undertaken with Roads and Maritime as a part of the overall traffic impacts of the combined MPW and MPE developments. The apportionment of developer contributions would be subject to the outcomes of these discussions and would be discussed further, and as necessary an agreement determined, between SIMTA and the relevant government agencies (Roads and Maritime and Liverpool City Council, as relevant).	Section 7.6, Section 20.3.4, Appendix G and Appendix M of the EIS Appendix M of the MPW Stage 2 RtS.
	Indicative cost estimates should be provided for any intersection upgrades proposed to be part of a contribution or cost-share arrangement. Where such works are already planned by RMS, these should also be noted.		

Aspect	Comment	Response	Reference
	Stakeholder consultation including with RMS is mentioned in the report. However only minutes from a single meeting were included. No other meeting minutes, presentations or, responses from RMS arising from such meetings, have been included. As such it is unclear as to what RMS's position was on all matters discussed.	Section 6 of the EIS provides a summary of consultation undertaken with all stakeholders, including Roads and Maritime. Section 2 of the MPW Stage 2 RtS provides further detail on additional consultation undertaken during and post exhibition of the EIS. A summary of the joint agency meeting minutes have been provided as this was a key meeting in relation to the presentation of the results of the traffic modelling as required under Condition 12 of the MPW Concept Approval. Other meetings undertaken have generally comprised more procedural discussions in relation to Roads and Maritime's on-going preparation of the Liverpool Moorebank Arterial Road Investigation LMARI AIMSUM model prepared to reflect the local region's operational traffic network conditions and therefore have not been specifically summarised. The MPW Stage 2 traffic model has been provided to TfNSW in mid-March 2017, as requested in the meeting undertaken with TfNSW (and DP&E) on 9/03/2017 (refer to Section 2 of the MPW Stage 2 RtS). Additional TfNSW comments were provided through a formal submission comprising a letter dated 10 June 2017.	Section 6 of the EIS. Section 2 of the MPW Stage 2 RtS.
	It is unclear if any of the upgrades noted as 'proposed' have been identified by RMS or Council, or if they have been identified by the report's author.	Appendix G of the EIS provides concept drawings for the layout of the proposed Moorebank Avenue/Anzac Road intersection. Appendix H of the MPW Stage 2 RtS provides concept drawings for the revised layout of the Moorebank Avenue/Anzac Road intersection. The Moorebank Avenue/Anzac Road intersection is the only upgrade included within the Proposal. The Operational Traffic and Transport Impact Assessment (Appendix M of the EIS) suggests a number of network improvements, which are not included in the Proposal, although they are considered necessary as a result of unacceptable levels of services at these intersection through background traffic growth (refer also to Section 7.6 of the EIS). The suggested upgrade and traffic network improvements have been identified by Arcadis based on the LMARI model provided by Roads and Maritime Services. As discussed in Section 6 of the EIS, consultation on the approach and outcomes of this model has been undertaken with both Roads and Maritime	Section 6, section 7.6, Appendix G and Appendix M of the EIS.

Aspect	Comment	Response	Reference
		Services and Liverpool City Council separately and also jointly (to satisfy Condition No. 12 of the MPW Concept Approval).	
	Figures similar to those contained in Appendix B are required for the development traffic and for the future year scenarios (including the cumulative assessment). The spreadsheets which inform these figures are also required.	A detailed assessment of traffic impacts associated with operation of the Proposal has been presented in Section 5 of the OTTIA (refer to Appendix M of the EIS). The level of detail presented in the assessment is considered appropriate to determine the operational impacts of the Proposal in consideration of the SEARs, Concept Plan Conditions of Approval and the REMMs. Consistent with the SEARs, the operational traffic and transport impact assessment has used background traffic growth models developed by Roads and Maritime for the Liverpool/ Moorebank area, detailed the existing traffic and transport environment relative to the road network and public and active transport, undertaken detailed modelling and analysis, as discussed and agreed in consultation with TfNSW, Roads and Maritime and Liverpool City Council. In addition the assessment of operation traffic and transport impacts has considered service vehicle movements and site access arrangements and integrated public and active transport into the design of the Proposal.	Appendix M (OTTIA) of the EIS. Section 2 of the MPW Stage 2 RtS.
	It is suggested that SIMTA will consult with TfNSW in relation to Public and Active Transport provisions during detailed design. The detailed design stage is likely to be too late to incorporate this infrastructure particularly if TfNSW requests are not foreseen by SIMTA. We suggest that this consultation should have already occurred. Therefore, TfNSW requirements should have been included as part of the report.	As discussed in section 6 of the EIS, TfNSW have been consulted on a number of occasions since the last quarter of 2015 with regards to the Proposal and the Moorebank Precinct. Issues raised during this consultation have been considered during the design development of the Proposal, and the assessments prepared as part of the EIS. As part of the Proposal, the Proponent has nominated a potential option for the extension of the existing 901 public bus route, and the internal road network is suitable to accommodate bus movements (Refer to Appendix H of the MPW Stage 2 RtS). In addition, the Proposal also includes, at the location of the Moorebank Avenue/ Anzac Road intersection upgrade, 3.5 m wide shared path. The inclusion of this public and active transport infrastructure as part of the Proposal takes into account the comments provided by TfNSW to-date on acceptable distances to bus stops and the width of shared paths. Further, as discussed in mitigation measure No. 1E (refer to Section 22 of the EIS and Section 8 of the MPW Stage 2 RtS), additional consultation with TfNSW would be conducted regarding the provision for active transport	Section 6 and Section 22 of the EIS. Section 8 of the MPW Stage 2 RtS.

Aspect	Comment	Response	Reference
		to/from the Proposal site and along the internal perimeter road, as part of detailed design for the Proposal, where relevant.	
	All crash data should be provided as it is only reported at a high level.	It is considered impractical to present all crash data within the EIS. As such, only crash data relevant to the Proposal has been included in Section 2.5 (refer to Appendix M of the EIS). This information is available from Roads and Maritime Services on request should further information be required.	Appendix M (OTTIA) of the EIS.
Operational Traffic Impact Assessment (Rev F) - Other Gaps and Initial Observations	Report figures are quite small and difficult to interpret. It is requested that clearer / larger copies of all figures be provided.	The images included throughout the EIS have been amended to ensure better clarity with improved detail. Amended images have been included in Appendix C of the MPW Stage 2 RtS.	Appendix C of the MPW Stage 2 RtS.
Preliminary Construction Traffic Management Plan (Rev C)	Limited details in relation to proposed traffic management strategies etc. is provided. Whist we understand that the plan will be refined, more detail is required in relation to how construction traffic will be managed i.e. drawings showing expected construction works scope, lane closures, traffic control, signage plans and any detours etc.	A detailed Construction Traffic Management Plan would be prepared prior to the commencement of construction (refer to Section 22 and Appendix M of the EIS). Details have been provided at a high level to enable sufficient flexibility to allow the construction contractor to develop a reasonable and feasible construction traffic management plan that responds to the information as requested in relevant conditions of approval to be provided by DP&E for the Proposal. It is noted that drawings showing expected construction works scope, lane closures, traffic control, signage plans and any detours would be considered impractical and unreasonable until the development of the detailed design of the Proposal.	Section 22 and Appendix M of the EIS.
	The AM and PM peak hour time periods are not clearly defined. Please clarify.	AM peak is defined as 8-9 am while the PM peak is defined as 5-6 PM.	N/A
	Traffic impacts during both construction traffic peak periods *and* local road network peak periods should be assessed.	Assumptions made around construction traffic generation, including the distribution of traffic throughout the day has been discussed in detail in Section 4.3 of the CTIA (refer to Appendix M of the EIS). The intended distribution of construction traffic has been used to calculate impacts to the local road network. The impact of construction traffic has been considered in the context of the AM and PM peak periods on the local road networks, as described in Section 2.2 (refer to Appendix M of the EIS). Further, a Construction Traffic Impact Assessment (CTIA) has been included in Appendix C of the MPW Stage 2 RtS to provide an assessment of the	Section 2.2 and section 4.3 of the CTIA (Appendix M) of the EIS. Section 6 and Appendix C of

Aspect	Comment	Response	Reference
		Amended Proposal (refer also to Section 6 of the MPW Stage 2 RtS). This CTIA has also considered construction traffic in the context of the AM and PM peak periods.	the MPW Stage 2 RtS.
	The report indicates that certain works and activities are proposed to be undertaken outside standard hours. Limited information is provided in relation to these works. Further information is required in relation to works being applied for as part of this application (or if further applications will be submitted for specific out of hours works).	As described in Section 4.3.4 of the EIS, it is proposed to undertake the importation of clean fill to the site over additional hours as follows: • 6 am to 10 pm Monday to Friday • 7 am to 6 pm Saturdays. Any other construction works undertaken outside of these hours would be undertaken in consultation with relevant authorities. The other works that may be required to be undertaken outside of standard construction hours would include: • Works associated with the upgrade of the Moorebank Avenue/Anzac Road intersection to minimise impacts on through traffic • Works associated with the tie-in of the Rail link connection to the Rail link to minimise disruption to services on the Rail link. • Any works which do not cause noise emissions to be audible at any nearby sensitive receptors or comply with the 'Outside Standard Construction Hours' (refer to Section 8 and Appendix N of this EIS) • The delivery of materials which is required outside of these hours as requested by Police or other authorities for safety reasons • Emergency work to avoid the loss of lives, property and/or to prevent environmental harm • Works required to be undertaken during rail corridor possessions • Any other work as approved through the Construction Noise and Vibration Management Plan.	Appendix M (CTIA) of the EIS.

Aspect	Comment	Response	Reference
Preliminary Construction Traffic Management Plan (Rev C) - Other Gaps and Initial Observations	Report figures are quite small and difficult to interpret. It is requested that clearer / larger copies of all figures be provided.	The images included throughout the EIS have been amended to ensure better clarity with improved detail. Amended images have been included in Appendix C of the MPW Stage 2 RtS.	Appendix C of the MPW Stage 2 EIS.
Preliminary Operational Traffic Management Plan (Rev C) Key Gaps	Limited details in relation to proposed traffic management strategies etc. is provided. Whist we understand that the plan will be refined, more detail on the actual content of the documents to be prepared is required (e.g. sample procedures manuals, reporting forms and the like intended to form the basis of such systems);	A detailed Operational Traffic Management Plan, based on the Preliminary Operational Traffic Management Plan (refer to Appendix M of the EIS) would be prepared prior to operation of the Proposal (refer to Section 22 of the EIS). Details have been provided at a high level to enable sufficient flexibility to allow SIMTA to develop a reasonable and feasible management plan that responds to the information as presented in the relevant conditions of approval at time of operations.	Section 22 and Appendix M of the EIS.
	Section 4.3 notes that traffic control may be required on Moorebank Avenue at certain times and that Appropriate Traffic Control Plans will be produced in consultation with RMS. We believe that Traffic Control Plans should also require approval from RMS.	Noted.	N/A
	The proposed intersection upgrades indicated on Figure 3-1 should be supported with scaled concept drawings clearly illustrating: • The existing and proposed layout • Any land required beyond the existing road reserve • Impacts on services, drainage, other property accesses etc.	An assessment of impacts associated with proposed intersection upgrades has been provided in sections 7 – 19 of the EIS. Appendix H of the MPW Stage 2 RtS provides concept drawings for the revised layout of the Moorebank Avenue/Anzac Road intersection. Section 6 of the RtS provides a figure showing the land to be impacted by the Amended Proposal. Assessment and consideration of the potential property access has been considered in Section 7 of the RtS.	Section 7 to 19 of the EIS. Section 6, Section 7 and Appendix H of the MPW Stage 2 RtS.

MPW STAGE 2 SUBMISSIONS: DP&E KEY ISSUES – 4 APRIL 2017

Aspect	Comment	Response	Reference
General			
Staging	A staging report is to be provided. This is to include a combined MPW and MPE project program showing scheduling and overlaps between all activities and works including remediation, construction, spoil importation, site/road raising and spoil stockpiling on both sites. The program is also to show overlaps between construction and operational activities, e.g. operation of MPE and MPW Stage 2 proposals and construction of the remaining approved warehousing on MPW.	A cumulative construction and operational scenario for the Proposal that overlaps with other components of the Moorebank Precinct was assessed as part of the EIS. At the time of preparation of the EIS, the construction cumulative scenario accounted for overlapping construction activities with other components of the Moorebank Precinct, according to available scheduling information. This scenario included concurrent construction of the Proposal with the latter stages of construction of: • MPW Early Works • The MPE Stage 1 Project. The operational cumulative impact scenario considers the Proposal operating at 500,000 TEU throughput combined with the MPE Stage 1 Proposal operating at 250,000 TEU throughput, incorporating a total of 750,000 TEU throughput for the two sites running concurrently. A summary of the project program, as used as the basis of the cumulative construction and operational impact assessments is provided at Appendix P of the MPW Stage 2 RtS The MPE Stage 2 was not subject to development and/or environmental assessment at the time of commencing the environmental assessment for the Proposal and as such, was not considered as part of the cumulative construction or operational assessment within the MPW Stage 2 EIS. However, the cumulative impact assessment provided in Section 19 of the MPE Stage 2	Section 19 and Appendix P of the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
		EIS (subject to separate assessment and determination), which provides the details relevant to the staging report requested, considered both construction and operational cumulative scenarios associated with the MPE Stage 2 Proposal, the MPE Stage 1 Proposal and the MPW Stage 2 Proposal. The construction cumulative scenario took account of activities overlapping within the vicinity of the MPE site according to scheduling information. The operational cumulative impact scenario considers the operation of the MPE Stage 2 Proposal combined with the MPE Stage 1 Proposal and MPW Stage 2 Proposal operating at 250,000 TEU and 500,000 TEU throughput respectively, incorporating a total of 750,000 TEU throughput for the two sites running concurrently. This operational cumulative assessment also considers the operation of 300,000m^2 of warehousing included within the MPE Stage 2 Proposal and operation of 215,000m^2 of warehousing as part of the MPW Stage 2 Proposal and other associated development (freight village and ancillary facilities).	
Dimensional Plans	A consolidated set of fully dimensioned plan(s) showing the location of all construction activities, works and facilities for which approval is sought for MPW Stage 2. Should include elevations, sections and levels. This is to include a Stockpile Management Plan.	Due to the nature of construction, the location of construction activities within the proposal site would be changing regularly as construction progresses. Fully dimensioned plans are therefore not available, nor considered realistic for construction of the Proposal. The indicative construction layout of the Proposal site is provided as Figure 4-8 of the EIS. This includes an outline of the construction area, as well as the indicative location of construction parking, the IMT facility compound, rail compound, earthworks compound, offices, the pre-construction and bulk earthworks stockpiling area and truck marshalling area. Approval is sought as part of this application for construction of the Proposal as described in Section 4.3 of the EIS, and Section 6.4 of the MPW Stage 2 RtS. A consolidated description of the Proposal, including the amendments, is provided at Appendix O of the MPW Stage 2 RtS. Existing site levels were included in the Survey Plan of the Proposal site, provided at Appendix C of the EIS. All fill required during construction of the Proposal site would be imported, and would be placed in accordance with the site levels shown on drawing no. C-MICS2-SSD-111-AA003760-05 in the Revised Stormwater and Drainage Design Drawings at Appendix H of the MPW Stage 2 RtS.	Figure 4-8, Sections 4.3, 6.4 and Appendices O, C, H and L of the EIS

Aspect	Comment	Response	Reference
		In response to the issues raised during the public display of the EIS relating to fill importation, a stockpile management protocol has been prepared and is provided at Appendix L as part of the MPW Stage 2 RtS.	
Operational activities and uses	A list of all operational activities and uses for which approval is sought for MPW Stage 2, including the proposed freight village uses.	The operational components of the Proposal for which we are seeking approval is described in Section 4.2 of the EIS and the operational activities and uses are described in Section 4.4 of the EIS. Section 6 of the MPW Stage 2 RtS provides details regarding additional operational activities, uses and components relating to the amendments to the Proposal. A consolidated description of the Proposal, including operational activities and uses, is provided at Appendix O of the MPW Stage 2 RtS, which includes consideration of all amendments to the Proposal.	Sections 4.2, 4.4 and 6 and Appendix O of the EIS
Construction activities	A list of all construction activities for which approval is sought for MPW Stage 2, including the proposed crushers and concrete batching plants.	The construction activities required for the Proposal are detailed in Section 4.3 of the EIS, including a break-down of each works period and their respective construction activities. Section 4.3.3 of the EIS provides a detailed description of the proposed construction methods, including crushing and batching plants. The construction program has been updated as a result of the Amended Proposal and is included in Section 6 of this RtS. A consolidated description of the Proposal, including construction activities, is provided at Appendix O of the MPW Stage 2 RtS, which includes consideration of the Amended Proposal.	Sections 4.3 of the EIS Section 6 and Appendix O of the MPW Stage 2 RtS
Numerical modelling assumptions	Inputs and assumptions for all numerical modelling (noise, air, traffic) and other analysis are to be provided. Impact assessment is to present worst case scenarios, i.e. impact with reference to base-line conditions (prior to any construction) and construction impact assessment for peak periods of activity within the entire Moorebank Precinct (MPW+MPE) with reference to (a).	The impact assessments prepared as part of the EIS included the consideration of a worst-case scenario as part of the assessment of the Proposal alone, and as part of the cumulative impact assessment, as follows: • Proposal alone – worst case construction scenario considered for assessment i.e. where the greatest overlaps in construction works periods are expected. • Cumulative – worst case overlap in construction across the various projects within the MPW and MPE concept plan approvals, the same was applied for operations.	Appendices N, O and M of the EIS

Aspect	Comment	Response	Reference
		The technical assessments prepared for the EIS detail the inputs and assumptions adopted in the following sections: • Sections 7.1, 7.2, 8.2, 9.1.1 and 10.1 of the Noise and Vibration Impact Assessment (refer to Appendix N of the EIS) • Sections 1.3, 3, 5 of the Air Quality Impact Assessment (refer to Appendix O of the EIS) • Appendix A of the Construction Traffic Impact Assessment (refer to Appendix M of the EIS) • Appendix B and C of the Operational Traffic and Transport Impact Assessment (refer to Appendix M of the EIS).	
Biodiversity and Vegetation Clearing			
Fuel reduction and defendable space	It is noted in the Bushfire Protection Assessment that a 25 m defendable space is required from the warehousing and that fuel reduction is required within the rail corridor. Does this include fuel reduction within the riparian corridor Conservation Zone? The Biodiversity assessment is to include an assessment of the impacts on the riparian corridor (if affected) and rail corridor vegetation due to fuel reduction for bushfire management.	The bushfire protection assessment does not include fuel reduction within the riparian corridor (i.e. conservation area). This is detailed in the assessment of the Proposal against the provisions of Planning for Bushfire Protection 2006 (NSW Rural Fire Service), included in Section 20.2 and Appendix W of the EIS. This assessment confirms that the current design of the Proposal would comply with the relevant objectives of *Planning for Bushfire Protection 2006*, including adequate separation between fixed assets and the bushfire prone vegetation and defendable spaces (ie. 25m or more), and that further vegetation clearance for bushfire protection, including within the riparian corridor, would not be required. As detailed in the assessment, the defendable space located between the warehousing area and the conservation area would be maintained as an Inner Protection Area and managed to the standards as required by *Planning for Bushfire Protection* 2006 and the NSW Rural Fire Service's document 'Standards for Asset Protection Zones', ie, the landscaped areas within the Proposal site would be managed to maintain minimum dry fuels loads. This includes the Rail Link connection but not the riparian area. The Biodiversity Assessment Report (refer Appendix G of the MPW Stage 2 RtS) considers this vegetation removal within the rail corridor.	Section 20.2 and Appendices G and W of the EIS

Aspect	Comment	Response	Reference
Threatened species modelling	Updated threatened species mapping of the project area is to be provided targeting additional threatened species identified in the October 2016 surveys.	An updated Biodiversity Assessment Report (BAR) has been prepared for the MPW Stage 2 RtS (refer Appendix G), which includes details of the additional threatened species surveys that have been undertaken and updated mapping of the Amended Proposal site.	Appendix G of the MPW Stage 2 RtS
Visual Impact			
Consideration of gantries and stacked containers	The visual impact assessment should include proposed gantries and stacked containers and a comparative analysis in relation to surrounding land uses having regard to proposed vegetation clearing and filling	The visual impact assessments (VIA) undertaken for the EIS (refer Appendix T of the EIS) and for the Amended Proposal (refer to Appendix I of the MPW Stage 2 RtS) considered vegetation clearing and both stacked containers and container handling equipment (such as gantries). The VIA for the EIS concluded that overall, the Proposal is in keeping with the surrounding land uses and any impacts would be effectively minimised through the use of landscaping and urban design, the maximum anticipated visual impact at any view point would be Moderate. The proposed landscape and built form treatments would result in an improvement in the visual amenity of the entire site and would increase the current level of screening of the site. Urban design and planning principles assist with the breakdown of the bulk and scale of the development and contribute to the creation of one cohesive landscape. The VIA undertaken for the Amended Proposal determined that the potential impacts would generally result in impacts to visual amenity that would be consistent with those identified and assessed as part of the EIS VIA. Additionally, the VIA undertaken for the Amended Modification Proposal (refer to Appendix C of the MPW Concept Modification RtS), considered the visual impacts of the importation of fill and the subsequent adjustment to building formation level. The assessment concluded that the Amended Modification Proposal would not result in significant changes to the visual landscape to that already assessed as part of the MPW Concept Approval. Therefore, the outcomes and recommendations of the assessment undertaken for the MPW Concept Approval are still considered relevant and appropriate for the assessment of the Amended Modification Proposal.	Appendix T of the EIS Appendix I of the MPW Stage 2 RtS Appendix C of the MPW Concept Modification RtS

Aspect	Comment	Response	Reference
Human Health			
Consideration of fill importation in the Concept HRA	The HIA included in the Concept EIS should be updated to cover importation of fill and other proposed changes to the development	An additional health assessment regarding the importation of fill was undertaken as part of the MPW Concept Modification RtS. This assessment determined that the importation of fill during the construction of the Amended Modification Proposal has the potential to result in impacts to air quality and noise, and therefore human health, as detailed in Sections 7.1.2 and 7.1.7 of the MPW Concept Modification RtS. These additional assessments determined that the importation of clean general fill to the MPW site during construction would result in noise impacts that are slightly above those identified in the MPW Concept Approval. However, these noise impacts are considered to be manageable through the preparation and implementation of a CEMP (as identified in REMM 1B of the MPW Concept Approval) applicable to the relevant future stage of development in which the works are to be constructed in. In addition, the potential air quality impacts resulting from the importation of fill as part of the Amended Modification Proposal are expected to be low risk and short-term in nature, given the implementation of the mitigation measures detailed in Section 8 of the MPW Concept Modification RtS. Through the implementation of the REMMs approved for the MPW Concept Approval human health impacts associated with the Amended Modification Proposal, including the importation of fill, would be adequately managed. No additional mitigation measures are required for the Amended Modification Proposal. Consequently, it is not considered necessary for the Concept HRA to be updated.	Sections 7.1 and 8 of the MPW Concept Modification RtS
Architectural drawings			
Consideration of gantries and stacked containers	The Architectural Drawings should include gantries and proposed container stacking.	The Architectural drawings prepared for the EIS (refer to Appendix D of the EIS) and the Amended Proposal (refer to Appendix B for the MPW Stage 2 RtS) contain stacked containers and container handling equipment (such as gantries).	Appendix B for the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
Riparian corridor, bushland/ open space connectivity, landscaping, water sensitive urban design, water cycle management			
Consistency with strategic planning and policy documents	The EIS should address and demonstrate consistency of design aspects of the development with the following documents: • Draft Coastal Management SEPP with regard to mapped wetlands and conservation/rehabilitation of Amiens Wetland. • Greater Metropolitan Regional Environmental Plan No 2—Georges River Catchment • LCC Biodiversity Management Plan 2012 & Biodiversity Strategy 2003 • LCC wide recreation strategy 2020 • Concept CoA 18, re pedestrian connection to Casula Railway Station • Council's Vision document with regard to riverfront lands • LCC Georges River Casula Parklands Draft Master Plan • DPE's Sydney Green Grid • Draft South West District Plan, specifically: – Accessibility – integrated public transport, roads, cycleways and pedestrian links creating an interconnected web of accessibility, with increased north-south and east-west transport links connecting people, jobs and places. – The natural landscape – protecting and enhancing the rivers and bushland, the visual landscape of scenic hills and ridgelines, and our access and connections to them.	Section 3 of the MPW Concept EIS includes a consistency assessment of the MPW Project in relation to key strategic planning documents, and establishes the strategic need and justification for the MPW Project. The MPW Concept EIS (5066) was granted approval by the PAC on 3 June 2016. This approval identifies that the NSW Government supports, subject to satisfying conditions of approval, the operation of the MPW Project on the western side of Moorebank Avenue, Moorebank. Section 3.1 of the EIS outlines the strategic justification for the Proposal from a State and Commonwealth perspective. This section was prepared based on the requirements of the SEARs which stipulated that the EIS is to address the following documents: • NSW State Priorities • A Plan for Growing Sydney 2014 • State Infrastructure Strategy 2012-2032 • NSW Freight and Ports Strategy 2013 • NSW Long Term Transport Masterplan • National Land Freight Strategy. The majority of following documents were not directly considered in the preparation of the EIS as they were not identified in the SEARs, however a consistency assessment for the Proposal with each of these plans is provided below. **Draft Coastal Management SEPP** The mapped wetlands on the Proposal site included in the Draft Coastal Management SEPP are located directly to the north of the dustbowl area, within the conservation area. As no works are proposed within this area, no impacts to this wetland are anticipated. The Amiens wetland is not included in the Draft Coastal Management SEPP, regardless impacts to the Amiens wetland have been considered in the biodiversity and stormwater and drainage assessments undertaken for the Proposal (refer to Appendix Q and R of the EIS) and the Amended Proposal (refer Appendix G and H of the MPW Stage 2 RtS).	Section 3 of the MPW Concept EIS Section 3.1 and Appendix D, Q and R of the EIS Appendix B, G, H and N of the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
	• Liverpool DCP 2008 Part 1 • Liverpool DCP 2008 Part 7 Development in Industrial Areas, specifically: – Landscape Area – Building Design, Streetscape and Layout – Landscaping and Fencing – Car Parking and Access – Amenity and Environmental Impact • Liverpool City Council Water Management Policy, June 2016 • Landcom draft Water Sensitive Urban Design • Australian Runoff Quality: Guide to Water Sensitive Urban Design	**Greater Metropolitan REP No 2—Georges River Catchment** Section 5.3.6 of the EIS includes a detailed assessment of the Greater Metropolitan REP No.2 – Georges River Catchment. **LCC Biodiversity Management Plan 2012 & Biodiversity Strategy 2003** The objective of these documents is to protect and manage the native biodiversity of the Liverpool LGA and maintain ecological processes and systems. The BAR prepared for the EIS (refer Appendix Q) and updated for the Amended Proposal (refer Appendix G of the MPW Stage 2 RtS) considered the impacts of the Proposal on biodiversity and identified mitigation measures to minimise any potential impacts, ensure native biodiversity is protected and managed, and maintain ecological processes and systems. These mitigation measures also include the provision of biodiversity offsets as part of a precinct-wide Biodiversity Offset Strategy. **LCC wide recreation strategy 2020** The aim of this strategy is to provide direction on the development of public recreational infrastructure to meet the existing and future needs of the community. The Proposal is located on Commonwealth Land, previously occupied by Defence for training purposes, and is not accessible to the public. The land use of the Proposal site is changing from Defence to industrial, therefore it would not remove any existing recreational areas nor would it directly impact on any surrounding recreational areas. Further, the Proposal would not inhibit the ability to develop future recreational areas within the surrounding area. **Concept CoA 18, re pedestrian connection to Casula Railway Station** Architectural Drawings (refer Appendix D of the EIS and Appendix B of the MPW Stage 2 RtS) show the site layout does not preclude a possible future pedestrian connection to Casula Railway Station from the northern section of the site. **Council's Vision document with regard to riverfront lands** The Georges River Master Plan, prepared in August 2016, refers to a 350 ha site located to the north of the Moorebank Precinct, bounded by the M5 Motorway to the south and the Georges River to the west. The Proposal would not preclude development under the Georges River Master Plan. The plan aims	

Aspect	Comment	Response	Reference
		to preserve the environmental values connected to the Georges River and Foreshore, improve public access to these areas, and provide a framework for driving urban growth to 2050, while not changing existing planning rules. The Moorebank Intermodal Terminal is identified within this plan (page 6) as being a key driver for the precinct establishment, through the generation of local employment. As such, the proposal would directly contribute to meeting the aims of this plan. The Proposal is located on Commonwealth Land, previously occupied by Defence for training purposes, and not accessible to the public. The Georges River riparian area, running along the western boundary of the Proposal site would be preserved as a conservation area, which would also act as a visual and noise buffer of site operations for nearby residents in Casula. **LCC Georges River Casula Parklands Draft Master Plan** The Georges River Casula Parklands Draft Master Plan relates to land to the west of the Proposal site, on the opposite side of the Georges River. The designated conservation area acts as a significant noise and visual buffer to this side of the river, and management measures would be implemented to assist with achieving the water quality objectives from the NSW Office of Water and Australian and New Zealand Environment and Conservation Council (ANZECC). The construction and operation of the Proposal would not impede the design objectives associated with this plan. **Sydney Green Grid** The Sydney Green Grid is identified in *A Plan for Growing Sydney*, which is considered in Section 3.1 of the EIS. **Draft South West District Plan** The Greater Sydney Commission's (GSC) Draft South West District Plan (November 2016) (District Plan) specifically references the Moorebank Intermodal Freight Precinct at Moorebank. The Moorebank Intermodal Freight Precinct (i.e. including the Proposal) supports the vision that by 2056, Western City will be transformed into "a trade, logistics, advanced manufacturing, tourism, health and science hub". The benefits of integrated planning inclusive of staged infrastructure development and identification of the Moorebank Intermodal Freight Precinct within the Liverpool Strategic Centre are present across the productivity, liveability and sustainability priorities within the District	

Aspect	Comment	Response	Reference
		Plan aspects of the framework. Key areas where the Proposal is aligned with the District Plan include: • Delivering increased accessibility and better transport connections (Section 3.3.1 of the District Plan) • With the development of the Moorebank Intermodal Terminal and freight and logistics movements associated with the Western Sydney Airport, the South West District will become increasingly important in terms of moving people and goods. • Threshold greenfield development being linked to delivery of transport connections (Action P9 of the District Plan) • Growing the diversity, level and depth of jobs and the vibrancy of the Liverpool City Centre expressly references the Moorebank Intermodal (Section 3.5.1 of the District Plan) • Liverpool as a city of business innovation and health and education excellence – targets job generating business investment to Liverpool with a focus on the area's competitive advantages in health, education and medical research, distribution and logistics, professional services, retail and construction sector (Section 3.6.1 of the District Plan) • Growing tertiary education opportunities: "TAFE NSW is also in discussions with Moorebank Intermodal terminal about the potential to establish a Skills Exchange model for the construction of the terminal and the worker engagement, and for training around smart transport and logistics in the longer term." (Section 3.6.3 of the District Plan) • Strengthening the diversity of employment choice: "Freight and logistics activities are an economic facilitator in any city. This statement is true for every class of freight – from air to rail and container freight, to the local delivery of parcels in vans. Our land use planning must therefore recognise, support and mitigate impacts of freight delivery. Maintaining the productivity of the District's freight network is an important consideration in this draft District Plan." (Section 3.8 of the District Plan) • Productivity Action items P19 and P20 as indicated above directly relate to the integration of the Moorebank Intermodal Terminal	

Aspect	Comment	Response	Reference
		• Allowing activities in the established employment and urban services areas to evolve over time while still retaining urban services and major freight and logistics facilities is essential. (Section 3.8.4 of the District Plan) • Liveability Action L9 - coordinate infrastructure planning and delivery for growing communities – managing background growth and transport infrastructure delivery timing • An approach to coordinated infrastructure planning that "could involve staging development to get the most efficient use of existing infrastructure capacity and staging infrastructure delivery using interim solutions including … temporary intersection improvements" • Sustainability Actions with outcomes which are being pursued within the development of the proposal, include: – protection and management of areas of high environmental value (S6) – the development of initiatives for a sustainable low carbon future (S13) – review guidelines for air quality and noise measures for development near rail corridors and busy roads (S16) – identify and map potential high impact areas for noise and air pollution (S17) • Almost half (11) of the 23 listed sustainability priorities are being actively supported and pursued through the development of the Proposal either as direct commitments or linked within Conditions of Approval. **Liverpool DCP 2008** Under Clause 11 of SEPP(S&RD) DCPs, developed under LEPs, are not applicable to SSD. Notwithstanding this, an assessment of the Proposal in consideration of the DCP has been provided (refer Appendix N of the MPW Stage 2 RtS). **Liverpool City Council Water Management Policy, June 2016** The purpose of this policy is to set standards for the management of all aspects of the water cycle in a holistic and coordinated way. The policy provides directions for water management and defines key principles to underpin water management in the Liverpool LGA.	

Aspect	Comment	Response	Reference
		The Proposal is consistent with this policy as it incorporates water sensitive urban design (WSUD) principles, sustainability and considers flooding in its design. In addition, compliance with the flood prone land controls stipulated in the LCC DCP are detailed in Appendix N of the MPW Stage 2 RtS. **Landcom draft Water Sensitive Urban Design** The Landcom draft WSUD document provides information on WSUD elements, monitoring and maintenance and construction requirements. The Proposal design is consistent with this document as it incorporates WSUD elements and water quality and quantity management measures throughout construction and operation (refer Appendix R of the EIS and Appendix H of the MPW Stage 2 RtS). **Australian Runoff Quality: Guide to Water Sensitive Urban Design** This guide provides an overview of current best practice in the management of urban stormwater within the context of total urban water cycle management and integration of management practices into the urban built form. The Proposal is consistent with the objectives of this guide in that the Proposal design incorporates WSUD elements, and water quality and quantity management measures have been adopted during both construction and operation of the Proposal.	
Current conditions			
Development consent	Any consents obtained from Liverpool City Council are to be listed. We note that there is an approval for a show room and café on the MPE site. It is unclear whether this should is to be developed in parallel with the SSD.	The development consents issued by Liverpool City Council for the MPE site are as follow: • DA 1079-2016: Display suite - The construction and operation of a display suite, including café, signage and parking for 24 cars. • DA 1264-2015 (as modified): Buildings 53 and 54 (Cluster 1) - The alteration of existing warehouses for a future end-user. • DA 352-2016 & DA 984-2016: Building 49-52 (Cluster 2) - The alteration of existing warehouses for a future end-user. Note that DA 352-2016 was for the construction of the development, and DA 984-2016 is for the use of the development.	N/A

Aspect	Comment	Response	Reference
		• DA 557-2016: Building 82 - Alterations and additions to an existing building and change of use to a warehouse and distribution centre. A qualitative cumulative assessment has been undertaken regarding the operation of the above development consents concurrently with the construction of the Proposal. **DA 1079-2016: Display suite** The proposed development is intended to be used for a period of approximately five to ten years. The environmental assessment undertaken for this development concluded that there would be: • No material impact on the operation of the local area network with all intersections in the locality continuing to operate with similar delays and levels of service as currently occurs • Minor increase in impervious surface and hence no additional stormwater management controls are required • No adverse impacts on the visual character of the area • No unreasonable impact on the surrounding uses in terms of noise or vibration • No impact on the heritage qualities of the site • No impacts on any existing vegetation in or around the site • No hazardous or contamination risks. As such, no adverse cumulative impacts are anticipated to result from the operation of the proposed development concurrently with the construction of the Proposal. **DA 1264-2015 (as modified): Buildings 53 and 54, DA 352-2016 & DA 984-2016: Building 49-52, and DA 557-2016: Building 82** The environmental assessments undertaken for these developments concluded that there would be: • Adequate existing access, internal road network and hard stand areas available on the site for operations	

Aspect	Comment	Response	Reference
		• No alteration to existing hardstand area or impervious surfaces. The existing stormwater mechanisms on the site will be retained as part of any use operating from the site • No impact on visual character on the existing building • No unreasonable noise or vibration impacts • No impacts on the heritage value of the site given its minor physical nature • No impact on any surrounding Flora or Fauna values • No hazardous or contamination risks. As such, no adverse cumulative impacts are anticipated to result from the operation of the proposed developments concurrently with the construction of the Proposal.	
Utilities	Details of water, sewerage, electricity, communications. Update of outcome of consultation into proposed community contributions	Details of the utility demand requirement and connections for the Proposal are provided in Sections 4 and 20.3.4 of the EIS. The Utilities Strategy Report and Building Service Strategy Brief (refer to Appendix H of this EIS) provide further detail on the utilities works to be undertaken. Regarding developer contributions, Condition of Approval E13 for the MPW Concept Approval (SSD 5066 3 June 2016) identifies: E13. All future Development Application shall include: *a) an assessment of the impacts of the project on local infrastructure, having regard to any relevant Council's Developer Contributions Plan (or equivalent document requiring developer contributions);* *b) a commitment to pay developer contributions to the relevant consent authority or undertake works-in-kind towards the provision or improvement of public amenities and services.* ***Note****: This requirement may be satisfied subject to the terms of any applicable Voluntary Planning Agreement; and* *c) a commitment to undertake vehicle monitoring on Cambridge Avenue. Should any monitoring reveal the need for improvement works within the Campbelltown LGA as a result of the proposal, the Applicant may be required to contribute towards local road maintenance or upgrades.*	Sections 4 and 20.3.4 and Appendix H of the EIS

Aspect	Comment	Response	Reference
		The above requirements are addressed within Section 20.3.4 of the EIS, specifically referencing Liverpool City Council's principles of establishing developer contributions under the Liverpool Contributions Plan 2009. It is SIMTAs intention to pay developer contributions as it is prescribed in the existing CoA and is identified within the EIS. Any contribution needs to take into account works in kind which would be undertaken to the benefit of the developer, LCC and the community (e.g. through maintenance/improvement of existing water management system and catering for background traffic growth respectively). The staged nature of this MPW Project requires that development contributions are considered progressively as part of development applications and are attributable to the impact associated with those stages under the MPW Concept Approval (SSD 5066). Further, it is noted that the Liverpool City Council Contributions Plan does not consider industrial development within the Moorebank area. Any proposed contribution should therefore be consistent with surrounding industrial areas taking into account the mitigating circumstances and key considerations identified above.	
Staff amenities			
Provision of staff amenities	Although reference is made to provision of bicycle racks, lockers and showers and typical office plans show showers and toilets and paved areas off lunch rooms, no information is provided on landscaped areas for staff breaks, meals etc located at reasonable distances from warehouses throughout the site. It is noted that the landscape plans do not show the freight village or adequate provision of landscaping bays per ratio of car parking bays.	Landscaped areas for staff breaks were included in the Landscape design statement and plans provided at Appendix E of the EIS and are also shown in the revised Landscape design statement and plans at Appendix B of the MPW Stage 2 RtS. Landscaped areas shown in the landscape design drawings, denoted with '*office breakout area with turf area surrounding with feature tree canopy providing shade and amenity*'. These areas are generally located adjacent to warehouse office buildings, shown as blue in the landscape design plans. The site plans, provided in Appendix D of the EIS, showed an 'outdoor area', adjacent to each of the warehouse offices. These areas, denoted as 'outdoor areas' on the architectural drawings, correspond to the office break out areas shown in the Landscape design plans. The revised Architectural drawings are provided in Appendix B of the MPW Stage 2 RtS.	Appendix B and D of the EIS Appendix B and N of the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
		The landscape design statement and plans provided in the EIS (Appendix D) and as part of the MPW Stage 2 RtS (Appendix B) also show the freight village, which is located below Warehouse 2, and the indicative locations of landscaping within the car parking areas (exact locations to be determined during detailed design). Compliance with DCP controls regarding landscaping, parking and staff amenities is detailed in Appendix N of the MPW Stage 2 RtS.	
Graffiti			
Prevention and management of graffiti	Design/ measures to prevent and manage graffiti are to be provided.	The prevention and management of graffiti has been considered as part of the overall on-site security measures, as detailed in Section 4.4.7 of the EIS., The Proposal includes a number of on-site security measures to ensure the protection and safety of the Proposal site, its employees and authorised visitors and, hence, also manage the potential for graffiti. Security at the Proposal site would include: • Fencing around the perimeter of the Proposal site, and potentially the Rail link connection, which is envisaged to include palisade fencing and chain-link fencing along the Moorebank Avenue boundary and chain-link at other locations • A controlled site access system including electronic truck processing • A controlled circuit television (CCTV) security system at key locations including site entrances and along boundaries • An integrated telecommunications system which involves connection to all main buildings and structures. Further, Section 20.5.3 of the EIS notes that 'The Proposal would be self-contained, enclosed and secure. Natural and electronic surveillance would be installed throughout the facility, and a security fence would restrict unauthorised access. Crime within or involving the Proposal would therefore be prevented to the greatest extent possible.' The site security measures proposed and described in the EIS are considered to be appropriate to prevent and manage the potential for graffiti.	Section 4.4 and 20.5 of the EIS

Aspect	Comment	Response	Reference
Architectural design finishes			
Architectural design finishes	Architectural design finishes of external facing development elements including noise walls, retaining walls, drainage works. Includes development fronting Georges River.	Section 4.2.7 and Appendix D of the EIS, and Appendix B of the MPW Stage 2 RtS, provide details on the urban design of the Proposal, including a schedule of the indicative materials and colour palette for the proposed buildings and other structures on the site. The IMT facility, warehouses and structures included in the Proposal would be of a high design quality. The building colours and finishes would be compatible and blend with the surrounding land uses, including non-reflective colours. A variety of materials would be incorporated, including glass, colourbond and painted concrete. The intention is that all buildings, where possible, be provided a comprehensive landscape setting that integrates with the surrounding landscape. Compliance with DCP controls regarding urban design and architectural finished is detailed in Appendix N of the MPW Stage 2 RtS.	Section 4.2.7 and Appendix D of the EIS Appendix N of the MPW Stage 2 RtS
Renewable energy, water conservation and reuse			
Utilities	The Utilities Summary Report only makes reference to existing reticulated services. Given the proposed combined roof area for the site, sustainable sources such as solar power and rainwater collection and reuse should be included.	The aim of the Utilities Summary Report (Appendix H of the EIS) was to undertake a strategic review of the existing utility infrastructure and identify and document the utilities required for the Proposal and not to identify the incorporation of sustainability initiatives. These initiatives are outlined in the sustainability section of the EIS. Potential sustainability initiatives for the Proposal are outlined in Section 4.2.8 of the EIS, including: • Use of alternate fuels in operational machinery (such as LPG or biofuels) • Use of natural light and ventilation for office spaces • The procurement of energy efficient equipment for construction and operation • Water harvesting, including roof water collection on all warehouses • Re-use of waste water, e.g. for toilet flushing, landscape irrigation and wash-down areas	Section 4.2.8 and Appendix H of the EIS

Aspect	Comment	Response	Reference
		• Energy efficiency design measures (such as for lighting types and controls, control systems, compressors, variable speed drives for fans/pumps etc) • Measures to minimise HVAC demand (such as use of natural cooling vents and doors to control air movement, insulation, routine maintenance, and economy cycles that exchange ambient air to help control indoor temperature) • Installation of energy efficient conveyors and automatic sortation systems • Use of a warehouse management systems (enabling multi-tasking of mobile equipment, optimising storage locations, and allowing integration of energy management systems and other management systems) • Review of potential renewable energy sources, such as solar energy, prioritised in accordance with the prioritising the Carbon Management Principles for Emissions Reduction (such that offsetting is considered as a last priority). These sustainability initiatives would be considered during the detailed design phase of the Proposal.	
Contamination/ Spoil			
Remediation	What remediation works were undertaken prior to Stage 1, by Defence? Is there a site auditor's report? Will there be any residual contamination following Stage 1 Early Work remediation?	Section 2.6 of the MPW Concept EIS lists a number of reports documenting previous investigations provided to Parsons Brinkerhoff (PB) by Defence informing the preparation of the Phase 1 ESA undertaken by PB for the MPW site. As described within Section 15.1 of the MPW Concept EIS, prior to the MPW Project commencing, site rehabilitation works are required to reduce the environmental, health and safety risks on the MPW site under a separate EPBC referral (2014/7152), by Moorebank Intermodal Company (MIC). These works would be undertaken following completion of the Moorebank Units Relocation Project, approved in September 2012 by Federal Parliamentary Standing Committee. The proposed site rehabilitation works include: • The decontamination and demolition of eight buildings identified as containing asbestos containing material; • remediation of previously identified contamination hotspots, including underground storage tanks, as identified in the Moorebank Intermodal	Section 2.6 and 15.1 of the MPW Concept EIS Section 13 and Appendix S of the EIS

Aspect	Comment	Response	Reference
		Terminal Remediation Action Plan (RAP) (refer to MPW Concept EIS – Technical Paper 5 – Environmental Site Assessment (Phase 2)); and • Decontamination and site stabilisation of the 'dust bowl' located on the western side of the MPW site. The proposed site rehabilitation works were declared (under delegation from the Commonwealth Minister for the Environment) not to be a 'controlled action' on 9 May 2014, and therefore are not subject to further assessment under the EPBC Act. The site audit report for these works will become available on the EPA website upon the completion of Early Works. It is anticipated that all remediation activities included in the Early Works assessment would be undertaken (refer to Section 15 of the MPW Concept EIS). It has however been identified that there is potential for some residual contamination being encountered following Early Works completion. There is potential for unexpected finds being encountered during site earthworks activities, and minor amounts of surface contamination to be present within topsoil, which could become uncovered during topsoil stripping during Stage 2 of the MPW Project. It is also recognised that, given the historical use of the site as a Defence training facility, there may be potential for PFAS interaction during the construction of OSD overflow channels during Stage 2 of the MPW Project, which would be subject to a future RAP, pending the outcomes of the implementation of the PFAS Management Plan during Early Works. Residual contamination risks with potential to occur during Stage 2 of the MPW Project have been assessed with appropriate mitigation and management measures prescribed within the MPW Stage 2 Contamination Summary Report, summarised in Section 13 of the EIS (refer to Appendix S and Section 13 of the EIS).	
PFAS/ PFOS	PFAS/PFOS - has the sampling been conducted in accordance with most recent best practice? Has Defence included this site as one of their priority sites?	Groundwater sampling investigation levels have been established following a review of World's Best Practice and most recent published criteria in Australia. The key intent of Early Works is to remediate the site ready for construction of future stages. PFAS/PFOS will be remediated under the Early Works approval in accordance with the RAP and the PFAS Management Plan. The MPW site is not on the "priority sites" list to our knowledge. The Holsworthy Barracks is under an investigation program that was planned for early 2017.	N/A

Aspect	Comment	Response	Reference
Groundwater monitoring	Please confirm if any ongoing groundwater monitoring is proposed for the site and what impact filling will have on ongoing monitoring.	As described in Section 13.4.2 of the EIS, ongoing groundwater monitoring is to be undertaken in accordance with the groundwater monitoring plan (GMP) developed at the conclusion of remediation activities for the Proposal. This GMP which would be included within the Long Term Environmental Management Plan (LTEMP) to be developed for the site. The areas requiring ongoing groundwater monitoring and the contaminants of concern relevant for each of those areas would be determined at the completion of the remediation works. The importation of clean general fill is anticipated to have minimal impact on ongoing groundwater monitoring activities. The existing groundwater wells on the site would continue to be used for ongoing monitoring. If following the importation of fill it is determined that the continued use of the existing wells is not possible, these existing wells would become redundant and new well locations would be identified and installed.	Section 13.4 of the EIS
Contamination management relating to imported fill	Provide confirmation, from a suitably qualified specialist, that the imported fill would be suitable from a contamination management standpoint (i.e. cap and contain) and that new wells would be installed following site raising for any long term groundwater monitoring	Fill characteristics, including fill permeability and composition would be addressed within the Earthworks Specification, to be prepared under the CEMP for the Proposal. As outlined above, ongoing groundwater monitoring methods following the importation and fill material would be detailed within the GMP to be included within the LTEMP for the Proposal. The existing groundwater wells on the site would continue to be used for ongoing monitoring. If following the importation of fill it is determined that the continued use of the existing wells is not possible, these existing wells would become redundant and new well locations would be identified and installed.	N/A
Underground storage tanks	Please note that any underground storage tanks will be required to have secondary leak detection systems and likely groundwater monitoring wells	All remaining USTs on the MPW site would be removed and any associated residual contamination remediated under Early Works. No USTs are proposed to be installed for this stage of the MPW Project.	N/A
Contaminated waste disposal	Is any material to be disposed of at the Glenfield Waste site? If so, provide details on the quantity and type of material to be disposed of at the Glenfield site.	It is anticipated that asbestos waste from the Proposal construction would be disposed of at the Glenfield Waste Facility. The quantity and nature of unsuitable material to be disposed of would be clarified within the Asbestos Management Plan (AMP) to be prepared as part of the CEMP for the Proposal.	N/A

Aspect	Comment	Response	Reference
		The Glenfield Waste Facility Environment Protection Licence (EPL 4614) permits the acceptance of asbestos waste with no upper limit (refer to Section L3.1 of EPL).	
Fire and Other Emergencies			
Emergency management plan(s)	A draft emergency management plan is to be prepared for the entire Moorebank Precinct (MPW + MPE) covering fire, flood and incidents indicating, amongst other matters: • Evacuation routes and alternatives (noting that the Cambridge Avenue causeway over the Georges River is prone to flooding and consents prohibit heavy vehicle from the site using Cambridge Avenue) • Provision of water for firefighting in the event mains water is not available Demonstrating consultation with NSW police force, NSW Fire Brigade, NSW Rural Fire Service and the Ambulance Service of NSW.	As detailed in Section 22 of the EIS, emergency response and incident management protocols for operation of the Proposal would be developed collaboratively with the terminal operator in consultation with the NSW Police Force, NSW Fire Brigade, NSW Rural Fire Service and the Ambulance Service of NSW, where appropriate. These would be prepared prior to operation of the Proposal. These protocols would also be considered at a whole-of-precinct level by the Proponent, and would be progressively updated as the development of the MPE and MPW projects continue.	Section 22 of the EIS
Cumulative Microclimate/ Amenity Impacts			
Urban heat island	An assessment of the cumulative impacts of the Moorebank Intermodal Precinct is to be provided, e.g. increase in local temperature due to the site being covered by hard surfaces, impervious surfaces, lighting, visual impacts, wind tunnel effects, edge effects on adjacent lands due to raising the area.	Lighting and visual impacts of the Proposal are assessed in Section 15 of the EIS (and Appendix T) and assessed cumulatively within Section 19 of the EIS. The results of the cumulative visual assessment concluded that the screening provided by existing vegetation to sensitive receivers, combined with proposed landscape treatment and the existing industrial setting of each precinct would result in no anticipated visual or lighting impacts above what was assessed for the Proposal in isolation. The visual assessment undertaken for the Amended Proposal (refer to Section 7.1.9 and Appendix I of the MPW Stage 2 RtS) indicates that the changes assessed within the RtS for the Amended Proposal, including illuminated backlit signage, would not have any effect on any	Sections 11, 15, 19, Appendix E and T of the EIS Section 7.1 and Appendix G of the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
		neighbouring properties and would not alter the obtrusive lighting results included in the EIS VIA. Edge effects are considered in Section 11 of the EIS (and Appendix Q) and assessed from a cumulative perspective in Section 19 of the EIS. The results from this assessment conclude that edge effect impacts associated with the Proposal are similar to those identified for the MPW Concept EIS. An assessment of edge effects was undertaken for the Amended Proposal in Section 7.1.5 of the MPW Stage 2 RtS (and Appendix G). The results of this assessment indicate that impacts associated with edge effects for the Amended Proposal are generally unchanged, limited to the sediment basin outlets which are now wider than contemplated by the MPW Concept Approval and the addition of the covered drain. The Proposal, including cumulatively with the MPE Project, is not anticipated to result in any wind tunnel impacts, however, if wind tunnels were to occur it would be limited to within the Proposal site and would not impact on surrounding receivers. Regarding an assessment on Urban Heat Islands (UHI) (ie. the phenomena whereby urban regions experience warmer temperatures than their rural surroundings), it is noted that UHI comprise two key forms; namely surface UHI and atmospheric UHI. An increase in impervious surfaces and reduction in vegetation cover has the potential to result in an increase in surface UHI. Surface UHI is typically worst during daytime hours and in summer. MPW Stage 2 would result in an increase in impervious areas and would, therefore, have the potential to result in surface UHI. A landscape plan has been prepared for the MPW Stage 2 Proposal and is presented in Appendix E of the EIS, which outlines the proposed strategy for retaining vegetation and revegetating areas to the greatest extent possible. Further, a conservation area will be retained to the west of the Proposal site minimising the potential for the Proposal to result in surface UHI. Some surface UHI may be experienced (particularly during summer months), however this would be generally restricted to localised areas within the Proposal site. Atmospheric UHI is typically a result of high density urban development (with buildings located closely to one another), as well as from waste heat from energy consumption. The warehouse layout provided for the Proposal allows for a low-moderate density industrial use. Further, warehouses have a substantially lower energy demand per square metre than residential or commercial	

Aspect	Comment	Response	Reference
		buildings. Machinery and equipment would have a power requirement, however this would be substantially lower than that of the building power demand. The potential for the Proposal to contribute to atmospheric UHI is, therefore, considered to be low. The extent of UHI is largely dependent on weather conditions and geographic location. The average wind speed and infrequency of calm wind conditions at the Proposal site - occurring approximately 12% of the time (refer Appendix O) - would enhance wind dissipation of UHI effects. Further, the proximity of Georges River and large vegetated areas (to the south and east of the Proposal site) will minimise UHI occurring within the area. The potential UHI effects from the Proposal are, therefore, considered to be minor. Additionally, the cumulative UHI impact resulting from the Proposal and the MPE Project, is considered to be minor. The MPE Project would also incorporate landscaping, has significant vegetated areas to the south and east, and contains low-moderate density warehousing all of which would minimise potential UHI effects. Further, the cumulative impact assessments will continue to update the whole of precinct cumulative impact assessment with each subsequent project approval.	
Updated social and economic impacts			
Revised socio-economic impacts	Resulting from the modified development Including: identification of directly affected community and other stakeholders, specifying in what way each might be affected;	Section 20.5 of the EIS provided a socio-economic assessment for the Proposal. This assessment concluded that construction impacts and benefits that would affect the socio-economic environment would be temporary and include the employment of a construction workforce, changes to noise and visual amenity, air quality and changes to traffic transport and access arrangements. In general, it is anticipated that the majority of impacts would be minor and temporary, and would generally be within localities closest to the Proposal site. There is potential for positive and negative socio-economic impacts associated with the operation of the Proposal. Positive impacts are likely to be felt more at a regional level while both positive and negative impact of the development would possibly be experienced at the local level. Assessments of traffic, air quality, visual amenity, noise and vibration, visual amenity and health impacts associated with operation of the Proposal found that any socio-economic	Section 7 and 20.5 of the EIS Section 7 of the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
		impacts would be minor, particularly with proposed mitigation measures minimising any negative impacts. Additionally, an updated assessment of the potential socio-economic impacts associated with the Amended Proposal has been undertaken, and is included in Section 7 of the MPW Stage 2 RtS. The socio-economic impact assessment included in Section 7 determined that construction and operation of the Amended Proposal would result in socio-economic impacts consistent with those identified in the EIS.	
diversity of views/concerns in the community	Identification of any diversity of views/concerns that might exist in the community;	A summary of the responses received from the community throughout the public exhibition of the EIS, as well as through ongoing consultation to-date as part of the environmental assessment of the project has been included in Section 3 of the MPW Stage 2 RtS. Section 3 of the MPW Stage 2 RtS also includes an analysis of the key issues raised by the community as part of the submissions process.	Section 7 and 20.5 of the EIS Section 3 of the MPW Stage 2 RtS
Significance of socio-economic impact	Assess significance of each impact on the following characteristics: • Duration • Extent • Severity and • Level of community concern.	Section 20.5 of the EIS provided a socio-economic assessment for the Proposal. Additionally, an updated assessment of the potential socio-economic impacts associated with the Amended Proposal has been undertaken and is included in Section 7 of the MPW Stage 2 RtS. These assessments consider the duration, extent and severity of the proposed works. In addition, ongoing community consultation has been undertaken throughout the preparation and exhibition of the EIS and the preparation of the MPW Stage 2 RtS in order to ensure community concerns are being appropriately recognised and addressed.	
Mitigation	Discuss mitigation options for potentially significant negative social impacts, and propose strategies to secure and maximise beneficial impacts;	As noted in the above response, the socio-economic assessment undertaken for the Proposal (Section 20.5 of the EIS) concluded that that the Proposal would result in minor and temporary impacts during construction (both adverse and beneficial impacts), and in both positive and negative socio-economic impacts during operations. No significant negative social impacts associated with the Proposal are anticipated. This is consistent with the assessment undertaken for the Amended Proposal (refer Section 7 of the MPW Stage 2 RtS). Regardless, mitigation measures to reduce potential impacts and to maximise beneficial impacts are identified in both the EIS (Section 20.5.4) and the MPW Stage 2 RtS (Section 7). The mitigation measures relevant to the potential	Section 20.5 of the EIS Section 7 of the MPW Stage 2 RtS

Aspect	Comment	Response	Reference
		socio-economic impacts also include those detailed for noise, air quality, visual and traffic (refer Section 7 of the MPW Stage 2 RtS).	
Reporting	Outline mechanisms for publicly reporting social impact performance over time	A number of mitigation measures have been provided in Section 7 – 19 of the EIS to reduce the impact of the Proposal on surrounding stakeholders, including the community. One of the key mitigation measures includes the preparation of a community information and awareness strategy, which would be prepared to inform local residents of proposed construction activities related to construction to the Proposal and included as part of the CEMP. Additionally, written notification would be provided to potentially affected and adjoining land owners prior to commencement of site operations. The manner of notification would be confirmed in the final OEMP for the Proposal. The OEMP would also include measures to engage with stakeholders and to manage and respond to feedback received during operation of the Proposal, including via a complaints register. Section 2 of the MPW Stage 2 RtS details how feedback regarding the Proposal can be provided to SIMTA at any time.	Section 7 – 19 of the EIS Section 2 of the MPW Stage 2 RtS
Hazards and Risks			
Preliminary risk screening	Please provide clarification on the use of liquefied natural gas (LNG) within the development. The uses described in Table 14-5 of the EIS ("to fuel locomotive terminal vehicles, and warehouse equipment") appears to be inconsistent with the general uses of LNG. It is generally understood that rail locomotives are fuelled with diesel (C1 combustible liquid, not a DG), and forklifts (i.e. warehouse equipment) are fuelled with liquefied petroleum gas (LPG). Although LNG and LPG are both DG Class 2.1 flammable gases, the storage and handling of LNG and LPG are covered by different standards (AS 3961 for LNG and AS 1596 for LPG). Hence, the equipment and requirements for LNG and LPG are different.	It is acknowledged that the uses described in Table 14-5 have identified the use of LNG for refuelling of locomotives, however all locomotives would be refuelled using diesel fuel only. No LPG would be used for this purpose, however some LPG may be used for other operational purposes at the Proposal site, such as possible refuelling of warehouse plant and equipment (pending individual tenant requirements). As stated in Section 14.1 of the EIS, no LPG is proposed to be stored onsite for the Proposal. Therefore, no preliminary screening assessment using the Applying SEPP 33 guideline, (Department of Planning, 2011) has been required for the use or storage of LPG as part of the Proposal. It is noted that this departs from Table 14.5 of the MPW Concept EIS, which stated that LPG would be used on site for 'fuel for sale at the service station'. Refuelling of warehouse plant and equipment would be determined by individual tenants at each warehouse. It is envisaged that mobile warehouse equipment would be fuelled primarily with diesel.	Section 14.1 of the EIS

Aspect	Comment	Response	Reference
	In addition, the risk arising from the use of LNG and LPG are different. As such, the preliminary risk screening (using the method in the Department's Applying SEPP 33 guideline) for LNG and LPG is performed differently.	Any refuelling activities undertaken onsite using LPG would require a preliminary risk screening assessment to ensure compliance with storage requirements (location, tank size and separation distances) under SEPP 33 (specific to the type of fuel to be stored) to maintain acceptable risk levels associated with refuelling procedures. This would be undertaken by individual tenants once machinery types, fuel type and quantities are confirmed. As identified in Table 14-5 of the EIS, an approximate total of 16 tonnes of LNG was assessed for storage requirements under requirements of SEPP 33. The exact number and location and volume of storage tanks would be dependent on the machinery demand requirements associated with the final warehouse uses and layout, to be determined during detailed design. The location of the LNG storage tank/s must maintain a separation distance such that other land uses would not be located within the potentially hazardous region (refer to Figure 14-1 of the EIS). Should future planning applications under the MPW Concept Approval be prepared where LPG is considered, they must be undertaken in accordance with the Applying SEPP 33 guideline to determine the hazards and risks associated specifically with LPG.	
LNG storage	If LNG is confirmed to be stored (item 1 above), please provide clarification on the total quantity of LNG to be stored within the development. The total quantity stated in the Stage 2 EIS (SSD 7709 – 16 tonnes in multiple tanks) is different compared to MPW Concept Plan (SSD 5066 – 42 tonnes in 1 storage tank).	As outlined above, it is envisaged that refuelling of locomotives and mobile plant and equipment within warehouses would primarily be refuelled by diesel, which would be stored onsite. Table 14.5 of the MPW Concept EIS noted that LNG may be stored on-site in 1 x 100kL tank, holding less than 42 tonnes of LNG. This volume was subsequently revised on a pro-rata basis for the Proposal, estimating 16 tonnes of LNG storage for MPW Stage 2 activities. As outlined above, the types of fuels used to refuel warehouse plant and equipment would ultimately be determined by the individual warehouse tenants. The Proposal departs from the MPW Concept EIS in that there would not be centralised storage and supply of LNG fuel, but rather localised storage and supply based on demand and (presently) unspecified warehouse requirements. The storage and handling of any LPG or LNG stored within warehouses onsite as part of the Proposal must demonstrate compliance with storage requirements in accordance with the Applying SEPP 33 guideline.	Table 14.5 of the MPW Concept EIS

Aspect	Comment	Response	Reference
LNG storage	If LNG is confirmed to be stored (item 1 above), please provide clarification on the storage quantity and location for each LNG storage tank within the development. This information is required to perform the preliminary risk screening correctly, using the method in the Department's Applying SEPP 33 guideline. The Department noted the assumption that 16 tonnes of LNG will be evenly distributed across all (up to 16) tanks to arrive at the separation distances shown in Figure 14-1 of the EIS. The Department considers this assumption not generally valid for the following reasons: • LNG may be stored in tanks of different sizes (i.e. the separation distances for a 10 tonne and 6 tonne LNG storage tank are different); and • if multiple LNG tanks will be situated within the same general location, the quantity of LNG considered for the preliminary risk screening must be the total quantity of LNG in all tanks.	As described in section 14.4.2 of the EIS, it is unknown at this stage the exact fuelling requirements of individual warehouse tenants to power warehouse plant and equipment. The quantity of LNG fuel assessed within the EIS (16 tonnes) refers to the amount originally specified in the MPW Concept EIS revised on a pro-rata basis for this stage of development. Ultimately the types and volumes of fuels stored onsite within each warehouse would be determined by each individual warehouse tenant. The EIS (refer to Section 14.4.2) outlines required storage separation distances for LNG based on the assumption above for compliance with SEPP 33. Tenants proposing LNG storage within warehouses must therefore comply with tank sizes and separation distances specified in Figure 14-1 of the EIS. There was no assumption made in the EIS that the storage of LNG would be evenly distributed across all tanks of similar sizes. Separation distances shown in Figure 14-1 of the EIS can be calculated for tanks of varying size and separation distance. It is agreed that for multiple tanks stored within the same general location, then the collective volume be used to determine separation distance.	Section 14.4.2 of the EIS
Petrol station	Please confirm whether the petrol station, as noted in the overall site plan for MPW and MPE (dated 1 January 2017) but not detailed in the EIS will store dangerous goods (DG) and hazardous materials. The storage quantities provided in Table 2.2 and 3.3 of the 2014 Preliminary Risk Assessment (PRA) report, are as follow: • unleaded petrol (DG Class 3 PG II flammable liquid) – less than 30 kL, underground tank; • LPG (DG Class 2.1 flammable gas) – 50 kL; and • Diesel (C1 combustible liquid, not a DG) – at least 515 kL, stored separately from any DG Class 3 flammable liquids.	As outlined in the responses above, no petrol station is proposed as part of the Proposal. The Proposal provides for the following on site fuel storage: • Storage of diesel (approx. 190 KL) to be stored in two separate mobile storage tanks located near the locomotive shifter as part of the IMT facility for the purpose of refuelling locomotives. • Potential storage of Liquefied Natural Gas LNG for commercial use onsite, dependent upon demands of warehousing tenants. • Potential storage of Liquefied Petroleum Gas (LPG) for commercial use onsite, dependent upon demands of warehousing tenants. Further assessments of dangerous goods, including for the petrol station (if relevant), would be undertaken for each subsequent project approval as required.	

Aspect	Comment	Response	Reference
Transportation of hazardous materials	Please provide clarification on how the hazardous materials listed in Table 14-5 of the EIS will be transported for use on-site (LNG or LPG, to be confirmed in item 1 above, in particular).	The transport of dangerous goods to the Proposal site was described in Section 14.4.2 of the EIS, which stated that: '*The goods listed in Table 14-5 would typically be transported to the Proposal site by road. The transport and storage of dangerous goods is recognised as a high risk activity involving heavy vehicles on the public road and rail network (ADG Code, NTC, 2007). The number of road movements required for delivery of LNG to the Proposal site would be below the transportation threshold of 30 movements per week, or 500 movements per year. Transportation of solvents and other cleaners would be well below the threshold of 45 movements per week, or 750 movements per year*.' The approach to the transportation of dangerous goods to the Proposal site has not changed since the preparation of the EIS.	Section 14.4.2 of the EIS
Transport of dangerous goods.	Please confirm whether DGs, apart from quantities strictly for use on-site or for refuelling, will be transported to and from the development either by rail or road. The following inconsistencies in the EIS are noted: • Section 14.1 (page 406, 2nd paragraph) states: *Dangerous goods were identified as being explicitly excluded from the types of freight that the MPW Project would handle, and therefore would also be excluded from warehouses, freight container storage and transit areas.* • Section 5.3.3 states: *Notwithstanding this, the Proposal would not receive or store dangerous goods in quantities greater than the screening thresholds identified in Applying SEPP 33. On this basis a Preliminary Hazard Assessment is not required at this stage.*	The referred passages of the EIS do not infer inconsistency. Section 14.1 states that DGs are excluded from being considered as freight throughput. This is not inconsistent with Section 5.3.3, which states that materials used for warehousing operations (i.e. cleaning solvents, paints, lubricants etc.) may be classified as DGs, whose management would be regulated under provisions of SEPP 33.	Section 14.1 of the EIS

Aspect	Comment	Response	Reference
Planning-related hazards issues	If it is confirmed that DGs will not be transported to and from the development by road or rail (item 5 above), and the Applicant intends to transport DGs by road or rail and/or store DGs (warehouses or IMT) in future, the Applicant must perform a preliminary risk screening in accordance with the Department's *Applying SEPP 33* to establish if the development will be potentially hazardous. This preliminary risk screening must be submitted as part of a future modification application. If the preliminary risk screening indicates that the development will be potentially hazardous, a Preliminary Hazard Analysis (PHA) must also be submitted with that future modification application. The requirement to submit the PHA prior to determination of an application is stated in clause 12 of SEPP 33.	As discussed, the transport of DGs are described Section 14.4.2 of the EIS which stated that: '*The goods listed in Table 14-5 would typically be transported to the Proposal site by road. The transport and storage of dangerous goods is recognised as a high risk activity involving heavy vehicles on the public road and rail network (ADG Code, NTC, 2007). The number of road movements required for delivery of LNG to the Proposal site would be below the transportation threshold of 30 movements per week, or 500 movements per year. Transportation of solvents and other cleaners would be well below the threshold of 45 movements per week, or 750 movements per year*.' The approach to the transportation of dangerous goods to the Proposal site has not changed since the preparation of the EIS. Future development proposals would consider fuel storage requirements based on the information available at the time of preparation. This may include preliminary risk screening in accordance with SEPP 33.	Section 14.4.2 of the EIS
LNG storage and use	It is noted that SSD 5066 MOD 1 (MPW Concept MOD 1) includes subdivision of lots. It is also noted that: • 7 warehouses (215,000 m^2 GFA) will be constructed and operated as part of SSD 7709 (Stage 2); and • up to 85,000 m^2 GFA of warehousing (the number of buildings is unspecified) will be constructed and operated as part of Stage 3 which will be lodged in future. As such, the warehouses may be operated by end-users which are different to the IMT operator (SIMTA). In this case, additional land uses will be introduced within the overall boundary for MPW. With regards to the preliminary risk screening performed for LNG, it should be noted to the Applicant that: a. the separation distances for LNG are dependent on the distance between the storage tank (for a	Approval for subdivision in the Proposal is no longer sought, therefore separation distances as a result of any subdivision have not been considered in the EIS or the Amended Proposal. Any subdivision would be undertaken as part of future stages of the MPW Project, and would be assessed accordingly.	N/A

Aspect	Comment	Response	Reference
	specified quantity within the tank) and the nearest neighbouring land use. b. subdivision of lots may change the separation distances because additional land uses may be introduced within MPW. Hence, the separation distances for each LNG tank must take the above considerations (items a and b) into account to ensure that the development will not be potentially hazardous.		
Access and Parking			
Type and size of vehicles that will access the site.	Provide details of all vehicle types and sizes that will access the site, along with swept paths and intersection designs for all access points to relevant standards to accommodate these vehicles. In addition, provide design details for onsite heavy vehicle manoeuvring, queuing and parking.	To ensure the safe and efficient operation of the Proposal, the following intersections have been designed to accommodate the movements of heavy vehicles that can transport two 40 foot containers: • Moorebank Avenue / Bapaume Road • Moorebank Avenue / Anzac Road • Moorebank Avenue / Chatham Avenue A swept path analysis of these intersections has been undertaken and have been provided in the Revised Stormwater and Drainage Design Drawings included at Appendix H of the MPW Stage 2 RtS. Regarding onsite movements, the internal road network and parking areas have been designed in consideration of the predicted vehicle movements within the site to ensure adequate capacity is provided and to ensure that vehicles are able to fully exit Moorebank Avenue into the Proposal site before coming to a stop.	Appendix H of the MPW Stage 2 RtS

ATTACHMENT B – NOISE AND VIBRATION

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27/04/2017

Moorebank Precinct West (MPW) Stage 2 (SSD 7709) Response to Submissions – Noise and Vibration

SSD-7709

Dear Karen,

This letter and its attachments responds to the issues identified by the independent noise expert engaged by Department of Planning and Environment (DP&E) during their preliminary assessment of the MPW Stage 2 Environmental Impact Statement (EIS) (herein referred to as the MPW Stage 2 EIS).

Specifically, **Attachment A** of this letter provides a tabulated response to the issues identified by the independent noise expert, as provided in Attachment B of the Moorebank Precinct West Stage 2 (SSD 7709) Response to Submissions letter addressed to Qube Property Management Services dated 16 December 2016. It should be noted that in response to the issues raised during the Noise and Vibration meeting, undertaken at DP&E's Pitt Street office on Tuesday 11 April 2017, the following additional information has been included in **Attachment A**:

- The inclusion of an assessment of noise emissions from the project during the daytime and evening period using the default noise-enhancing wind conditions, as described in the Industrial Noise Policy (INP) (NSW Environment Protection Authority (EPA), 2000).

To support the response to the issues raised by NSW DP&E's independent noise expert, the following documents have also been provided as attachments to this letter:

- A Noise Technical Memorandum (Wilkinson Murray, 2017) at **Attachment B**.
- A supplementary figure, responding to independent noise expert comment no.2 at **Attachment C**
- An Addendum Noise and Vibration Impact Assessment at **Attachment D**.

In addition, this letter provides a response to the issues raised during the Noise and Vibration meeting, held at DP&E's Pitt Street office on Tuesday 11 April 2017 and/or included in Attachment B of the DP&E letter (16 December 2016). In the instance where an issue has been raised which is not considered to be relevant to the MPW Stage 2 EIS, a technical response or explanation as to why further assessment is not considered necessary has been provided.

Response to comments from DP&E meeting (11 April 2017)

Cumulative construction noise outside of standard hours

Independent noise expert comment no. 11 noted that '*confirm no cumulative construction noise is expected during out of hours periods or provide an assessment of such as per the standard hours cumulative assessment at Section 10.4 of the NIA*'.

The cumulative construction scenario assessed in the MPW Stage 2 EIS (included as Section 19 of the EIS) considered the concurrent construction of the Proposal with the final stages of the MPW Early Works (SSD 5066) activities and the latter stages of construction of the MPE Stage 1 Project (SSD 14-6766). The cumulative construction scenario considered activities overlapping within the vicinity of the Proposal site according to scheduling information at the time of preparation of the EIS and did not include the overlap of bulk earthworks activities with any other components of the Moorebank Precinct i.e. MPE Stage 2 Proposal (SSD7628).

Note that a cumulative assessment with the MPE Stage 2 Proposal (SSD 7628) was not undertaken for the MPW Stage 2 EIS as suitable information was not available at the time of preparing the MPW Stage 2 EIS to provide an assessment. An assessment of the MPW Stage 2 Proposal (SSD 7709), MPE Stage 1 Project (SSD 14-6766) and MPE Stage 2 Proposal (SSD 7628) is provided within the MPE Stage 2 EIS, and therefore an assessment as part of the MPW Stage 2 EIS is not considered appropriate.

Both the MPW Early Works and MPE Stage 1 Project (refer to Section 4 of the EIS) would generally be undertaken during the standard daytime construction working hours, being:

- 7 am to 6 pm Monday to Friday.
- 8 am to 1 pm Saturday.
- No works on Sunday or Public Holidays.

Any works undertaken outside of these hours would be undertaken in consultation with relevant authorities. Works outside these hours that may be permitted would generally include the following:

- The delivery of materials which is required outside of these hours as requested by Police or other authorities for safety reasons.
- Emergency work to avoid the loss of lives, property and/or to prevent environmental harm.
- Works required to be undertaken during rail corridor possessions.
- Any other work as approved through the Construction Noise and Vibration Management Plan.

Section 9.3.1 of the the MPE Stage 1 EIS (SSD6766) noted that there may be times when construction would occur outside of standard construction hours; however, these would comply with the 'Outside Standard Construction Hours' construction noise management levels (NMLs) detailed in Table 9-4 of Section 9 of the MPE Stage 1 EIS (SSD6766).

Any construction activities that would be undertaken outside of standard construction hours in accordance with the construction noise management levels (NMLs) detailed in Table 9-4 would be infrequent and irregular, and managed with the implementation of an Out of Hours Protocol as part of the Construction Environmental Management Plan (CEMP). It is noted that the exact type of construction activities that may be undertaken

outside of standard construction hours is still subject to refinement through the CEMP approval process.

A summary of the cumulative construction scenario outside of standard construction hours is provided in Table 1.

Table 1 Summary of cumulative outside standard construction hours scenario for the Proposal

Time period	MPW Stage 2	MPW Early Works	MPE Stage 1
Weekdays – outside of standard construction hours			
6am to 7am	✓	×	×
6pm to 10pm	✓	×	×
10pm to 6am	×	×	×
Saturdays – outside of standard construction hours			
7am to 8am	✓	×	×
1pm to 6pm	✓	×	×

Based on the information summarised in Table 1, the cumulative construction scenario for the Proposal, on which the EIS was based does not include any cumulative construction activities which would contribute to noise impacts outside of standard construction hours.

Therefore, in response to the independent noise expert comment no. 11, no cumulative construction noise is expected during out of hours periods in the cumulative construction scenario assessed in the MPW Stage 2 EIS, and as such, an assessment of cumulative construction noise is not proposed as part of the MPW Stage 2 RtS.

Noise barrier design

Comment

During the meeting at the NSW DP&E office, the assessment of noise impacts associated with the proposed noise barrier along the western boundary of the MPW site was raised. In particular, the inclusion of a 'floating' barrier and its effectiveness with regards to mitigating noise impacts was discussed.

Response

As identified in Section 5.2.6 of the EIS, a 0.3 m gap is required at the bottom of the noise barrier, running along the western site boundary, to maintain sufficient drainage under the proposed noise barrier. This is a standard design feature and ensures that surface water flows do not, through erosion, undermine the noise barrier.

This gap is included in the noise model for the EIS, and the proposed Amended Proposal. The results of the operational noise model, developed using the CadnaA noise modelling software, indicate that the 0.3 m gap at the bottom of the noise barrier reduces the barrier effect by up to 1.5 dBA at sensitive receivers to the west of the Proposal site.

The predicted amenity LAeq, period operational noise levels included in Table 2-6 of the Addendum impact assessment – noise (Wilkinson Murray, 2017) demonstrated that with the operation of the proposed Amended Proposal, no receivers are predicted to exceed the NSW Industrial Noise Policy (INP) criteria. The reduction in barrier effect is most pronounced at receivers located at or below the height of the Proposal site, such as the Casula Powerhouse (S1). There is a negligible reduction in barrier effect at the majority of residential receivers in Casula, as they are elevated from the Proposal site.

Sound power level assumptions for locomotives on-site

Comment

During the meeting with NSW DP&E, the assumptions used for the determination of sound power levels associated with the locomotives on-site was raised.

Response

For the assessment of $L_{Aeq,15min}$ operational noise levels, against the INP intrusiveness criteria, it was assumed that eight locomotives were moving on the site, each with a continuous sound power level (SWL) of 106 dBA, combining to a total of 115 dBA.

For the assessment of $L_{Aeq,period}$ operational noise levels, against the INP amenity criteria, it was assumed that, on average, eight locomotives were on site and that they would be idling stationary for approximately 75% of their total time on site, and moving for the remaining 25% of their time on site. The modelled SWL for idling and moving locomotives are 100 dBA and 106 dBA, respectively; resulting in a total SWL of 111 dBA for the eight locomotives. This assessment approach for locomotive sound power levels was considered to be an acceptable, conservative approach to the assessment.

Change in noise levels along the SSFL from operational rail noise movements

Comment

During the meeting with NSW DP&E, the independent noise expert requested the noise technical memorandum consider the changes to rail noise levels along the Southern Sydney Freight Line (SSFL) due to the operational rail movements along the SSFL attributable to the Proposal.

Response

The *Rail Infrastructure Noise Guideline* (RING) provides no guidance on the assessment of rail noise from “private non-network” rail lines at receivers with significant existing rail noise levels from “network” rail lines. Therefore, an assessment methodology was adopted for the MPW Stage 2 EIS whereby, in the event that rail noise levels at sensitive receivers from the operation of the private non-network line exceed the applicable RING $L_{Aeq,period}$ criteria, the total level of rail noise at sensitive receivers should not increase by more than 2 dBA compared to the “No-build” or without Proposal option.

The predicted rail noise levels from the Proposal exceed the RING criteria during the evening and night time assessment periods at one receiver location only. This location is Glenfield Farm, and is identified as NM1 in the noise technical memorandum prepared to support the MPW Stage 2 RtS and is provided at **Attachment** C of this letter. Another residential dwelling previously existed immediately to the north of Glenfield Farm, but has since been demolished. Should a new dwelling be constructed at that location, it would be experience approximately the same levels of rail noise as Glenfield Farm.

As detailed in Section 8.5.2 of the MPW Stage 2 EIS, operational noise impacts would be managed with the implementation of an Operational Environmental Management Plan (OEMP) which include continued ambient noise monitoring surveys with annual reporting of noise results up to two years beyond the completion of construction of the Proposal.

The independent noise expert, appointed by NSW DP&E, has raised concerns around the predicted increases in rail noise levels near locations NM2 and NM3, and posited that these increases may have been under-predicted. It is Wilkinson Murray's opinion that the predicted increases in rail noise levels at these locations are, due to the conservative nature of the noise modelling, more likely to be overestimated than underestimated. Nevertheless, since the predicted rail noise levels at NM2 and NM3, from the Proposal, comply with the RING criteria for a private non-network line, no further assessment is warranted.

Further, the MPW Stage 2 Proposal includes approval only for the operation of trains on the Rail link, which is to be constructed as part of the MPE Stage 1 Approval (SSD 6766). The Proposal does not seek approval for the movement of trains on the SSFL, which is the subject of separate approvals already granted for this operational rail line. Based on discussions undertaken with ARTC, for the MPW Stage 2 Proposal and other stages of approval, the SSFL has suitable capacity and approval to accommodate the trains proposed for the MPW Stage 2 Proposal. Therefore, an assessment of the SSFL is not considered relevant, nor is standard practice for a rail freight impact assessment.

We would welcome the opportunity to discuss this with you further. Do not hesitate to contact Steve Ryan from Tactical Group (0406 995 822) with any questions.

Yours sincerely

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Enc. 4

CC. Westley Owers, Steve Ryan, Nathan Cairney, Andrew Wiltshire, Nic Hall

ATTACHMENT A: RESPONSE TO INDEPENDENT EXPERT COMMENTS

Aspect	Comment	Response	Reference
Noise Issues			
Ambient noise monitoring	1. provide ambient noise monitoring data charts and/or raw electronic data from locations L1 to L3 as referenced from the MPW Concept Plan EIS (precise reference not provided and seemingly no longer available online);	Ambient noise monitoring data, in the form of noise logger plots were included in Appendix B of *Technical Paper 2: Noise and Vibration Impact Assessment* (SLR Consulting, 2014); prepared to support the Moorebank Intermodal Terminal Concept EIS. (https://majorprojects.affinitylive.com/public/246a966ba837c880137b190133ac9dd7/050%20Technical%20Paper%202_%20Noise%20and%20vibration%20(Part%20B).pdf).	Appendix B of the MPW Concept Approval EIS.
Construction noise – site plan	2. provide separate site plan showing each of the seven construction stages' equipment placements used in the model, relative to surrounding land-uses;	As discussed in Section 8.4 of the EIS, a total sound power level (SWL) was developed for each works period that was representative of all plant in the period operating simultaneously. Each SWL was then modelled as a single area source based on the footprint of the work period. These source regions are provided in Attachment B of this letter. For the works period involving Moorebank Avenue, the total SWL of all plant as a single area source was modelled over the region shown on the figure. Since that works period also involved the internal roads on the MPW site, activities on the MPW site were also modelled, and then the highest predicted noise levels for each catchment was presented. For the additional covered drain within the Endeavour Energy easement, as identified for the Amended Proposal, plant items were modelled as a line source, as shown in the figure provided at Appendix D of the MPW Stage 2 RtS.	Section 8.4 of the EIS. Attachment B of this letter
Operational noise – site plan	3. as for item 2, provide same for operational noise sources (eg route for trucks on site for day, evening and night scenarios, and position of all major noise sources such as the reach stackers, other container handling equipment and locomotives);	Information in relation to the location of operational infrastructure including rail lines and warehousing, and operational truck routes are shown in Section 4 of the EIS. For clarity, the following operational equipment would generally be associated with the use of the following operational areas: • IMT – reach stackers, container handling equipment, heavy vehicle movements and loading and unloading and locomotives • Warehousing – container handling equipment, heavy and light vehicle movements loading and unloading • Internal road network and truck holding areas – heavy and light vehicle movements. A full list of operational noise sources included in the noise assessment is included in Section 8 and Appendix N of the EIS.	Section 4, section 8 and Appendix N of the EIS.

Aspect	Comment	Response	Reference
Meteorological conditions	4. clarify meteorological conditions used in modelling for the night time period (see section 7.1.2 of the noise impact assessment (NIA));	Night time operational noise levels were predicted for two meteorological scenarios; calm and adverse. 'Calm' meteorological conditions used for night-time operational noise modelling were based on Pasquill-Gifford stability class D (CONCAWE Weather Category 4) which is characterised by no wind and a mild temperature lapse. 'Adverse' meteorological conditions used for night-time operational noise modelling were based on Pasquill-Gifford stability class F (CONCAWE Weather Category 6), which is characterised by source to receiver winds up to 3m/s and/or temperature inversion. These conditions are considered consistent with Section 5 of the *Industrial Noise Policy* (INP) (NSW EPA, 2000) to assess operational activities. An additional assessment of noise emissions from the project for calm and adverse meteorological conditions during the daytime and evening period has been undertaken using the default noise-enhancing wind conditions, as described in the Industrial Noise Policy (INP) (NSW Environment Protection Authority (EPA), 2000), being: • 3 m/s source to receiver wind during daytime and evening; and, • F-class stability (temperature inversion) during night time. Under the default conditions, the predicted daytime and evening operational noise levels increase by 4-5 dBA under adverse meteorology; however, the total operational noise during these conditions would continue to be below the operational noise criteria at Casula, Glenfield and Wattle Grove. The detailed results of the operational noise modelling under the default conditions is provided in Attachment B of this letter.	Section 9 and Appendix N of the EIS. Attachment B of this letter.
Sound power levels - locomotives	5. Clarify representation of locomotives on site as referenced at Section 7.2.2 of the NIA that states "...a combined SWL of 111dBA," Confirming if this is for the eight modelled locomotives on site or per locomotive;	The combined sound power level (SWL) of 111dBA represents all eight modelled locomotives combined. As presented in Table 7-1 of the Noise and Vibration Impact Assessment (Appendix N of the EIS), the continuous sound power levels, adopted for assessment purposes, for stationary and (slowly) moving locomotives are 100 dBA and 106 dBA, respectively. When considered over an amenity assessment period, the locomotives would spend more time idling than they would moving. Therefore, the combined SWL of 111 dBA is considered to be a conservative representation of the combined SWL of the locomotives. Alternatively, the intrusiveness modelling scenario, presented in Section 7.2.3, assumes that eight locomotives are all moving on the site in a worst-case 15-minute period, and assigns a combined SWL of 115 dBA for the locomotives.	Appendix N of the EIS.

Aspect	Comment	Response	Reference
Rail track curvature radii	6. confirm rail track curvature radii between the site and SSFL connection (eg provide a 2-D alignment map to scale or in digital format that can be used to measure radii);	An assessment of the impacts from the operation of the Rail Link connection to the Southern Sydney Freight Line is included in the MPE Stage 1 Approval (SSD 14-6766) and is outside the scope of this Proposal. The Proposal seeks approval to operate on, and not for the construction of, the Rail link.	MPE Stage 1 EIS
Rail traffic noise	7. Section 8.2.2 implies that existing rail traffic noise is significant and that the additional movements are not significant in terms of volumes when compared to existing. An analysis of existing rail noise levels at the three residential areas should be provided and the expected change in rail noise due to the Proposal demonstrated to "unlikely to noticeably increase due to the Proposal". For example, the reference to 77 Leacocks Lane and Lot 21 Leacocks Lane noise levels is unclear (stated as 3 to 5 dB increase because of the relative shielding to the track for these two locations). It is unclear if this issue is limited to this location or a small number or properties or if this issue extends across many properties;	An assessment of rail noise from the Proposal has been included in Section 8 and Appendix N of the EIS. A projected rail noise impact assessment has been undertaken and is included as Attachment D of this letter. Based on the corrected measurements as included in the Noise Technical Memorandum, provided as Attachment C of this letter, the predicted $L_{Aeq,period}$ rail noise levels at nearby noise sensitive as a result of the Proposal comply with the RING criteria for private non-network rail lines at all receivers, except Casula. Therefore, a more detailed assessment of L_{Aeq} rail noise levels in Casula was considered warranted, and requires that the existing levels of rail noise be established at this location only. Rail noise modelling indicates that the $L_{Aeq,period}$ rail noise levels from the Proposal would comply with the RING criteria for “private non-network rail lines” in Wattle Grove and Glenfield, but would exceed the night time criterion by up to 4 dB in Casula. These criteria are considered particularly stringent to the extent that the existing L_{Aeq} and L_{Amax} noise levels are already above the criteria. L_{Aeq} and L_{Amax} rail noise levels at the most sensitive residential receivers near the Rail link are predicted to exceed the established noise goals. However, due to the proximity of these receivers to the Southern Sydney Freight Line, rail movements associated with the Proposal are not expected to result in a noticeable change to the existing L_{Aeq} and L_{Amax} rail noise levels. Further rail noise monitoring has been undertaken in February 2017 to greater establish existing rail noise levels at Casula, which would be representative of noise levels at 77 Leacocks Lane and Lot 21 Leacocks Lane. Existing levels of rail noise have been established at a number of locations in Casula, including the area where the *Rail Infrastructure Noise Guideline* (RING) criterion is predicted to be exceeded. At the rail noise monitoring locations, it is demonstrated that the Proposal would result in an increase in the night time $L_{Aeq,period}$ rail noise level of less than 2 dB, which is considered unlikely to be noticeable and does not warrant mitigation. It should be noted that the existing rail noise levels are greater than the contribution from the Proposal. The existing rail noise levels that have been established as part of the additional monitoring are representative of a number of properties near the Proposal, including 77 Leacocks Lane and Lot 21 Leacocks Lane, Casula.	Section 8 and Appendix N of the EIS. Attachment D of this letter

Aspect	Comment	Response	Reference
Number of train movements	8. confirm whether it will be an average of eight locomotives (as per Section 7.2.2) or seven trains (as per Section 8.2.3) per day at the site. Confirm what the typical and maximum train movements will be to/from site across the daytime and night time periods, and provide an assessment of these;	A description of the Proposal including the proposed rail movements is included in Section 4 of the EIS. During normal site operation it is anticipated that two trains would be on site at any one time, with eight locomotives present on site at any one time. Operations at the IMT facility would accommodate up to 12 train movements per day (6 in each direction). An assessment of the potential noise impacts from train movements is included in Section 8 and Appendix N of the EIS. The statement that 7 trains would access the site per day, as per Section 8.2.3 of the NVIA included in Appendix N, is incorrect.	Section 8 and Appendix N of the EIS
Mitigation measures	9. confirm what, if any, feasible and reasonable mitigation or management was considered to abate noise level exceedances identified in Section 8 due to train movements, or justify why these would not be adopted;	A detailed discussion of the potential noise impacts from the Proposal and the requirement for mitigation is included in Section 8 and Appendix N of the EIS and has been updated in the Noise Technical Memorandum, at Attachment C of this letter. As part of the Noise Technical Memorandum, additional monitoring of existing rail noise levels at nearby noise sensitive receivers was undertaken. Increases in rail noise from the Proposal on nearby noise sensitive receivers were validated using the additional monitoring undertaken. The Noise Technical Memorandum demonstrates compliance with the established RING criteria for private non-network rail lines at the monitoring locations, with the exception of RM1 (Casula), where the predicted evening and night time L_{Aeq} rail noise levels from the Proposal exceed the RING criterion for a private non-network rail line by 1.2 dBA and 3.9 dBA, respectively. However, at this location, the Proposal would result in an increase in the total evening and night time L_{Aeq} rail noise levels of less than 2 dBA, which is considered unlikely to be noticeable, and therefore mitigation is not considered necessary. The predicted increase in total rail noise levels during the evening, with the Proposal, at RM2 (Casula) is more than 2 dBA. However, the predicted L_{Aeq},evening rail noise level at RM2, due to the Proposal alone, would comply with the RING criterion for a private non-network rail line. As the increase in rail noise is not likely to be noticeable, and the increase in rail noise from the Proposal would not result in an exceedance of the RING criteria at this location no mitigation is considered necessary.	Section 8 and Appendix N of the EIS. Attachment C of this letter

Aspect	Comment	Response	Reference
Road traffic noise	10. existing road traffic noise levels should be provided in addition to the quote increases in Section 9;	Road noise levels for the Proposal have been assessed in accordance with the *NSW Road Noise Policy* (RNP)(DECCW, 2011). The RNP states that: *For existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding 'no build option'.* Increases in road traffic noise levels along the M5 Motorway, Moorebank Avenue, and Anzac Road as a result of the Proposal are considerably less than 2 dBA. In accordance with the RNP, no mitigation of traffic noise levels is considered necessary. As the Proposal is unable to affect existing road noise levels, existing road noise levels are not considered relevant to the Proposal.	The existing road noise levels have been provided at Attachment B of this letter.
Cumulative construction noise outside of standard hours	11. confirm no cumulative construction noise is expected during out of hours periods or provide an assessment of such as per the standard hours cumulative assessment at Section 10.4 of the NIA;	The cumulative construction scenario assessed in the MPW Stage 2 EIS considered the concurrent construction of the Proposal with the final stages of the MPW Early Works (SSD 5066) activities and the latter stages of construction of the MPE Stage 1 Project (SSD 14-6766). The cumulative construction scenario considered activities overlapping within the vicinity of the Proposal site according to scheduling information at the time of preparation of the EIS and did not include the overlap of bulk earthworks activities with any other components of the Moorebank Precinct. Both the MPW Early Works and MPE Stage 1 Project (refer to Section 4 of the EIS) would generally be undertaken during the standard daytime construction working hours, being: • 7 am to 6 pm Monday to Friday. • 8 am to 1 pm Saturday. • No works on Sunday or Public Holidays. Any works undertaken outside of these hours would be undertaken in consultation with relevant authorities. Works outside these hours that may be permitted would generally include the following: • The delivery of materials which is required outside of these hours as requested by Police or other authorities for safety reasons. • Emergency work to avoid the loss of lives, property and/or to prevent environmental harm. • Works required to be undertaken during rail corridor possessions. • Any other work as approved through the Construction Noise and Vibration Management Plan.	Table 9-4 of the MPE Stage 1 EIS.

Aspect	Comment	Response	Reference
		Section 9.3.1 of the MPE Stage 1 EIS noted that there may be times when construction would occur outside of standard construction hours; however, these would comply with the 'Outside Standard Construction Hours' construction noise management levels (NMLs) detailed in Table 9-4 of Section 9 of the MPE Stage 1 EIS. Any construction activities that would be undertaken outside of standard construction hours in accordance with the construction noise management levels (NMLs) detailed in Table 9-4 would be infrequent and irregular, and managed with the implementation of an Out of Hours Protocol as part of the Construction Environmental Management Plan (CEMP). It is noted that the exact type of construction activities that may be undertaken outside of standard construction hours is still subject to refinement through the CEMP approval process. The cumulative construction scenario for the Proposal, on which the EIS was based does not include any cumulative construction activities which would contribute to noise impacts outside of standard construction hours. Therefore, no cumulative construction noise is expected during out of hours periods in the cumulative construction scenario assessed in the MPW Stage 2 EIS, and as such, an assessment of cumulative construction noise is not proposed as part of the MPW Stage 2 RtS.	
Construction vibration impacts	12. provide confirmation on why the SEARs item 6 f) was not addressed in full in respect of the listed guidelines ie DoP 2008 and EPA's vibration guideline. Alternatively, provide a detail vibration impact assessment from proposed construction activities to demonstrate vibration impacts are not likely as stated (eg provide offset distances from typical plant and activities and compare these to actual separation distances to sensitive receivers including residences and other structures); and	Table 6-10 in Section 6.6 of the NVIA presents the safe working distances, as presented in the Construction Noise Strategy (TCA, 2012), for vibration intensive plant most likely to be used during the construction of the Proposal. The safe working distances in TCA (2012) have been developed specifically to satisfy the requirements of the EPA's vibration guideline – Assessing Vibration: a technical guide (DECCW, 2006) as requested by the SEARs. At the time of preparing the NVIA, no sensitive buildings or land uses, for cosmetic damage or human response, had been identified within the safe working distances of the identified construction plant. In response to submissions received for the Proposal, a Noise Technical Memorandum has been developed to further assess the potential for vibration impact on Kitchener House. The assessment investigates potential impacts from a wider range of construction plant and considers relevant international standards for vibration impacts on historic buildings. The construction activities most likely to generate vibration at Kitchener House would be the use of vibration-intensive equipment for road works along Moorebank Avenue, namely the use a vibratory roller. Based on the construction footprint for works on Moorebank Avenue, there is potential for construction plant to be operated approximately 20 metres from Kitchener House, which, depending upon the type and size of plant, could come within the safe working distance of Kitchener House. Additional mitigation measures for the Construction works anticipated to encroach within 20m of Kitchener house have been proposed to be included in the Construction Environmental Management Plan (CEMP) to ensure that the current of Kitchener House is not	Appendix N of the EIS Attachment D of this letter.

Aspect	Comment	Response	Reference
		worsened by the construction works and the potential construction vibration impacts are adequately managed by the construction contractor. No other buildings are predicted to be affected by vibration during construction of the Proposal. Development Near Rail Corridors and Busy Roads – Interim Guideline (DoP, 2008) provides guidance on the assessment and mitigation of noise and vibration impacts for developments that would introduce new sensitive receivers into areas near existing transport infrastructure. The Proposal would not create new sensitive receivers near existing transport infrastructure, and therefore, DoP 2008 is not considered relevant to the NVIA for the Proposal.	
Mitigation measures	13. confirm which mitigation measures listed in Table 11-1 would be adopted for the Proposal.	Table 11-1 in the NVIA (Appendix N of the EIS) contains REMMs relevant to the noise and vibration assessment. All REMMs listed in Table 11-1 would be implemented where reasonable and feasible for the Proposal as required by the MPW Concept Approval (SSD 5066). In addition to this, a number of mitigation measures for noise which would be implemented for the Proposal are included in Section 22 of the EIS.	Section 22 and Appendix N of the EIS.

ATTACHMENT B

Supplementary response material

Construction – source regions

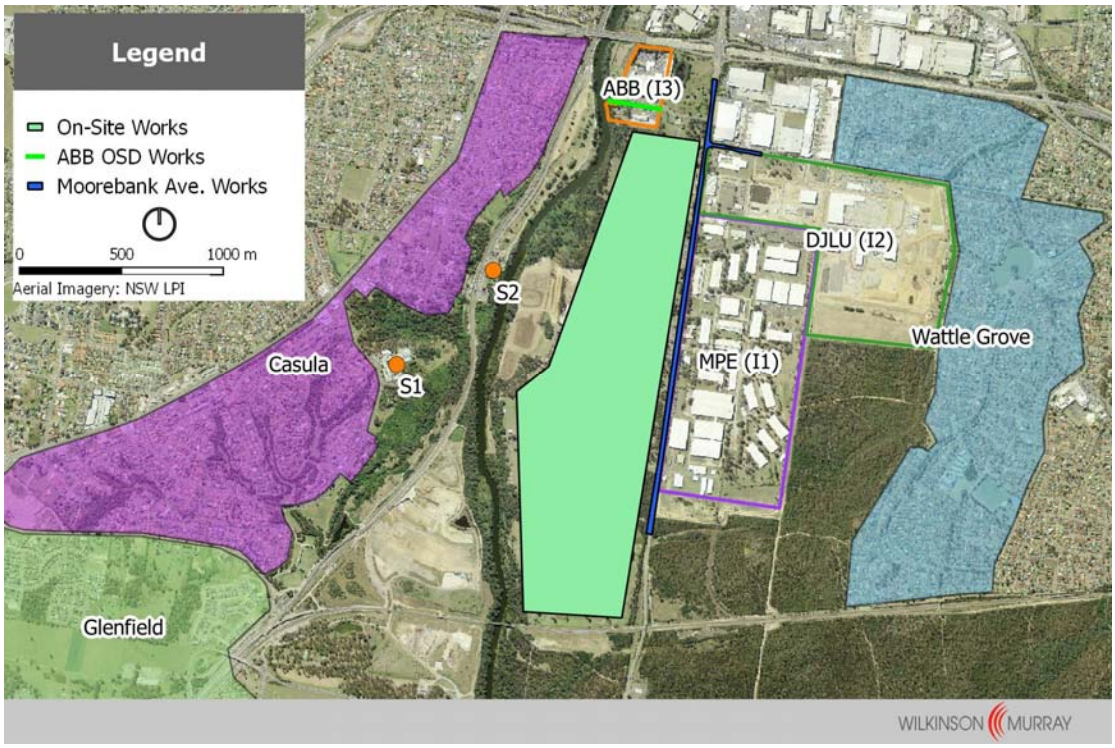


Figure 1 Single area source regions used in the construction noise impact assessment

Existing road traffic noise levels

Road	Existing :LAeq Road Noise Levels	
	Day (7am to 10pm)	Night (10pm to 7am)
M5, east of Moorebank Avenue	64	60
M5, west of Moorebank Avenue	61	57
Moorebank Avenue, North of the M5 interchange	69	64
Anzac Road, East of Moorebank Avenue	62	60

Assessment of operational noise levels using the INP default values

Receiver	Predicted $L_{Aeq,15min}$ Noise Level (dBA)						Criteria (dBA)			Exceedance
	Day		Evening		Night[1]		Day[1]	Evening[1]	Night[1]	
	Calm[2]	Adverse[3]	Calm[2]	Adverse[3]	Calm[2]	Adverse[3]				
Casula	36	40	36	40	35	**39**	44	44	38	Up to 1 dB
Glenfield	<20	<20	<20	<20	<20	<20	40	40	38	0 dB
Wattle Grove	32	37	32	37	32	36	40	40	37	0 dB

1. Daytime = 7.00am-6.00pm; Evening = 6.00pm-10.00pm; Night = 10.00pm-7.00am.
2. CONCAWE Category 4.
3. CONCAWE Category 6.

ATTACHMENT C – NOISE TECHNICAL MEMORANDUM

25 May 2017

WM Project Number: 15324
Our Ref: 15324 Ltr 170317

Westley Owers
Arcadis
Level 5 141 Walker Street
NORTH SYDNEY NSW 2060

Dear Westley

Re: MPW Stage 2 - RtS Technical Memo

This technical memo has been prepared to support responses to submissions (RtS) to the Environmental Impact Statement (EIS) for the Moorebank Precinct West (MPW) Stage 2 Proposal (the Proposal), in relation to noise and vibration. These submissions are summarised as follows:

- Submission from the NSW Environment Protection Authority (EPA) regarding the existing levels of rail noise at sensitive receivers near the Proposal, and the subsequent assessment of increases in rail noise due to the Proposal;
- Submission from EPA regarding sleep disturbance impacts due to rail movements associated with the Proposal; and,
- Submissions from Liverpool City Council and Moorebank Heritage Group regarding vibration impacts, particularly at heritage buildings.

This technical memo should be read in conjunction with the following documents:

- Noise and Vibration Impact Assessment (NVIA) for the Proposal, prepared by Wilkinson Murray (Report No. 15324 VerA_Final, provided at Appendix M of the EIS).
- NVIA for the Amended Proposal, as part of the MPW Stage 2 response to submissions report (Report No. 15324 VerD_Final, provided at Appendix D of the response to submissions report).

RAIL NOISE

Submissions

During the exhibition of the EIS, submissions were made regarding the assessment of rail noise from the Proposal by the NSW Environment Protection Authority (EPA). In particular, submissions requested more information relating to the quantification of existing levels of rail noise at the most potentially affected residential receivers, and further justification / demonstration that the Proposal would not noticeably increase rail noise at these location. An Excerpt from the submissiond received from the EPA on the Proposal, as they relate to rail noise have been provided in Table 1.

Table 1 Submissions Relating to Existing Rail Noise Levels

Agency	Submission
EPA	The expected increase in rail noise due to the project should be quantified using rail noise levels measured or predicted at the same point as used to predict the rail noise level for the project, using the same parameter. The assessment used the LAeq(24hour) 48.4 dBA rail noise level predicted for year 2020 at 77 Leacocks Lane, Casula, in the Southern Sydney Freight Line Operational Noise and Vibration Management Plan (Appendix B of the Operational Environmental Management Plan), to suggest that the project's rail movements would increase LAeq(period) rail noise levels by less than 2 dB at Lot 21 Leacocks Lane, the closest receiver in the area. The assessment relied on some optimistic assumptions: • The assessment stated that existing rail noise levels at Lot 21 Leacocks Lane were 3 to 5 dBA above those at 77 Leacocks Lane, because Lot 21 Leacocks Lane had direct line of sight to the Southern Sydney Freight Line and 77 Leacocks Lane does not. The 3 to 5 dBA appears to be a subjective estimate rather than being based on modelling. • Rail noise levels in the area will not change significantly between now and 2020. • The LAeq (24hour) predicted in the Southern Sydney Freight Line plan is equivalent to the LAeq (night) predicted in the assessment. The expected increase in rail noise due to the project should be quantified using rail noise levels measured or predicted at the same point as used to predict the rail noise level for the project, using the same parameter. The method used to estimate rail noise increase in the assessment was highly subjective and reliant on assumptions which were not adequately explained.

To respond to these issues raised during the exhibition of the EIS, additional monitoring of existing rail noise levels and assessment of the potential impacts of the Proposal on noise sensitive receivers have been undertaken. This section of the memo describes the methodology and results of these additional investigations, and provides a discussion / validation of the potential operational noise impacts in light of these additional investigations.

Rail noise criteria

As detailed in Section 6.4 of the NVIA (Appendix N of the EIS), airborne noise from freight rail movements along the Rail Link have been assessed using the Rail Infrastructure Noise Guideline (RING) (EPA, 2013). In accordance with RING, the section of the Rail link between the Southern Sydney Freight Line (SSFL) and the Proposal site is classified as a ‘non-network line servicing an industrial site’.

The relevant rail noise criteria for the assessment of potential impacts from the Rail link between the Proposal site and the SSFL are summarised in Table 2 below.

Table 2 Rail Noise L_{Aeq} Criteria

Receiver	Indicative Noise Amenity Criteria	Time Period[1]	$L_{Aeq, period}$ Criteria
Casula Glenfield Wattle Grove	Residential Suburban	Day	55
		Evening	45
		Night	40
S1, S2	School/ classroom	Noisiest 1-hour period when in use	45
I1, I2, I3	Industrial	When in use	70

1. Daytime 7:00am–6:00pm; Evening 6:00pm–10:00pm; Night 10:00pm-7:00am.

It should be noted that the rail noise criteria presented in Table 2 are applicable only to rail noise levels at sensitive receivers due to rail movements on the Rail link. These criteria are not applicable to existing rail noise levels at sensitive receivers due to rail movements on nearby network rail lines, such as the Main Southern Line and the SSFL. Moreover, RING does not provide guidance on how to assess the total levels of rail noise at sensitive receivers due to the combined operation of network and non-network rail lines.

Methodology

To provide a clearer indication of the potential impact of the Proposal on L_{Aeq} rail noise levels at sensitive receivers the assessment presented in the NIVA at Appendix N of the Proposal has been revised. This involved a more robust estimation of rail noise levels at sensitive receivers without the Proposal, and also removing some of the conservatism of the previous assessment.

To respond to the issues raised by the EPA, the following was undertaken:

- Correction of predicted noise levels at noise sensitive receivers by calibrating L_{Aeq} noise levels in the model using the logarithmic average (in lieu of the 95th percentile) of the measured noise levels from the Transport for New South Wales (TfNSW) Rail Noise Database;
- Additional monitoring of existing rail noise levels at nearby noise sensitive receivers, where the revised predicted L_{Aeq} rail noise levels exceed the relevant RING criteria;
- Establishment of rail noise levels at nearby noise sensitive receivers under the 'without the Proposal' (i.e. no build) scenario for the year of opening of the Proposal; and,
- Validation of likely increases in rail noise from the Proposal on nearby noise sensitive receivers.

Correction of predicted noise levels at noise sensitive receivers

The model used to predict rail noise levels at sensitive receivers in the NVIA was calibrated using the 95th percentile measured levels for freight locomotives and wagons from the TfNSW rail noise database. This is a very conservative measure, and typically, noise models used to predict L_{Aeq} noise levels are calibrated using the logarithmic average of the measured levels. As presented in the accompanying report to Version 3 of the TfNSW rail noise database, prepared by SLR Consulting, 95th percentile energy-based noise levels are 5 dBA higher than the logarithmic average noise levels for locomotives, and 4 dBA higher for freight wagons.

Therefore, to provide more reasonable predictions of L_{Aeq} rail noise levels from the Proposal, while still retaining a level of conservatism, the predicted L_{Aeq} rail noise levels presented in the NVIA for the EIS have been corrected downwards by 4 dBA.

A comparison of the predicted L_{Aeq} rail noise levels presented in Table 8-1 of the EIS with the corrected levels, are presented in Table 3.

The EIS results as presented in Table 3 indicate that the predicted $L_{Aeq,period}$ rail noise levels were originally predicted to exceed the relevant RING criteria for a private non-network line at the most affected residential receivers in Casula and Glenfield, and also at S1. The NVIA stated that, due to their proximity to the Main Southern Line, the East Hills Line and the Southern Sydney Freight Line (SSFL), the most affected residential receivers would most likely be subject to significant existing levels of rail noise. Further, it was concluded that the Proposal would be unlikely to result in a significant increase in the overall $L_{Aeq,period}$ rail noise levels.

The conclusions in the NVIA were supported with the best available data at the time on noise levels at sensitive receivers near the SSFL, and relied on a number of assumptions that were consistent and appropriate to the methodology used, but tended towards a conservative assessment of noise impact, i.e. and over-estimation of the existing and predicted noise levels, as detailed in the EPA's submissions in Table 1 above. The submissions received from government agencies during public exhibition have requested a more detailed assessment of existing L_{Aeq} rail noise levels in Casula and Glenfield.

Based on the corrected measurements provided in Table 3, the predicted $L_{Aeq,period}$ rail noise levels at nearby noise sensitive receivers, using the more appropriate logarithmic average of the measurement results in the TfNSW rail noise database, comply with the RING criteria for private non-network rail lines at all receivers, except Casula. Therefore, a more detailed assessment of L_{Aeq} rail noise levels in Casula is warranted, and requires that the existing levels of rail noise be established at this location only

Table 3 Comparison of the Predicted L_{Aeq} Rail Noise Levels from the Proposal at Noise Sensitive Receivers – 95th Percentile vs Logarithmic Average

Receiver	Predicted Level (dBA)						RING Criteria (Recommended)			Exceedance of RING criteria (dBA)					
	Day		Evening		Night		Day	Evening	Night	Day		Evening		Night	
	EIS	Corrected	EIS	Corrected	EIS	Corrected				EIS	Corrected	EIS	Corrected	EIS	Corrected
Casula	50	46	**50**	**46**	**48**	**44**	55	45	40	0	0	**5**	**1**	**8**	**4**
Glenfield	43	39	43	39	**41**	37	55	45	40	0	0	0	0	**1**	0
Wattle Grove	41	37	42	38	39	35	55	45	40	0	0	0	0	0	0
S1	**48**	44	**48**	44	**47**	43	45 (when in use)			0	0	**3**	0	**2**	0
S2	43	39	43	39	42	38	45 (when in use)			0	0		0	0	0

1.Daytime = 7.00am-6.00pm; Evening = 6.00pm-10.00pm; Night = 10.00pm-7.00am.

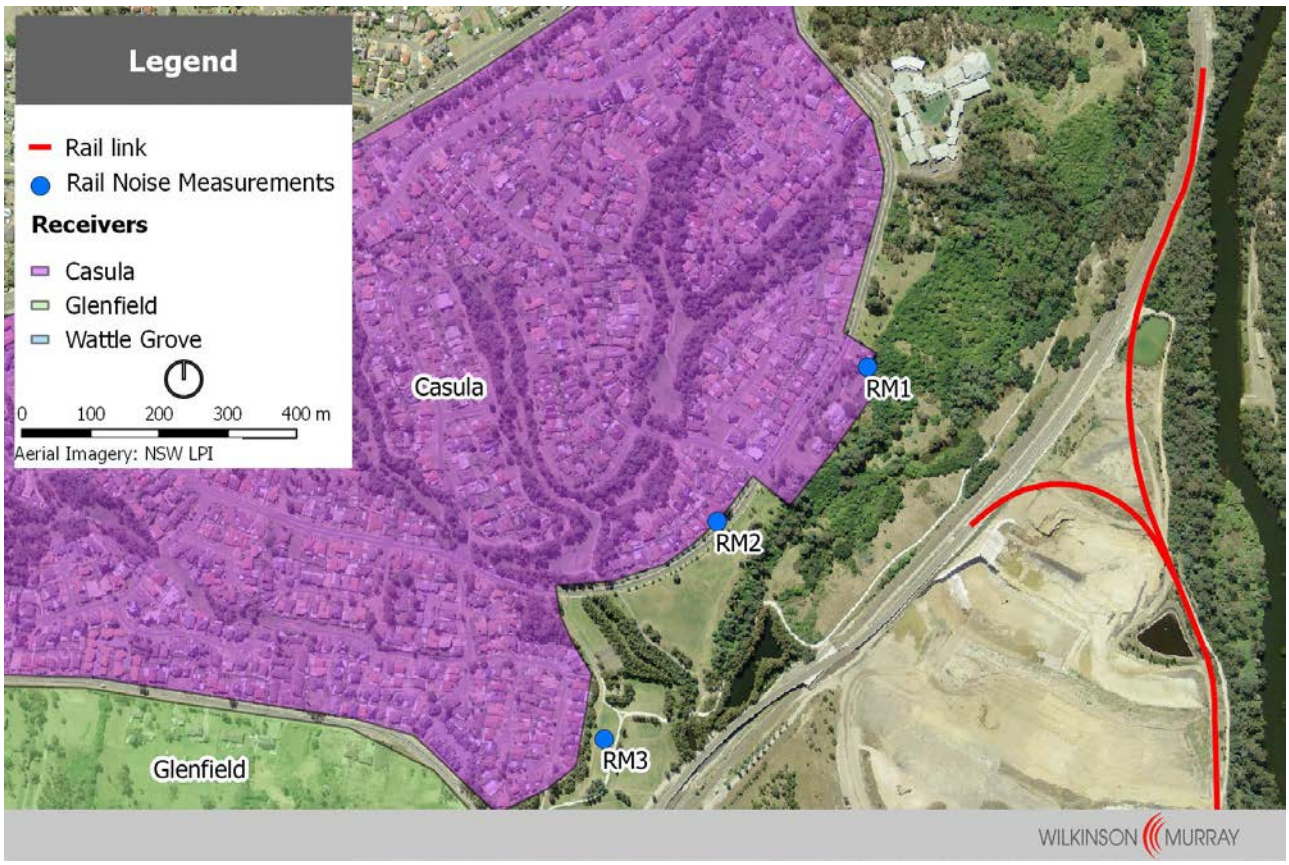
Rail Noise Monitoring

To establish the existing L_{Aeq} rail noise levels at the most affected residential receivers in Casula at the year of opening without the Proposal (herein referred to as the no-build scenario), attended noise monitoring was conducted at a number of locations near the connection of the Rail Link with the SSFL between 2 and 11 February 2017. Revised modelling results, presented in Table 3 of this technical memo, indicate that $L_{Aeq,period}$ noise levels from rail movements associated with the Proposal are only predicted to exceed the RING criteria in Casula. Therefore, rail noise monitoring has been confined to this area of interest.

Monitoring was undertaken at three locations, shown on Figure 1. The existing levels of rail noise will not be the same at all receivers in Casula, nor are the predicted rail noise levels from the Proposal. Therefore, the following monitoring locations were chosen to demonstrate the range of impacts at the most potentially affected receivers in Casula:

- RM1, which is representative of Glenfield Farm and adjacent residences along Leacocks Lane to the north of the intersection with Mackellar Street
- RM2, which is representative of residential receivers along Leacocks Lane to the south of the intersection with Mackellar Street
- RM3, which is representative of residential receivers on the eastern side of Slessor Road

Figure 1 Noise Monitoring Locations



At each monitoring location, attended noise measurements were conducted between approximately 10.00pm and 3.00am. During the attended monitoring, visual observations were made to identify freight and commuter rail movements, and a Sound Level Meter (SLM) and an environmental noise logger were used to measure noise levels from the observed rail movements. The noise logger captured 100ms data and high quality wave files to enable accurate and reliable post-processing of the measurement data to determine noise levels of the existing rail movements.

Following the noise monitoring, the 100ms and wave data were analysed to identify all freight and commuter movements, and to calculate the logarithmic average Sound Exposure Level (SEL) at each monitoring location for individual freight and commuter movements. The SEL noise descriptor represents the total acoustic energy for an event, normalised to a duration of 1 second, and is typically used to predict $L_{Aeq,period}$ noise levels for a given number of similar events over a particular period of time. On several occasions, multiple trains were audible at the same time. On these occasions, it was not possible to accurately determine the SEL for each movement, and these movements have not been included in the analysis.

Table 4 below provides a summary of the measured noise levels of freight and commuter passenger rail movements at the three noise monitoring locations. The measurement results for individual movements observed, measured and reliably analysed are presented in Appendix A of this memo.

Table 4 Summary of Measured Rail Noise from Freight and Passenger Rail Movements

Monitoring Location	Date	Freight		Commuter	
		No. of Measured Movements[1]	Log. Average SEL (dBA)	No. of Measured Movements[1]	Log. Average SEL (dBA)
RM1	9-10/02/2017	13	79.0	18	72.7
RM2	10-11/02/2017	5	75.1	34	62.0
RM3	2-3/02/2017	8	84.6	23	70.4

1. Total number of movements measured during monitoring period.

Establishment of rail noise levels under the 'without Proposal' (i.e. no-build) scenario for the year of opening of the Proposal

To estimate the levels of rail noise at the most affected residential receivers in Casula, during a typical day or night, for the no-build scenario, the logarithmic average SEL for freight and commuter rail movements as observed during the rail noise monitoring (refer to Table 4) have been combined with the projected rail movements for the year 2020, as presented in the *Southern Sydney Freight Line Operational Noise and Vibration Management Plan*, available on the ARTC website (www.artc.com.au/community/environment/). Where daily commuter rail movements are relatively constant, daily freight rail movements can vary considerably. Therefore, the SSFL projected volumes have been used to provide a reliable indication of typical daily rail movements in the area near the Proposal.

It is understood that the projected freight movements on the SSFL for 2020 as included in the SSFL operational noise and vibration management plan account for the rail movements associated with the Moorebank intermodal catchment demand, and would therefore, include the movements from the Proposal. Accordingly, for the purposes of estimating the levels of rail noise at sensitive receivers under the no-build scenario, the freight rail movements generated by the Proposal have been subtracted from the no-build scenario. The estimated daily rail movements along the Main Southern Line and the SSFL in the vicinity of the Proposal under the no-build scenario are shown in Table 5.

It should be noted that, in accordance with RING, noise from network rail lines are assessed during a 15-hour daytime period, from 7.00am until 10.00pm, and a 9-hour night time period, from 10.00pm until 7.00am. Accordingly, the project rail movements along the Main Southern Line and the SSFL are defined for these periods.

Table 5 Daily Rail Movements – no-build scenario

Year	Time Period	Train Type	Movements
2020	Day (7.00am – 10.00pm)	Freight	28
		Commuter	124
	Night (10.00pm – 7.00am)	Freight	21
		Commuter	44

Predicted rail noise levels without the Proposal

The predicted L_{Aeq} rail noise levels at nearby noise sensitive receivers at Casula under the no-build scenario, based on the additional noise measurements undertaken and the projected rail movements from the SSFL Operational Noise and Vibration Management Plan are presented in Table 6. These predicted noise levels are presented for the 15-hour day and 9-hour night RING assessment periods for network rail lines.

Table 6 Predicted Rail Noise Levels – no build scenario

Monitoring Location	$L_{Aeq, period}$ Noise Level	
	Day (7.00am – 10.00pm)	Night (10.00pm – 7.00am)
RM1	49.3	48.9
RM2	43.1	43.6
RM3	52.4	53.1

Assessment of the impacts on rail noise from the Proposal on nearby sensitive receivers

The predicted L_{Aeq} rail noise levels at the monitoring locations, under the no-build scenario, with the Proposal only, and the total combined L_{Aeq} rail noise levels are shown in Table 7, along with the increase in noise levels at the noise monitoring location as a result of the operation of the Proposal. The combined noise levels presented in Table 7 are equal to the logarithmic sum of the predicted existing rail noise levels, and the predicted rail noise levels from the Proposal alone.

To facilitate an assessment of rail noise levels against the RING criteria for private non-network rail lines, which are defined for the day, evening and night time assessment periods, the existing L_{Aeq} rail noise levels during the evening (6.00pm – 10.00pm) are assumed to be equal to those during the daytime (7.00am – 6.00pm). This is considered a reasonable assumption since much of the evening peak commuter rail movements occur within the evening period.

The results in Table 7 demonstrate compliance with the established RING criteria for private non-network rail lines at the monitoring locations, with the exception of RM1, where the predicted evening and night time L_{Aeq} rail noise levels from the project exceed the RING criterion for a private non-network rail line by 1.2 dBA and 3.9 dBA, respectively. However, at this location, the Proposal would result in an increase in the total evening and night time L_{Aeq} rail noise levels of less than 2 dBA, which is considered unlikely to be noticeable, and does not warrant mitigation.

The predicted increase in total rail noise levels during the evening, with the Proposal, at RM2 is more than 2 dBA. However, since the predicted $L_{Aeq,evening}$ rail noise level at RM2, due to the Proposal alone, complies with the RING criterion for a private non-network rail line, no mitigation is considered necessary.

Table 7 Predicted Future Rail Noise Levels – with Proposal

Monitoring Location	$L_{Aeq, period}$ Noise Level (dBA)																	
	No-build scenario			Operation of the Proposal along the Rail Link only			RING Criteria			Exceedance[2] of RING criteria from operation along the Rail Link y			Build scenario[3]			Increase in rail noise at monitoring locations with the Proposal (Build minus No-build)		
	D[1]	E[1]	N[1]	D[1]	E[1]	N[1]	D[1]	E[1]	N[1]	D[1]	E[1]	N[1]	D[1]	E[1]	N[1]	D[1]	E[1]	N[1]
RM1	49.3	49.3	48.9	44.8	46.2	43.9	55	45	40	0	**1.2**	**3.9**	50.6	51.0	50.1	1.3	1.7	1.2
RM2	43.1	43.1	43.6	40.6	42.0	39.6	55	45	40	0	0	0	45.0	45.6	45.1	1.9	2.5	1.5
RM3	52.4	52.4	53.1	38.6	40.0	37.7	55	45	40	0	0	0	52.6	52.6	53.2	0.2	0.2	0.1

1. D = 7.00am-6.00pm; E = 6.00pm – 10.00pm; N = 10.00pm-7.00am.
2. Exceedance of applicable RING criteria for a private non-network rail line.
3. “Build” Scenario is the logarithmic sum of the rail noise levels for the no-build scenario with the operation of the Proposal

SLEEP DISTURBANCE

Following the EIS Exhibition for the Proposal, EPA have made a submission, requesting further detail on potential sleep disturbance impacts from the Proposal, particularly due to rail movements associated with the Proposal. This submission from EPA is presented in Table 8.

Table 8 EPA Submission Relating to Sleep Disturbance from Rail Movements

Agency	Submission
EPA	Further detail should be provided on sleep disturbance impacts from the project, as it is likely to increase the number of events above Lmax 65 dBA (55 dBA indoors). Predicted LAmax rail noise levels were between 7 and 14 dBA above the screening criteria at the three receiver catchment areas modelled (Casula, Glenfield and Wattle Grove). Casula was the only suburb where the 95th percentile LAmax was predicted to be above 65 dBA (up to 67 dBA), indicating that one out of six expected rail movements in the night time could contribute an LAmax event above 65 dBA (roughly equal to 55 dBA inside a habitable room). The assessment relied on research summarised in the NSW Road Noise Policy to conclude that freight rail movements associated with the project, in the absence of wheel squeal, were unlikely to awaken people from sleep or affect health and wellbeing significantly. It also noted: • existing movements on the Southern Sydney Freight Line and Main South Line were likely to contribute LAmax events above 65 dBA • LAmax noise levels from the project were "unlikely to cause a noticeable change to the existing acoustic environment". But the project is likely to increase the number of LAmax events above 65 dB outdoors (55 dB indoors) at the nearest sensitive receiver in Casula, increasing the chance of sleep disturbance. As suggested by the application notes for the industrial noise policy, further detail should be provided on maximum noise level events during the night time. For example, by comparing the number of events per night above LAmax 65 dB outdoors with the project and without the project.

As presented in Section 8.2.3 of the NVIA, rail movements associated with the Proposal are predicted to result in L_{Amax} noise levels above 65 dBA at the most affected point in Casula. As presented above, in response to submissions regarding existing levels of rail noise near the Proposal, noise monitoring has recently been conducted at a number of locations in Casula. This monitoring was conducted specifically with a view to establishing the existing $L_{Aeq,period}$ rail noise levels near the Proposal, however is also useful in establishing existing maximum noise levels in the area. Monitoring location RM1, as shown in Figure 1, is representative of the area of Casula where L_{Amax} noise levels from rail movements are predicted to exceed 65 dBA, typically during one rail event per night.

The noise monitoring data from RM1 was analysed to identify maximum noise events. Since the monitoring was not conducted over an entire night time period, the number of identified events during the period 11.00pm – 3.00am was scaled to represent a typical 9-hour night time period (10.00pm – 7.00am). Table 11 presents the estimated number of noise events above 65 dBA L_{Amax} during a typical night for both the existing environment, and the future case where the Proposal would contribute one additional event above 65 dBA.

Table 9 Existing and Future Night Time Noise Events Above 65 dBA L_{Amax} – RM1

Existing (no Proposal)		Future (with Proposal)	
Measured Events (11pm – 3am)	Estimated Nightly Events (10pm – 7am)	Proposal Contribution	Total
15	34	1	35

Table 11 demonstrates that the contribution of the Proposal to the total number of noise events above 65 dBA is small, and is considered unlikely to result in a noticeable change to the existing maximum noise level environment and as a result is unlikely to result in additional sleep disturbance issues.

VIBRATION IMPACTS AT HERITAGE BUILDINGS

During the EIS exhibition for the Proposal, the Moorebank Heritage Group (MHG) and Liverpool City Council (LCC) have made submissions identifying that the NVIA had not specifically mentioned Kitchener House. The LCC submission is presented in Table 10.

Table 10 Submissions Related to Heritage Buildings

Agency	Submission
LCC	The EIS has failed to assess the potential noise and vibration impacts on adjacent sites Kitchener House and Glenfield Farm. Due to the heritage significance of these sites additional assessment should be undertaken to ensure the potential impacts to this site are completely considered.

Glenfield Farm is located at 88 Leacocks Lane, Casula on land zoned as R5 Large Lot residential and has been treated as a residential receiver for noise assessment purposes. Glenfield Farm is located more than 480 metres west of the construction footprint of the Proposal.

With regards to vibration impacts, given the distance of Glenfield Farm from the operational footprint of the Proposal (more than 480m), vibration impacts at Glenfield Farm are not anticipated, and no further assessment of vibration impacts at Glenfield Farm is considered warranted or necessary.

As such, this section of the Noise Technical Memorandum presents the following:

- A summary of the vibration assessment presented in the NVIA from the EIS;
- Identification of Kitchener House as a vibration sensitive receiver;
- Establishment of relevant vibration criteria;
- Assessment of potential vibration impacts at Kitchener House; and,
- Vibration management and mitigation measures.

Summary of NVIA Vibration Assessment

Table 6-10 in Section 6.6 of the NVIA presented the safe working distances, as presented in the Construction Noise Strategy (TCA, 2012), for vibration intensive plant most likely to be used during the construction of the Proposal. The safe working distances in TCA (2012) have been developed specifically to satisfy the requirements of the EPA's vibration guideline – Assessing Vibration: a technical guide (DECCW, 2006). At the time of preparing the NVIA for the EIS, no sensitive buildings of land uses had been identified within the safe working distances of the identified construction plant for either cosmetic damage or human response impacts.

Identification of Vibration Sensitive Receivers near the Proposal

Kitchener House is located on a parcel of land that is zoned for industrial use, it is treated as an industrial receiver for noise assessment purposes. Kitchener house is located further away from the MPW Stage 2 site than DJLU (I2) and ABB (I3) and since predicted operational and construction noise levels comply with the established noise criteria at DJLU and ABB, they would also comply at Kitchener House.

With respect to potential vibration impacts, since Kitchener House is of particular heritage significance, consideration should be given to construction vibration impacts, with a view to protecting Kitchener House from structural damage.

Vibration Criteria for Kitchener House

There are currently no Australian Standards or guidelines to provide guidance on assessing the potential for building damage from vibration. It is common practice to derive goal levels from international standards. British Standard BS 7385:1993 and German Standard DIN 4150:1999 both provide goal levels, below which vibration is considered insufficient to cause building damage. Of the two standards, DIN 4150 is the more stringent. Table 11 summarises the goal levels specified in DIN 4150.

With regard to these levels DIN 4150 states:

> *"Experience has shown that if these values are complied with, damage that reduces the serviceability of the building will not occur. If damage nevertheless occurs, it is to be assumed that other causes are responsible. Exceeding* [these] *values does not necessarily lead to damage; should they be significantly exceeded, however, further investigations are necessary."*

Table 11 Guideline Values for Vibration Velocity to be used when Evaluating the Effects of Short-Term Vibration on Structures
[Source: Table 1, DIN 4150-3:1999]

Type of Structure	Guideline Values for Velocity – PPV (mm/s)		
	1 Hz to 10 Hz	10 Hz to 50 Hz	50 Hz to 100 Hz
Buildings used for commercial purposes, industrial buildings, and buildings of similar design	20	20 to 40	40 to 50
Dwellings and buildings of similar design and/or occupancy	5	5 to 15	15 to 20
Structures that, because of their particular sensitivity to vibration, cannot be classified under either of the other classifications and are of great intrinsic value (e.g. listed buildings under preservation order)	3	3 to 8	8 to 10

Due to the historical significance of Kitchener House, and without knowing the particular sensitivity of these buildings to vibration impacts, it is recommended that vibration levels during construction of the MPW Stage 2 Proposal do not exceed those in the bottom row of Table 11. Additionally, during the preparation of the *Construction Noise and Vibration Management Plan* (CNVMP), to be prepared as part of the *Construction Environmental Management Plan* (CEMP) for the Proposal, it is recommended that given the proximity of Kitchener House to the construction footprint of the Proposal, the building should be inspected by a suitably qualified structural engineer to complete a dilapidation survey, and to identify any features of the building construction that make it particularly sensitive to vibration impacts. If no such features are identified, it is recommended that the vibration limits for Kitchener House are revised to those for dwellings in Table 11.

Potential Vibration Impacts at Kitchener House

The recommended safe working distances for vibration intensive plant suggested in the Transport Construction Authority's *Construction Noise Strategy* (2012) have been adopted in this assessment to evaluate the potential for vibration impacts on Kitchener House. Table 12 sets out the recommended safe working distances for various vibration intensive plant.

Table 12 Recommended Safe Working Distances for Vibration Intensive Plant

Item	Description	Safe Working Distance	
		Cosmetic Damage	Human Response
Vibratory Roller	< 50 kN (Typically 1-2 tonnes)	5 m	15 m to 20 m
	< 100 kN (Typically 2-4 tonnes)	6 m	20 m
	< 200 kN (Typically 4-6 tonnes)	12 m	40 m
	< 300 kN (Typically 7-13 tonnes)	15 m	100 m
	> 300 kN (Typically 7-13 tonnes)	20 m	100 m
	> 300 kN (> 18 tonnes)	25 m	100 m
Small Hydraulic Hammer	(300 kg – 5 to 12 t excavator)	2 m	7 m
Medium Hydraulic Hammer	(900 kg – 12 to 18 t excavator)	7 m	23 m
Large Hydraulic Hammer	1600 kg – 18 to 34 t excavator	22 m	73 m
Pile Boring	≤ 800 mm	2 m (nominal)	N/A
Jackhammer	Hand held	1 m (nominal)	Avoid contact with structure

Source: Construction Noise Strategy, 2012, Transportation Construction Authority

Of the construction works periods, only the works on Moorebank Avenue as part of Works Period D would have the potential to result in vibration intensive plant being operated close to Kitchener House. The construction footprint for these works is approximately 20 metres from the nearest façade of Kitchener House and vibratory rollers have been identified as required plant items for works on Moorebank Avenue. Therefore, there is potential for vibration intensive plant to come within the recommended safe working distances for cosmetic damage should vibratory rollers greater than seven tonnes and more than 300 kN be used.

Vibration Management / Mitigation Measures

The preceding sections have identified the potential for vibration intensive construction plant, associated with the Proposal, to be operated near Kitchener House, within the TCA (2012) recommended safe working distances for cosmetic damage.

It should be noted that the potential for impact depends heavily on the exact type and size of construction plant used, and the locations in which it is used. Accordingly, this vibration assessment should be revised as part of the CEMP when greater detail is available regarding the exact type of plant to be used, and the exact locations where it will be used.

Notwithstanding the above, if any of the plant items in Table 12 are proposed to be operated within their respective "Cosmetic Damage" safe working distances, from Kitchener House, then attended vibration monitoring should be conducted at Kitchener House to ensure that the vibration levels in Table 11 are not exceeded. If exceedances are identified, the work should cease immediately, and alternative construction methods should be used.

Additionally, during the preparation of the CNVMP, to be included as part of the CEMP for the Proposal, it is recommended that given the proximity of Kitchener House to the construction footprint of the Proposal, the building should be inspected by a suitably qualified structural engineer to complete a dilapidation survey, and to identify any features of the building construction that make it particularly sensitive to vibration impacts. If no such features are identified, it is recommended that the vibration limits for Kitchener House are revised to those for dwellings in Table 11.

I trust this information is sufficient. Please contact us if you have any further queries.

Yours faithfully
WILKINSON MURRAY

Nic Hall
Manager (Wollongong)

APPENDIX A

NOISE MEASUREMENT RESULTS

Table A-1 Rail Noise Measurement Results

Measurement Location	Date	Time	Duration	Measured Noise Levels (dBA)			Type
				L_{Aeq}	SEL	L_{Amax}	
RM1	9/02/2017	22:15	96	60.2	80.0	67.7	Freight
RM1	9/02/2017	22:29	30	58.8	73.6	62.7	Commuter
RM1	9/02/2017	22:33	33	57.0	72.2	61.4	Commuter
RM1	9/02/2017	22:35	30	58.3	73.1	62.7	Commuter
RM1	9/02/2017	22:38	92	59.3	78.9	65.1	Freight
RM1	9/02/2017	22:40	17	58.0	70.3	62.8	Commuter
RM1	9/02/2017	22:41	31	56.9	71.8	60.7	Commuter
RM1	9/02/2017	22:02	39	55.4	71.3	59.9	Commuter
RM1	9/02/2017	23:06	37	56.8	72.5	61.6	Commuter
RM1	9/02/2017	23:11	36	56.3	71.8	60.9	Commuter
RM1	9/02/2017	23:19	85	58.0	77.3	64.1	Freight
RM1	9/02/2017	23:28	79	61.6	80.6	67.5	Freight
RM1	9/02/2017	23:36	38	55.6	71.3	60.0	Commuter
RM1	9/02/2017	23:41	40	57.5	73.5	63.2	Freight
RM1	10/02/2017	0:03	36	54.0	69.5	57.3	Commuter
RM1	10/02/2017	0:07	72	57.1	75.6	61.9	Freight
RM1	10/02/2017	0:13	63	50.3	68.3	57.4	Freight
RM1	10/02/2017	0:20	81	57.4	76.5	62.2	Commuter
RM1	10/02/2017	0:24	62	56.4	74.3	63.3	Commuter
RM1	10/02/2017	0:35	38	57.4	73.2	63.3	Commuter
RM1	10/02/2017	0:41	35	55.0	70.5	59.8	Commuter
RM1	10/02/2017	1:01	35	56.3	71.7	61.5	Commuter
RM1	10/02/2017	1:11	58	55.6	73.2	61.3	Commuter

Measurement Location	Date	Time	Duration	Measured Noise Levels (dBA)			Type
				L_{Aeq}	SEL	L_{Amax}	
RM1	10/02/2017	1:15	131	62.8	83.9	70.3	Freight
RM1	10/02/2017	1:18	113	59.1	79.4	63.2	Freight
RM1	10/02/2017	1:22	52	55.5	72.6	60.6	Freight
RM1	10/02/2017	1:34	73	61.5	80.1	68.3	Freight
RM1	10/02/2017	1:35	36	55.4	70.9	59.5	Commuter
RM1	10/02/2017	1:44	37	59.4	75.0	65.4	Commuter
RM1	10/02/2017	2:17	91	58.5	78.1	61.7	Freight
RM1	10/02/2017	2:55	72	61.6	80.1	67.0	Freight
RM2	10/02/2017	22:07	28	56.2	70.7	61.1	Commuter
RM2	10/02/2017	22:12	26	39.7	53.8	43.1	Commuter
RM2	10/02/2017	22:20	94	50.0	69.7	62.4	Freight
RM2	10/02/2017	22:32	24	43.9	57.6	51.0	Commuter
RM2	10/02/2017	22:36	28	41.1	55.5	45.4	Commuter
RM2	10/02/2017	22:40	27	55.8	70.0	65.4	Commuter
RM2	10/02/2017	23:02	25	45.0	59.1	49.5	Commuter
RM2	10/02/2017	23:06	97	60.8	80.6	69.1	Freight
RM2	10/02/2017	23:10	28	50.5	65.0	59.8	Commuter
RM2	10/02/2017	23:18	27	50.6	65.0	56.3	Commuter
RM2	10/02/2017	23:33	25	43.5	57.4	49.4	Commuter
RM2	10/02/2017	23:37	26	47.1	61.3	55.4	Commuter
RM2	10/02/2017	23:41	27	43.7	57.9	49.6	Commuter
RM2	10/02/2017	23:45	27	44.5	58.8	51.1	Commuter
RM2	11/02/2017	0:09	28	47.1	61.6	53.9	Commuter
RM2	11/02/2017	0:17	28	46.3	60.7	53.1	Commuter
RM2	11/02/2017	0:32	27	44.7	59.0	51.4	Commuter

Measurement Location	Date	Time	Duration	Measured Noise Levels (dBA)			Type
				L_{Aeq}	SEL	L_{Amax}	
RM2	11/02/2017	0:35	26	43.8	58.0	50.3	Commuter
RM2	11/02/2017	0:44	21	41.8	55.0	45.6	Commuter
RM2	11/02/2017	0:48	26	48.8	62.9	53.9	Commuter
RM2	11/02/2017	0:58	29	44.3	58.9	49.9	Commuter
RM2	11/02/2017	1:00	59	51.0	68.8	55.5	Freight
RM2	11/02/2017	1:03	24	41.0	54.8	47.4	Commuter
RM2	11/02/2017	1:12	26	45.2	59.4	51.9	Commuter
RM2	11/02/2017	1:15	26	45.4	59.6	52.7	Commuter
RM2	11/02/2017	1:18	28	50.7	65.2	61.3	Commuter
RM2	11/02/2017	1:23	31	47.3	62.1	53.3	Commuter
RM2	11/02/2017	1:33	25	43.1	57.1	48.6	Commuter
RM2	11/02/2017	1:34	29	45.7	60.3	52.7	Commuter
RM2	11/02/2017	1:36	23	41.9	55.5	46.9	Commuter
RM2	11/02/2017	1:39	24	40.7	54.6	46.2	Commuter
RM2	11/02/2017	1:42	27	45.2	59.4	50.2	Commuter
RM2	11/02/2017	1:48	58	56.4	74.0	69.7	Freight
RM2	11/02/2017	1:59	27	44.3	58.6	50.7	Commuter
RM2	11/02/2017	2:02	26	44.9	59.1	52.6	Commuter
RM2	11/02/2017	2:15	25	42.2	56.3	48.9	Commuter
RM2	11/02/2017	2:19	42	47.1	63.3	52.9	Freight
RM2	11/02/2017	2:26	26	44.3	58.5	52.0	Commuter
RM2	11/02/2017	2:57	27	42.9	57.2	48.8	Commuter
RM3	2/02/2017	22:06	27	57.3	71.7	62.6	Commuter
RM3	2/02/2017	22:09	27	58.3	72.6	64.8	Commuter
RM3	2/02/2017	22:15	141	65.5	86.9	73.7	Freight

Measurement Location	Date	Time	Duration	Measured Noise Levels (dBA)			Type
				L_{Aeq}	SEL	L_{Amax}	
RM3	2/02/2017	22:29	27	57.3	71.6	62.7	Commuter
RM3	2/02/2017	22:32	24	53.7	67.5	57.5	Commuter
RM3	2/02/2017	22:39	27	54.6	69.0	59.6	Commuter
RM3	2/02/2017	22:43	24	53.9	67.8	57.4	Commuter
RM3	2/02/2017	23:04	27	56.5	70.8	61.9	Commuter
RM3	2/02/2017	23:09	27	55.1	69.4	60.7	Commuter
RM3	2/02/2017	23:13	28	56.2	70.7	61.7	Commuter
RM3	2/02/2017	23:35	29	56.8	71.5	61.3	Commuter
RM3	2/02/2017	23:42	64	61.2	79.2	65.5	Freight
RM3	2/02/2017	23:50	23	53.7	67.3	57.5	Commuter
RM3	3/02/2017	0:08	27	59.0	73.3	65.2	Commuter
RM3	3/02/2017	0:11	27	54.9	69.2	60.3	Commuter
RM3	3/02/2017	0:18	27	54.8	69.1	59.5	Commuter
RM3	3/02/2017	0:31	24	54.0	67.8	58.2	Commuter
RM3	3/02/2017	0:36	27	57.9	72.2	63.6	Commuter
RM3	3/02/2017	0:50	61	66.0	83.8	71.5	Freight
RM3	3/02/2017	1:02	26	54.9	69.1	59.5	Commuter
RM3	3/02/2017	1:05	28	54.7	69.2	59.1	Commuter
RM3	3/02/2017	1:07	26	55.6	69.8	60.7	Commuter
RM3	3/02/2017	1:15	28	56.4	70.9	61.7	Commuter
RM3	3/02/2017	1:18	40	63.4	79.5	70.6	Freight
RM3	3/02/2017	1:22	27	56.1	70.4	61.0	Commuter
RM3	3/02/2017	1:36	25	53.5	67.5	57.3	Commuter
RM3	3/02/2017	1:44	27	58.3	72.6	63.9	Commuter
RM3	3/02/2017	1:46	125	67.7	88.7	78.8	Freight

Measurement Location	Date	Time	Duration	Measured Noise Levels (dBA)			Type
				L_{Aeq}	SEL	L_{Amax}	
RM3	3/02/2017	2:16	87	65.3	84.7	72.1	Freight
RM3	3/02/2017	3:01	69	65.7	84.1	74.3	Freight
RM3	3/02/2017	3:18	70	62.6	81.0	70.0	Freight

ATTACHMENT D – ADDENDUM NOISE IMPACT ASSESSMENT

ACOUSTICS AND AIR

MPW STAGE 2 RESPONSES TO SUBMISSIONS

ADDENDUM IMPACT ASSESSMENT - NOISE

REPORT NO. 15324-PA
VERSION E

MAY 2017

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D	Final	16 March 2017	Nic Hall	John Wassermann
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50 YEARS 1962–2012

TABLE OF CONTENTS

Page

GLOSSARY OF ACOUSTIC TERMS

1 INTRODUCTION 1

1.1 Report Purpose 1
1.1.1 Amended Proposal 1

1.2 MPW Stage 2 Proposal Assessment 4
1.2.1 Operational Noise Impacts 4
1.2.2 Construction Noise Impacts 5

1.3 Amended Proposal Assessment 7
1.3.1 Methodology 7
1.3.2 Results 10
1.3.3 Mitigation Measures 13

1.4 Conclusion 13

APPENDIX A – NOISE CONTOUR PLOTS

GLOSSARY OF ACOUSTIC TERMS

Most environments are affected by environmental noise which continuously varies, largely as a result of road traffic. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. These descriptors, which are demonstrated in the graph below, are here defined.

Maximum Noise Level (L_{Amax}) – The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

L_{A1} – The L_{A1} level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the L_{A1} level for 99% of the time.

L_{A10} – The L_{A10} level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the L_{A10} level for 90% of the time. The L_{A10} is a common noise descriptor for environmental noise and road traffic noise.

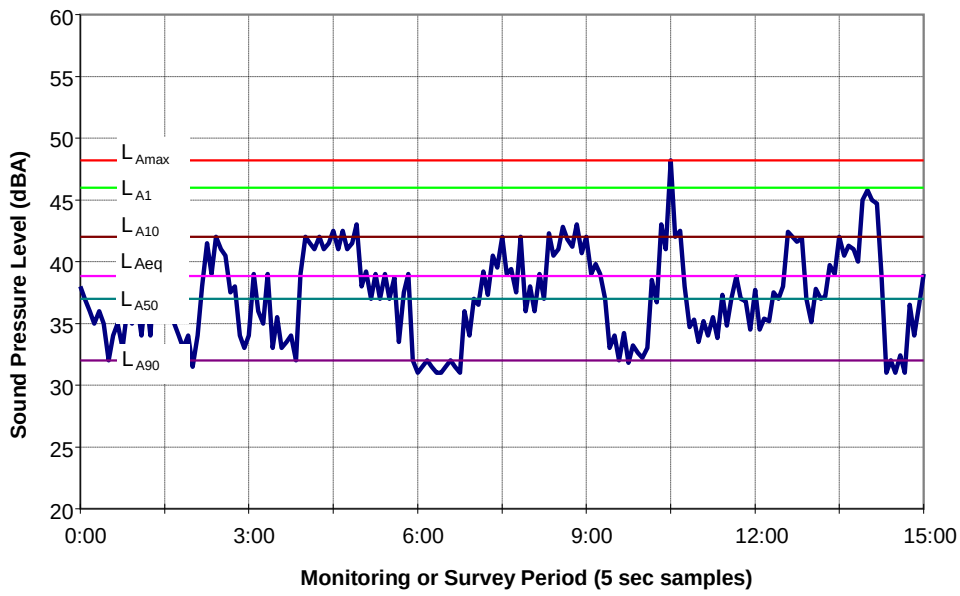
L_{A90} – The L_{A90} level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the L_{A90} level for 10% of the time. This measure is commonly referred to as the background noise level.

L_{Aeq} – The equivalent continuous sound level (L_{Aeq}) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

ABL – The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening and night time) for each day. It is determined by calculating the 10th percentile (lowest 10th percent) background level (L_{A90}) for each period.

RBL – The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and night time.

Typical Graph of Sound Pressure Level vs Time



1 INTRODUCTION

SIMTA are seeking approval for the construction and operation of the Moorebank Precinct West (MPW) Stage 2 Proposal (the Proposal), which will be the second stage of development under the MPW Concept Approval (SSD 5066).

An Environmental Impact Statement (EIS) was prepared for the Proposal seeking approval under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). In particular, the EIS was prepared to address, and be consistent with, the following:

- The Secretary's Environmental Assessment Requirements (SEARs) (SSD 16-7709) for the Proposal, which were issued on 14 July 2016
- The relevant requirements of the MPW Concept Approval (SSD 5066) granted by the Planning Assessment Commission (PAC) on 3 June 2016
- The relevant requirements of the approval under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) (No. 2011/6086).

The EIS was publicly exhibited, in accordance with clause 83 of the *Environmental Planning and Assessment Regulations 2000* (EP&A Regulations), between 26 October 2016 and 25 November 2016. During this exhibition period submissions were invited from all stakeholders including members of the community and government stakeholders. In response to the submissions received, and also to respond to design progression, amendments have been made to the Proposal (the Amended Proposal), as detailed below.

1.1 Report Purpose

The purpose of this report is to provide further environmental assessment for the Amended Proposal and serve as an addendum to the Noise and Vibration Impact Assessment (NVIA) provided within the EIS. A summary of the works included in the Amended Proposal is provided below.

1.1.1 Amended Proposal

The MPW Stage 2 Proposal (the Proposal) involves the construction and operation of an intermodal terminal (IMT) facility to support a container freight throughput volume of 500,000 twenty-foot equivalent units (TEUs) per annum. The Proposal also includes the construction and operation of approximately 215,000 m^2 GFA, freight village (800 m^2) and associated infrastructure.

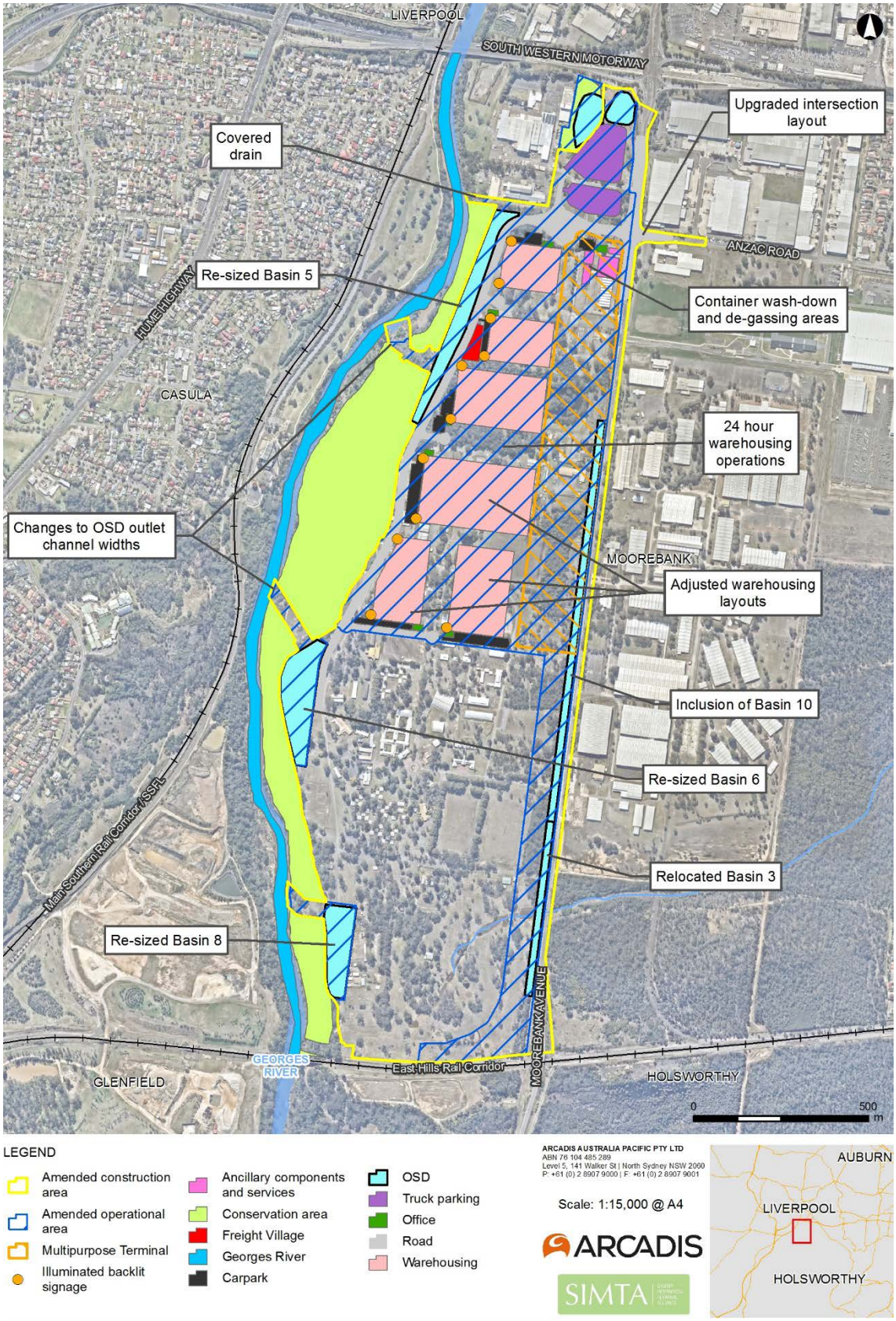
The Amended Proposal alters the Proposal based on design development, submissions received during exhibition of the EIS and, consultation with key stakeholders. A summary of the amendments to the Proposal is as follows:

- Alignment of the operational hours for warehouses to the IMT facility and Port freight operations to enable freight movements outside of peak traffic times.

- Alterations to the drainage design, including:
    - Inclusion of the OSD (Basin 10) along the eastern boundary
    - Relocation of temporary basin 3A
    - Re-sizing of OSD (Basins 5, 6 and 8) along the western boundary of the operational area
    - Reduction to the widths of selected OSD outlet channels
    - Provision of an additional covered drain within the Endeavour Energy easement
- Establishment of a container wash-down facility with de-gassing area within the IMT facility
- Illuminated backlit signage within the warehousing area
- Inclusion of an upgraded layout for the Moorebank Avenue/Anzac Road intersection
- Adjustments to warehouse layouts.

The amendments to the Proposal are shown in Figure 1-1.

Figure 1-1 Amendments to the Proposal



Impact Assessment

1.2 MPW Stage 2 Proposal Assessment

1.2.1 Operational Noise Impacts

The NVIA for the Proposal presented an assessment of operational noise impacts, in general accordance with the *NSW Industrial Noise Policy* (INP). In accordance with the INP, the NVIA presented the predicted $L_{Aeq,\ 15min}$ and $L_{Aeq,\ period}$ noise levels from the operation of the Proposal at the most potentially affected off-site receivers, and compared these predicted noise levels with the established intrusiveness and amenity criteria, respectively. In accordance with the INP, the predicted noise levels were presented during both calm and adverse meteorological conditions.

The predicted $L_{Aeq,\ 15min}$ and $L_{Aeq,\ period}$ noise levels, from the operation of the Proposal, as presented in the NVIA, are presented in Table 1-1 and Table 1-2, respectively.

It should be noted that the predicted $L_{Aeq,\ 15min}$ operational noise levels at the most potentially affected receiver in Wattle Grove was incorrectly reported in the NVIA for the Proposal. The $L_{Aeq,15min}$ operational noise levels presented in the NVIA for Wattle Grove represented the highest predicted noise levels in the region of Wattle Grove to the south of Anzac Road. However, there is a small region in Wattle Grove to the north of Anzac Road, near the intersection of Delfin Drive and Anzac Road, where the $L_{Aeq,15min}$ operational noise levels from the proposal are moderately higher than those presented in the NVIA. This region can be identified by reviewing the operational noise contour plots presented in the NVIA, and those presented for the Amended Proposal, in Appendix A of this report. Table 1-1 presents the correct predicted levels in Wattle Grove, along with the levels originally reported in the NVIA in brackets.

Table 1-1 Predicted $L_{Aeq,\ 15min}$ Operational Noise Levels – MPW Stage 2 Proposal

Receiver	Predicted $L_{Aeq,15min}$ Noise Level (dBA)				Criteria (dBA)			Exceedance?
	Day[1]	Evening[1]	Night[1]		Day[1]	Evening[1]	Night[1]	
			Calm[2]	Adverse[3]				
Casula	36	36	35	**39**	44	44	38	Up to 1 dB
Glenfield	<20	<20	<20	<20	40	40	38	0 dB
Wattle Grove	32 (28)	32 (28)	32 (28)	36 (33)	40	40	37	0 dB

1. Daytime = 7.00am-6.00pm; Evening = 6.00pm-10.00pm; Night = 10.00pm-7.00am.
2. CONCAWE Category 4.
3. CONCAWE Category 6.

Review of Table 1-1 indicates that the predicted $L_{Aeq,\ 15min}$ operational noise levels comply with the established criteria in Glenfield and Wattle Grove.

During periods where noise levels are enhanced by meteorological conditions, $L_{Aeq,\ 15min}$ operational noise levels were predicted to exceed the established night time intrusiveness criterion at the most affected receivers in Casula. At six residential receivers in Casula, the noise levels were predicted to exceed the criterion by up to 1 dB.

Table 1-2 Predicted $L_{Aeq, period}$ Operational Noise Levels – MPW Stage 2 Proposal

Receiver	Predicted $L_{Aeq, period}$ Noise Level (dBA)				Criteria (dBA)			Exceedance
	Day[1]	Evening[1]	Night[1]		Day[1]	Evening[1]	Night[1]	
			Calm[2]	Adverse[3]				
Casula	33	33	32	36	54	45	40	0 dB
Glenfield	<20	<20	<20	<20	54	45	40	0 dB
Wattle Grove	29	29	28	33	54	45	40	0 dB
S1	<20	<20	<20	22	45 (external, when in use)			0 dB
S2	24	24	23	27	45 (external, when in use)			0 dB
I1 (MPE)	60	60	60	60	70 (external, when in use)			0 dB
I2 (DJLU)	56	56	56	57	70 (external, when in use)			0 dB
I3 (ABB)	51	48	48	48	70 (external, when in use)			0 dB

1. Daytime = 7.00am-6.00pm; Evening = 6.00pm-10.00pm; Night = 10.00pm-7.00am.
2. CONCAWE Category 4.
3. CONCAWE Category 6.

Review of Table 1-2 indicates that the predicted $L_{Aeq, period}$ operational noise levels presented in the EIS comply with the established criteria at all sensitive receiver locations at all times.

1.2.2 Construction Noise Impacts

The NVIA for the Proposal presented the predicted $L_{Aeq, 15min}$ construction noise levels for the major works periods for the Proposal, and compared these levels with the Noise Management Levels (NML) established in accordance with the *Interim Construction Noise Guideline* (ICNG). Predicted noise levels were presented for the proposed works in both standard construction hours, and a number of out of hours (OOH) periods.

The predicted construction noise levels at the most potentially affected receivers during standard construction hours, as presented in the NVIA, are shown in Table 1-3.

Table 1-3 Predicted Standard Hours[1] Construction Noise Levels – MPW Stage 2 Proposal

Receiver	Construction Works Period[2]							NML
	Pre-construction stockpiling	Site preparation	Bulk earthworks, drainage and utilities	Moorebank Avenue and internal roads	IMT facility and Rail link connection	Warehouse construction and fit out	Buildings and finishing works	
Casula	39	46	**50**	44	47	46	41	49
Glenfield	25	32	36	30	33	32	27	45
Wattle Grove	26	33	37	31	34	33	28	45
S1	38	45	49	43	46	45	40	55
S2	37	44	48	42	45	44	39	55

Receiver	Construction Works Period[2]							NML
	Pre-construction stockpiling	Site preparation	Bulk earthworks, drainage and utilities	Moorebank Avenue and internal roads	IMT facility and Rail link connection	Warehouse construction and fit out	Buildings and finishing works	
MPE (I1)	40	47	51	45	48	47	42	75
DJLU (I2)	33	40	44	38	41	40	35	75
ABB (I3)	42	49	53	47	50	49	44	75

1: Standard Construction Hours = 7.00am – 6.00pm weekdays, 8.00am – 1.00pm Saturday, no work on Sundays or public holidays.
2: Predicted noise levels included as bold text denotes an exceedance of the NML.

Review of Table 1-3 indicates that construction noise levels during standard hours are predicted to exceed the established NML at the nearest residential receivers in Casula by 1 dB, and are predicted to comply with the established NML for all other receiver catchments and discrete receivers.

The predicted construction noise levels at the most potentially affected receivers during the OOH periods, as identified in the NVIA, are presented in Table 1-4. It should be noted that OOH noise limits, established in accordance with the ICNG, are applied to residential receivers only. Accordingly, the residents of Casula, Glenfield and Wattle Grove are the focus of the noise assessment for OOH construction activities.

Table 1-4 Predicted OOH Construction Noise Levels – MPW Stage 2 Proposal

Receiver	OOH Period 1*		OOH Period 2, 3 & 4*		Exceedance
	Predicted $L_{Aeq, 15min}$ Noise Level	NML	Predicted $L_{Aeq, 15min}$ Noise Level	NML	
Casula	39	44	44	44	0 dB
Glenfield	26	40	31	40	0 dB
Wattle Grove	26	40	35	40	0 dB

* OOH Period 1: 6.00am – 7.00am Weekdays
OOH Period 2: 6.00pm – 10.00pm Weekdays
OOH Period 3: 7.00am – 8.00am Saturday
OOH Period 4: 1.00pm – 6.00pm Saturday

Review of Table 1-4 indicates that the predicted $L_{Aeq, 15min}$ noise levels at the most potentially affected residential receivers comply with the establish OOH NML during all OOH works periods.

1.3 Amended Proposal Assessment

1.3.1 Methodology

Construction Noise Impacts

An assessment of construction noise impacts associated with the Amended Proposal has been undertaken for the following amendments:

- Hours of warehousing operations;
- Drainage works;
- Container wash-down facilities and degassing facility within the Proposal site;
- Illuminated backlit signage;
- Upgraded layout for the Moorebank Avenue / Anzac Road intersection; and,
- Adjustments to warehouse layout.

A breakdown of the construction noise assessment methodology for each of the listed elements above is provided below.

Hours of warehousing operations

Revised hours of warehousing operations as part of the Amended Proposal would not change the construction noise impacts of the Proposal, and has therefore not been assessed further as part of this report.

Drainage works

Adjustments to the drainage design, as part of the Amended Proposal, would not significantly change the duration, intensity or distance to sensitive receivers of the related construction activities. Therefore, this amendment would not change the construction noise impacts of the Proposal, and has therefore not been assessed further as part of this report.

Container wash-down and degassing facilities

The addition of container wash-down and degassing facilities, as part of the Amended Proposal, would not significantly change the duration, intensity or distance to sensitive receivers of the related construction activities. Therefore, this amendment would not change the construction noise impacts of the Proposal, and has therefore not been assessed further as part of this report.

Illuminated backlit signage

The addition of illuminated backlit signage, as part of the Amended Proposal, would not significantly change the duration, intensity or distance to sensitive receivers of the related construction activities. Therefore, this amendment would not change the construction noise impacts of the Proposal, and has therefore not been assessed further as part of this report.

Upgraded layout for the Moorebank Avenue / Anzac Road intersection

The proposed upgraded layout for the Moorebank Avenue/Anzac Road intersection would result in construction works along Moorebank Avenue being conducted for an additional three months, and would result in works being conducted in closer proximity to DJLU. The construction footprint for the upgraded layout for the Moorebank Avenue / Anzac Road intersection has been included in the noise model for the relevant works period.

Adjustments to warehouse layout

Adjustments to the warehouse layout, as part of the Amended Proposal, would not significantly change the duration, intensity or distance to sensitive receivers of the related construction activities. Therefore, this amendment would not change the construction noise impacts of the Proposal, and has therefore not been assessed further as part of this report.

To assess the potential for incremental construction noise impacts associated with the Amended Proposal, over those predicted for the Proposal, the proposed changes were reviewed to identify the following:

- Construction activities occurring closer to sensitive receivers;
- Construction activities occurring over a longer duration; and,
- Additional construction plant.

Of the proposed changes, only the upgraded layout for the Moorebank Avenue/Anzac Road intersection have the potential to result in incremental construction noise impacts on sensitive receivers.

The additional construction activities for the Amended Proposal are anticipated to be conducted during standard construction hours, and therefore, the OOH construction noise levels presented in the NVIA for the Proposal do not require any update.

$L_{Aeq, 15min}$ construction noise levels for works periods that would change under the Amended Proposal have been modelled, taking into account additional construction plant and changes to the locations of construction activities, relative to sensitive receivers.

Operational Noise Impacts

An assessment of operational noise impacts associated with the Amended Proposal has been undertaken for the following amendments:

- Hours of warehousing operations;
- Drainage works;
- Container wash-down facilities and degassing facility within the Proposal site;
- Illuminated backlit signage;
- Upgraded layout for the Moorebank Avenue / Anzac Road intersection; and,
- Adjustments to warehouse layout.

A breakdown of the operational noise assessment methodology for each of the listed amendments above is provided below.

Hours of warehousing operations

The dominant noise sources associated with the operation of the warehouses are trucks accessing the warehouses, via the warehouse access road along the western site boundary and the internal road network in the warehousing area.

In the EIS noise model, truck movements were modelled for both average movements and worst-case 15-minute movements for the day, evening and night time assessment periods (i.e 24-hour movements), consistent with the traffic movements presented in the EIS and the supporting operational traffic and transport impact assessment.

The traffic numbers used in the EIS and the supporting operational traffic and transport impact assessment were based on a 24-hour traffic profile not an 18-hour traffic profile. The noise modelling was conducted using the average truck volumes and worst-case 15-minute peak truck volumes derived from the temporal variation (%) of traffic over the 24-hour period. Therefore, no changes to traffic movements are anticipated and no updates are required to the noise model and as such, no changes to traffic movements has been considered as part of this assessment.

Drainage works

Drainage works as part of the Amended Proposal would not change the operational noise impacts of the Proposal, and have therefore not been included in the operational noise assessment presented in this report.

Container wash-down and degassing facilities

The container wash-down and degassing facilities have the potential to introduce additional operational noise sources to the Proposal site. The dominant noise source identified for the container degassing and wash-down area is a large pressure washer. The pressure washer is represented in the noise model as a point source, operating continuously, with a sound power level of 103 dBA. The continuous operation of the pressure washer has been used to represent a typical worst-case 15-minute period for the operation of the Amended Proposal.

Illuminated signage

Illuminated signage as part of the Amended Proposal would not change the operational noise impacts of the Proposal, and has therefore not been assessed further as part of this report.

Upgraded layout for the Moorebank Avenue / Anzac Road intersection

The upgraded layout for the Moorebank Avenue / Anzac Road intersection would not change the operational noise impacts of the Proposal, and has therefore not been assessed further as part of this report.

The upgraded layout for the Moorebank Avenue/Anzac Road intersection would not significantly affect road traffic noise levels at sensitive receivers as there are no such receivers adjacent to either Moorebank Avenue or Anzac Road in the vicinity of the upgraded layout.

Adjustments to warehouse layout

The warehouse layout can affect operational noise levels from the Proposal as it influences the flow of trucks on the internal road network, and the warehouses themselves provide significant shielding between noise sources and sensitive receivers.

The latest layout for the warehouses and the internal road network, as shown in Figure 1-1, were imported into the noise model, and the associated noise sources representing traffic on the internal roads and warehousing activities were updated accordingly.

The computer noise model used to predict the $L_{Aeq,\ 15min}$ and $L_{Aeq,\ period}$ operational noise impacts for the Proposal was updated to reflect the above amendments.

None of the amendments to the Proposal are considered likely to result in noise sources with significant L_{Amax} noise levels moving closer, or being more exposed, to the most affected residential receivers. Therefore, the predicted L_{Amax} noise levels in the sleep disturbance assessment in the NVIA are representative of the likely L_{Amax} noise levels for the Amended Proposal.

1.3.2 Results

The predicted $L_{Aeq,\ 15min}$ and $L_{Aeq,\ period}$ operational noise levels at the most potentially affected sensitive receivers, under the Amended Proposal, are presented in Table 1-5 and Table 1-6, respectively. Contour plots of the predicted $L_{Aeq,15min}$ operational noise levels from the Amended Proposal are presented in Appendix A of this report.

Table 1-5 provides a comparison of the predicted $L_{Aeq,\ 15min}$ operational noise levels between the results of the EIS and the revised results with the inclusion of the Amended Proposal. Table 2-5 demonstrates that the Amended Proposal would comply with the established intrusiveness criteria in Glenfield and Wattle Grove, and would exceed the criterion by up to 1 dB in Casula. This exceedance is equivalent to that identified in the NVIA.

Table 1-6 provides a comparison of the predicted $L_{Aeq,\ period}$ operational noise levels between the results of the EIS and the revised results with the inclusion of the Amended Proposal. Table 2-6 demonstrates that the Amended Proposal would comply with the established amenity criteria, consistent with what was identified in the NVIA prepared to the support the EIS.

Comparison of the predicted operational noise levels for the Amended Proposal with the predicted operational noise levels for the Proposal as assessed in the EIS demonstrates that the Amended Proposal would have a very small effect on operational noise levels at sensitive receivers. Review of the tables indicates that, at the most affected residential receivers in Casula, under the Amended Proposal, $L_{Aeq,\ 15min}$ and $L_{Aeq,\ period}$ operational noise levels decrease by 1 dB during the daytime and evening, and $L_{Aeq,\ period}$ operational noise levels increase by 1 dB during the night time. However, in reality, these changes in predicted noise levels are less than 1 dB, and have been exaggerated in the process of rounding to the nearest 1 dB.

It is noted that although each warehouse is altered by the amended layout, the general location and orientation of the warehouses, and the associated internal road network, have not changed significantly when viewed in context of the overall operational noise emissions from the Proposal site. Therefore, as indicated by the results of the updated modelling, the amended warehouse layout is not expected to significantly influence the operational noise impacts from the Proposal.

Table 1-5 Comparison of Predicted $L_{Aeq,\ 15min}$ Operational Noise Levels between the EIS and the Amended Proposal

Receiver	MPW Stage 2 EIS (as exhibited)				Amended Proposal				Criteria (dBA)			Exceedance?	
	Predicted $L_{Aeq,15min}$ Noise Level (dBA)				Predicted $L_{Aeq,15min}$ Noise Level (dBA)							MPW Stage 2 EIS	Amended Proposal
	Day[1]	Eve.[1]	Night[1]		Day[1]	Eve.[1]	Night[1]		Day[1]	Eve.[1]	Night[1]		
			Calm[2]	Adverse[3]			Calm[2]	Adverse[3]					
Casula	36	36	35	**39**	35	35	35	**39**	44	44	38	Up to 1 dB	Up to 1 dB
Glenfield	<20	<20	<20	<20	<20	<20	<20	<20	40	40	38	0 dB	0 dB
Wattle Grove	32 (28)	32 (28)	32 (28)	36 (33)	32	32	32	36	40	40	37	0 dB	0 dB

1. Daytime = 7.00am-6.00pm; Eve. = 6.00pm-10.00pm; Night = 10.00pm-7.00am.
2. CONCAWE Category 4.
3. CONCAWE Category 6.

Table 1-6 Comparison of Predicted $L_{Aeq,\ period}$ Operational Noise Levels between the EIS and the Amended Proposal

Receiver	MPW Stage 2 EIS (as exhibited)				Amended Proposal				Criteria (dBA)			Exceedance?	
	Predicted $L_{Aeq,\ period}$ Noise Level (dBA)				Predicted $L_{Aeq,\ period}$ Noise Level (dBA)							MPW Stage 2 EIS	Amended Proposal
	Day[1]	Eve.[1]	Night[1]		Day[1]	Eve.[1]	Night[1]		Day[1]	Eve.[1]	Night[1]		
			Calm[2]	Adverse[3]			Calm[2]	Adverse[3]					
Casula	33	33	32	36	32	32	31	35	54	45	40	0 dB	0 dB
Glenfield	<20	<20	<20	<20	<20	<20	<20	<20	54	45	40	0 dB	0 dB
Wattle Grove	29	29	28	33	29	29	28	32	54	45	40	0 dB	0 dB
S1	<20	<20	<20	22	22	22	21	24	45 (external, when in use)			0 dB	0 dB
S2	24	24	23	27	25	25	24	28	45 (external, when in use)			0 dB	0 dB
I1 (MPE)	60	60	60	60	60	60	60	60	70 (external, when in use)			0 dB	0 dB
I2 (DJLU)	56	56	56	57	56	56	56	57	70 (external, when in use)			0 dB	0 dB
I3 (ABB)	51	48	48	48	51	48	48	48	70 (external, when in use)			0 dB	0 dB

1. Daytime = 7.00am-6.00pm; Eve. = 6.00pm-10.00pm; Night = 10.00pm-7.00am.
2. CONCAWE Category 4.
3. CONCAWE Category 6.

The predicted $L_{Aeq, 15min}$ construction noise levels at the most potentially affected sensitive receivers due to the Amended Proposal are presented in Table 1-7. The table presents the predicted noise levels at sensitive receivers for the construction works periods relevant to the Amended Proposal. Namely, the "Moorebank Avenue and internal roads" works period, during which, works for the upgraded layout of the Moorebank Avenue / Anzac Road intersection would occur.

Table 1-7 Predicted Construction Noise Levels – Amended Proposal

Receiver	Moorebank Avenue & Internal Roads		NML	Incremental Impact?	Exceedance
	MPW Stage 2 EIS	Amended Proposal			
Casula	44	44	49	No	0 dB
Glenfield	30	30	45	No	0 dB
Wattle Grove	31	37	45	**Yes**	0 dB
S1	43	43	55	No	0 dB
S2	42	42	55	No	0 dB
MPE (I1)	45	45	75	No	0 dB
DJLU (I2)	38	64	75	**Yes**	0 dB
ABB (I3)	47	47	75	No	0 dB

As shown in Table 1-7, the Amended Proposal would result in additional construction noise impacts on the DJLU site, and at the most affected residential receivers in Wattle Grove.

Construction noise levels at the most affected residential receivers in Wattle Grove and on the DJLU site, during the construction works associated with the upgraded layout for the Moorebank Avenue/ Anzac Road intersection, would increase as a result of these works moving closer to these receivers. Additionally, since these works would be conducted over a longer period, construction noise on the DJLU site would be experienced over a longer period. The predicted $L_{Aeq, 15min}$ construction noise levels at the most affected receivers in Wattle Grove and on the DJLU site remain below the established NML under the Amended Proposal.

The above results indicate some increased construction noise impacts at sensitive receivers due to the construction of the Amended Proposal. However, the additional impacts do not result in any additional exceedances of the established NMLs over that presented in the EIS NVIA. Accordingly, the conclusions and recommended mitigation measures in the EIS NVIA relating to construction noise impacts from the Proposal, remain unchanged.

1.3.3 Mitigation Measures

The Amended Proposal is not expected to result in any additional operational noise impacts, beyond those presented in the NVIA. Therefore, the operational noise mitigation measures recommended in the NVIA are still valid, and no additional measures are recommended.

Construction activities under the Amended Proposal are not predicted to result in any additional exceedances of the established NML at any sensitive receivers. Therefore, no mitigation measures additional to those identified in the NVIA for the Proposal are recommended.

1.4 Conclusion

This assessment concludes that the Amended Proposal would result in consistent operational noise impacts to those already identified and assessed as part of the existing NVIA. Therefore, the outcomes and recommendations of the assessment undertaken for the NVIA are still relevant and appropriate for the assessment of the Amended Proposal.

Additionally, this assessment concludes that the Amended Proposal would result in some additional construction noise impacts to those already identified and assessed as part of the existing NVIA due to the extended duration of construction works, additional plant and works being carried out closer to sensitive receivers. However, the outcomes and recommendations of the assessment undertaken for the NVIA are still relevant and appropriate for the assessment of the Amended Proposal.

APPENDIX A

NOISE CONTOUR PLOTS

Figure A-2 Night Time $L_{Aeq,\ 15min}$ Operational Noise Levels – Calm Meteorological Conditions

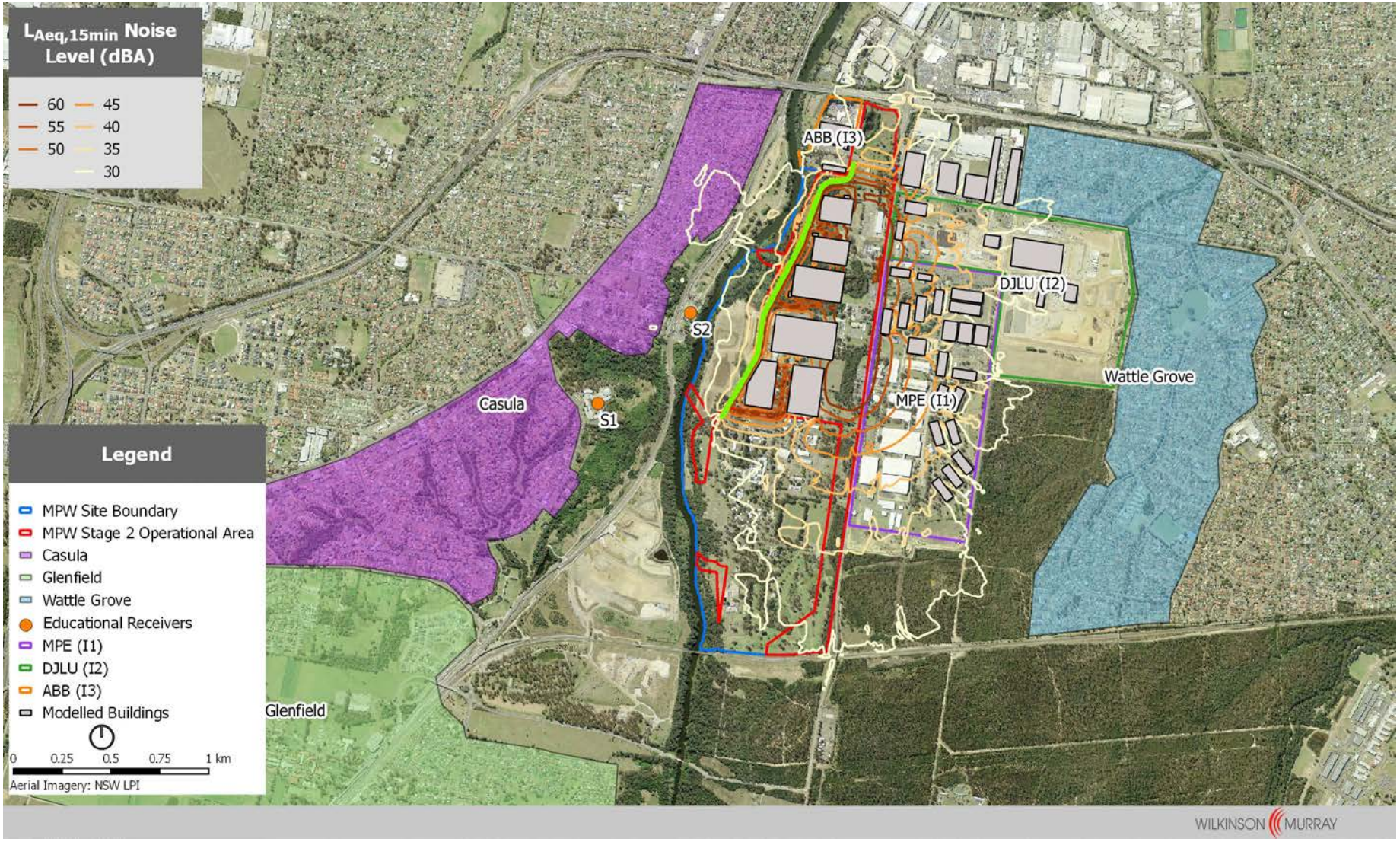
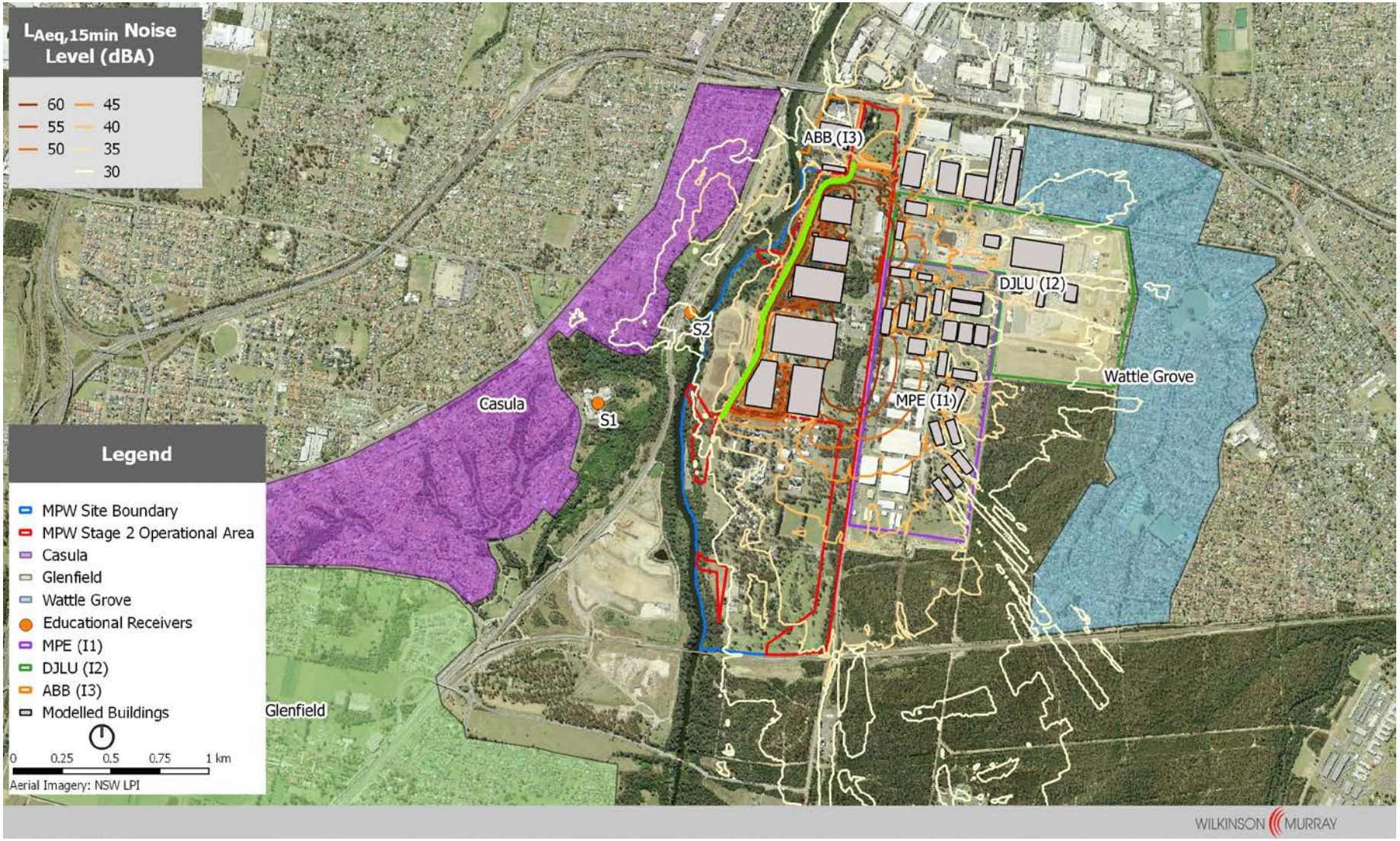


Figure A-2 Night Time $L_{Aeq,\ 15min}$ Operational Noise Levels – Adverse Meteorological Conditions



ARCADIS Design & Consultancy for natural and built assets

APPENDIX C – GOVERNMENT ARCHITECT NSW RESPONSE

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3/07/2017

Moorebank Precinct West (MPW) Stage 2 (SSD 7709) Response to Submissions – issues raised by Government Architect NSW

SSD-16_7709

Dear Barbara,

This letter and its attachment responds to the issues identified by Government Architect NSW during their assessment of the MPW Stage 2 Environmental Impact Statement (EIS) (herein referred to as the MPW Stage 2 EIS).

Specifically, **Attachment A** of this letter provides a tabulated response to the issues identified by Government Architect NSW as included in the letter titled *'Moorebank Precinct West Stage 2 (SSD 7709) Comment on the Environmental Impact Statement'*, dated 22 May 2017.

We would welcome the opportunity to discuss these responses with you further. Do not hesitate to contact Steve Ryan from Tactical Group (0406 995 822) with any questions.

Yours sincerely

Claire Vahtra
Environmental Consultant
+61 2 8907 9018

Enc. 1
CC. Nathan Cairney, Steve Ryan, Andrew Wiltshire, Westley Owers

ATTACHMENT A – RESPONSE TO ISSUES RAISED BY GOVERNMENT ARCHITECT NSW

Aspect	Comment	Response	Reference
Visual Impacts			
Viewpoint 2	This vantage point from Leacock Regional Park looks east towards development site. The current view provides a long distance view over uninterrupted bushland. The proposed view results in the roof of the Proposal being visible, breaking the bushland horizon line. This resulting visual impact is considered as being moderate within the assessment in the EIS. As this is currently a significant distant bushland view from the public domain, this impact is not considered acceptable.	The Visual Impact Assessment (VIA) (Refer to Section 15 and Appendix T of the EIS) has been undertaken in accordance with the Conditions of Approval (CoA – MP10-0193) and SEARs for the Proposal (refer to Table 15-1 of the EIS). As outlined in Section 3.1 of the VIA, the visual impact of the selected viewpoints in this study have been evaluated on a qualitative basis. The visual impact of the Proposal has been assessed using a range of criteria against which the relative importance of each observer location can be described including; context, setting, site elements, site character, adjacent development, distance to view (foreground, middle ground and background), land use, visual prominence of the development, and potential changes to the view setting. For each observer location, these criteria have been addressed under three category headings; 'visual adaptation', 'visual sensitivity' and the resulting 'visual impact'. As outlined in Table 15-11 of the EIS and Table 6 of the VIA (refer to Appendix T of the EIS), the overall visual impact	Section 22 of the MPW Concept EIS Section 15 and Appendix T of the EIS

Aspect	Comment	Response	Reference
		assessment finding of moderate from Viewpoint 02 is comprised of a low/moderate adaptation impact and a moderate sensitivity impact. As shown in figure 15-5 of the EIS, the proposed view would not break the bushland horizon line. The introduction of building roofs, as shown in Figure 15-5 of the EIS, is considered in this case to be acceptable given the presence of screening vegetation in both the foreground and background, softening the prominence of the Proposal from the viewpoint site. Visual impact mitigation would be implemented through adaptive and considered design. Harmonious colour pallets and high quality finishes/materials of visible warehouse components implemented, would allow for limited contrast, attractive design and longevity of amenity. Given the methodology applied to undertake the visual impact assessment of the Proposal, the result of the impact assessment and the mitigation measures proposed to avoid, minimise and mitigate the visual impacts of the Proposal, that the level of impact at this viewpoint is considered acceptable.	
Viewpoint 3	This vantage point is located within Carroll Park and neighboring residential properties and provides existing distant views across bushland. Whilst the view has been identified as moderately sensitive, the impact itself by the Proposal is identified as moderate to high. As a view that is currently landscape in character, this impact is not considered acceptable.	The Visual Impact Assessment (VIA) (Refer to Section 15 and Appendix T of the EIS) has been undertaken in accordance with the Conditions of Approval (CoA – MP10-0193) and SEARs for the Proposal (refer to Table 15-1 of the EIS). Visual impact assessment criteria and methodology undertaken is outlined within the above submission response. As outlined in Table 15-11 of the EIS and Table 6 of the VIA (refer to Appendix T of the EIS), the overall visual impact assessment finding of moderate from Viewpoint 03 (representative of view from Carrol Park and associated residential properties) is comprised of a moderate adaptation impact and a moderate sensitivity impact.	Section 22 of the MPW Concept EIS Section 15 of the EIS

Aspect	Comment	Response	Reference
		Viewpoint sensitivity was assessed based on the likely duration of views and number of observers from a given viewpoint and is independent of the 'prominence' of the Proposal. It is acknowledged through Table 15-11 and Figure 15-7 of the EIS that the existing landscape amenity would change as a result of the Proposal. The proposed view from this site would be encountered by residents and users of the park, with the Proposal being moderately prominent. However, the view is assessed as being of moderate visual sensitivity as the views of the site would be temporary contributing to an overall assessment rating of moderate and is considered acceptable on this basis.	
Viewpoint 7	This vantage point is located along Moorebank Road from the public road. The current view provides good screening by mature trees along the road interface into the site. The proposal does not provide sufficient landscape screening of the proposed warehouse buildings, and is considered unacceptable.	The Visual Impact Assessment (VIA) (Refer to Section 15 and Appendix T of the EIS) has been undertaken in accordance with the Conditions of Approval (CoA – MP10-0193) and SEARs for the Proposal (refer to Table 15-1 of the EIS). Visual impact assessment criteria and methodology undertaken is outlined within the above submission response. As stated in Table 15-11 of the EIS, for Viewpoint 07 the addition of warehouse buildings to the existing landscape would be compatible with the existing industrial nature of the area, and views would generally be temporary as most users would be travelling along Moorebank Avenue in vehicles at this viewpoint location, which indicates low visual sensitivity. Furthermore, as outlined within the Landscape Plans for the Proposal (refer to Appendix B of this RtS), landscape planting along the western side of Moorebank Avenue frontage (refer to Figure 15-15 of the EIS) would consist of a variety of tree and shrub heights and serve to provide a natural visual screen of warehouse buildings within the Proposal site from the roadway. This level of screening	Section 22 of the MPW Concept EIS Section 15 of the EIS Appendix B of this RtS

Aspect	Comment	Response	Reference
		is considered acceptable based on the low visual sensitivity of the area. Further visual impact mitigation would be implemented through adaptive and considered design of warehouse buildings. This would be implemented through harmonious colour pallets and high quality finishes/materials of visible warehouse components allow for limited contrast, attractive design and longevity of amenity.	
Conclusion	From the assessment of the view analysis, it is considered that the proposal results in adverse impacts to views 02, 03 and 07 in particular and the visual quality of the natural bushland landscape, both along the river edge and from Moorebank Road. The proposals as viewed from these vantage points described above are not sensitive to the surrounding predominant character and the context, and do not protect the beauty of the is part of the Georges River region's natural visual landscape. Overall, these view impacts do not meet the objectives of the draft District Plan (South West), the Green Grid, Better Placed and the Regional Environment Plan no 2. Georges River Catchment. It is recommended that the scheme is reviewed and amended to reduce the visual impacts from the public domain.	As discussed from the responses above, and more broadly in Table 15-11 of the EIS, the assessment findings for views 02, 03 and 07 (i.e. Moorebank Avenue) of moderate are considered acceptable and comply with the requirements of the SEARs. The visual character and quality of the bushland along the Georges River would be maintained through the retention of the riparian corridor (i.e. conservation area), which would also form a proposed biodiversity offset site. Although it is acknowledged the Proposal would have a degree of visual impact ranging from negligible to moderate depending on the location, the Proposal is considered overall to be sensitive to surrounding land uses and additional mitigation measures would be implemented to reduce this impact further, where possible. The extensive native bushland areas, Department of Defence facilities on neighbouring lands, the adjacent MPE site and the general pattern of industrial type development surrounding the Proposal site screens the Proposal from much of the greater sensitive surrounding areas, which are primarily residential. Landscaping and urban design features, described in Section 15 of the EIS, would screen the Proposal as well as further integrate the Proposal with surrounding land uses, minimising the visual impact. An additional commitment (refer to Section 22 of the EIS)	Section 3.1 and 15 of the EIS

Aspect	Comment	Response	Reference
		to implement harmonious colour pallets and high quality finishes/materials of visible warehouse components would further generate limited contrast, attractive design and longevity of amenity with respect to the built Proposal components. As outlined in Section 7.1 of this RtS, the Amended Proposal would not change the assessment findings outlined in the EIS. **Strategic Documentation Consideration** Section 3 of the MPW Concept EIS includes a consistency assessment of the MPW Project in relation to key strategic planning documents, and establishes the strategic need and justification for the MPW Project. The MPW Concept EIS (SSD 5066) was granted approval by the PAC on 3 June 2016. This approval identifies that the NSW Government supports, subject to satisfying conditions of approval, the operation of the MPW Project on the western side of Moorebank Avenue, Moorebank. Section 3.1 of the EIS outlines the strategic justification for the Proposal from a State and Commonwealth perspective. This section was prepared based on the requirements of the SEARs which stipulated that the EIS is to address the following documents: • NSW State Priorities • A Plan for Growing Sydney 2014 • State Infrastructure Strategy 2012-2032 • NSW Freight and Ports Strategy 2013 • NSW Long Term Transport Masterplan • National Land Freight Strategy.	

Aspect	Comment	Response	Reference
		The majority of following documents were not directly considered in the preparation of the EIS as they were not identified in the SEARs, however a consistency assessment for the Proposal with each of these plans is provided below. **Draft South West District Plan** The objectives of the Greater Sydney Commission's (GSC) Draft South West District Plan (November 2016) include overall priorities of liveability, productivity and sustainability and attributing principles. The address of the strategic planning and visual objectives of the South West District Plan are a singular facet of the broader social, economic and environmental considerations, within which the Proposal is supported. Specific reference within the submission to constraints of the Proposal that require addressing include: • Limited access points across the Georges River and the railway line; and • Environmental issues on the riverbank. Pedestrian and cycle connections across the Georges River are outside the scope of the proposal. Notwithstanding, Architectural Drawings provided in Appendix D of the EIS indicate that the site layout does not preclude a possible future pedestrian connection to Casula Railway Station from the northern section of the site. Secondly, the riparian corridor along the Georges River adjacent to the Amended Proposal site would be preserved and maintained for conservation purposes, and thereby would not exacerbate any existing environmental issues along the river bank. The Proposal supports the Plan's vision that by 2056, Western City will be transformed into "a trade, logistics, advanced	

Aspect	Comment	Response	Reference
		manufacturing, tourism, health and science hub". The benefits of integrated planning inclusive of staged infrastructure development and identification of the Proposal within the Liverpool Strategic Centre are present across the productivity, liveability and sustainability priorities within the District Plan aspects of the framework. **Sydney Green Grid** Consideration of the Sydney Green Grid objectives with reference to the Proposal is identified in *A Plan for Growing Sydney*, which is considered in Section 3.1 of the EIS. The Proposal is considered to align with or, at worst, not compromise any of the key objectives identified within the submission document, including those concerned with environmental conservation, environmental quality of waterways, access to open space, encouraging sustainable transport connections and adaptation to climate extremes and urban greening. **Greater Metropolitan Regional Environmental Plan No 2—Georges River Catchment** Section 5.3.6 of the EIS considers the matters relevant of this plan to the Proposal, including key objectives raised by GA in its submission to maintain or improve the water quality and river flows of the Georges River and its catchment, and to establish a consistent and coordinated approach to environmental planning and assessment for land along the George River and its tributaries. Further detail providing reference for how the Proposal satisfies specific relevant planning controls is provided in Table 5-6 of the EIS.	

Aspect	Comment	Response	Reference
		Better Placed - NSW Government Architect's Office The first draft of this document was exhibited following the exhibition of the MPW Stage 2 EIS. Notwithstanding, the Proposal supports the key objective of this strategic document of "making people's lives better" through its function in improving the operational capacity of the freight distribution network throughout Western Sydney, for years to come. **Greener Spaces – NSW Government Architect's Office** The key objectives of the Greener Places as identified by GA in their submission, are: • To guide the planning, design and delivery of green infrastructure in urban areas across NSW • To create a healthier, more liveable and sustainable urban environment by improving community access to recreation and exercise, supporting walking and cycling connections and improving the resilience of urban areas. The Proposal does not directly affect any existing open space or community access to recreation and exercise. The Proposal is situated within an industrial area and includes the preservation of a large area of connected riparian corridor adjacent to the Georges River for conservation purposes. The Proposal would assist in the promotion of a more liveable and sustainable urban environment, as discussed in detail in Section 3.1 of the EIS. Overall, the objectives within the Strategic Plans identified would not be compromised by the Proposal, for reasons outlined above and throughout this document. Further information about how the Proposal align with both National and NSW strategic planning and policy framework is provided in Section 3.1 of the EIS.	

Aspect	Comment	Response	Reference
Impacts to open space and bushland connectivity			
Connections to riparian corridor and across the Georges River from the Proposal site	The Proposal does not show evidence of providing the opportunity to connect to significant open space and bushland along the river bank within the site, along the riverbank and surrounding areas of open space such as Leacock Regional Park. This is important in the context that the bushland and open space is a key asset of this area and connections to this amenity and green infrastructure network provide significant health and well-being benefits to both residents of the area and employees of the site.	The nature of the proposed use of the Proposal site as an intermodal freight processing facility does not intend to provide public connectivity to bushland adjacent to the Georges River, as this area forms a proposed biodiversity offset area which is to be retained for conservation purposes. It should also be noted that that the MPW site, and riparian corridor along this side of the Georges River, was previously not publicly accessible due to the military use of the site. Leacock Regional Park is located on the opposite side of the Georges River to the Proposal site. Notwithstanding, Architectural Drawings provided in Appendix D of the EIS show the site layout does not preclude a possible future pedestrian connection to Casula Railway Station from the northern section of the site.	Section 4 and Appendix D of the EIS
Conclusion	The ability to provide connections for users of this area to significant open space amenity is important in responding to peoples' needs for services and amenity and allowing access to existing open spaces which people can enjoy. This does not meet the objectives of the draft District Plan (South West), the Regional Environment Plan Georges River Catchment, Better Placed and the Green Grid. It is recommended that investigations of potential to provide connections to	The Proposal has been designed in accordance with the relevant CoAs and SEARs. The Proposal is located upon Commonwealth Land, previously occupied by Department of Defence for training purposes, and is not accessible to the public for site security reasons. The Proposal does not directly affect any existing open space and bushland, and does not preclude future connections to existing public open space and bushland.	Section 20.5 and Appendix E of the EIS Appendix B of this RtS

Aspect	Comment	Response	Reference
	open space and bushland should be undertaken and incorporated.		
Vegetation loss			
Urban heat island effect exacerbated by the Proposal	The Proposal site is located to the south-west of Sydney where temperatures are hotter and the effect of trees to act as an important cooling mechanism is needed;	Urban Heat Islands (UHI) refer to the phenomena whereby urban regions experience warmer temperatures than their rural surroundings. UHI comprise two key forms; namely surface UHI and atmospheric UHI. The Amended Proposal would result in an increase in impervious areas and would, therefore, have the potential to result in surface UHI. A landscape plan has been prepared for the Proposal and is presented in Appendix E of the EIS, which outlines the proposed strategy for retaining vegetation and revegetating areas to the greatest extent possible. Further, a conservation area will be retained to the west of the MPW Stage 2 site minimising the resulting surface UHI effect of the Proposal site, however some surface UHI effects may be experienced (particularly during summer months). Atmospheric UHI is typically a result of high density urban development (with buildings located closely to one another), as well as from waste heat from energy consumption. The warehouse layout provided for the Proposal allows for a low-moderate density industrial use. Further, warehouses have a substantially lower energy demand per square metre than residential or commercial buildings. Machinery and equipment would have a power requirement; however, this would be substantially lower than that of the building power demand. The potential for the Proposal to contribute to atmospheric UHI is, therefore, considered to be low.	Section 4, Appendix O of the EIS Appendix B of this RtS

Aspect	Comment	Response	Reference
		The extent of UHI is largely dependent of weather conditions and geographic location. The average wind speed and infrequency of calm wind conditions at the Proposal site - occurring approximately 12% of the time (refer to Appendix O of the EIS) - would enhance wind dissipation of UHI effects. Further, the proximity of Georges River and large vegetated areas (to the south and east of the Proposal site) will ameliorate UHI occurring within the area. The potential UHI effects from the Proposal are therefore considered to be minor. In addition, a variety of both large and small tree forms is proposed to both reduce the heat island effect and create a naturally appearing landscape treatment (refer to Appendix B of this RtS).	
Preservation of trees within the Proposal site	The Proposal site is industrial in nature, requiring existing landscaping to soften impacts to the environment	The development of the Proposal site for the purposes of an IMT is consistent with the Liverpool LEP land zoning of IN1 (General Industrial). As outlined within Section 7 of this RtS, all remaining vegetation within the Amended Proposal site would be cleared, and offset as part of the Biodiversity Offset Strategy (BOS), which is being prepared as part of the MPW Concept Approval (SSD 5066). The visual character and quality of the bushland along the Georges River would be maintained to promote public health through the retention of the riparian corridor (i.e. conservation area), which represents one of the most environmentally sensitive areas of the MPW site, and would also form a proposed biodiversity offset site. The Landscape plans for the Amended Proposal, provided in Appendix E of this RtS, are proposed to integrate the development with the surrounding environment using tree, shrub and groundcover species that are local to the area to create	Section 4 of the EIS Section 7 of this RtS Appendix B of this RtS

Aspect	Comment	Response	Reference
		habitat opportunities and links to surrounding habitat. The focus of the landscape works includes: • The integration of the Moorebank Avenue frontage • Landscape works associated with internal roads and warehouses • Landscape interface with the vegetation conservation areas Further detail regarding landscape design is provided in Landscape design plans for the Amended Proposal (refer to Appendix B of this RtS).	
Maintaining habitat connectivity	The Proposal site sits adjacent to an important riparian corridor of the Georges River and the loss of existing trees would adversely impact this area	As outlined in Section 2.3.4 of the EIS, the Georges River runs directly west of the Proposal site, with disturbed native and other vegetation forming the riparian corridor which continues to both the north and south of the Proposal site. The areas west of the Georges River are generally characterized as low-density residential development with commercial developments and community facilities in the suburbs of Casula, directly west, and Liverpool, north-west. The majority of existing vegetation within the MPW site is native and representative of threatened ecological communities listed in Schedules 1 and 2 of the TSC Act. The visual character and quality of the bushland along the Georges River would be maintained to promote public health through the retention of the riparian corridor (i.e. conservation area). The riparian corridor represents one of the most environmentally sensitive areas of the MPW site, and is a proposed biodiversity offset site. Vegetation clearing as part of the Amended Proposal would involve the removal of all remaining vegetation within the Amended Proposal site, totalling	Section 2, 11 and 22 of the EIS Section 7 and Appendix G of this RtS

Aspect	Comment	Response	Reference
		approximately 42.7 hectares of threatened ecological communities (refer to Section 8.2 of the Revised Biodiversity Assessment Report [BAR], Appendix G of this RtS). All vegetation removal as part of the Proposal would be included in the Biodiversity Offset Strategy (BOS), which is being prepared as part of the MPW Concept Approval (SSD 5066). As outlined in Section 7 of this RtS, The Amended Proposal includes construction of three stormwater basin outlets within the Georges River riparian zone as well as a covered drain in the north of the riparian zone, within the Endeavour Energy easement. The approximate widths of the basin outlet impact areas during construction and operation (following revegetation), and consequent gaps in the riparian corridor vegetation, are as follows (refer to Figure 8.1 of the Revised BAR, Appendix G of this RtS): • Basin 5: 40 to 72 metres during construction, and 25 to 72 metres during operation • Basin 6: 41 metres during construction, and 22 metres during operation • Basin 8: 52 metres during construction, and 30 to 50 metres during operation. These areas to be disturbed would be re-contoured and partially revegetated upon completion of the basin outlets to restore habitat connectivity. While there would be a temporary and short-term impact during construction of the outlets, the permanent impacts would be unlikely to significantly impede fauna movement. Furthermore, several mitigation measures (No. 4R, 4S and 4U) have been included as part of the EIS to monitor the health of the	

Aspect	Comment	Response	Reference
		riparian corridor and Georges River during both construction and operation of the Proposal (refer to Section 22 of the EIS), by a suitably qualified bush regenerator or ecologist.	
Conclusion and recommendations	A review of the existing banks of mature trees on the site which may be lost due to new buildings should be undertaken, and adjustments made to the building footprints to ensure retention of trees of high value; As it is proposed to fill the site, the proposed landform should be reviewed to maintain existing ground levels around the perimeter of the site, particularly adjacent to the conservation zone and to the north of the site where there are stands of mature trees. To ensure the survival of mature trees, existing surface levels should be maintained within the drip zone of the tree trunks, with a maximum upslope fill level to be determined at an appropriate distance from the trunk. An arborist should be appointed to provide specialist advice in relation to this; A tree replacement strategy should be implemented to ensure that for every tree removed there is a minimum number of replacement trees. Specialist arborist advice should be	The adjusted building formation levels proposed vary across the Proposal site and are driven by site drainage, and flood modelling requirements. As a result, the removal of vegetation would occur in areas where clean general fill would be placed. As outlined within Section 7 of this RtS, due to the requirement to adjust building formation levels, all remaining vegetation within the Amended Proposal site would need to be cleared, and offset as part of the Biodiversity Offset Strategy (BOS), which is being prepared as a requirement of the MPW Concept Approval (SSD 5066). Bulk Earthworks Plans provided as part of Appendix R of the EIS indicate the intended depth of cut/fill along the perimeter of the MPW site. As per mitigation measure 4C (refer to Section 8 of the RtS), vegetation clearing would be restricted to the Amended Proposal construction footprint. Sensitive areas outside of this footprint would be clearly identified as exclusion zones to prevent removal of trees outside the construction boundary. This exclusion area would extend to the drip zone for trees along the site perimeter of the Amended Proposal site. As stated in Section 10.2 of the Biodiversity Assessment Report (refer to Appendix G of this RtS), A comprehensive Biodiversity Offset Package (BOP) for the MPW Project is to be prepared and implemented under condition D17 of the MPW Concept Approval (SSD 5066).	Section 7, 8 and Appendix G of this RtS

Aspect	Comment	Response	Reference
	provided to guide principles for tree replacement;	This document will be prepared in accordance with the NSW Biodiversity Offsets Policy for Major Projects, and will be prepared with the objective of offsetting all biodiversity impacts within the Moorebank Precinct (comprising the MPW site and the Moorebank Precinct East (MPE) site). The BOP will consider all relevant biodiversity impacts of the Amended Proposal including tree removal and replacement.	
Water Sensitive Urban Design			
Onsite detention	The location of the three proposed on-site detention facilities, directly adjacent to the bushland conservation area will have a detrimental effect on the sensitive natural landscape. Furthermore, the proposed edge treatment of the channel of the OSD provides no softened green edge through vegetation growth. This edge condition of the detention bank sits adjacent to the proposed 5 metre noise wall, adjacent to the internal roadway.	The inclusion of the three OSDs adjacent to the conservation area does not result in any increase to the site footprint when compared to the area approved as part of the MPW Concept Approval (SSD 5066). Furthermore, the inclusion of the site drainage system, inclusive of OSDs, would serve to benefit the surrounding sensitive natural landscape by controlling the quantity and quality of surface runoff passing through the MPW site during both construction and operation, to a neutral or beneficial effect (i.e. maintain or improve existing water quality) as required by the SEARs. As outlined in Section 7 of this RtS, the Amended Proposal includes construction of three stormwater basin outlets within the Georges River riparian zone, as well as a covered drain within the Endeavour Energy easement in the north of the riparian zone. The riparian corridor would be impacted by the removal of vegetation for construction of sediment basin outlets in three locations. Vegetation would be removed to the water's edge, creating a temporary barrier to habitat connectivity along the riparian corridor; the resulting gaps in the vegetation would range from 50 metres to 70 metres during construction. The areas to be disturbed would be recontoured and	Section 12 of the EIS Appendix B of this RtS

Aspect	Comment	Response	Reference
		partially revegetated upon completion of the basin outlets to restore habitat connectivity. Furthermore, several mitigation measures (No. 4R, 4S and 4U) have been included as part of the EIS to monitor the health of the riparian corridor and Georges River during both construction and operation of the Proposal (refer to Section 22 of the EIS), by a suitably qualified bush regenerator or ecologist. As outlined in the Landscape Plans for the Amended Proposal (refer to Appendix B), native grasses are proposed to be planted along the embankment of the OSD channel to integrate with the surrounding natural landscape.	
Other areas for WSUD	Within the operational areas of the site, and the context of the proposed building and associated parking, there are insufficient details of the proposals to incorporate a sustainable drainage network which will drain water in a sensitive way, and provide added landscaped visual amenity within the development area.	As discussed within Section 12.2 of the EIS, the stormwater and drainage design for the Proposal incorporates a water sensitive urban design (WSUD) approach to achieve the adopted performance targets, in accordance to the SEARs. This would involve the integration of the following: • Gross Pollutant Traps (GPTs): these are primary stormwater treatment measures used as the first measure in a stormwater treatment train. • Rain gardens: these act as bio-retention systems and comprise of a combination of vegetation and filter substrate and treat stormwater through the processes of settling, filtration and biological uptake of nutrients. For the Proposal site, it is proposed that rain gardens would form the base of the OSD basins. The inclusion of the above components into the Proposed drainage system would control flows in a sensitive way to	Section 12.2 of the EIS

Aspect	Comment	Response	Reference
		achieve water quality targets, while adding visual amenity to the OSDs.	
Conclusion	Any stormwater discharge into the Georges River should meet stringent water quality controls. There should be minimal disturbance to the river bank. Stormwater treatment should utilize bioremediation techniques. The current proposals do not meet the objectives of REP Georges River Catchment, the District Plans (South West) and Greener Spaces.	As stated in the above responses, water quality controls required by the SEARs, are outlined in Section 12 of the EIS and would be achieved through implementation of the proposal drainage system, which would utilize water sensitive urban components (that include bioremediation). The inclusion of OSDs and drainage channels adjacent to, and through, the conservation area have been assessed in Section 7 and Appendix G of this RtS, and would result in minimal disturbance to the Georges River bank. The objectives of the mentioned Strategic Planning documents relating to water quality are consistent with those associated with the Proposal as demonstrated above. Further information about how the Proposal align with both National and NSW strategic planning and policy framework is provided in Section 3.1 of the EIS.	Section 12 and 3.1 of the EIS Section 7 and Appendix G of this RtS
Health and active living			
Pedestrian access and employee welfare	Key elements which are absent from the proposal in relation to this include any integration of pedestrian connections across the Georges River to Casula Station or to Leacock Regional Park and cycle connections which have the opportunity to link to Liverpool CBD. The Proposal does not provide any meaningful open space for employees for passive (space for lunch or to sit) or	As mentioned in the responses above, the Proposal is located upon Commonwealth Land, previously occupied by Department of Defence for training purposes, and is not accessible to the public for site security reasons. Pedestrian and cycle connections across the Georges River are outside the scope of the proposal. Notwithstanding, Architectural Drawings provided in Appendix D of the EIS indicate that the site layout does not preclude a possible future pedestrian connection to Casula Railway Station from the northern section of the site.	Sections 10, 20.5 and Appendix D of the EIS

Aspect	Comment	Response	Reference
	active recreation (physical exercise) during breaks whilst on the site. The proximity of the Proposal to established residential areas, and the impacts which will result from the industrial nature of the scheme raises questions about the ability to sustain good health to these areas.	The Proposal includes the following features for the benefit of site employees: • Freight village – construction and operation of approximately 800 m^2 of retail premises, which would provide services to support employees on the Proposal site, including lunch and breakout areas (refer to Section 4.2.4 of the EIS). • Each warehouse would contain site amenities, office and break out areas (refer to Section 4.2.3 of the EIS) • End of service facilities, including bike racks, lockers and showers would be provided for each warehouse, relative to the anticipated number of employees (refer to Section 7.4.2 of the EIS). The specialist studies undertaken and included within the EIS, including those regarding human health (refer to Section 10), and socio-economic impacts (refer to Section 20.5) indicate that the Proposal would not impact the ability of people nearby to maintain good health. Furthermore, the studies also provide mitigation measures to manage any residual environmental impacts arising from the Proposal.	
Conclusion	Limited end of trip facilities, in the form of a shower are provided within the proposals for cyclists. This is not sufficient for the potential number of employees who will be based in each warehouse. The Georges River riparian corridor is a significant natural asset to form a strong framework to promote and encourage good health active living.	As mentioned in the responses above, end of trip facilities, including bike racks and showers, relative to each warehouse and the number of employees in reference to guidelines adopted from *The City of Sydney Section 3 – General* are discussed in Section 7.4 of the EIS. Despite being outside scope of the Proposal, Architectural Drawings provided in Appendix D of the EIS indicate that the site layout does not preclude a possible future pedestrian connection to Casula Railway Station from the northern section of the site.	Section 7.4 and 3.1 of the EIS

Aspect	Comment	Response	Reference
	This does not meet the objectives of the draft District Plan (South West), REP Georges River Catchment, Better Placed and the Green Grid. It is recommended that plans are reviewed to ensure that: • adequate end of trip facilities for cyclists are incorporated within the proposal, including sufficient number of showers and cycle parking; and • pedestrian connections are provided and prioritised within the scheme and to adjoining amenity including Casula Station and Leabrook Regional Park.	The visual character and quality of the bushland along the Georges River would be maintained to promote public health through the retention of the riparian corridor (i.e. conservation area), which would also form a proposed biodiversity offset site. For these reasons, the Proposal is considered to meet the objectives of the draft District Plan (South West), REP Georges River Catchment, Better Placed and the Green Grid. Further information about how the Proposal align with both National and NSW strategic planning and policy framework is provided in Section 3.1 of the EIS.	
Employee amenity			
Provision of open space to operational employees	The Proposal does not incorporate any clear opportunities for employees to connect to meaningful open spaces, either existing or proposed. A small open area of approximately 3 metres x 3 metres is proposed, located adjacent to the office of each warehouse. These are generally located directly adjacent to the loading docks. This appears to be the only open space for employees and as proposed is not considered to provide a	As mentioned in the responses above, The Proposal includes the following features for the benefit of site employees: • Freight village – construction and operation of approximately 800 m2 of retail premises, which would provide services to support employees on the Proposal site, including lunch and breakout areas. • Each warehouse would contain site amenities, office and break out areas	Section 7.4 of the EIS

Aspect	Comment	Response	Reference
	space of high quality for employees to be able to relax during break times whilst on site.	• End of service facilities, including bike racks, lockers and showers would be provided for each warehouse, relative to the anticipated number of employees. The general location of these areas is shown in Section 4.2 of the EIS. The extent and type of open spaces and amenities for employees is considered appropriate, and to a standard consistent with an IMT and associated warehousing facilities.	
Conclusion	The proposal does not meet the objectives of the draft District Plan, Better Placed, the Green Grid and the Greener Spaces. It is recommended that plans are reviewed to integrate sufficient and meaningful green landscaped open space within the scheme for employees to be able to enjoy.	For the reasons outlined in responses above regarding employee amenity, the objectives of the District Plan, Better Placed, the Green Grid and the Greener Spaces are considered to be satisfied by the Proposal. Further information about how the Proposal align with both National and NSW strategic planning and policy framework is provided in Section 3.1 of the EIS.	Section 3.1 of the EIS
Public space			
Lack of high quality landscaped space within the Proposal site	The public areas of the scheme include internal roads and carparking areas, with a limited landscape treatment. This framework of operational roads and carparking areas occupies the entire of the open space within the development area of the site and provides no opportunity for the creation of high quality streets and open spaces. A small open area of approximately 3	As mentioned in the responses above, the Proposal is located upon Commonwealth Land, previously occupied by Department of Defence for training purposes, and is not accessible to the public for site security reasons. Landscaping treatment, as detailed within the Landscape Plans for the Amended Proposal (refer to Appendix B of this RtS) would focus on the following: • The integration of the Moorebank Avenue frontage	Appendix B of this RtS

Aspect	Comment	Response	Reference
	metres x 3 metres is located adjacent to the office of each warehouse. These are located directly adjacent to the loading docks. The resulting experience for employees working within the facility will be poor.	• Landscape works associated with internal roads and warehouses • Landscape interface with the vegetation conservation areas Further detail regarding landscape design is provided in Landscape design plans for the Amended Proposal (refer to Appendix B of this RtS). The Proposal is for approval to construct and operate an IMT facility with associated warehousing, internal transportation network and drainage infrastructure. The site layout and associated planning controls are designed to maximise the operational efficiency and safety of the site, and are consistent with Part 7 of the Liverpool Development Control Plan 2008 for industrial development. The extent and type of open spaces and amenities for employees is considered appropriate and to a standard consistent with an IMT and associated warehousing facilities.	
Conclusion	The site planning has not allowed for integration of any open space and compromised the potential for creating quality open space through maximising the building footprints and associated carparking. This is not consistent with the objectives of the draft District Plan (South West), Better Placed, Greener Places, and the Green Grid. It is recommended that landscape proposals are reviewed and amended to provide higher quality open spaces	The Proposal is for approval to construct and operate an IMT facility with associated warehousing, internal transportation network and drainage infrastructure. The site layout and associated planning controls are designed to maximise the operational efficiency and safety of the site, and are consistent with Part 7 of the Liverpool Development Control Plan 2008 for industrial development. Open spaces have been retained where possible for the benefits of both employees and visitors, and to retain the existing natural character of the surrounding environment. Proposed pedestrian and cyclist connectivity within the Proposal site is outlined in Section 5 of the Operational Traffic and Transport Impact Assessment (refer to Appendix M of the EIS). Due to the	Appendix M of the EIS Appendix B of this RtS

Aspect	Comment	Response	Reference
	and a movement network for pedestrians within the development	operational site safety and security, pedestrian access to the Proposal site is restricted to the internal perimeter road. The extent and type of open spaces and amenities for employees is considered appropriate and to a standard consistent with an IMT and associated warehousing facilities, and no further review is considered appropriate.	
Green spaces			
Integrating existing green spaces within the Proposal site	The nature of the Proposal is industrial in nature, and any opportunity for increasing the green elements of the site should be integrated. Current Proposals indicate large box-format warehouses and carparking which dominate the site and compromised the ability to provide a meaningful green environment. Further, the proposals along the internal road provide no landscape to the western side of the roadway, which will result in a poor environment.	A maximum Floor Space Ratio (FSR) has been established for the warehousing precinct to control the density, intensity and massing of warehouses on the Project site, to minimise environmental impacts and maintain an appropriate visual connection with adjoining properties. These planning controls are consistent with Part 7 of the Liverpool Development Control Plan 2008 for industrial development. Carparking and the internal road network are necessary to facilitate the core function of the site. These areas and functionality of the site for its core purpose as an intermodal facility cannot be compromised with green space for the sole benefit of employees. As demonstrated within the Landscape Plans for the Amended Proposal (refer to Appendix B of this RtS), landscaping and screen planting is proposed along the western side of the internal road, allowing for maximum visual amenity to the visual receptors to the west.	Appendix B of this RtS
Enhancement of green spaces	There is no evidence to indicate that existing green spaces within the site have been enhanced. There are significant bushland areas which have been designated as conservation zone. There is no supporting information about how these spaces will be	As outlined within Section 11.1 of the EIS, retention and enhancement of substantial areas of vegetation within the Georges River riparian corridor (i.e. the conservation area) within the MPW site would be undertaken through design principles and mitigation measures outlined in Section 22 of the EIS (most	Section 7 and Appendix B of this RtS

Aspect	Comment	Response	Reference
	preserved in the context of infrastructure and building works.	notably mitigation measures 0B, 0C, 4A, 4B, 4C, 4N, 4O, 4P, 4R, 4S, 4T and 4U). As outlined within Section 7 of this RtS, all remaining vegetation within the Amended Proposal site would be removed, and offset as part of the Biodiversity Offset Strategy (BOS), which is being prepared as part of the MPW Concept Approval (SSD 5066). A landscape plan has been prepared for the Proposal and is presented in Appendix B of this RtS, which outlines the proposed strategy for revegetating areas to the greatest extent possible.	
Conclusion	The proposals do not create a greener environment and enhance or protect the natural beauty of the District's visual landscape and riparian corridor. This is not consistent with the objectives of the Regional Environment Plan for the Georges River, the Green Grid, the draft District Plans (South West) and Better Placed. It is recommended that plans are reviewed and amended to improve the capacity of the scheme to provide a greener environment.	As outlined within the Landscape Plans prepared for the Amended Proposal (Refer to Appendix B of this RtS), the landscape design serves to integrate the development with the surrounding environment, using tree, shrub and groundcover species that are local to the area. The site layout has allowed for maximum planting opportunities on the western side of the site for sensitive receivers to the west. The retention of the large conservation area, as discussed in earlier responses above, along with other design aspects including implementation of recommended site drainage systems, would maintain the biodiversity values of the Georges River riparian corridor at areas relative to the Amended Proposal site.	Appendix B of this RtS
Building design			
Warehouse size and appearance	The proposed buildings on the site include 7 warehouse buildings which provide a mass storage function. The footprints range in size, with the largest being Warehouse 1C with dimensions of 29.6 metres x 26 metres, and	The warehousing layout selected for the Proposal was based on consultation with DP&E following the original Concept Approval, which considered three potential warehousing layout options. The selected layout is designed to allow efficient access to the IMT and Moorebank Avenue. As discussed in the responses above, a maximum FSR has been established for the	Table 15-9 and Appendix D of the EIS

Aspect	Comment	Response	Reference
	average heights of 13 metres. These result in a excessively large footprint and bulk. There is no articulation to the buildings to break up the massing and allow a softening with the landscape. Finished materials to the buildings includes coloured metal cladding to walls and roofs, with a proposed colour palette which is not complementary or sensitive to the natural predominant bushland setting.	warehousing precinct to control the density, intensity and massing on the Project site, to minimise environmental impacts and maintain an appropriate visual connection with adjoining properties. These planning controls are consistent with Part 7 of the Liverpool Development Control Plan 2008 for industrial development. As outlined within the Landscape Plans for the Amended Proposal (refer to Appendix B of this RtS), warehousing buildings have been located to provide opportunities for landscaping and screen planting, to provide optimal softening to the sensitive receptors to the west. The buildings and structures included in the Proposal would be of a high design quality. The building colours and finishes would be compatible and blend with the surrounding land uses, including the natural bushland setting, including non-reflective colours. A schedule of the indicative colour palette for proposed office buildings and other structures is provided in the Architectural Drawings (Appendix D of the EIS) and summarised in Table 15-9 of the EIS. The design is in accordance with the relevant CoAs and SEARs regarding landscaping, and are considered suitable for the development application.	
Conclusion	The warehouse buildings as currently proposed do not sit sensitively with their natural setting and the interface along the Georges River, and the established residential areas which are located within the vicinity. The footprint of the buildings and their lack of articulation does not allow the opportunity to create any areas of quality and meaningful public open	The warehousing buildings, as discussed in the earlier responses would be compatible and blend with the surrounding land uses, including non-reflective colours. A schedule of the indicative colour palette for proposed office buildings and other structures is provided in the Architectural Drawings (Appendix D of the EIS) and summarised in Table 15-9 of the EIS. The warehousing layout as discussed are designed to maximise the operational efficiency of the site with respect to the future tenants. Consideration of recreation space for employees is included within the design, through the inclusion of the freight	Section 3.1 and 15 of the EIS

Aspect	Comment	Response	Reference
	space for employees of the facility to enjoy. The proposals for the buildings do not align with the objectives of the draft District Plans (South West) or Better Placed. It is recommended that plans are reviewed to reduce the footprints of the warehouse buildings and break up with articulation. It is also recommended that the materials palette be reviewed	village, end of trip facilities and other amenities associated with each warehouse. Changes to the warehousing layout of the site is not considered necessary. For the reasons identified above within this table, the Proposal is considered to align with the objectives of the draft District Plans (South West) and Better Placed. Further information about how the Proposal align with both National and NSW strategic planning and policy framework is provided in Section 3.1 of the EIS.	
Light spill impacts			
Light spill assessment	The Proposal is to operate 24 hours a day, 7 days a week. The warehouse facility is to run 18 hours a day from 7am to 1am. A detailed assessment of the light spill impacts has not been undertaken, however whilst the assessment within the EIA concludes that: *"The light spill assessment concludes that minimal effect on adjacent properties and on the environment can be achieved, through appropriate selection of light source, luminaire make and aiming as well as pole positions and height from static site lighting well within the limits stated in*	As outlined in Section 15 of the EIS, a light spill assessment, undertaken by AECOM, was prepared to inform the MPW Concept EIS. The assessment involved measurement of the existing environmental conditions with respect to light spill, calculation of the potential light spill from the indicative proposed lighting design for the Project, and assessment of the potential light spill impact in specific sensitive receptor areas. An additional light spill assessment for operation of the Proposal, undertaken by Reid Campbell, is provided in Section 15.4.2 of the EIS (refer to Appendix T of the EIS). The assessment involved light spill modelling at relevant boundaries, as indicated in Figure 15-18 of the EIS. In addition to the assessment finding that the overall anticipated light spill impacts would be minor, a number of mitigation measures with respect to operational light spill during operation are included to mitigate residual impacts. These findings are considered representative of the Amended Proposal.	Section 15 and Appendix T of the EIS

Aspect	Comment	Response	Reference
	AS 4282 - 1997 Control of the obtrusive effects of outdoor lighting".		
Conclusion	The light required after daylight hours to coincide with the operation of the warehouse facilities is considered to have a cumulative detrimental impact on the urban environment and the proximity to existing residential areas and the overall sky glow which will be created.	As identified in the response above, light spill assessment undertaken for the proposal concluded that the overall light spill impacts would be minor. As discussed in Section 15 of the EIS, various mitigation measures (refer to Section 15.5 and 22 of the EIS) would be adopted during operation to mitigate the cumulative impacts generated by proposal.	Sections 15 and 22 of the EIS

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ATTACHMENT B – Response to requests for additional information and agency comments

ATTACHMENT B – Response to requests for additional information and agency comments

Table B-1 Response to DP&E requests for additional information

Key issue	Additional information required	Response	Reference
Application forms	Updated application forms with current applicant details	An updated application form for the Proposal, acknowledging who the landowner is and the land to which the application applies has been provided as Attachment C of this letter.	Attachment C of this letter
Biodiversity	Updated Biodiversity Assessment Report, including: • details of additional survey • assessment of direct and indirect impacts on groundwater dependent ecosystems including in Boot Land area • assessment of indirect impacts on all species including *Hibbertia fumana* including in Boot Land area	An updated Biodiversity Assessment Report was included at Appendix G of the MPW Stage 2 RtS (Updated Biodiversity Assessment Report (Updated BAR), Arcadis, June, 2017). <u>Details of additional survey</u> As part of the revised BAR, section 4.2 (Field assessment - targeted threatened species) describes the additional surveys conducted in 2017. <u>Direct and indirect impacts on groundwater dependent ecosystems, including in the Boot Land area</u> Groundwater occurs beneath the Proposal site generally between 8 and 12 metres below the existing ground levels, at the time of geotechnical investigation. This is deeper than the expected depth of excavations during Proposal construction, which are not anticipated to intrude upon the water table. As acknowledged in Section 7.1.5 of the MPW Stage 2 RtS, direct impacts to groundwater dependent ecosystems, such as drawdown of groundwater from the root zone, may occur as a result of earthworks and geotechnical construction activities. This may have the potential to affect retained vegetation and habitat that may utilise the shallow groundwater aquifers present; the riparian vegetation in the west of the site has been identified as having high potential for groundwater interaction. A Groundwater Monitoring Program is to be prepared as a sub-plan to the CEMP (Mitigation Measure (0B).It is anticipated that the Monitoring Program would monitor and inform management actions relating to any impacts to groundwater during construction of the Proposal, including but not limited to groundwater. As the Proposal's stormwater and drainage has been designed to maintain consistent flows from the Proposal site through existing drainage outlets and into local waterways, the Proposal would not change the environmental availability of surface water for potential infiltration into nearby groundwater systems, should there be surface water-groundwater interaction, including within the Boot Land.	Section 4.2 of Appendix G of the MPW Stage 2 RtS. Attachment D of this Letter.

Key issue	Additional information required	Response	Reference
		In addition, the Proposal would maintain or improve existing water quality and appropriate water treatment has been built into the stormwater and drainage design to mitigate against any adverse impacts of the Proposal on water quality. As such, should there be surface water-groundwater interaction near the Proposal, including within or adjacent to the Boot Land, the Proposal would not impact on the surface water quality near the Proposal, and would not affect the quality of groundwater which could potentially support groundwater dependent ecosystems. The Proposal is therefore not expected to have any direct and/ or indirect impacts on groundwater dependent ecosystems, including in the Boot Land. <u>Indirect impacts on all species, including *Hibbertia fumana,* including in the Boot Land</u> Six threatened flora species were recorded during surveys of the Boot Land between 2011 and 2017. Of these, all six are currently listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) and four are currently listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The previously recorded threatened flora species in the Boot Land, as well as the distance from the closest record to the Proposal is summarised below. Threatened flora species records in the Boot Land in the vicinity of the Proposal have been provided at **Attachment D** of this letter.	

Species	EPBC Act status	BC Act status	Distance o from MPW Stage 2 Constructi on Area	Distance from MPW Stage 2 impacts
Acacia bynoeana	Vulnerable	Endangered	210	245
Acacia pubescens	Vulnerable	Vulnerable	664	688
Grevillea parviflora subsp. *parviflora*	Vulnerable	Vulnerable	54	78
Hibbertia fumana	Not listed	Critically Endangered (provisional listing)	230	285

Key issue	Additional information required	Response					Reference
		Hibbertia puberula subsp. *puberula*	Not listed	Endangered	24	49	
		Persoonia nutans	Endangered	Endangered	0	25	
		The eastern boundary of the MPW Stage 2 Construction Area (also known as the Proposal site) adjoins the western boundary of the Boot Land; however no specific works are planned within the Moorebank Avenue road reserve. The closest area of impact from the MPW Stage 2 Proposal is the proposed on-site detention basin adjoining the eastern boundary of the MPW site. With the exception of *Persoonia nutans*, all threatened flora species in the Boot land have a minimum of 25 metre wide native vegetation buffer between them and the edge of the MPW Stage 2 Construction Area. The closest record of each species to any proposed MPW Stage 2 impacts ranges from 25 metres to 688 metres. Given that: • the recorded threatened plant populations are located a minimum of over 25 metres from any MPW Stage 2 project impacts, with the vast majority of records located over 50 metres from any impacts; • the closest impact is an OSD, which is designed to capture sediment flows that may impact on adjoining areas, and will be designed, constructed and managed in accordance with a stormwater management plan; and • the existing Moorebank Avenue will not be disturbed, at this location, as part of the MPW Stage 2 Proposal, and would provide an additional barrier between the proposed impacts and the threatened flora populations on the Boot Land, particularly in the area south of Anzac Creek where Moorebank Avenue rises to form the rail overbridge. It is considered unlikely that there would be any indirect impacts on the threatened flora populations identified in the Boot land as a result of the Proposal. The risk of introducing or spreading weeds and pathogens into the Boot land as a result of the MPW Stage 2 Proposal is considered low, given the barrier effect of Moorebank Avenue and the proposed implementation of hygiene procedures for the use of vehicles and the importation of materials to the site.					

Key issue	Additional information required	Response	Reference
Cumulative assessments	To include MPE Stage 2	Section 19 of the MPW Stage 2 EIS included an assessment of the cumulative impacts of the MPW Stage 2 Proposal with concurrent construction and operation of other developments. The cumulative scenarios as detailed below were considered the most realistic, based on the best available information available at the time of writing: • Cumulative construction (2018): concurrent construction of the Proposal with MPW Early Works, and the construction of the MPE Stage 1 Project. • Cumulative operation: Operation of the Proposal at 500,000 TEU throughput, combined with the operation of the MPE Stage 1 Project at 250,000 TEU throughput. At each stage of development of the MPW Project under the MPW Concept Approval, the cumulative construction and operational scenario would be reconsidered and an assessment of the cumulative impacts at each development stage be undertaken. This cumulative scenario was considered to be representative of the cumulative environment at the time of undertaking the environmental assessment of the MPW Stage 2 Proposal. It was also considered realistic based on the anticipated planning approval timeframe for the MPW Stage 2 Proposal, i.e. EIS exhibited in late October/late November 2016 with MPE Stage 2 EIS exhibited in mid-December 2016/ late February 2017. Since the preparation of the MPW Stage 2 EIS, an SSD application has been submitted to NSW DP&E for Stage 2 of the MPE Project, under the MPE Concept Approval. As the environmental assessment of the MPW Stage 2 Proposal was being undertaken at the time of undertaking the environmental assessment of the MPE Stage 2 Proposal, the construction and operational cumulative assessment undertaken as part of the MPE Stage 2 EIS considered the concurrent construction and operation of the MPE Stage 2 Proposal with the MPW Stage 2 Proposal. For information, Attachment E of this letter includes section 19 of the MPE Stage 2 EIS, which considered cumulative construction and operational impacts of the MPE Stage 2 and MPW Stage 2 Proposals. In addition, Attachment E includes a cumulative assessment of the MPW Stage 2 Proposal, drawing upon the information provided in the MPE Stage 2 cumulative assessment, as requested by DP&E.	Attachment E of this letter
Consolidated list of mitigation measures	Including measures in the response to NSW DP&E's issues	It is understood that DP&E were to provide an additional request for information and detail updates required for the mitigation measures for MPW Stage 2. Based on discussions with DP&E in the meeting undertaken with SIMTA representatives on 5 September 2017, and in lieu of receiving this information from DP&E, further detail has been included in the mitigation measures for the MPW Stage 2 Proposal. **Attachment F** includes updated mitigation measures, from those provided in the MPW Stage 2 RtS (Section 8). The additional information provided has been drawn from the management plans which were submitted with the EIS and the RtS for the MPW Stage 2 Proposal. All of this information has previously been submitted to DP&E however as requested the mitigation measures have been updated to provide more detail.	Attachment F of this letter.

Key issue	Additional information required	Response	Reference
Contamination	Evidence of consultation with Defence on whether the site is a priority under the PFAS/PFOS investigation program.	The Department of Defence (DoD) has implemented a PFAS investigation and management program, which includes undertaking a national program to review its estate and investigate and implement a comprehensive approach to the management of PFAS impacts on, and in the vicinity of some of its bases around Australia (more information about the management program is provided on the DoD website at http://www.defence.gov.au/Environment/PFAS/). A number of investigations sites have been identified nationally, including five sites within NSW. The Moorebank Precinct, inclusive of the MPW site and MPE site are not included as part of these investigations; however, Holsworthy Barracks (RAAF Base Holsworthy) located to the south of the Moorebank Precinct was considered as part of the investigation sites. The Proposal site is therefore not considered to be a priority site under the DoD PFAS/ PFOS investigation program. GHD prepared a report for Jones Land LaSalle, which detailed the preliminary and limited sampling and analysis of environmental media to evaluate the potential for the Holsworthy Barracks site to be a source of PFAS to off-site areas (*Defence per- and poly-fluoroalkyl substances (PFAS) Environmental Management Preliminary Sampling* – Holsworthy Barracks, GHD, September, 2016 (GHD PFAS Sampling Report), available at http://www.defence.gov.au/Environment/PFAS/docs/General/PSPReports/PSPHolsworthyBarracks.pdf) The site boundary of the PFAS investigations at Holsworthy Barracks extends to the southernmost boundary of the MPW Stage 2 amended construction area, where it meets the East Hills Railway Line. In addition, there is a surface water monitoring location as part of the Holsworthy Barracks investigation approximately 1.23 km east of the MPW Stage 2 amended construction area, within Anzac Creek (denoted as HBK_SW002 on Figure 1 of the GHD PFAS Sampling Report report). The GHD PFAS sampling report noted that the surface water samples at HBK_SW002 detected PFAS at levels below the drinking water guidelines, and recreational and aesthetic guidelines for PFOS and PFOA.	PFAS investigation and management program at http://www.defence.gov.au/Environment/PFAS/ GHD PFAS Sampling Report, available at http://www.defence.gov.au/Environment/PFAS/docs/General/PSPReports/PSPHolsworthyBarracks.pdf
Detailed list of elements for approval (and construction)	Construction elements including concrete batching plant, crushing plant etc	Appendix O of the MPW Stage 2 RtS comprised a consolidated proposal description, as requested by NSW DP&E in its submission on the MPW Stage 2 EIS, provided in April 2017. Table 4-9 in Section 4.3.5 of the consolidated proposal description provides a summary of the indicative plant and equipment likely to be utilised during each construction works periods of the MPW Stage 2 Proposal. Amongst other things, a concrete batching plant and crushing plant have been listed as indicative plant and equipment.	Table 4-9 in Section 4.3.5 of the Consolidated Project Description, at Appendix O of the MPW Stage 2 RtS.

Key issue	Additional information required	Response	Reference
Detailed plans	*Site plan* Site plan should be provided as a series of plans at 1:1000 at A1 (including key plan), showing existing site contours and finished contours or building platform levels to AHD. Existing and finished contours to extend approximately 20m outside construction footprint.	Site plans at the requested scale have been provided at Attachment G of this letter.	Attachment G of this letter.
	Edge effect plan Plans for development of Moorebank Avenue, and works in riparian zone, should be provided as a series of plans at 1:500 at A1 (including key plan).	Edge effect plans, showing the works along Moorebank Avenue and in the riparian zone as part of the MPW Stage 2 Proposal have been provided as Attachment G of this letter.	Attachment G of this letter.
	Edge effect sections Landscape cross-sections and details showing: • Existing ground levels (AHD) • Proposed fill level (AHD) • Proposed retaining wall heights • Proposed OSD basin wall heights adjacent to conservation area • Proposed retaining wall/ OSD wall materials/ treatment • Conservation zone boundary • Annotated fill batter slopes (e.g. 1 in 4) and treatments	The existing and proposed fill levels in AHD, shown as cross sections were provided in the revised drainage design drawings as Earthworks Sections Sheet 1 (DWG C-MIC2-SSD-116-AA003760-07) and Earthworks Sections Sheet 2 (DWG C-MIC2-SSD-117-AA003760-07), in the Revised Stormwater and Drainage Design Drawings in Appendix H of the MPW Stage 2 RtS. These drawings have been extracted from the MPW Stage 2 RtS and provided as Attachment G of this letter. The conservation zone boundary is shown as the 'Proposal Operational Boundary' on DWG LDA-007 and LDA-008 in the revised Landscape Design Statement and Plans, provided at Appendix B of the MPW Stage 2 RtS. These drawings have been extracted from the MPW Stage 2 RtS and provided as Attachment G of this letter. The remaining information requested, including the heights of retaining walls and OSD basin walls, fill batter sloped and the retaining wall/ OSD wall materials/ treatment would be determined as part of future detailed design development. The indicative location of OSD walls and retaining walls, are shown in the revised architectural drawings and revised landscape design statement and plans, at Appendix B of the MPW Stage 2 RtS.	Earthworks Sections Sheet 1 (DWG C-MIC2-SSD-116-AA003760-07) and Earthworks Sections Sheet 2 (DWG C-MIC2-SSD-117-AA003760-07), in Appendix H of the MPW Stage 2 RtS. Appendix B of the MPW Stage 2 RtS. Attachment G of this letter.

Key issue	Additional information required	Response	Reference
Drainage	Long sections through piped drainage showing grades, inlet invert levels, outlet invert levels into onsite detention basins, detention basin outlet invert levels, existing surface levels, final surface levels. All levels to be to Australian Height Datum (AHD)	The detail requested in these long sections would be determined as part of future detailed design development, and is not required as part of the SSD assessment stage (i.e. part of the post approval stage). It should be noted that Stormwater Drainage Basin and Raingarden Typical Details (DWG C-MIC2-SSD-416-AA003760-06) was included in the Revised Stormwater and Drainage Design Drawings at Appendix H of the MPW Stage 2 RtS, and has been replicated as **Attachment H** of this letter.	DWG C-MIC2-SSD-416-AA003760-06 at Appendix H of the MPW Stage 2 RtS. **Attachment H** of this letter.
	Also long sections through drainage swales on the remainder of the MPW Stage 2 and through basins 6 and 8, with details as above	As above, the detail requested in these long sections would be determined as part of future detailed design development, and is not required as part of the SDD assessment stage. It should be noted that Basin 3, Basin 4, Basin 5, Basin 6 and Basin 10 are shown in cross section in Earthworks Sections Sheet 1 (DWG C-MIC2-SSD-116-AA003760-07) and Earthworks Sections Sheet 2 (DWG C-MIC2-SSD-117-AA003760-07), of the Revised Stormwater and Drainage Design Drawings in Appendix H of the MPW Stage 2 RtS, and in Attachment G of this letter.	Earthworks Sections Sheet 1 (DWG C-MIC2-SSD-116-AA003760-07) and Earthworks Sections Sheet 2 (DWG C-MIC2-SSD-117-AA003760-07), in Appendix H of the MPW Stage 2 RtS. Attachment G of this letter.
Filling and stockpile placement	Conceptual earthworks drawing showing location of, sequencing and fill volumes for progressive stockpiling and placement of fill to design levels including progressive conceptual erosion and sediment controls, e.g. catch drains, temporary sediment basins (in addition to OSD basins)	The sequencing and timing of the placement of fill would be subject to the preferred construction methodology of the construction contractor (once appointed). Mitigation measure OD in Table 22-1 of the MPW Stage 2 EIS states that '*The construction and/or operation of the Proposal may be delivered in a number of stages. If construction and/or operation is to be delivered in stages a Staging Report would be provided to the Secretary prior to commencement of the initial stage of construction and updated prior to the commencement of each stage as that stage is identified*.' The Proposal, inclusive of stockpiling and placement of fill material would be undertaken in accordance with this mitigation measure, and implemented in accordance with the CEMP for the Proposal. The Staging Report would identify the progressive installation of site infrastructure and services, as appropriate to the progressive development of the Proposal. A Stockpile Management Protocol has been prepared for the Proposal (refer to Appendix L of the MPW Stage 2 RtS). This Protocol provides a process for the establishment of stockpiles to ensure that the environmental impacts are minimised during construction. The Protocol would be included and further developed as part of the CEMP (FCMM 0B). It includes principles of stockpile management and how these principles would be applied throughout construction of the Proposal, including materials characterisation, materials	Table 22-1 of the MPW Stage 2 RtS. Appendix L of the MPW Stage 2 RtS. Appendix H of the MPW Stage 2 RtS. Attachment F of this letter.

Key issue	Additional information required	Response	Reference
		handling, stockpile water management and stockpile stabilisation. These measures would ensure that suitable management of the stockpiles is undertaken, thereby reducing the environmental impacts of the Proposal during construction. DWG C-MIC2-SSD-101-AA003760-06 and DWG C-MIC2-SSD-102-AA003760-06 of the Revised Stormwater and Drainage Design Drawings At Appendix H of the MPW Stage 2 RtS included Erosion and Sediment Control Plans for the Proposal. In addition, DWG C-MIC2-SSD-103-AA003760-06 provided Erosion and Sediment Control Details to be applied as part of the Proposal. The Soil and Water Management Sub-Plan, to be included as part of the CEMP for the Proposal, would further describe the approach to erosion and sediment control that would be applied throughout construction of the Proposal (refer to mitigation measure No. 0B in Section 8 of the RtS).	
Traffic and transport	Requested modelling still outstanding	Traffic modelling relevant to the environmental assessment of the MPW Stage 2 Proposal (EIS) has been provided to Roads and Maritime in mid-March 2017 Additional operational traffic modelling was also discussed in the RtS, with modelling provided to Roads and Maritime in early September 2017. No traffic modelling relevant to the assessment of the MPW Stage 2 Proposal is currently outstanding. It is acknowledged that discussions between the Proponent, Transport for NSW and NSW Roads and Maritime Services, relating to whole-of-precinct traffic modelling are ongoing. However, although related to the whole-of-precinct modelling, the traffic and transport assessment of the MPW Stage 2 Proposal, as presented in Section 7 and Appendix M of the MPW Stage 2 EIS and Section 7 and Appendix B of the MPW Stage 2 RtS are relevant to the impacts of Stage 2 of the MPW Project and is not dependent on the abovementioned whole-of-precinct modelling. Additional modelling and documentation to inform discussions with RMS regarding a proposed infrastructure schedule has also been provided to the RMS on 6 September 2017.	Section 7 and Appendix M of the MPW Stage 2 EIS. Section 7 and Appendix B of the MPW Stage 2 RtS.

Table B-2 Response to additional agency comments

Key issue	Additional information required	Response	Reference
NSW Department of Primary Industries (NSW DPI)			
Erosion and Sediment Control Plans	DPI wishes to advise the proponent that in reviewing the erosion and sediment control plan for this site, the proposed mitigation measures should be specifically designed in light of the erosive potential of the locally occurring soils, both natural soils and the fill material used in the works. This plan should include mitigation measures to revegetate formed banks as soon as possible following construction and the use of temporary bank stabilisation methods prior to this planting. The commitment to stage any riparian vegetation removal to just prior to construction works should be maintained during the pre-construction and construction phases of the project.	The erosion and sediment controls to be included to avoid, minimise and mitigate against the potential for construction of the Proposal to result in erosion and sedimentation impacts will be determined in consideration of the erosive potential of locally occurring soils, and the characteristics of the clean general fill to be imported as part of construction of the Proposal. It should be noted that DWG C-MIC2-SSD-103-AA003760-06 at Appendix H of the MPW Stage 2 RtS provided Erosion and Sediment Control Details to be applied during construction of the Proposal. In addition, the Soil and Water Management Plan (SWMP) to be included as part of the CEMP for the Proposal.	DWG C-MIC2-SSD-103-AA003760-06 at Appendix H of the MPW Stage 2 RtS.
NSW Environment Protection Authority (NSW EPA)			
Recommended conditions of consent	The EPA recommends that, should the development be granted consent, NSW DP&E consider the following conditions: 1. Within seven years of operation all existing locomotives utilising the facility or operating the rail shuttle must meet as minimum US EPA Tier 0+ for particle emissions (less than or equal to 0.3 grams per kilowatt hour).	A Best Practice Review (BPR) (Arcadis, June 2017) was submitted as part of the MPW Stage 2 RtS (refer to Appendix K). The MPW Stage 2 BPR included the following commitment relating to air emissions for existing locomotives entering the IMT facility: • *Existing locomotives – operate with diesel particulate emissions less than or equal to 0.30 grams per kilowatt hour* *The timeframe for the implementation of this restriction will be based on either 'AS 7512 Exterior Environment' or, if this standard is not yet in force, within seven years of operation of the IMT facility.* In particular, the above commitment was made in lieu of there being any established industry standard for air emissions of existing locomotives. Should an industry standard (either the AS 7512 or equivalent) be established it would be supersede the above required standards to ensure that the MPW Stage 2 Proposal intermodal terminal is operating in parody with other established industry standard for rail freight transportation.	MPW Stage 2 RtS Best Practice Review (Arcadis, June, 2017) (Appendix K of the RtS)

Key issue	Additional information required	Response	Reference
		In consideration of the above, the following amendments (with additions bold and underlined and deletions bold underlined and struck through) should be made to the Recommended condition of approval: Within seven years of operation all existing locomotives utilising the **~~facility or operating the rail shuttle~~ MPW Stage 2 intermodal terminal they** must meet as minimum US EPA Tier 0+ for particle emissions (less than or equal to 0.3 grams per kilowatt hour). **This measure would be adopted until such time as an industry standard or guideline (endorsed by NSW regulators) has been established, at which time the relevant standard or guideline including associated timeframes would apply**.	
	2. All new locomotives ordered after 1 July 2018 or delivered to rail operator from 1 July 2019 that are utilising the facility or operating the rail shuttle must meet as minimum US EPA Tier 2 emission standards for particles and oxides of nitrogen (PM less than or equal to 0.27 grams per kilowatt hour and NOx less than or equal to 7.37 grams per kilowatt hour).	The MPW Stage 2 BPR included the following commitment relating to air emissions for new locomotives entering the IMT facility: • *New locomotives – operate with diesel particulate emissions less than or equal to 0.27 grams per kilowatt hour.* *The timeframe for the implementation of this restriction will be based on either 'AS 7512 Exterior Environment' or, if this standard is not yet in force, within seven years of operation of the IMT facility.* Similar to the above, this commitment was made in lieu of there being any established industry standard for air emissions of new locomotives. Should an industry standard (either the AS 7512 or equivalent) be established it would be supersede the above required standards to ensure that the MPW Stage 2 Proposal intermodal terminal is operating in parody with other established industry standard for rail freight transportation. The specific timing of the MPW Stage 2 Proposal operations has yet to be determined and is subject to planning approvals and construction timeframes and there a timeframe commitment, above relating to operation of the terminal cannot be undertaken at this stage and is considered unreasonable. Therefore, a more reasonable timeframe, in parody with the industry, and EPA's request should be included in this recommended condition of approval. In consideration of the above, the following amendments (with additions bold and underlined and deletions bold underlined and struck through) should be made to the Recommended condition of approval: All new locomotives, ordered after **the commencement of operations, ~~1 July 2018 or delivered to rail operator from 1 July 2019~~ that are** utilising the **MPW Stage 2 Proposal intermodal terminal ~~facility or operating the rail shuttle~~** must meet as minimum US EPA Tier 2 emission standards for particles and oxides of nitrogen (PM less than or equal to 0.27 grams per kilowatt hour and NOx less than or equal to 7.37 grams	MPW Stage 2 RtS Best Practice Review (Arcadis, June, 2017) (Appendix K of the RtS)

Key issue	Additional information required	Response	Reference
		per kilowatt hour). **This measure would be adopted until such time as an industry standard or guideline (endorsed by NSW regulators) has been established, at which time the relevant standard or guideline including associated timeframes would apply**.	
	3. All new locomotives delivered to rail operator from 1 July 2022 that are utilising the facility or operating the rail shuttle must meet as minimum US EPA Tier 3 emission standards for particles and oxides of nitrogen (PM less than or equal to 0.13 grams per kilowatt hour and NOx less than or equal to 7.37 grams per kilowatt hour).	The MPW Stage 2 BPR included the following commitment relating to air emissions for new locomotives entering the IMT facility: • *New locomotives – operate with diesel particulate emissions less than or equal to 0.27 grams per kilowatt hour.* *The timeframe for the implementation of this restriction will be based on either 'AS 7512 Exterior Environment' or, if this standard is not yet in force, within seven years of operation of the IMT facility.* The MPW Stage 2 BPR did not include provision for the restriction (within any timeframe) of new locomotives utilising the terminal that do not comply with US Tier 3 emissions standards. Notwithstanding this, the MPE Stage 1 Stage 1 Best Practice Review (Arcadis, August, 2017), which was recently submitted to DP&E for final signoff, included the following commitment related to port shuttle locomotives: • Any new locomotives ordered after 5 years of the commencement of operations of the IMEX terminal (anticipated to be 1 January 2024) would operate with diesel particulate emissions less than 0.13 and NOx emissions of less than 7.37 grams per kilowatt hour. SIMTA, would be willing to implement a similar restriction for the MPW Stage 2 Proposal intermodal terminal, subject to this being restricted to port shuttle movements, timing being related to operations and also should be it be relevant only in lieu of an established industry standard. In consideration of the above, the following amendments (with additions bold and underlined and deletions bold underlined and struck through) should be made to the Recommended condition of approval: All new **port shuttle** locomotives **ordered after 5 years of commencement of operations of the MPW Stage 2 Proposal intermodal terminal** ~~**delivered to rail operator from 1 July 2022 that are**~~ utilising the facility ~~**or operating the rail shuttle**~~ must meet as minimum US EPA Tier 3 emission standards for particles and oxides of nitrogen (PM less than or equal to 0.13 grams per kilowatt hour and NOx less than or equal to 7.37 grams per kilowatt hour). **This measure would be adopted until such time as an industry standard or guideline (endorsed by NSW regulators) has been established, at which time the relevant standard or guideline including associated timeframes would apply**.	MPW Stage 2 RtS Best Practice Review (Arcadis, June, 2017) (Appendix K of the RtS) Section 3.2.1 of the MPE Stage 1 Best Practice Review (Arcadis, August, 2017)

Key issue	Additional information required	Response	Reference
	4. Within one year of operation, all container handling equipment must meet, as minimum, US EPA Tier 3 / Euro Stage IIIa emission standards or achieve an equivalent emission control performance to those standards listed in this condition.	The MPW Stage 2 RtS included the following mitigation measure (No. 3C) in relation to container handling equipment to be used in the MPW Stage 2 intermodal terminal: *New reach stackers to achieve emissions performance equivalent to US EPA Tier 3 / Euro Stage IIIA standards.* Other best practice mitigation measures are also included in the MPW Stage 2 mitigation measures for container handling equipment within the MPW Stage 2 intermodal terminal, namely: • *Unnecessary idling avoided through driver training and site anti-idle policy* • *Equipment with smoky exhausts (more than 10 seconds) should be stood down for maintenance.* SIMTA therefore agrees with the recommended condition of approval subject to the inclusion of the following clarifications (with additions bold and underlined and deletions bold underlined and struck through): Within one year of operation, all container handling equipment **operating in the MPW Stage 2 Proposal intermodal terminal** must meet, as minimum, US EPA Tier 3 / Euro Stage IIIa emission standards or achieve an equivalent emission control performance to those standards listed in this condition.	MPW Stage 2 RtS (Section 8)
NSW Heritage Council			
Management of historic heritage	The Heritage Council previously provided comment on the exhibition of Moorebank Precinct West - Stage 2 in a letter dated 18 November 2016. This advice outlined earlier approvals issued as SSD 5066 and early works SSD 5066 Mod 1 for the Moorebank development and allowed for conditions of approval to manage historic heritage within the study area. This current SSD 7709 project is reliant on the successful fulfilment of the conditions of approval, confirmation of their completeness should therefore be required prior to the commencement of this proposal.	This submission from the NSW Heritage Council has not been made available to Arcadis by NSW DP&E as part of the submissions process. It is requested that this letter be provided to Arcadis for consideration and comment.	N/A

Key issue	Additional information required	Response	Reference
Recommended conditions of consent	1. Prior to construction works commencing, the applicant shall demonstrate to the Department of Planning and Environment that all conditions of approval in respect to historic heritage have been satisfactorily met.	There are no objections to the inclusion of this recommended condition of consent as part of the MPW Stage 2 approval instrument.	N/A
	2. A stop work procedure is included in the project environmental management documents, which should clarify that in the event an unexpected find is identified, works must cease in that area. A suitably qualified and experienced heritage professional/archaeologist should assess the find and identify if it has significance (local or state). If the item has significance, how to manage this item within the development activity. The stop work procedure should be included in all site inductions for the project with appropriate examples of what may be considered an unexpected find.	The MPW Stage mitigation measures, included in Section 8 of the RtS, propose similar mitigation to this recommended condition of approval. Subsequent to the submission of the MPW Stage 2 RtS, we have updated mitigation measure 10C to the following (refer to the FCMM at Attachment F of this letter): • 10C - An unexpected finds protocol (or equivalent) would be included within the CEMP, *including a stop works procedure*. If unexpected finds are identified during works, a suitably qualified archaeological consultant would be engaged to assess the significance of the finds and the NSW Heritage Council notified. In this instance, further archaeological work or recording may be required. As a result, there are no objections to the inclusion of this recommended condition of consent as part of the MPW Stage 2 approval instrument.	MPW Stage 2 RtS (Section 8) Attachment F of this letter
	3. The detailed design and interpretation for the project should incorporate the names of historic roads, places and significant people in the naming of buildings and roads in the new project area to mitigate the impact on the Moorebank Cultural Landscape.	The MPW Concept Approval (SSD 5066) FCMMs and the MPW Stage 2 mitigation measures, included in Section 8 of the RtS, propose similar mitigation to this recommended condition of approval. The MPW Stage 2 RtS mitigation measures includes the following: • 10A – Naming of roads would consider previous School of Military Engineering (SME) street names. • 10B – Naming of buildings and roads (in addition to above) would consider commemoration of significant events and individuals related to the Moorebank Cultural Landscape. In that these mitigation measures already satisfy the intent of the recommended condition of approval it is considered unnecessary for this recommended condition of approval to be included within the MPW Stage 2 approval instrument.	MPW Stage 2 RtS (Section 8)

<table>
<tr><th>Key issue</th><th>Additional information required</th><th>Response</th><th>Reference</th></tr>
<tr><td></td><td>4. Any interpretation strategy prepared as part of the project must be submitted to the Heritage Council of NSW for comment and endorsement.</td><td>Based on similar conditions of approval (MPW Concept Approval (SSD 5066) and MPE Stage 1 Approval (SSD 14-6766)) the Secretary is nominated to provide approval for all documentation (including an Interpretation Strategy) and therefore consultation is considered suitable (i.e. for comment) but endorsement is considered inconsistent with the standard sign-off process.

In consideration of the above, the following amendments (with additions bold and underlined and deletions bold underlined and struck through) should be made to the recommended condition of approval:

Any interpretation strategy prepared as part of the project must be submitted to the Heritage Council of NSW for comment ~~and endorsement~~. <u>**The Strategy shall be submitted to the Secretary.**</u></td><td>N/A</td></tr>
<tr><td colspan="4">NSW Office of Environment and Heritage (NSW OEH)</td></tr>
<tr><td>Indirect impacts on Hibbertia fumana with the ‘Boot Land’</td><td>With regard to your specific advice request on the MPW Stage 2 RTS, it does not appear the indirect impacts on Hibbertia fumana within the ‘Boot land’ have been considered. While the RTS (and updated BAR) state that ‘no other threatened plant species listed under the TSC Act and/or EPBC Act are anticipated to be directly or indirectly impacted by the Amended Proposal’ (RTS, p. 458), the consideration of indirect impacts is restricted to the Georges Rivers riparian corridor (RTS pp. 460-461).</td><td>Six threatened flora species were recorded during surveys of the Boot Land between 2011 and 2017. Of these, all six are currently listed under the NSW Biodiversity Conservation Act 2016 (BC Act) and four are currently listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The previously recorded threatened flora species in the Boot Land, as well as the distance from the closest record to the Proposal is summarised below. Threatened flora species records in the Boot Land in the vicinity of the Proposal have been provided at Attachment D of this letter.
<table>
<tr><th>Species</th><th>EPBC Act status</th><th>BC Act status</th><th>Distance o from MPW Stage 2 Construction Area</th><th>Distance from MPW Stage 2 impacts</th></tr>
<tr><td>Acacia bynoeana</td><td>Vulnerable</td><td>Endangered</td><td>210</td><td>245</td></tr>
<tr><td>Acacia pubescens</td><td>Vulnerable</td><td>Vulnerable</td><td>664</td><td>688</td></tr>
<tr><td>Grevillea parviflora subsp. parviflora</td><td>Vulnerable</td><td>Vulnerable</td><td>54</td><td>78</td></tr>
</table></td><td>Section 4.2 of Appendix G of the MPW Stage 2 RtS.

Attachment D of this Letter.</td></tr>
</table>

Key issue	Additional information required	Response	Reference

Hibbertia fumana	Not listed	Critically Endangered (provisional listing)	230	285
Hibbertia puberula subsp. *puberula*	Not listed	Endangered	24	49
Persoonia nutans	Endangered	Endangered	0	25

The eastern boundary of the MPW Stage 2 Construction Area (also known as the Proposal site) adjoins the western boundary of the Boot Land; however no specific works are planned within the Moorebank Avenue road reserve. The closest area of impact from the MPW Stage 2 Proposal is the proposed on-site detention basin adjoining the eastern boundary of the MPW site.

With the exception of *Persoonia nutans*, all threatened flora species in the Boot land have a minimum of 25 metre wide native vegetation buffer between them and the edge of the MPW Stage 2 Construction Area. The closest record of each species to any proposed MPW Stage 2 impacts ranges from 25 metres to 688 metres. Given that:

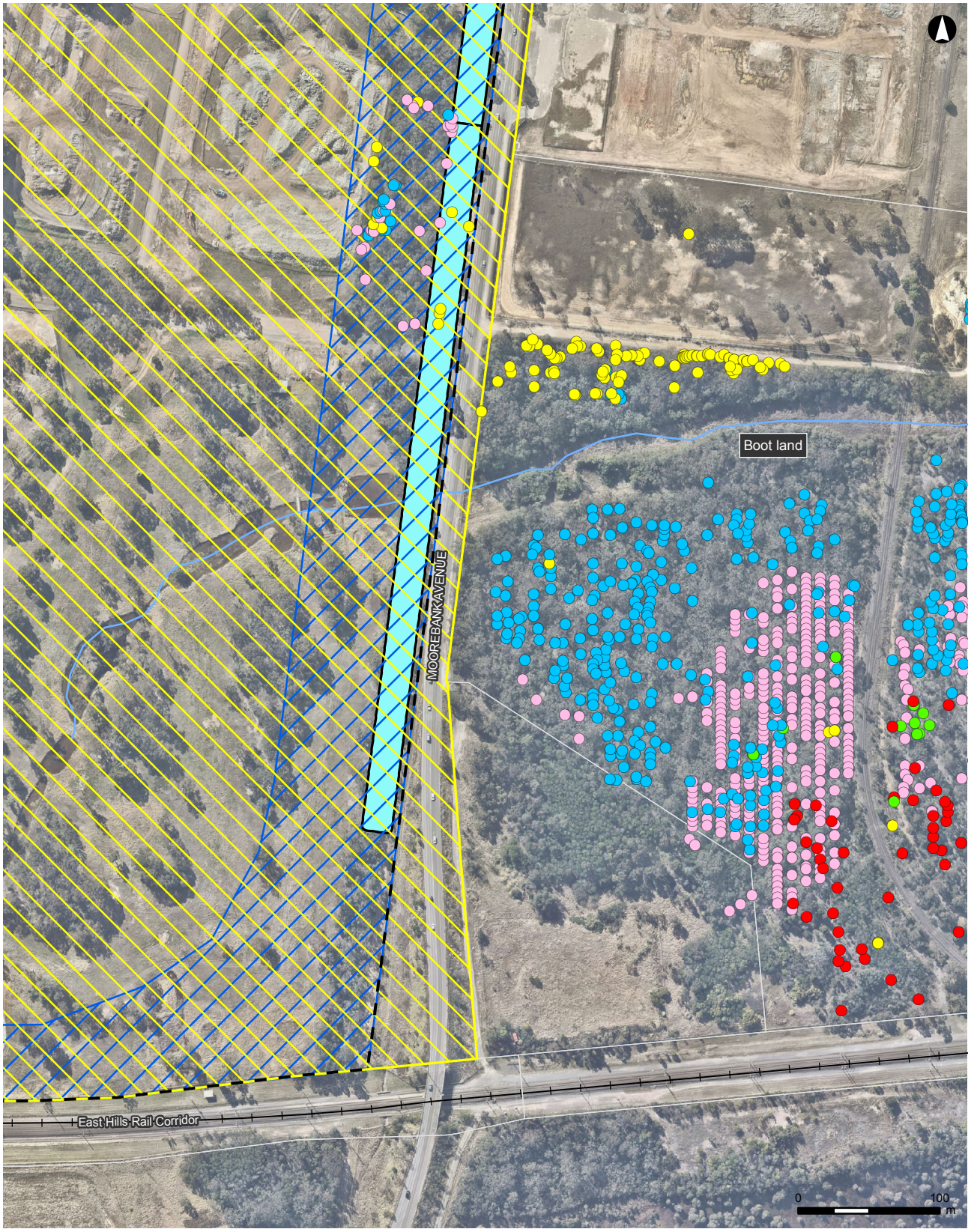
- the recorded threatened plant populations are located a minimum of over 25 metres from any MPW Stage 2 project impacts, with the vast majority of records located over 50 metres from any impacts;
- the closest impact is an OSD, which is designed to capture sediment flows that may impact on adjoining areas, and will be designed, constructed and managed in accordance with a stormwater management plan; and
- the existing Moorebank Avenue will not be disturbed, at this location, as part of the MPW Stage 2 Proposal, and would provide an additional barrier between the proposed impacts and the threatened flora populations on the Boot Land, particularly in the area south of Anzac Creek where Moorebank Avenue rises to form the rail overbridge.

It is considered unlikely that there would be any indirect impacts on the threatened flora populations identified in the Boot land as a result of the Proposal. The risk of introducing or spreading weeds and pathogens into the Boot land as a result of the MPW Stage 2 Proposal is considered low, given the barrier effect of Moorebank Avenue and the

Key issue	Additional information required	Response	Reference
		proposed implementation of hygiene procedures for the use of vehicles and the importation of materials to the site.	

ATTACHMENT C – Development Application Form

ATTACHMENT D – Threatened flora species and vegetation mapping



LEGEND

- Amended construction area
- Amended operational area
- MPW site
- OSD
- Watercourse
- Existing railway

Threatened Flora Species

- Acacia bynoeana
- Grevillea parviflora subsp. parviflora
- Hibbertia fumana
- Hibbertia puberula subsp. puberula
- Persoonia nutans

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SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

ATTACHMENT E – Cumulative Impact Assessment, considering MPE Stage 2

CUMULATIVE IMPACTS

Approach

To identify the potential cumulative impacts of the concurrent construction and operation of the MPW Stage 2 Proposal and the MPE Stage 2 Proposal, we have utilised the results from previous cumulative assessments undertaken where possible. The approach that has been undertaken to assess the potential cumulative impacts of the MPW Stage 2 Proposal with the MPE Stage 2 Proposal is as follows:

- A review of the impacts of the Proposal as identified in the MPW Stage 2 EIS.
- A review of the impacts identified in the MPE Stage 2 EIS cumulative assessment, and the MPE Stage 2 RtS (where the RtS superceded the cumulative assessments included in the MPE Stage 2 EIS).
- A comparison of the results from the MPW Stage 2 EIS to the MPW Stage 2 RtS, where the Proposal was altered to include a number of amendments to the Proposal (as described in Section 6 of the MPW Stage 2 RtS).
- A summary of the potential cumulative impacts of the MPW Stage 2 Proposal (as amended by the MPW Stage 2 RtS), MPE Stage 2 Project and MPE Stage 2 Proposal.

The cumulative assessment scenarios included in previous MPW Stage 2 and MPE Stage 2 EIS documents are summarised in Table 1.

Table 1 Cumulative assessment scenarios included in the MPW stage 2 EIS and MPE Stage 2 EIS

Location of cumulative assessment	Cumulative construction scenario	Cumulative operational scenario
MPE Stage 2 EIS (section 19) MPE Stage 2 RtS (section 7)	Construction of the MPE Stage 2 Proposal, concurrently with MPW Stage 2 and MPE Stage 1.	Operation of the Proposal combined with the MPE Stage 1 Proposal and MPW Stage 2 Proposal operating at 250,000 TEU and 500,000 TEU throughput respectively, (i.e a total of 750,000 TEU throughput for the two sites running concurrently). Operation of 300,000m^2 of warehousing included within the Proposal and operation of 215,000m^2 of warehousing as part of the MPW Stage 2 Proposal and other associated development (freight village and ancillary facilities) (i.e. a total 515,000m^2 warehousing)
MPW Stage 2 EIS (Section 19) MPW Stage 2 RtS (Section 7)	Construction of the Proposal concurrently with MPW Early works and the MPE Stage 1 Project.	The Proposal operating at 500,000 TEU throughput combined with the MPE Stage 1 Project, operating at 250,000 TEU throughput, (i.e a total of 750,000 TEU throughput for the two sites running concurrently).
MPW Stage 2 as presented in this document	Construction of the MPE Stage 2 Proposal, concurrently with MPW Stage 2 and MPE Stage 1.	Operation of the Proposal combined with the MPE Stage 1 Proposal and MPW Stage 2 Project operating at 250,000 TEU and 500,000 TEU throughput respectively, (i.e a total of 750,000 TEU throughput for the two sites running concurrently). Operation of 300,000m^2 of warehousing included within the Proposal and operation of 215,000m^2 of warehousing as part of the MPW Stage 2 Proposal and other associated development (freight village and ancillary facilities) (i.e. a total 515,000m^2 warehousing)

Assessment

Table 2 below provides a summary of the anticipated cumulative impacts of the concurrent construction and operation of the MPW Stage 2 Proposal with the MPE Stage 2 Proposal.

Table 2 Assessment of cumulative impacts

Aspect	MPW Stage 2 (MPW Stage 2 Proposal only)	
Phase	**Construction**	**Operation**
Traffic and transport	• The construction traffic assessment presented in the MPW Stage 2 RtS identified that key intersections with the potential to be impacted by construction traffic (i.e. M5 Motorway / Moorebank Avenue and Moorebank Avenue / Anzac Road during the AM and PM peak hours) would maintain a Level of Service (LoS) of B or C; representing good to satisfactory operating conditions. • The MPE Stage 2 cumulative traffic and transport assessment identified that all modelled intersections near the MPE and MPW Stage 2 Proposals would operate at an acceptable LoS during the AM and PM peak during peak construction. • The assessment presented in the MPW Stage 2 RtS concluded that construction traffic impacts associated with the amendments to the MPW Stage 2 Proposal would be consistent with those presented in the MPW Stage 2 EIS. • As a result of the above, the concurrent construction of the MPW Stage 2 Proposal with the MPE Stage 1 Project and MPE Stage 2 Proposal is anticipated to result in impacts that would maintain a similar LoS at the M5 Motorway / Moorebank Avenue and Moorebank Avenue / Anzac Road intersections to those identified in the MPW Stage 2 RtS. Further, the mitigation measures as included in Section 8 of the MPW Stage 2 RtS consider the potential impact of the concurrent importation of clean general fill for the MPE Stage 2 and MPW Stage 2 Proposals (i.e. during potentially concurrent construction	• The operational traffic and transport assessment presented in the MPW Stage 2 RtS identified that the MPW Stage 2 Proposal (as amended) would result in only marginal traffic impacts to the surrounding road network in the presence of the proposed mitigation and management measures. The traffic and transport analysis included in the MPW Stage 2 Proposal shows that with the exception of the Moorebank Avenue / Anzac Road intersection, all key intersections within the traffic and transport study area would require progressive upgrades to manage existing and projected background traffic volumes before the addition of the traffic generated by the MPW Stage 2 Proposal. • The MPE Stage 2 cumulative traffic and transport assessment, included in the MPE Stage 2 RtS identified that road network improvements are required to mitigate the impacts of the cumulative operation of the MPE Stage 1 Project, MPE Stage 2 Proposal and MPW Stage 2 Proposal at key intersections within the study area, and these are either partially as a result of the cumulative operational scenario, and/or to cater for background traffic growth. As these upgrades are not directly a result of the proposals (cumulative assessment) they have been nominated as assumed network upgrades and adopted to complete the modelling for the cumulative operational traffic and transport impact assessment. The performance of intersections at locations where the assumed network upgrades have been adopted are expected to perform satisfactorily, after the upgrades were adopted in the modelling, with the addition of

Aspect	MPW Stage 2 (MPW Stage 2 Proposal only)	
Phase	**Construction**	**Operation**
	periods[1]) through the inclusion of an additional mitigation measure which limits the amount of clean general fill that would be transported to the Moorebank Precinct per day. Mitigation measure 1H in Section 8 of the MPW Stage 2 Proposal includes the following: – *Importation of fill to site during construction of the Proposal is to not exceed a total of 22,000 m^3 of material per day. This limit is to be further reduced by an amount equivalent to any fill being imported to the MPE Stage 2 Proposal (SSD 7628) on the same day such that the combined importation of fill to the Proposal site and MPE site does not exceed 22,000 m3 on any given day.* • This above mitigation measure has also been included in Section 8 of the MPE Stage 2 RtS to similarly address any cumulative impacts from both proposals during construction. • The above results and the proposed mitigation measure limiting the daily import of clean general fill would manage and address potential cumulative traffic and transport impacts from the concurrent construction of the MPW Stage 2 Proposal with the MPE Stage 2 Proposal.	cumulative operational traffic in 2019 and 2029 in the AM and PM peak periods. • The assessment presented in the MPW Stage 2 RtS identifies traffic impacts associated with the Amended Proposal would be generally consistent with the traffic and transport impacts in the MPW Stage 2 EIS. In 2019 there would be only minor changes (both increases and reductions) in intersection delay, but no changes in LoS. In 2029, predicted changes in intersection delay would again be minor, but there would be improvements to LoS at the Moorebank Avenue / Anzac Road / MPW access road intersection (PM peak), the M5 Motorway/ Hume Highway intersection (AM peak) and the M5 Motorway / Heathcote Road intersection (PM peak). A deterioration in LoS is predicted for the Moorebank Avenue / Newbridge Road in the PM peak. • The cumulative assessment identified that the change in operational traffic impacts when comparing MPW Stage 2 to the combined proposals would be negligible (when considering the implementation of assumed network upgrades). In addition to this, the MPW Stage 2 Proposal (as amended) includes a proposed upgrade to the Anzac Road /Moorebank Avenue intersection which would accommodate both MPE Stage 1, MPE Stage 2 and MPW Stage 2 operational traffic and background traffic growth until 2029.

[1] Subject to planning approval timeframes.

Aspect	MPW Stage 2 (MPW Stage 2 Proposal only)	
Phase	**Construction**	**Operation**
Noise and vibration	• The construction noise assessment presented in the MPW Stage 2 RtS considered each construction works period and determined that the construction noise emissions are expected to comply with the established Noise Management Levels (NML) at all noise-sensitive receivers, with the exception of Casula. At Casula, construction noise levels during the bulk earthworks phase of construction are predicted to exceed the NML by up to 1 dBA (during standard construction hours). • The MPE Stage 2 EIS cumulative construction noise assessment identified that cumulative construction noise levels are predicted to comply with the NML at all receivers, except for the most sensitive receivers in Casula, where cumulative construction noise levels may exceed NML by up to 2dB during standard daytime construction hours. • The assessment presented in the MPW Stage 2 RtS identified that the MPW Stage 2 Proposal (as amended) would not result in any exceedances of NMLs, but would result in additional construction noise impacts on the DJLU site and at the most affected residential receivers in Wattle Grove. • The cumulative assessment presented in the MPE Stage 2 RtS identified that cumulative construction noise levels are predicted to comply with the NML at all receivers, except for the most sensitive receivers in Casula, where cumulative construction noise levels may exceed NML by up to 2dB during standard daytime construction hours. This represents a 1dB increase in the exceedance of NML at the most sensitive receivers in Casula. However, as identified in the cumulative assessment, an exceedance of up to 2dB is considered negligible. Potential noise impacts from construction of the MPW Stage 2 Proposal would be managed through the implementation of mitigation measures as outlined in Section 8 of the MPW Stage 2 RtS.	• The operational Noise and Vibration Impact Assessment in the MPW Stage 2 EIS identified that the operational noise levels from the MPW Stage 2 Proposal would comply with the relevant criteria, including relevant sleep disturbance goals. • The MPE Stage 2 cumulative operational noise assessment identified that the operational noise levels at sensitive receivers, due to the concurrent operation of the MPW Stage 2 Proposal, the MPE Stage 1 Project and MPW Stage 2 Proposal, would comply with the relevant amenity criteria at all times (day, evening and night). • The operational noise assessment presented in the MPW Stage 2 RtS presents operational noise impacts consistent with those presented in the MPW Stage 2 EIS. • The cumulative assessment identified that the change in operational noise impacts when comparing MPW Stage 2 to the combined proposals would be negligible.

Aspect	MPW Stage 2 (MPW Stage 2 Proposal only)	
Phase	**Construction**	**Operation**
Air Quality	• The air quality modelling results presented in the MPW Stage 2 RtS indicated that the construction phase air emissions would comply with all relevant impact assessment criteria. The predicted increase in annual average PM_{10}, $PM_{2.5}$, Total Suspended Particulate matter (TSP) and dust deposition are considered minor, when compared against existing background conditions. • The cumulative air quality modelling results identified in the MPE Stage 2 assessment indicate that dust, TSP, PM_{10} and $PM_{2.5}$ emissions at sensitive receivers near the proposals comply with all relevant impact assessment criteria. The annual average background concentrations of $PM_{2.5}$ already exceeds the NEPM AAQ reporting standard, meaning that cumulative predictions are also above the standard at all receptors. It is noted; however, that the incremental increases in $PM_{2.5}$ emissions as a result of the MPW Stage 2 Proposal with the MPE Stage 1 Project and MPW Stage 2 Proposal would result in relatively minor increases to the annual average when compared to background concentration levels. • The air quality impacts identified in the MPW Stage 2 RtS are consistent with those presented in the MPW Stage 2 EIS. • The impacts identified in the MPE Stage 2 cumulative assessment, which considered the concurrent operation of the MPW Stage 2 and MPW Stage 2 Proposals are consistent with those presented in the MPW Stage 2 RtS.	• For the operational phase of the MPW Stage 2 Proposal as presented in the MPW Stage 2 RtS, the maximum increase in PM_{10} and $PM_{2.5}$ is minor when compared to existing background conditions. When background concentrations are added, there are no additional exceedances of the short-term impact assessment criteria. The annual average background concentrations of $PM_{2.5}$ already exceed the NEPM reporting standard, and therefore cumulative predictions included in the MPW Stage 2 RtS (the MPW Stage 2 Proposal, plus background) were also above the standard at all receptors. However, despite the existing exceedance of the annual average background concentration, the MPW Stage 2 Proposal results in a relatively minor additional increase in annual average $PM_{2.5}$ (<0.4 µg/m³ at all sensitive receptors). The predicted NO_2, CO, SO_2 concentrations are well below the relevant impact assessment criteria with the operation of the MPW Stage 2 Proposal alone. • The cumulative air quality modelling results identified in the MPE Stage 2 assessment indicate that predicted concentrations of PM_{10} and $PM_{2.5}$ for the cumulative operational scenario (concurrent operation of the MPE Stage 2 Proposal, MPW Stage 2 Proposal and MPE Stage 1 Project) are compliant with the relevant air quality goals, except for the annual average $PM_{2.5}$ concentrations, which, as earlier discussed, are already in exceedance of criteria and are not significantly influenced as a result of incremental cumulative emissions generated by the proposals. The predicted concentrations of other air pollutants investigated (O_2, CO, SO_2) were well below the impact assessment criteria at the most affected receivers. • The assessment presented in the MPW Stage 2 RtS presents operational air quality impacts consistent with those presented in the MPW Stage 2 EIS. • The impacts identified in the MPE Stage 2 cumulative assessment are generally consistent with those presented in the MPW Stage 2 RtS.

Aspect	MPW Stage 2 (MPW Stage 2 Proposal only)	
Phase	**Construction**	**Operation**
Human Health	• Emissions to air from construction sources were not evaluated in the respective HRAs. This approach is based on the assessment that construction air emissions would be temporary, relatively easily manageable and compliant with relevant air quality standards. Similarly, construction phase noise impacts to human health were not considered for this assessment as they would be temporary and are demonstrated in the Noise and Vibration Impact Assessment to comply with the relevant standards.	• The results of the HRA in the MPW Stage 2 EIS found that the increase in risk to human health as a result of air pollution from the operation of the MPW Stage 2 Proposal are low or negligible. The cancer risk from the air toxins are well below acceptable risk levels set by international agencies. The implementation of best practice measures as outlined in the Air Quality Best Practice Review (Appendix O of the MPW Stage 2 EIS) would lead to further reductions in air pollution levels and the associated health risks. The noise HRA investigated the impact of noise from operation of the Proposal and rail noise on sleep disturbance, annoyance and cognitive impairment using the World Health Organisation (WHO) community noise guidelines. The noise from both operation of the MPW Stage 2 Proposal and cumulative assessment scenario in the MPW Stage 2 EIS meets the WHO community noise guidelines at all residential receivers. A Hazard Quotient (HQ) greater than 1 was predicted for annoyance and cognitive impairment at the nearest industrial receivers, however, the HQs for existing ambient noise already exceed 1 for annoyance and cognitive impairment at these receivers. Similarly, although rail noise and total noise exceed the WHO community noise guidelines, the existing ambient noise levels are already above these guidelines and on this basis the MPW Stage Proposal related noise is expected to have minimal additional impact on the local residential area. With the implementation of the best practice measures outlined in the Noise and Vibration Impact Assessment (Appendix N of the MPW Stage 2 EIS), these exceedances would be minimised and as a result the risk to health of the local community would be low. • The MPE Stage 2 cumulative assessment evaluated the increase in annual health endpoints for cumulative exposure to air quality parameters PM_{10}, $PM_{2.5}$, NO_2, SO_2, and CO for each suburb. Based on the estimated increased annual incidence for multiple health endpoints contributing to mortality and morbidity identified in the MPE Stage 2 cumulative assessment and shown above, there are no significant

Aspect	MPW Stage 2 (MPW Stage 2 Proposal only)	
Phase	**Construction**	**Operation**
		adverse health effects expected in relation to short-term exposure to PM10, PM2.5, NO2, SO2 or CO from the cumulative proposals in the surrounding local area. The MPE Stage 2 cumulative assessment identified that excess lifetime cancer risks associated with the cumulative operation of the MPE Stage 2 and MPW Stage 2 Proposal-related exposure to benzene, 1,3-butadiene, PAHs (as BAP TEQ) and DPM were all within the acceptable risk range of 10^{-6} to 10^{-4}. Therefore, no unacceptable cancer risks are expected in relation to long-term exposure to VOCs, DPM and PAHs in the surrounding local area. • A review of cumulative noise impacts to human health in the MPE Stage 2 cumulative assessment identified that hazard quotients for annoyance, sleep disturbance and cognitive impairment were less than or equal to one (1) at all residential and educational receivers. This indicates that the operational noise from the cumulative proposals do not pose an unacceptable risk to the health of these communities. Noise from the cumulative proposals would result in a predicted hazard quotient of greater than 1 for annoyance and cognitive impairment at the nearest industrial receiver, however, this is considered acceptable given the hazard quotients for existing ambient noise at this receiver already exceed 1 for these health effects. • The assessment presented in the MPW Stage 2 RtS presents operational human health impacts consistent with those presented in the MPW Stage 2 EIS. • The cumulative assessment presented in the MPE Stage 2 EIS identified a minor increase in the impacts to human health from those presented in the MPW Stage 2 RtS. However, the combined impact would not pose an unacceptable risk to the health of surrounding communities. Best practice procedures and management measures are prescribed within the respective environmental assessments for proposal which would further reduce levels of air and noise pollution generated as a result of the operation of the proposals.

Aspect	MPW Stage 2 (MPW Stage 2 Proposal only)	
Phase	**Construction**	**Operation**
Biodiversity	• The updated BAR prepared for the MPW Stage 2 RtS identified impacts to three threatened ecological communities (TECs) listed under the *Threatened Species Conservation Act 1997* (TSC Act) and/ or *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) associated with the following Plant Community Types (PCTs) in the MPW Stage 2 Proposal site: – 15.51 ha of Hard-leaved Scribbly Gum – Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin – 0.92 ha of Parramatta Red Gum woodland on moist alluvium of the Cumberland Plain, Sydney Basin – 30.62 ha of Forest Red Gum – Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin • MPW Stage 2 would also have an impact on populations of three threatened flora species listed under the TSC Act and EPBC Act: – 16 plants -Persoonia nutans – 333 stems - Grevillea parviflora subsp. Parviflora – 88 plants - Hibbertia puberula subsp. puberula • A review of cumulative biodiversity impacts in the MPE Stage 2 biodiversity assessment identified that of the three plant communities identified in the MPW Stage 2 RtS assessment, only one (Hard-leaved Scribbly Gum – Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin) would experience a cumulative impact from the combination of the proposals. The area of Hard-leaved Scribbly Gum – Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basin to be cleared would be increased by 0.84 ha (a total of 16.35 ha) in the cumulative assessment. • Threatened fauna species recorded on the MPW Stage 2 site as well as the MPE Stage 1 site were the Grey Headed flying-fox (Pteropus policephalus) and a suite of microbat species including Southern Myotis (Myotis adversus), East-coast Freetail-bat (Mormopterus norfolkensis) and Eastern Bentwing-bat (Miniopterus schreibersii oceanensis). Hollow-bearing trees would be reduced as a result of the proposals and habitat connectivity would be impacted across the landscape through clearing and vegetation in the Georges River riparian corridor. Furthermore, concurrent construction activities, particularly instream works, have the potential to exacerbate impacts to aquatic habitats. There would be a cumulative loss of fauna habitat within the landscape from vegetation removal. • The impacts identified to PCTs in the MPW Stage 2 RtS show a reduction in clearing when compared to the EIS. This reduction is primarily attributable to the revised vegetation mapping for the MPW Stage 2 Amended Development Site following further site inspection and aerial photograph interpretation to remove areas of cleared exotic-dominated vegetation and hardstand. • The MPW Stage 2 Proposal as presented in the RtS would have a direct impact on one additional threatened flora species listed under the TSC Act and EPBC Act *Hibbertia puberula* subsp. *puberula*. This would not result in a change to the cumulative assessment as presented in the MPE Stage 2 EIS as this species was not identified in the MPE Stage 2 or the MPE Stage 1 sites.	

Aspect	MPW Stage 2 (MPW Stage 2 Proposal only)
Phase	**Construction** **Operation**
	• The cumulative assessment would result in a minor increase in the area of threatened PCTs to be cleared and minor loss of fauna habitat and connectivity. Impacts to biodiversity during construction and operation would be managed through the mitigation measures as outlined in section 9 of the MPW Stage 2 RtS and the Biodiversity Offset Package being prepared for the MPW Project.
Hazard and risk	• A Preliminary Risk Screening in accordance with *State Environmental Planning Policy No 33— Hazardous and Offensive Development* (SEPP 33) for the MPW Stage 2 Proposal has been undertaken. Hazards and risks associated with the MPW Stage 2 Proposal may arise from a number of activities including demolition, road logistics, storage of hazardous materials, refuelling, waste disposal and equipment maintenance. Key hazards and risks associated with the MPW Stage 2 Proposal include presence of contamination on site (including asbestos), loss of containment of flammable/combustible or corrosive liquids, fire and explosion, vehicle movements and machinery use, dangerous goods storage and transport and gas leaks. • As no major effects would be felt outside of the cumulative proposal sites, it is considered unlikely that any cumulative impacts would arise as a result of the construction or operation of the proposals. Key impacts for MPE Stage 1 Project with the MPE Stage 2 and MPW Stage 2 proposals would be managed and controlled locally in accordance with appropriate management plans as part of the CEMP and OEMPs for the Proposals. • The hazards and risks identified in the MPW Stage 2 RtS are consistent with those presented in the MPW Stage 2 EIS. • The impacts identified in the MPE Stage 2 cumulative assessment do not increase from those presented in the MPW Stage 2 RtS.
Visual amenity	• The MPW Stage 2 proposal is in keeping with the surrounding land uses and any impacts would be effectively minimised through the use of landscaping and urban design. • The cumulative assessment as presented in the MPE Stage 2 EIS notes that both the MPE and MPW sites are effectively screened from surrounding sensitive receivers by existing vegetation to the west, south and east, and existing Defence and industrial areas to the north reducing visual impacts to surrounding sensitive receivers. Landscaping proposed on each of the proposal sites would also assist in reducing any visual impacts. In addition, the MPE Stage 1 Project, MPE Stage 2 and MPW Stage 2 proposals are all in keeping with the existing industrial nature of both sites. • The impacts to visual amenity as identified in the MPW Stage 2 RtS are generally consistent with those presented in the MPW Stage 2 EIS. • It is not anticipated for the cumulative scenario (i.e the concurrent development of the MPE Stage 1 Project, MPE Stage 2 Proposal and MPW Stage 2 Proposal) to result in increase in visual impacts above what was assessed for each proposal in isolation.

ATTACHMENT F – Final Consolidated List of Mitigation Measures

FINAL COMPILATION OF MITIGATION MEASURES

The MPW Stage 2 Environmental Impact Statement ((MPW Stage 2 EIS) Arcadis, 2016) identified a range of environmental impacts and recommended management and mitigation measures to avoid, remedy or mitigate these impacts (refer to Section 22 of the MPW Stage 2 EIS).

These mitigation measures were revised as part of the MPW Stage 2 Response to Submissions Report ((MPW Stage 2 RtS), Arcadis, 2017) in response to the following:

- Submissions received during the public exhibition period
- To address the amendments to the Proposal
- To incorporate additional mitigation measures from the MPW Concept RtS where necessary.

Subsequent to the submission of the MPW Stage 2 RtS to the NSW Department of Planning and the Environment (DP&E), DP&E have requested that we provide a consolidated list of mitigation measures, including measures in the response to DP&E issues (as requested in the *Moorebank Precinct West – Response to Submissions and outstanding information* letter (DP&E request), issued on 28 August 2017). In response to the DP&E request, a review of the following documentation has been undertaken:

- *Preliminary Construction Environmental Management Plan* (Arcadis, 2016), provided as Appendix I of the MPW Stage 2 EIS
- *Preliminary Construction Traffic Management Plan* (Arcadis, 2016), provided at Appendix M of the MPW Stage 2 EIS
- *Preliminary Operational Traffic Management Plan* (Arcadis, 2016), provided at Appendix M of the MPW Stage 2 EIS
- *Noise and Vibration Impact Assessment* (Wilkinson Murray, 2016), provided at Appendix N of the MPW Stage 2 EIS
- *Preliminary Construction Air Quality Management Plan* (Ramboll Environ, 2016), provided at Appendix O of the MPW Stage 2 EIS
- Revised mitigation measures provided in Section 8 of the MPW Stage 2 RtS
- *Stockpile Management Protocol*, provided at Appendix L of the MPW Stage 2 RtS
- *Environmental Works Method Statement*, provided at Appendix M of the MPW Stage 2
- *Moorebank Precinct West (MPW) Stage 2 (SSD 7709) Response to Submissions* letter, issued to NSW DP&E (dated 31 August 2017).

As part of this review, the mitigation measures have been updated to include information that was previously presented within these management plans, appended to both the MPW Stage 2 EIS and RtS. No additional information, that was not previously submitted to DP&E, has been included in these mitigation measures. This cumulative presentation of mitigation measures supersede those previously provided in Section 8 of the MPW Stage 2 RtS.

For ease of reference, words deleted as part of the revision of mitigation measures as part of the MPW Stage 2 RtS are shown in ***~~bold italic strike through~~*** and words inserted as part of the MPW Stage 2 RtS are shown in ***underlined bold italics***. Words deleted as part of the additional review are shown in ~~*shaded italic strike through*~~ and words inserted are shown in *shaded italics*.

The revised mitigation measures represent the Final Compilation of Mitigation Measures (FCMM) for the MPW Stage 2 Proposal and are provided in Table 1 below.

Pre-construction activities for the Amended Proposal would be undertaken in the areas shown in Figure 1 and is relevant to mitigation measure No. 0A only (refer to Table 1)

The construction and operational activities included within the Amended Proposal have been separated into components based on their functional relationship and include the following:

- IMT – IMT and associated development including, but not limited to, container handling and storage, truck access, processing and holding areas, rail sidings and associated infrastructure, administration area and ancillary components (container washdown and de-gassing area and main site road and roundabout).
- Rail link connection – including, but not limited to, the rail sidings and access tracks.
- Warehousing – including, but not limited to, warehousing and attached offices, container storage areas, car parking, truck loading/unloading areas and vehicle manoeuvring, access roads and the freight village.
- Moorebank Avenue intersection -including, but not limited to, Moorebank Avenue/Anzac Road and Moorebank Avenue/Bapaume Road intersection works.
- Site infrastructure – including but not limited to, construction works such as tree clearing, earthworks, construction and operation of the perimeter road, east west channel, OSDs, utilities.

Figure 2 and Figure 3 outlines these components of the Amended Proposal provided in Table 1.

The ‘implementation stage’ column of Table 1 indicates the timing as to when the specific mitigation measures would be implemented. For example, a CEMP might be prepared prior to construction, but would not be ‘implemented’ until the construction phase.

For this Final Compilation of Mitigations Measures, the following definitions apply to the terms used in the implementation phase column:

- Detailed design - works and design progression prior to construction of the associated permanent physical works for the Amended Proposal
- Pre-construction phase – initial stage of physical works for the Amended Proposal, which are not included within the definition of construction and within Works period A
- Construction phase – during construction of all permanent physical works for the Proposal (Works periods B - G)
- Operation phase - either prior to, or during, operation of the Amended Proposal.

Figure 1 Pre-construction activities

LEGEND

- Site infrastructure
- Existing railway
- Watercourses

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Scale: 1:15,000 @ A4

Figure 2 Site infrastructure

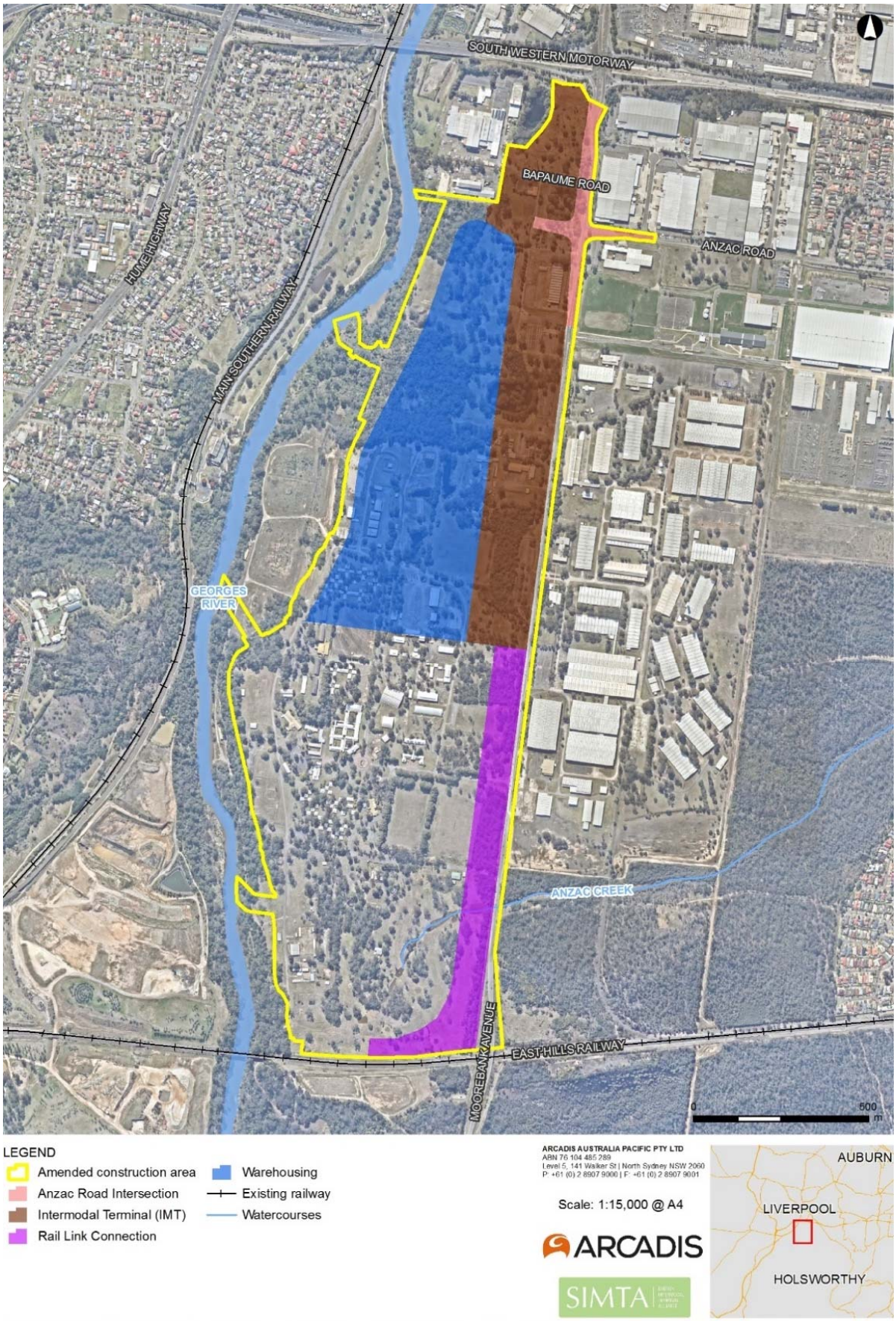


Figure 3 Key operational components

Table 1 Final Compilation of Mitigation Measures – MPW Stage 2 Proposal

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
0.	**General environmental management**						
0A	Pre-construction works would be undertaken subject to the preparation of an Environmental Work Method Statement (EWMS) or equivalent. Pre-construction works include the following: • survey; acquisitions; or building/ road dilapidation surveys; fencing; investigative drilling, excavation or salvage • minor clearing or translocation of native vegetation that does not comprise any EECs • establishment of site compounds and construction facilities • Installation of environmental mitigation measures • utilities adjustment and relocation that do not present a significant risk to the environment, as determined by the Environmental Representative • other activities determined by the Environmental Representative to have minimal environmental impact • All works as described in Works period A in section 4 of this EIS *Stockpiling within the areas denoted for pre-construction stockpiling within Figure 1 of this document, in accordance with the stockpile management protocol.*	Pre-Construction	Y	Y	Y	Y	Y

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
0B	The Construction Environmental Management Plan (CEMP), or equivalent, for the Proposal would be based on the PCEMP (Appendix I of this EIS), and include the following preliminary management plans: • Preliminary Construction Traffic Management Plan (PCTMP) (Appendix M of the EIS) • Air Quality Management Plan (Appendix O of the EIS) • Erosion and Sediment Control Plans (ESCPs) and Bulk Earthworks Plans, within the Stormwater Drainage Design Drawings (Appendix R of the EIS) As a minimum, the CEMP would include the following sub-plans: • Construction Traffic Management Plan (CTMP) • Construction Noise and Vibration Management Plan (CNVMP), prepared in accordance with the *Interim Construction Noise Guideline* • Cultural Heritage Assessment Report/Management Plan • Construction Air Quality Management Plan • Construction Soil and Water Management Plan (SWMP), prepared in accordance with Managing Urban Stormwater, 4th Edition, Volume 1, (2004). • Erosion and Sediment Control Plan • Flood Emergency Response and Evacuation Plan • UXO, EO, and EOW Management Plan • Acid Sulfate Soils Management Plan • Bushfire Management Strategy • Community Information and Awareness Strategy. • Flora and Fauna Management Plan (FFMP) • Groundwater Monitoring Program (GMP) • *Stockpile management protocol*	Construction	Y	Y	Y	Y	Y

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
0C	The Operational Environmental Management Plan (OEMP), or equivalent, for the Proposal would be based on the following preliminary management plans • Preliminary Operational Traffic Management Plan (POTMP) (Appendix M of the EIS) • Air Quality Management Plan (Appendix O of the EIS) • Erosion and Sediment Control Plans (ESCPs) and Bulk Earthworks Plans, within the Stormwater Drainage Design Drawings (Appendix R of the EIS) As a minimum, the OEMP would include the following sub-plans • Operational Traffic Management Plan (OTMP) • Operational Noise and Vibration Management plan (ONVMP) • Air Quality Management Plan • Flooding and Emergency Response Plan (FERP) • Groundwater Monitoring Program • Long term Environmental Management Plan (LTEMP) • Pollution Incident Response Management Plan (PIRMP), including Spill Management Procedure, prepared under the EPA's Environmental Guidelines: Preparation of Pollution Incident Response Management Plans (EPA, 2012) • Incident Response Plan, including a Spill Management Procedure. • Fire Safety and Evacuation Plan • Community Information and Awareness Strategy. • Flora and Fauna Management Plan • Emergency Vehicle Response Plan	Operation	Y	Y	Y	***N***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
0D	The construction and/or operation of the Proposal may be delivered in a number of stages. If construction and/or operation is to be delivered in stages a Staging Report would be provided to the Secretary prior to commencement of the initial stage of construction and updated prior to the commencement of each stage as that stage is identified. *The Staging Report would identify the progressive installation of site infrastructure and services, as appropriate to the progressive development of the Proposal.*	Construction and operation	Y	Y	Y	Y	Y
1.	**Traffic and Transport**						
1A	A Construction Traffic Management Plan (CTMP) would be prepared based on the Preliminary Construction Traffic Management Plan (Appendix M of the EIS), detailing management controls to be implemented to avoid or minimise impacts to traffic, pedestrian and cyclist access, and the amenity of the surrounding environment. The following key initiatives would be included in the CTMP: • Review of speed restrictions along Moorebank Avenue and additional signposting of speed limitations • Restriction of haulage routes through signage and education to ensure, where possible, that construction vehicles do not travel through nearby residential areas to access the Proposal site, in particular Moorebank (Anzac Road) or the Wattle Grove residential areas • Inform local residents (in conjunction with the Community Information and Awareness Strategy) of the proposed construction activities and road access restrictions that the construction traffic must adhere to and establish communication protocols for community feedback on issues relating to construction vehicle driver behaviour and construction related matters • Installation of specific warning signs at entrances to the construction area to warn existing road users of entering and exiting construction traffic • Establishing pedestrian walking routes and crossing points	Construction	Y	Y	Y	Y	Y

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
	• Distribution of day warning notices to advise local road users of scheduled construction activities • Installation of appropriate traffic control and warning signs for areas identified where potential safety risk issues exist • The promotion of car-pooling for construction staff and other shared transport initiatives during the pre-construction phase • Facilitating emergency vehicle access to the site • Management of the transportation of materials to maximise vehicle loads and therefore minimise vehicle movements • Minimising the volumes of construction vehicles travelling during peak periods • Maintaining access to neighbouring properties, in particular the ABB site • Monitoring of traffic on Moorebank Avenue during peak construction periods to ensure that queuing at intersections does not unreasonably impact on other road users.						
1B	A Road Safety Audit would be undertaken on Cambridge Avenue to identify potential traffic safety risks from the Proposal (in consideration of background traffic) and determine appropriate mitigation.	Construction	***N***	***N***	***N***	***N***	***Y***
1C	Moorebank Avenue/Anzac Road/Proposal site intersection would be upgraded to include a four leg intersection as shown in Appendix G of the EIS. The funding of this intersection upgrade would be clarified through discussions with SIMTA and Roads and Maritime.	Operation	Y	Y	Y	***Y***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
1D	The Operational Traffic Management Plan would be prepared based on the Preliminary Operational Traffic Management Plan (Appendix M of the EIS) and include the following key initiatives: • Heavy vehicle route management • Safety and amenity of road users and public • Congestion management on Moorebank Avenue • Road user delay management • Information signage, distance information and advance warning systems • Driver code of conduct • Incident management • Traffic monitoring.	Operation	Y	Y	Y	***N***	***Y***
1E	Consultation with TfNSW would be conducted regarding the provision for active transport to/from the Proposal site and along the internal perimeter road, as part of detailed design for the Proposal.	Operation	***N***	***N***	***N***	***Y***	***Y***
1F	Bicycle and end of trip facilities would be provided in accordance with the *City of Sydney Section 3 – General Provisions.*	Operation	Y	***N***	Y	***N***	***N***
1G	Consultation would be undertaken with relevant bus provider(s) regarding the potential to extend the 901 bus service (or equivalent) and additional bus stops with the aim of maximising public transport accessibility to and within the Proposal site.	Operation	Y	Y	Y	***N***	***Y***
1H	***Importation of fill to site during construction of the Proposal is to not exceed a total of 22,000 m^3 of material per day. This limit is to be further reduced by an amount equivalent to any fill being imported to the MPE Stage 2 Proposal (SSD 7628) on the same day such that the combined importation of fill to the Proposal site and MPE site does not exceed 22,000 m^3 on any given day.***	***Construction***	***N***	***N***	***N***	***N***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
1I	***During operation, emergency vehicle access would be managed through an Emergency Vehicle Response Plan developed for the Proposal ,*** *in consultation with the NSW Police Force, NSW Fire Brigade, NSW Rural Fire Service and the Ambulance Service of NSW, where appropriate.*	***Operation***	***Y***	***Y***	***Y***	***N***	***Y***
2.	**Noise and Vibration**						
2A	A Construction Noise and Vibration Management Plan (CNVMP), or equivalent, would be prepared for the Proposal in accordance with the *Interim Construction Noise Guideline* (or equivalent), and would give consideration to Revised Environmental Mitigation Measures (REMMs) 5A – 5B (of the MPW Concept Plan Approval (SSD 5066)).	Construction	Y	Y	Y	***Y***	***Y***
2B	The ambient noise monitoring surveys undertaken within Casula, Wattle Grove and Glenfield would be continued throughout the construction and operation of the Proposal (with annual reporting of noise results up to two years beyond the completion of the Proposal).	Construction and operation	Y	Y	Y	***Y***	***Y***
2C	In the event of any noise or vibration related complaint or adverse comment from the community, noise and ground vibration levels would be investigated. Remedial action would be implemented where feasible and reasonable.	Construction and operation	Y	Y	Y	***Y***	***Y***
2D	A noise wall would be installed along a portion of the western boundary of the Proposal site in the general location identified in Figure 7-1 of the Noise Impact Assessment (Appendix N of the EIS). The height, extent, and staged implementation of the noise wall would be confirmed, based on further noise modelling undertaken during detailed design. *Should the detailed design solution require a staggered noise wall, the final noise wall would be designed to provide the appropriate level of noise attenuation to minimise operational noise impacts on nearby noise-sensitive receivers, where practicable.*	Operation	Y	N	Y	***N***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
2E	Best practice noise mitigation measures would be implemented for the operational phase of the Proposal including: • Noise monitoring (refer to mitigation measures 2B and 2C above) • A gate appointment system would be implemented to minimise truck loading/unloading wait times and resultant queueing. Trucks would be turned away from facility if arriving too early • Truck marshalling lanes would be included to minimise congestion and queueing • The provision of information signs and communication of MPW idle reduction policy.	Operation	Y	Y	Y	***N***	***N***
2F	***Management of vibration impacts to Kitchener House.*** ***In the event that plant items to be used for construction identified in Table 12 of the Noise Technical Memorandum (refer to Appendix D of the MPW Stage 2 RtS) are proposed to be operated within their respective "Cosmetic Damage" safe working distances from Kitchener House, then attended vibration monitoring would be conducted at Kitchener House to verify that the 'safe' vibration level is not exceeded. If exceedances are approached, the work should cease immediately, and alternative construction methods should be used.***	Construction	Y	N	N	***Y***	***Y***
3.	**Air Quality**						
3A	*A Construction Air Quality Management Plan would be prepared based on the Air Quality Management Plan (Appendix O of the EIS) and include the following key initiatives:* *Procedures for controlling/managing dust:* • *Clearing, site preparation and excavation* – *Deploy water carts periodically during construction to ensure exposure areas and topsoils/subsoil are kept moist.* – *Work practices would be modified to manage/control dust by limiting clearing, stripping and spoil handling during periods of*	Construction	Y	Y	Y	***Y***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
	adverse weather (hot, dry and windy conditions) and when dust is seen leaving the site. – *The extent of clearing of vegetation and topsoil would be limited to the designated footprint required for construction and appropriate staging of any clearing.* • *Demolition of existing structures* – *Where possible, materials and structures would be dampened using water sprays prior to demolition. During adverse weather (hot, dry and windy conditions), consideration would be given to modify demolition activities when dust is seen leaving the site. Special consideration, including boundary monitoring would need to be given to the demolition of buildings containing asbestos in accordance with relevant guidelines and legislation.* • *Haulage and heavy plant and equipment movements* – *Water carts would be operated on all unsealed internal roadways and travel routes.* – *All vehicles on-site would be confined to a designated route with a speed limit of 30km/hr enforced.* – *Trips and trip distances should be controlled and reduced where possible, for example by coordinating delivery and removal of materials to avoid unnecessary trips.* – *Dirt track-out should be managed using shaker grids and / or wheel cleaning. Dirt that has been tracked onto public roads would be cleaned as soon as practicable.* – *All trucks delivering fill or leaving the site with spoil material would have their load covered.* • *Wind erosion* – *Wind erosion from exposed ground would be limited by avoiding unnecessary vegetation and topsoil clearing and limiting to the minimum footprint required.* – *Wind erosion from temporary stockpiles would be limited by minimising the number of work faces on stockpiles and through*						

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
	temporary stabilisation (compaction of surface, water sprays, seeding, veneering). *Roles, responsibilities and reporting requirements:* • *During construction, environmental management would be the responsibility of the construction contractor. The Construction Manager (CM) would be responsible for the day to day construction activities of the Proposal site, including the implementation of dust controls.* *Construction dust monitoring:* • *Visual checks would be made daily and reported on an environmental inspection report. The visual checks would:* – *Inspect and report on excessive dust being generated at source (wheel generated dust, scrapers/graders, dozers, excavators, wind erosion).* – *Inspect and report on water cart activity and effectiveness.* – *Inspect and report on dust leaving the site.* – *Non-conformance (dust leaving the site) would be reported immediately to the CM or management.* • *Contingency measures for dust control where standard measures are deemed ineffective.*						
3B	Vehicle movements would be limited to designated entries and exits, haulage routes and parking areas.	Construction	Y	Y	Y	***Y***	***Y***
3C	Best practice air quality mitigation measures would be implemented for the operational phase of the Proposal including: **Locomotives** • Ensure locomotives are well maintained in accordance with the manufacturer's specification or relevant operational plan. Update maintenance plans to include a requirement to consider air emissions and where possible improve air emission performance at next overhaul/upgrade (for SIMTA operational fleet)	Operation	Y	Y	N	***N***	***N***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
	• Ultra Low Emitting Switch Locomotives would be considered during the procurement process, having regard to technical, logistical and financial considerations • Anti-idle policy and communication / training for locomotive operators • Unnecessary idling avoided through driver training and site anti-idle policy • Driver training for fuel efficiency.						
	Container Handling • New reach stackers to achieve emissions performance equivalent to US EPA Tier 3 / Euro Stage IIIA standards • Unnecessary idling avoided through driver training and site anti-idle policy • Equipment with smoky exhausts (more than 10 seconds) should be stood down for maintenance.		Y	N	N	***N***	***N***
	Trucks • Gate appointment system, truck marshalling lanes and rejection of trucks that arrive early to minimise wait times and queuing • Development of an anti-idle policy and communication through the provision of information signs • Unnecessary idling avoided through driver training and site anti-idle policy • Loading and unloading coordinated to minimise truck trip distances as they travel through site.		Y	Y	Y	***N***	***N***
3F	The *Air Quality Management Plan* (Appendix O of the EIS), would be further progressed and incorporated into the OEMP for the Proposal. In accordance with the AQMP the following key aspects would be addressed in the OEMP: • Implementation and communication of anti-idling policy for trucks and locomotives	Operation	Y	Y	Y	***N***	***N***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
	• Complaints line for the community to report on excessive idling and smoky vehicles • Procedures to reject excessively smoky trucks visiting the site based on visual inspection.						
4.	**Biodiversity**						
4A	Following detailed design and before construction, detailed flora and fauna mitigation measures would be developed and presented as part of the CEMP. These detailed measures would incorporate the measures listed below. The CEMP would address: • general impact mitigation • staff/contractor inductions • vegetation clearing protocols including identification of exclusion zones • pre-clearing surveys and fauna salvage/translocation • rehabilitation and restitution of adjoining habitat • weed control • pest management • monitoring. The CEMP would include clear objectives and actions for the Proposal including how to: • minimise human interferences to flora and fauna • minimise vegetation clearing/disturbance • minimise impact to threatened species and communities • minimise impacts to aquatic habitats and species • undertake flora and fauna monitoring at regular intervals.	Construction	Y	Y	Y	***N***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
4B	Vegetation clearing would be restricted to the construction footprint with sensitive areas, outside of this footprint, clearly identified as vegetation exclusion zones.	Pre-construction and Construction	Y	Y	Y	***Y***	***Y***
4C	The vegetation exclusion zones would be marked on maps, which would be prepared by the contractor/s, and would also be marked on the ground using high visibility fencing (such as barrier mesh).	Pre-construction and Construction	Y	Y	Y	***Y***	***Y***
4D	A suitably qualified ecologist would accompany clearing crews to ensure disturbance is minimised and to assist in relocating any native fauna to adjacent habitat.	Construction	Y	Y	Y	***N***	***Y***
4E	The following procedures would be implemented to minimise fauna impacts from vegetation clearance: • A staged habitat removal process would be developed and would include the identification and marking of all habitat trees in the area • Where reasonable and feasible, clearing of hollow-bearing trees would be undertaken in March and April when most microbats are likely to be active (not in torpor) but are unlikely to be breeding or caring for young, and when threatened hollow-bearing tree dependent birds in the locality are also unlikely to be breeding • Pre-clearing surveys would be conducted 12 to 48 hours before vegetation clearing to search for native wildlife (e.g. reptiles, frogs, Cumberland Land Snail) that can be captured and relocated to the retained riparian vegetation of the Georges River corridor • Vegetation would be cleared from a 10 m radius around habitat trees to encourage animals roosting in hollows to leave the tree. A minimum 48 hour waiting period would allow animals to leave • After the waiting period, standing habitat trees would be shaken (where safe and practicable) under the supervision of an ecologist to encourage animals roosting in hollows to leave the trees, which may then be felled, commencing with the most distant trees from secure habitat	Construction	Y	Y	Y	***N***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
	• Felled habitat trees would either be immediately moved to the edge of retained vegetation, or left on the ground for a further 24 hours before being removed from the construction area, at the discretion of the supervising ecologist • All contractors would have the contact numbers of wildlife rescue groups and would be instructed to coordinate with these groups in relation to any animal injured or orphaned during clearing.						
4F	Within areas of high quality intact native vegetation proposed to be removed: • Topsoil (and seedbank) would be collected from native vegetation that are to be permanently cleared and used in the revegetation of riparian areas • Where feasible and reasonable native plants in areas that are to be permanently cleared would be relocated and transplanted in riparian areas identified for rehabilitation	Construction	Y	Y	Y	***N***	***Y***
4G	Relocation of fauna to adjacent retained habitat would be undertaken by a suitably qualified ecologist during the supervision of vegetation removal.	Construction	Y	Y	Y	***Y***	***Y***
4H	An ecologist would supervise the drainage of any waterbodies on the Proposal site and would relocate ~~***native fish (e.g. eels),***~~ tortoises and frogs to the edge of the Georges River and/or the existing pond at the northern end of the Proposal site. ***Native fish (e.g. eels) that are endemic to the Sydney area would be translocated from drained ponds/dams on the site to natural waterways and pest fish would be euthanised on ice. If non-endemic native species are encountered on site, DPI Fisheries would be consulted to determine the best location to translocate this species.***	Construction	Y	Y	Y	***N***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
4I	The design of temporary site fencing and any overhead powerlines would consider the potential for collision by birds and bats and minimise this risk where practicable.	Detailed design & Pre-construction, construction	Y	Y	Y	***Y***	***Y***
4J	The potential for translocation of threatened plant species as individuals or as part of a soil translocation process would be considered during the detailed development of the EWMS and CEMP.	Detailed design, construction and construction	Y	Y	Y	***N***	***Y***
4K	Important habitat elements (e.g. large woody debris) would be moved from the construction area to locations within the conservation area which would not be cleared during the Proposal, or to stockpiles for later use in vegetation/habitat restoration.	Pre-construction and Construction	Y	Y	Y	***N***	***Y***
4L	Winter-flowering trees would be preferentially planted in landscaped areas of the Proposal site to provide a winter foraging resource for migratory and nomadic nectar-feeding birds and the Grey-headed Flying-fox.	Detailed design, Pre-construction and Construction	Y	Y	Y	***N***	***Y***
4M	Erosion and sediment control measures such as silt fencing and hay bales would be used to minimise sedimentation of streams and resultant impacts on aquatic habitats and water quality. *The erosion and sediment controls to be included to avoid, minimise and mitigate against the potential for construction of the Proposal to result in erosion and sedimentation impacts will be determined in consideration of the erosive potential of locally occurring soils, and the characteristics of the clean general fill to be imported as part of construction of the Proposal.*	Pre-construction and Construction	Y	Y	Y	***Y***	***Y***
4N	Opportunities for planting of detention basins with native aquatic emergent plants and fringing trees would be explored in the detailed design of the Proposal and, if practicable, implemented so that they would provide similar habitat in the medium term to that lost through the removal of existing basins.	Detailed design and construction	Y	Y	***N***	***N***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
4O	The CEMP (or equivalent) would include detailed measures for minimising the risk of introducing weeds and pathogens for construction related vehicles and equipment.	Construction	Y	Y	Y	***Y***	***Y***
4P	The CEMP and OEMP for the Proposal would consider and have reference to the weed removal and riparian vegetation restoration undertaken within parts of the Georges River corridor under the MPW Concept Approval (identified within the Biodiversity Offset Package for the MPW Project).	Construction and operation	***N***	***N***	***N***	***N***	***Y***
4Q	The detailed design process would consider the potential groundwater impacts on groundwater-dependent ecosystems. In most cases, these impacts, if evident, would be mitigated at the design phase.	Detailed design and construction	Y	Y	Y	***N***	***Y***
4R	The OEMP would include a biodiversity monitoring program designed to detect operational impacts of the Georges River riparian corridor (within the offset site).	Operation	Y	Y	Y	***N***	***Y***
4S	Ongoing monitoring of macroinvertebrate communities would be undertaken prior to, during and following construction upstream and downstream of the potential impacts at the proposed basin outlets in the Georges River and reference locations to assist in identifying any changes in aquatic communities.	Pre-construction, construction and operation	Y	Y	Y	***N***	***Y***
4T	The proposed stormwater basin outlets would be designed to minimise biodiversity impacts by incorporating native revegetation and fauna habitat features as far as possible.	Detailed design	Y	Y	Y	***N***	***Y***
4U	The native vegetation and connectivity values in the proposed basin outlets would be monitored to ensure that fauna passage is maintained.	Construction and operation	Y	Y	Y	***N***	***Y***
4V	***During operation, both threatened and non-threatened species of frogs and reptiles may be at risk of injury or mortality. Controls such as fencing would be put in place to keep land-based fauna away from the operating terminals.***	***Operation***	***Y***	***Y***	***Y***	***N***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
4W	***A monitoring program would be developed and implemented to measure the performance of revegetation activities in the Georges River riparian zone and associated conservation area.***	***Construction and operation***	***Y***	***Y***	***Y***	***N***	***Y***
5.	**Stormwater and Flooding**						
5A	A Soil and Water Management Plan (SWMP) and Erosion and Sediment Control Plan (ESCP), or equivalent, would be prepared for the Proposal. The SWMP and ESCPs would be prepared in accordance with the principles and requirements of the *Blue Book* and based on the Preliminary ESCPs provided in the Stormwater and Flooding Assessment Report (refer to Appendix R of the EIS). The following aspects would be addressed within the SWMP and ESCPs: • Minimise the area of soil disturbed and exposed to erosion • Priority should be given to management practices that minimise erosion, rather than to those that capture sediment downslope or at the catchment outlet • Divert clean water around the construction site or control the flow of clean water at non-erodible velocities through the construction area • Provision of boundary treatments around the perimeter of construction areas to minimise the migration of sediment offsite • Permanent or temporary drainage works (in particular OSDs) would be installed as early as practical in the construction program to minimise uncontrolled drainage and associated erosion • Stockpiles would be located away from flow paths on appropriate impermeable surfaces, to minimise potential sediment transportation. Where practicable, stockpiles would be stabilised if the exposed face of the stockpile is inactive more than ten days, and would be formed with sediment filters in place immediately downslope • Disturbed land would be rehabilitated as soon practicable • The wheels of all vehicles would be cleaned prior to exiting the construction site where excavation occurs to prevent the tracking of mud. Where this is not practical, or excessive soil transfer occurs	Construction	Y	Y	Y	***Y***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
	onto paved areas, street cleaning would be undertaken when necessary. • A requirement to inspect all permanent and temporary erosion and sedimentation control works prior to and post rainfall events and prior to closure of the construction area. Erosion and sediment control structures must be cleaned, repaired and augmented as required. • Where required, sediment basins and their outlets would be designed to be stable in the peak flow from at least the 10-year ARI time of concentration event. Sediment basins should be sized to accommodate the 5 day, 80th percentile storm event, with sufficient size and capacity to manage Type F soils. Sediment basins must be regularly cleaned to maintain the design capacity. Prior to discharge from sediment basins, water would be tested for the following parameters to identify construction impacts: – pH – Turbidity / TSS – Oil and grease. • Sediment fences are to be provided around the perimeter of the site to control untreated runoff from leaving the site, and around the existing and proposed drainage channels to minimise sediment migration into waterways and sediment basins • The following management measures would be implemented during works in and adjacent to Georges River to mitigate potential impacts on water quality during OSD channel construction: – All reasonable efforts would be taken to program construction activities during periods when flood flows are not likely to occur – The construction site, on completion of construction works, would be left in a condition that promotes native revegetation – The management principles outlined in Managing Urban Stormwater (Landcom 2004) for sites with high erosion potential would be implemented.						

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
5B	Proposal site exits would be fitted with hardstand material, rumble grids or other appropriate measures to limit the amount of material transported offsite.	Construction	Y	Y	Y	Y	Y
5C	The following measures would be considered during the development of construction methodology for the Proposal to mitigate flooding impacts: • For all site works, provide temporary diversion channels around temporary work obstructions to allow low and normal flows to safely bypass the work areas • Locate site compounds, stockpiling areas and storage areas for sensitive plant, equipment and hazardous materials above an appropriate design flood level, outside of the PMF extent at the northern section of the construction area, to be determined based on the duration of the construction work.	Construction	N	N	Y	Y	Y
5D	To minimise potential flood impacts during construction of the Proposal, the following measures would be implemented and documented in the SWMP: • The existing site catchment and sub-catchment boundaries would be maintained as far as practicable • To the extent practicable, site imperviousness and grades should be limited to the extent of existing imperviousness and grades under existing development conditions • Smaller detention storages that provide adequate rainfall runoff mitigation during partial construction/site development would be considered. • Temporary structures used to convey on site run-off during construction would be designed to accommodate flows during prolonged or intense rainfalls. The existing stormwater conduit conveying flows from Moorebank Avenue to the Georges River would be assessed to ensure it is adequate to accommodate run-off from the construction area.	Construction	N	N	Y	Y	Y

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
5E	A Flood Emergency Response and Evacuation Plan, or equivalent, would be prepared and implemented for the construction phase of the Proposal to allow work sites to be safely evacuated and secured in advance of flooding occurring at the Proposal site. ***The plan would be prepared in consultation with the State Emergency Service.***	Construction	N	N	Y	***Y***	***Y***
5F	Stormwater quality improvement devices would be designed to meet the performance targets identified in the *Stormwater and Flooding Environmental Assessment* (Appendix R ***of the EIS***), and civil design drawings. Maintenance of the bio-retention structures would be in accordance with the maintenance requirements set out in Gold Coast City Council's *Water Sensitive Urban Design Guidelines* 2007 and would be included in the OEMP.	Operation	Y	Y	Y	***N***	***Y***
5G	Operational water quality monitoring is to be carried out and included in the OEMP with the objective of maintaining or improving existing water quality.	Operation	Y	Y	Y	***N***	***Y***
5H	A Flood Emergency Response Plan (FERP) would be prepared and implemented for the operational phase of the Proposal. The FERP would take into consideration, site flooding and broader flood emergency response plans for the Georges River floodplains and Moorebank area. The FERP would also include the identification of an area of safe refuge within the Proposal site that would allow people to wait until hazardous flows have receded and safe evacuation is possible. ***The FERP would be prepared in consultation with the State Emergency Service.***	Operation	Y	Y	Y	***Y***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
5l	***Stockpile sites established during construction are to be managed in accordance with stockpile management principles set out in Appendix L of the MPW Stage 2 RtS.*** *Mitigation measures within the Stockpile Management Protocol include:* • *In order to accept fill material onto site, material characterisation reports/certification showing that the material being supplied is VENM/ENM must be provided.* • *Each truck entering the MPE Stage 2 Proposal site will be visually checked and documented to confirm that only approved materials that are consistent with the environmental approvals are allowed to enter the site.* • *Only fully tarped loads are to be accepted by the gatekeeper.* • *Environmental Assurance of imported fill material will be conducted to confirm that the materials comply with the NSW EPA Waste Classification Guidelines and the Earthworks Specification for the MPW site. The frequency of assurance testing will be as nominated by the Environmental assuror/auditor.* • *All trucks accessing the site for the purpose of clean general fill importation would enter and exit via the existing main MPE Stage 2 site access located in the North-west of the MPE site from Moorebank Avenue.* • *Ingress and egress to the stockpiling areas would be arranged so that the reversing of trucks within the site is minimised* • *Stockpiles would not exceed ten-metres in height from the final site levels, with battered walls at gradients of 1V:3H* • *For any stockpile heights greater than 4 m, benching would be implemented.* • *Where reasonable and feasible, and to minimise the potential for erosion and sedimentation of stockpile(s), stockpile profiles would typically be at angle of repose (the steepest angle at which a sloping surface formed of loose material is stable) with*	***Construction***	***Y***	***Y***	***Y***	***N***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
	a slight concave slope to limit the loss of sediments off the slope, or through the profile and the formation of a toe drain. • *The top surface of the stockpile(s) would be slightly sloped to avoid ponding and increase run off.* • *Topsoil stockpiles would be vegetated to minimise erosion.* • *Stockpiles would be protected from upslope stormwater surface flow through the use of catch drains, berms, or similar feature(s) to divert water around the stockpile(s).* • *A sediment control device, such as a sediment fence, berm, or similar, would be positioned downslope of the stockpile to minimise sediment migration.* • *Any water seepage from stockpiles would be directed by toe drains at the base of the stockpiles toward the sediment basins or check dams and away from the emplacement or extraction working face.* • *Newly formed stockpiles would be compacted (sealed off) using a smooth drum roller at the end of each working day to minimise water infiltration.* • *Haul roads would be located alongside the stockpile to the work/tipping area. As per best practice, the catchment area of haul roads for surface water runoff would be approximately 25-30 m lengths, facilitated by the provision of spine drains which would convey water from the haul road to toe drains at the base of the stockpile, and then to sediment basins.* • *Temporary sediment basins would be established in accordance with the ESCP prepared for the site.* • *Stockpiling of clean fill material is to be carried out during Works Period A (pre-construction) and Works Period D (bulk earthworks).*						

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
	• *Any imported clean general fill material that would be subject to stockpiling within the Proposal site for more than a 10-day period without being worked on, would be subject to stabilisation works, to minimise the potential for erosion.* • *Where the material being stockpiled is less coarse or has a significant component of fines then surface and slope stabilisation would be undertaken. Methods for slope stabilisation may include one or a combination of the following:* – *Application of a polymer to bind material together* – *Application of hydro-seed or hydromulch* – *Covering batters with mulch to provide ground cover.* – *Covering batters with geofabric* – *Use of a simple sprinkler system for temporary stockpiles, including use of radiating sprinkler nozzles to maintain fine spray over exposes surfaces.* – *Other options identified by the Contractor.* • *Topsoil stockpiles would be seeded with a grass/legume or nitrogen fixing species (such as acacia) to assist in erosion control and reduce loss of beneficial soil nutrients and micro-organisms.*						
5J	*Gross pollutant traps would be provided at basin inlets for all permanent basins during operation.*	*Construction*					*Y*
5K	*Hydraulic modelling of OSD outlet channels (using HEC-RAS software) would be undertaken during detailed design, to facilitate the design of the channels and demonstrate their effectiveness with respect to energy dissipation and scour protection elements*	*Detailed Design*					*Y*

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
6.	**Geology, Soils and Land Contamination**						
6A	The CEMP would identify the actions to be taken should additional contamination be identified during the development of the site (i.e. an unexpected finds protocol), and will address REMM items 8H, 8T, 8U, 8V and 8W (of the MPW Concept Plan Approval (SSD 5066)).	Construction	***N***	***N***	***N***	***Y***	***Y***
6B	A site specific Remediation Action Plan (RAP) is not considered to be required for the Proposal. The following documentation would be utilised for the purposes of remediating the site: • The Preliminary Remediation Action Plan (PB, 2014a) • The Validation Plan – Principles (Golder, 2015b) • The Demolition and Remediation Specification (Golder 2015c) • Any other contamination documentation prepared for the remediation activities undertaken for MPW Early Works (Stage 1).	Construction	***N***	***N***	***N***	***N***	***Y***
6C	The CEMP would include the preparation of a site-wide UXO, EO, and EOW management plan (or equivalent) based on the UXO Risk Review and Management Plan (G-Tek, 2016). This plan would be implemented to address the discovery of UXO or EOW during construction, to ensure a safe environment for all staff, visitors and contractors.	Construction	***N***	***N***	***N***	***N***	***Y***
6D	An Asbestos in Soils Management Plan (AMP) is to be implemented as part of the CEMP in accordance with the Safe Work NSW requirements, including but not limited to: • the Guidelines for Managing asbestos in or on soil (2014), and • Codes of Practice - How to Safely Remove Asbestos (2011) and How to Manage and Control Asbestos in the Workplace (2011).	Construction	***N***	***N***	***N***	***Y***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
6E	An Acid Sulfate Soils Management Plan (or equivalent) would be prepared as part of the CEMP in accordance with the ASSMAC Assessment Guidelines (1998), for areas identified as being of low or high risk i.e. works within close vicinity of the Georges River (Figure 13-2 of this EIS). In addition, a risk assessment quantifying the risks associated with the volumes of soil to be disturbed, the laboratory results from ASS testing undertaken, the end use of the materials and the proximity to sensitive environments is to be undertaken. All offsite disposal would be in accordance with the NSW Waste Classification Guidelines Part 4: Acid Sulfate Soils (2009).	Construction	***N***	***N***	***N***	***N***	***Y***
6F	The existing groundwater monitoring undertaken for the Proposal would continue. A groundwater monitoring program (GMP) would be developed at the conclusion of remediation activities for the Proposal and included as part a Long Term Environmental Management Plan (LTEMP) (to be prepared for approval by the Accredited Site Auditor and in association with the OEMP). The main purpose of the GMP would be to assist in the management of groundwater contamination (particularly PFAS impacts) at the site, and to minimise potential harm to human health and the environment. The GMP would achieve the following objectives: • Establish whether the residual groundwater contamination plume is shrinking, stable, or increasing, and whether natural attenuation and/or migration is occurring according to expectations through line-of-evidence collection • Provide appropriate groundwater investigation levels (GILs) for groundwater contaminants, in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (ASC NEPM). Should exceedances be identified, contingency plans for further investigations or remediation would be prepared.	Pre-construction, construction and operation	Y	Y	Y	***N***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
	• Provide appropriate trigger levels for key contaminants (where available), based on the receptor of interest and identified contaminants • Serve as a compliance program, so that potential impacts to down-gradient receptors are identified before adverse effect occurs (relative to above objectives) • Detect changes in environmental conditions (e.g. hydrogeologic, geochemical or other changes) that may reduce the efficacy of any natural attenuation processes or that could lead to a change in the nature of impact • Establish groundwater conditions (i.e. concentrations and/or trends) which indicated that groundwater monitoring could be reduced or ceased and the requirements of the GMP absolved. The monitoring program is to be undertaken for two years post operation of the Proposal to ensure a range of seasonal and river flow variations is assessed. At the completion of the two year period, subject to analysis of results, consideration would be given to whether this monitoring is required to continue.						
6G	Findings within the Geotechnical Interpretive Report (Golder, 2016 – Appendix S of the EIS) regarding excavations, earthworks, pavements and structural footings are to be considered during detailed design.	Detailed design	***N***	***N***	***N***	***N***	***Y***
6H	At the conclusion of remediation works, a Remediation and Validation Report (RVR) is to be prepared for the Proposal to facilitate the Auditor's review of remediation and validation activities. The RVR is to document the remediation and validation activities completed within specific areas of the Proposal, including: • Information relating to the materials used in the separation layers such as the soil types, geotextile materials, and sealant types etc. (if required) • An as-constructed plan of the site showing the locations, depths and materials of the separation layers installed at the site.	Operation	***N***	***N***	***N***	***N***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
6I	The existing site-wide Long-Term Environmental Management Plan (LTEMP), such as the one established at the completion of Early Works, is to be revised at the completion of the Proposal remediation activities to include protocols for ongoing maintenance and/or monitoring or any long term remedial/mitigation measures to be implemented following completion of the Site Audit Statement.	Operation	***N***	***N***	***N***	***N***	***Y***
6J	***In order to accept fill material onto site, the following will be undertaken:*** • ***Material characterisation reports/certification showing that the material being supplied is VENM/ENM must be provided.*** • ***Each truck entry will be visually checked and documented to confirm that only approved materials that are consistent with the environmental approvals are allowed to enter the site. Only fully tarped loads are to be accepted by the gatekeeper. Environmental Assurance of imported fill material will be conducted to confirm that the materials comply with the NSW EPA Waste Classification Guidelines and the Earthworks Specification for the MPW site. The frequency of assurance testing will be as nominated by the Environmental assuror/auditor.***	***Construction***	***N***	***N***	***N***	***N***	***Y***
6K	***The CEMP would include an Earthworks Specification, which would include details on earthworks material criteria, handling and placement requirements, embankment and cutting formation (including foundation, batter and benching requirements), unsuitable material and bridging layer requirements, conformance testing methods and acceptance criteria (e.g. for material acceptance and compaction control).***	***Construction***	***N***	***N***	***N***	***N***	***Y***
6L	***In areas where placement of fill would occur to final site levels, but hardstand and warehousing is not currently proposed, exposed surfaces would be stabilised using hydroseeding, or the application of a bitumen emulsion or a similar stabilisation method.***	***Construction***	***N***	***N***	***N***	***N***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
7.	**Hazard and risk**						
7A	The following measures would be included in the CEMP (or equivalent) to minimise hazards and risks: • Procedures for safe removal of asbestos • Provision for safe operational access and egress for emergency service personnel and workers would be provided at all times • An Incident Response Plan that would include a Spill Management Procedure.	Construction	Y	Y	Y	***Y***	***Y***
7B	To minimise the risk of leakages involving natural gas, LNG and flammable and combustible liquids to the atmosphere: • Appropriate standards for a gas reticulation network, including AS 2944-1 (2007) and AS 2944-2 (2007), would be applied • Correct schedule pipes would be used • Fire protection systems would be installed as required • Access to the Proposal site would be restricted to authorised personnel.	Operation	Y	Y	Y	***N***	***N***
7C	To minimise the risks of leakage of LNG and flammable liquids during transport: • The transport of dangerous goods by road would comply with the *Dangerous Goods (Road and Rail Transport) Act 2008* and the Dangerous Goods (Road and Rail Transport) Regulation 2014 • Contractors delivering the gas would be trained, competent and certified by the relevant authorities.	Operation	Y	Y	Y	***N***	***N***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
7D	To minimise hazards associated with venting of LNG: • LNG storage would be designed to AS/NZS 1596-2008 standards • Access to the Proposal site would be restricted to authorised personnel • Adequate separation distances to residencies and other assets would be maintained.	Operation	Y	Y	Y	***N***	***N***
7E	Storage of flammable/combustible liquids would be undertaken in accordance with AS 1940, with secondary containment in place in a location away from drainage paths.	Operation	Y	Y	Y	***N***	***N***
7F	Intermodal terminal facility and warehousing staff involved in the transport and handling of dangerous goods would receive training in the contents of the dangerous goods provisions commensurate with their roles and responsibilities. Training is to be provided and records maintained in accordance with the appropriate competent authority (WorkCover NSW).	Operation	Y	Y	Y	***N***	***N***
7G	The 190 KL of diesel fuel (combustible liquids of class C) would be stored on site in a separate 97 KL self-bunded container and would be stored away from other flammable materials of class 3PGI, II or III. The manifest threshold quantity under this circumstance is 100 KL for each tank. Refuelling of locomotives is likely to occur on the locomotive shifter, which would catch any spills during the refuelling process. Spill kits would be located in the vicinity of the refuelling location and staff would be trained in the use.	Operation	Y	N	N	***N***	***N***
7H	*A preliminary risk screening assessment would be undertaken prior to any refuelling activities being undertaken onsite using LPG to ensure compliance with storage requirements (location, tank size and separation distances) under SEPP 33 (specific to the type of fuel to be stored) to maintain acceptable risk levels associated with refuelling procedures.*	*Operation*	*Y*	*N*	*Y*	*N*	*N*

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
7I	*The storage and handling of any LPG or LNG stored within warehouses onsite as part of the Proposal must demonstrate compliance with storage requirements in accordance with the Applying SEPP 33 guideline.*	*Operation*	*N*	*N*	*Y*	*N*	*N*
8.	**Visual Amenity, urban design and landscape**						
8A	The following mitigation measures would be implemented, where reasonable and feasible, to minimise the visual impacts of the Proposal: • Existing vegetation around the perimeter of construction sites would be retained where feasible and reasonable • The early implementation of landscape planting would be considered in order to provide visual screening during the construction of the Proposal • Elements within construction sites would be located to minimise visual impacts as far as feasible and reasonable, e.g. setting back large equipment from site boundaries • Construction lighting, on both ancillary facilities and plant and equipment, would be designed and located to minimise the effects of light spill on surrounding sensitive receivers, including residential areas and the proposed conservation area • Design of site hoardings would consider the use of artwork or project information • Regular maintenance would be undertaken of site hoardings and perimeter areas including the prompt removal of graffiti • Re-vegetation/landscaping would be undertaken progressively • Where required for construction works, cut-off and directed lighting would be used and lighting location considered to ensure glare and light spill are minimised.	Construction	Y	Y	Y	***Y***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
8B	The following mitigation measures would be implemented, where reasonable and feasible, for the landscaping of the Proposal: • Use of species that are local to the area • Use of trees to provide a uniform canopy cover within vegetated areas • Use of local species as understory planting to support and enhance local habitat values • Use of seeds collected within the local area for planting to reinforce the genetic integrity of the region, where possible.	Operation	Y	Y	Y	***N***	***Y***
8C	The following initiatives would be implemented for mitigation of light spill: • Lighting would be designed to minimise impacts on surrounding existing and future residents and the proposed conservation zone • The use of shields on luminaire lighting to minimise brightness effects would be considered • Asymmetric light distribution-type floodlights would be selected as part of the proposed lighting design (i.e. the light is directed specifically to the task with minimal direct light spill to the surrounding area) • Low reflection pavement surfaces would be considered to reduce brightness • The quantity of light and energy consumption in parts of the Proposal site that are not active would be minimised, while retaining safe operation.	Detailed design and operation	Y	Y	Y	***N***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
9.	**Indigenous Heritage**						
9A	The scar portions of MA6 & MA7 would be removed by a qualified arborist and relocated to the TLALC property at Thirlmere, or a suitable area identified in consultation with Registered Aboriginal Parties (RAPs). The trees should be mounted and housed in a weather protected structure. All costs associated with the removal, relocation and housing of the trees would be covered by the Proponent. The relevant RAP would be responsible for the maintenance of the housing once established.	Construction	N	N	***N***	***N***	***Y***
9B	Staged salvage excavation of selected areas should be conducted as part of the Proposal, in consultation with RAPs. These stages include: • Part 1 would involve dispersed pits placed along transects within the Terrace PAD and the tertiary terrace (between MA10 and MA14 – refer to Figure 16-2 of this EIS). • Part 2 would involve open area salvage excavation, targeting the artefact concentrations identified by NOHC at MA10 and MA14, as well as any additional artefact concentrations identified during Part 1.	Construction	N	N	***N***	***N***	***Y***
9C	Where changes are made to the Proposal and areas not assessed by this report or previous reports (NOHC 2014, NOHC Sept 2014, AHMS 2015) are to be impacted, further Aboriginal heritage investigation and consultation should take place.	Construction	Y	Y	***Y***	***Y***	***Y***
9D	An Aboriginal Cultural Heritage Assessment Report (ACHAR) (also known as a Cultural Heritage Management Plan) would be prepared as part of the CEMP for the Proposal and would outline ongoing management/ mitigation measures relating to MA6 and MA7.	Construction	N	N	***N***	***N***	***Y***
9E	An unexpected finds procedure would be included in the ACHAR and in place for the construction phase of the Proposal.	Construction	***N***	***N***	***N***	***Y***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
9F	If suspected human remains are located during any stage of the construction works, work would stop immediately and the NSW Police and the Coroner's Office should be notified. The Office of Environment and Heritage, RAPs and an archaeologist would be contacted if the remains are found to be Aboriginal.	Construction	***N***	***N***	***N***	***Y***	***Y***
9G	Consultation with RAPs would continue throughout the life of the Proposal, as necessary. Ongoing consultation with RAPs would take place throughout the reburial of retrieved artefacts and in the event of the discovery of any unexpected Aboriginal objects.	Pre-Construction, construction and operation	***N***	***N***	***N***	***Y***	***Y***
10.	**Non-Indigenous Heritage**						
10A	Naming of roads would consider previous School of Military Engineering (SME) street names.	Detailed Design	Y	Y	Y	***N***	***Y***
10B	Naming of buildings and roads (in addition to above) would consider commemoration of significant events and individuals related to the Moorebank Cultural Landscape.	Detailed Design	Y	Y	Y	***N***	***Y***
10C	An unexpected finds protocol (or equivalent), *including a stop works procedure* would be included within the CEMP. If unexpected finds are identified during works, *the stop work procedure would be followed and* a suitably qualified archaeological consultant would be engaged to assess the significance of the finds and the NSW Heritage Council notified. In this instance, further archaeological work or recording may be required.	Construction	Y	Y	Y	***Y***	***Y***
11.	**Greenhouse Gas**						
11A	The following mitigation measures would be implemented, where reasonable and feasible, for management of GHG emissions as part the operation of the Proposal: • Energy efficiency design aspects would be incorporated wherever practicable to reduce energy demand • Fuel efficiency of the operation plant/equipment would be assessed prior to selection, and where practical, equipment with the highest	Detailed design	Y	Y	Y	***N***	***N***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
	fuel efficiency and which uses lower GHG intensive fuel (e.g. biodiesel) would be used • Energy-efficient guidelines for operational work would be considered and implemented where appropriate and regular maintenance of equipment would be undertaken to maintain fuel efficiency • Methods to reduce losses from industrial processes (refrigerants and SF6) would be investigated during detailed design • Consideration would be given to undertake further investigation and implementation of cost negative abatement opportunities • Investigate and, where possible, implement key performance indicators (KPIs) for plant efficiency and GHG intensity. The mitigation measures, management strategies and abatement opportunities presented in this report would be reviewed and considered where appropriate for incorporation into the OEMP.						
11B	The following initiatives would be implemented, where reasonable and feasible, for mitigation of GHG emissions during construction: • Construction works would be planned to minimise double handling of materials • Construction/transport plans would be incorporated within the CEMP to minimise the use of fuel during construction • Fuel efficiency of the construction plant/equipment would be assessed prior to selection, and where practical, equipment with the highest fuel efficiency and which uses lower GHG intensive fuel (e.g. biodiesel) would be used • On-site vehicles would be fitted with exhaust controls in accordance with the *Protection of the Environment Operations (Clean Air) Regulation 2010,* as required and appropriate. • Regular maintenance of equipment would be undertaken to maintain good operations and fuel efficiency • Where practicable, trucks removing waste from the site or bringing materials to the site would be filled to the maximum amount	Construction	Y	Y	Y	Y	Y

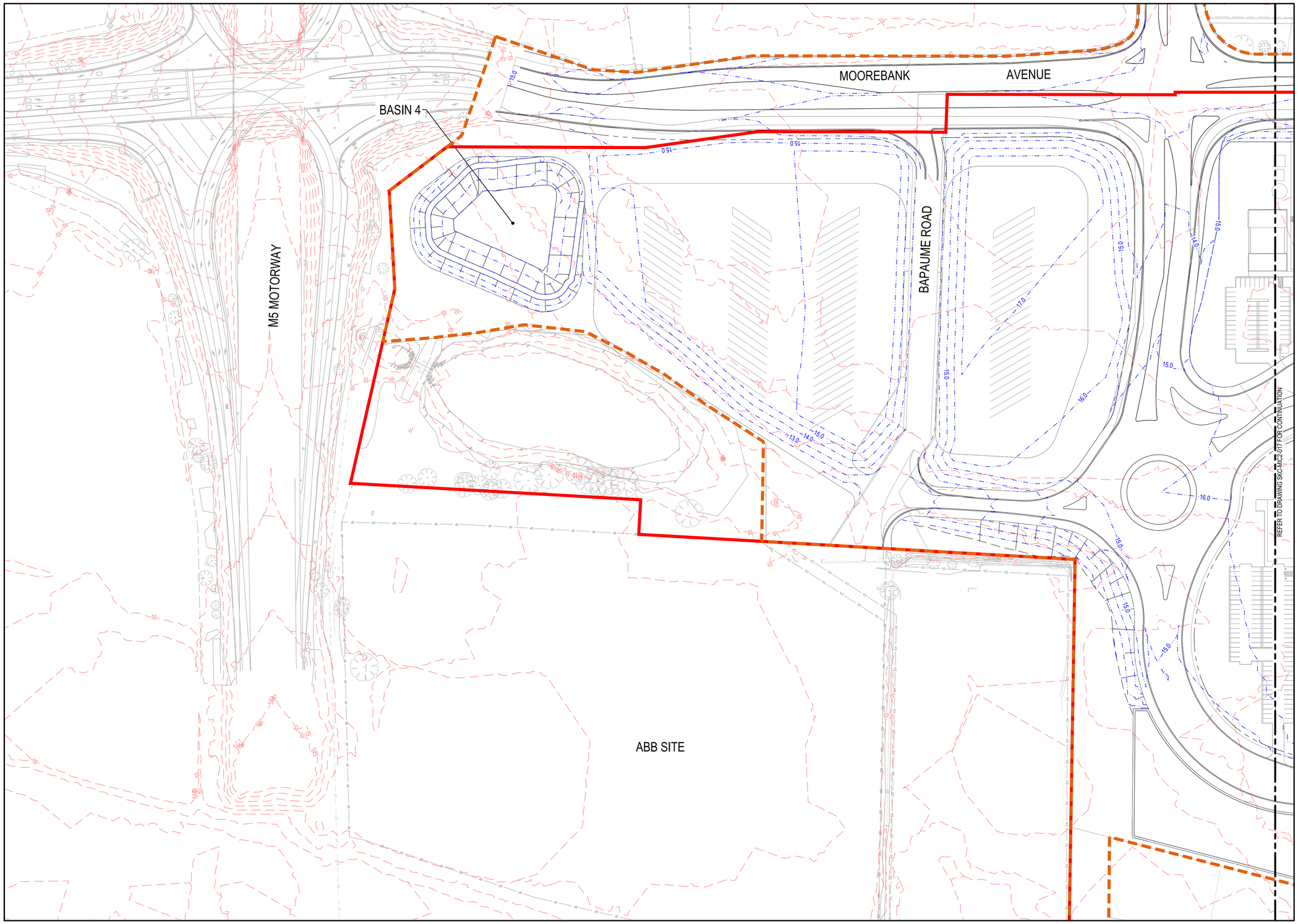
No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
	allowable, depending on the truck size and load weight, to reduce the number of traffic movements required • The mitigation measures, management strategies and abatement opportunities (Section 18 of this EIS) would be reviewed and considered where appropriate for incorporation into the CEMP.						
12.	**Waste**						
12A	The following mitigation measures would be implemented as part of the CEMP (or equivalent) for waste management: • Characterisation of construction waste streams in accordance with the *NSW Waste Classification Guidelines* • Management of any identified hazardous waste streams • Procedures to manage construction waste streams, including handling, storage, classification, quantification, identification and tracking • Mitigation measures for avoidance and minimisation of waste materials • Procedures and targets for re-use and recycling of waste materials.	Construction	Y	Y	Y	***Y***	***Y***
12B	The following mitigation measures would be implemented as part of the OEMP (or equivalent) for waste management: • Addressing waste management requirements and goals in staff inductions • Providing staff access to documentation outlining the facility's waste management requirements • Locating recycling bins in kitchen areas beside general waste bins to prevent contamination of recycling • Positioning paper recycling bins close to printer / photocopying equipment • Establishing bays or containers for recyclable waste generated through de-stuffing	Detailed design ***and operation***	Y	Y	Y	***N***	***N***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
	• Minimising general waste bins at desks but providing adequate container and paper recycling to encourage sorting of recyclables • Providing adequate bin storage for the expected quantity of waste. • Waste management planning incorporating principles of the waste hierarchy • Selection of materials used in operations with recycled content, low embodied energy and durability • Appropriate areas shall be provided for the storage of waste and recyclable material • Standard signage on how to use the waste management system and what materials are acceptable in the recycling would be posted in all waste collection and storage areas • All waste shall be collected regularly and disposed of at licensed facilities • An education programme and on-going monitoring for training personnel to properly sort and transport waste into the right components and destinations.						
12C	Container disposal units would be provided in the area around the diesel re-fuelling station to dispose of used spills kits. These containers would be taken for disposal at an appropriately licensed facility.	Operation	**Y**	**N**	Y	***N***	***N***
13.	**Bushfire**						
13A	The following actions would be considered for implementation, where reasonable and feasible, for mitigation of bushfire risk during construction: • A bushfire management strategy, or equivalent, would be prepared as part of the CEMP for the construction phase. The strategy would include: – Emergency response plans and procedures – All site offices and temporary buildings would have a minimum setback of 10 m to bushfire prone areas	Construction	Y	Y	Y	***Y***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
	– All site offices would be accessible via access roads suitable for firefighting appliances similar to NSW Rural Fire Service category 1 tankers.						
13B	The following mitigation measures would be implemented during the operation of the Proposal: • A bushfire management strategy, (including a fire safety and evacuation plan) or equivalent, would be prepared as part of the OEMP • Management of the landscaped areas within the Proposal site would be undertaken to maintain minimum dry fuels loads • The width, as required, of the Rail link connection would be maintained in a low fuel state • Protocols would be developed for the monitoring of train access/egress during high – catastrophic fire weather days, if required and in accordance with the bushfire management strategy.	Operation	Y	Y	Y	***N***	***Y***
14.	**Socio-economic**						
14A	A community information and awareness strategy would be included in the CEMP and would outline measures to maintain communication with the community and all relevant stakeholders throughout the construction process of the Proposal.	Construction	Y	Y	Y	***Y***	***Y***
14B	The Operational Environmental Management Plan (OEMP) would include measures to engage with stakeholders and to manage and respond to feedback received during the operation of the Proposal.	Operation	Y	Y	Y	***N***	***Y***

No.	Mitigation measures	Implementation stage	Applicability				
			IMT	Rail link connection	Warehousing	Moorebank Ave intersection	Site infrastructure
14C	*Security at the Proposal site would include:* • *Fencing around the perimeter of the Proposal site, and potentially the Rail link connection, which is envisaged to include palisade fencing and chain-link fencing along the Moorebank Avenue boundary and chain-link at other locations* • *A controlled site access system including electronic truck processing* • *A controlled circuit television (CCTV) security system at key locations including site entrances and along boundaries* • *An integrated telecommunications system which involves connection to all main buildings and structures.*	*Operation*	*Y*	*Y*	*Y*	*N*	*N*
14D	*Written notification would be provided to potentially affected and adjoining land owners prior to commencement of site operations. The manner of notification would be confirmed in the final OEMP for the Proposal.*	*Operation*	*Y*	*Y*	*Y*	*N*	*Y*
14E	*Measures to engage with stakeholders and to manage and respond to feedback received during operation of the Proposal, including via a complaints register would be provided in the OEMP for the Proposal*	*Operation*	*Y*	*Y*	*Y*	*N*	*Y*

ATTACHMENT G – Detailed plans

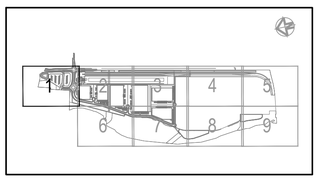


LEGEND

- MPW SITE BOUNDARY
- MPW STAGE 2 CONSTRUCTION AREA
- SUBJECT TO MPE STAGE 1 PROPOSAL (SSD 14 - 6766)
- INDICATIVE PROPOSED CONTOUR *
- EXISTING CONTOUR

NOTE

* SUBJECT TO DETAIL DESIGN



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Client: SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE / TACTICAL GROUP

Status: SKETCH
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Grid	MGA	Approved M.KEFFORD	

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Project: MPW INTERMODAL TERMINAL FACILITY - STAGE 2 STATE SIGNIFICANT DEVELOPMENT APPLICATION

Title: EXISTING AND PROPOSED CONTOUR PLAN SHEET 1

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SKC-MIC2-016	AA003760	01

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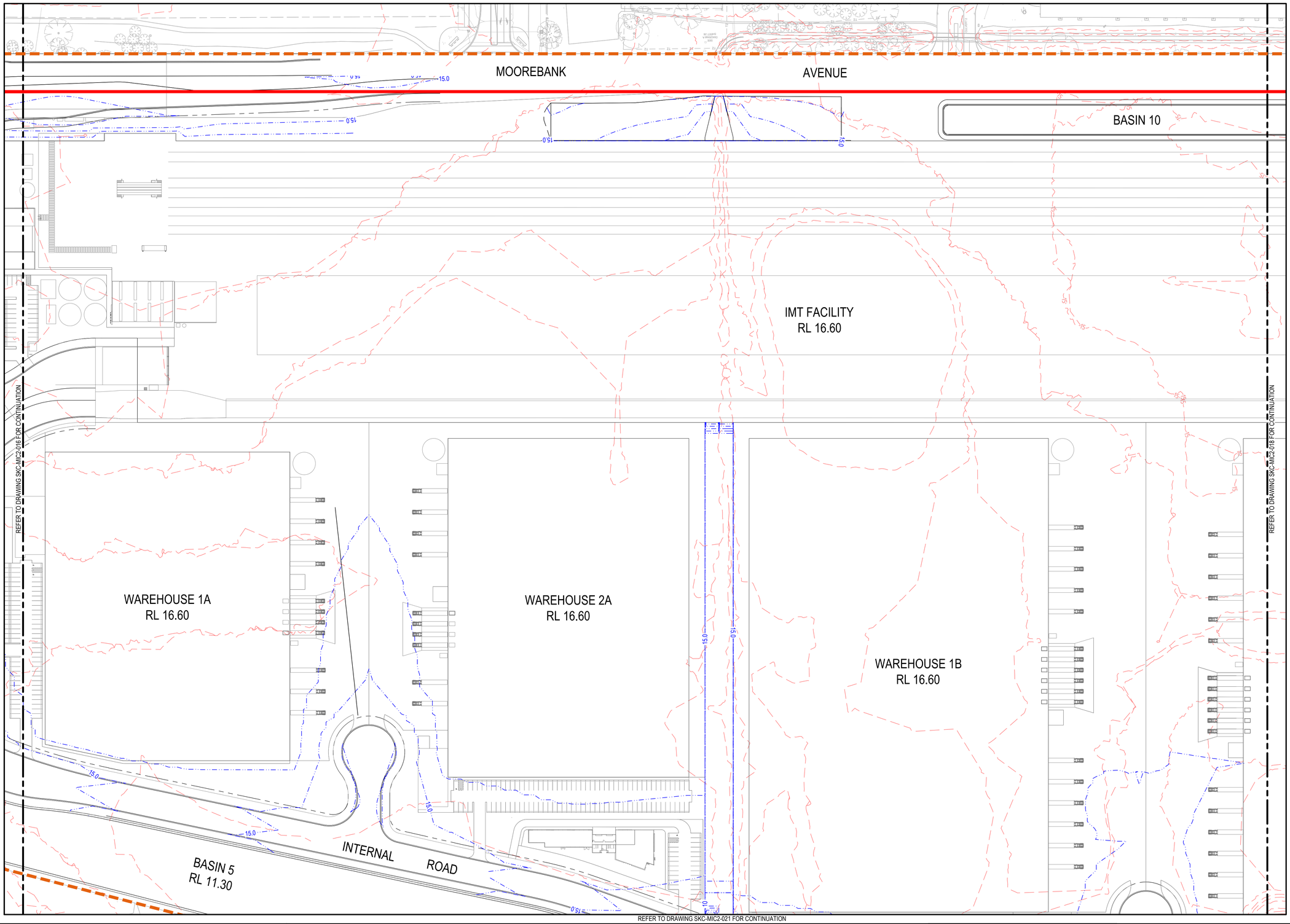

LEGEND

- MPW SITE BOUNDARY
- MPW STAGE 2 CONSTRUCTION AREA
- SUBJECT TO MPE STAGE 1 PROPOSAL (SSD 14 - 6766)
- INDICATIVE PROPOSED CONTOUR *
- EXISTING CONTOUR

NOTE

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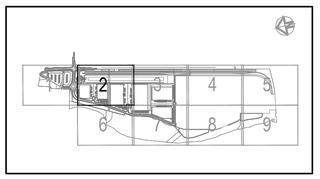

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TACTICAL GROUP

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Project: MPW INTERMODAL TERMINAL FACILITY - STAGE 2 STATE SIGNIFICANT DEVELOPMENT APPLICATION

Title: EXISTING AND PROPOSED CONTOUR PLAN SHEET 2

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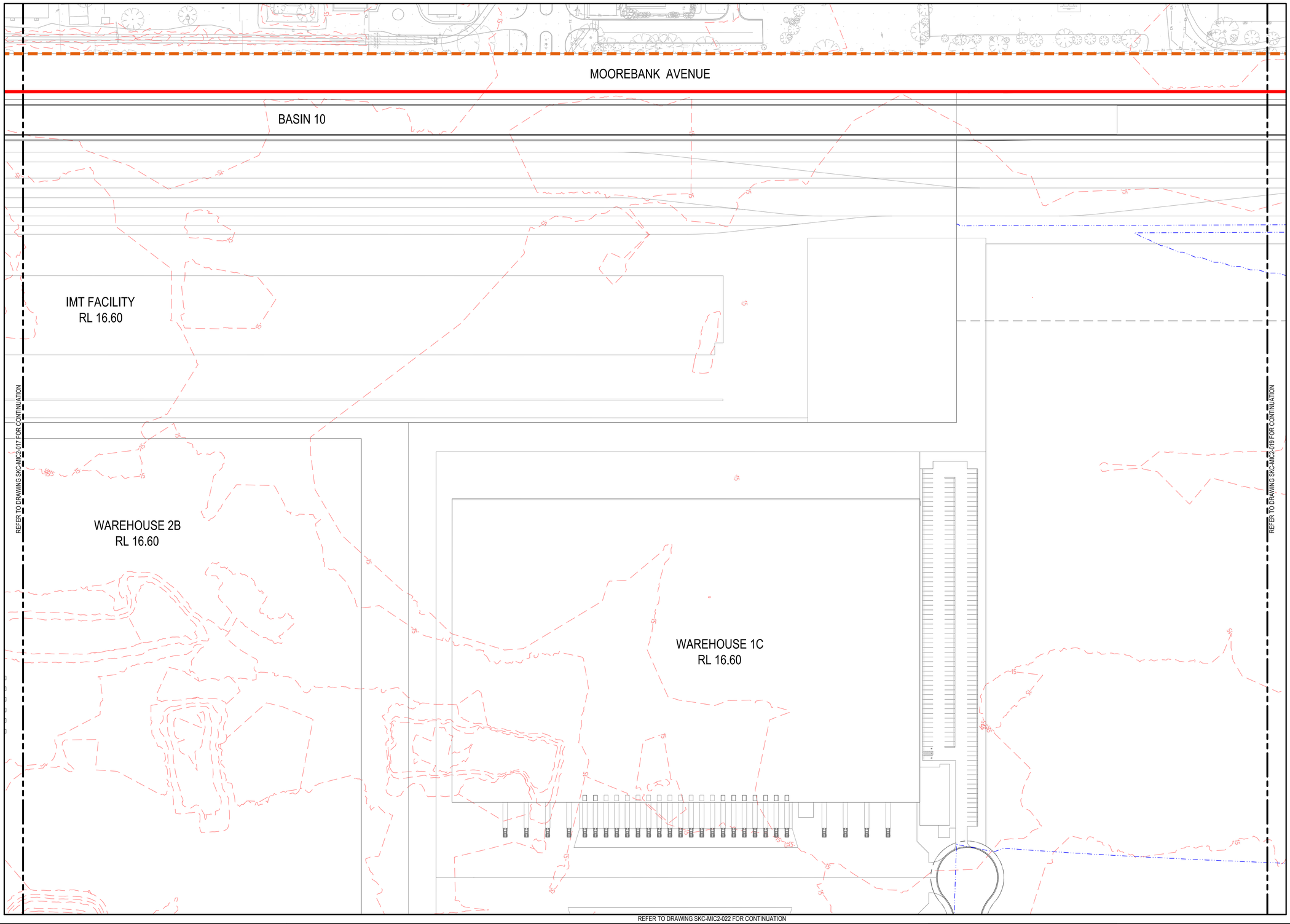

LEGEND

- MPW SITE BOUNDARY
- MPW STAGE 2 CONSTRUCTION AREA
- SUBJECT TO MPE STAGE 1 PROPOSAL (SSD 14 - 6766)
- INDICATIVE PROPOSED CONTOUR *
- EXISTING CONTOUR

NOTE

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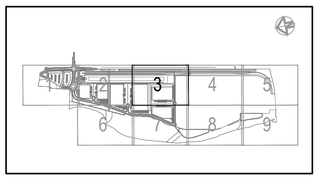

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TACTICAL GROUP

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MPW INTERMODAL TERMINAL FACILITY - STAGE 2 STATE SIGNIFICANT DEVELOPMENT APPLICATION

Title

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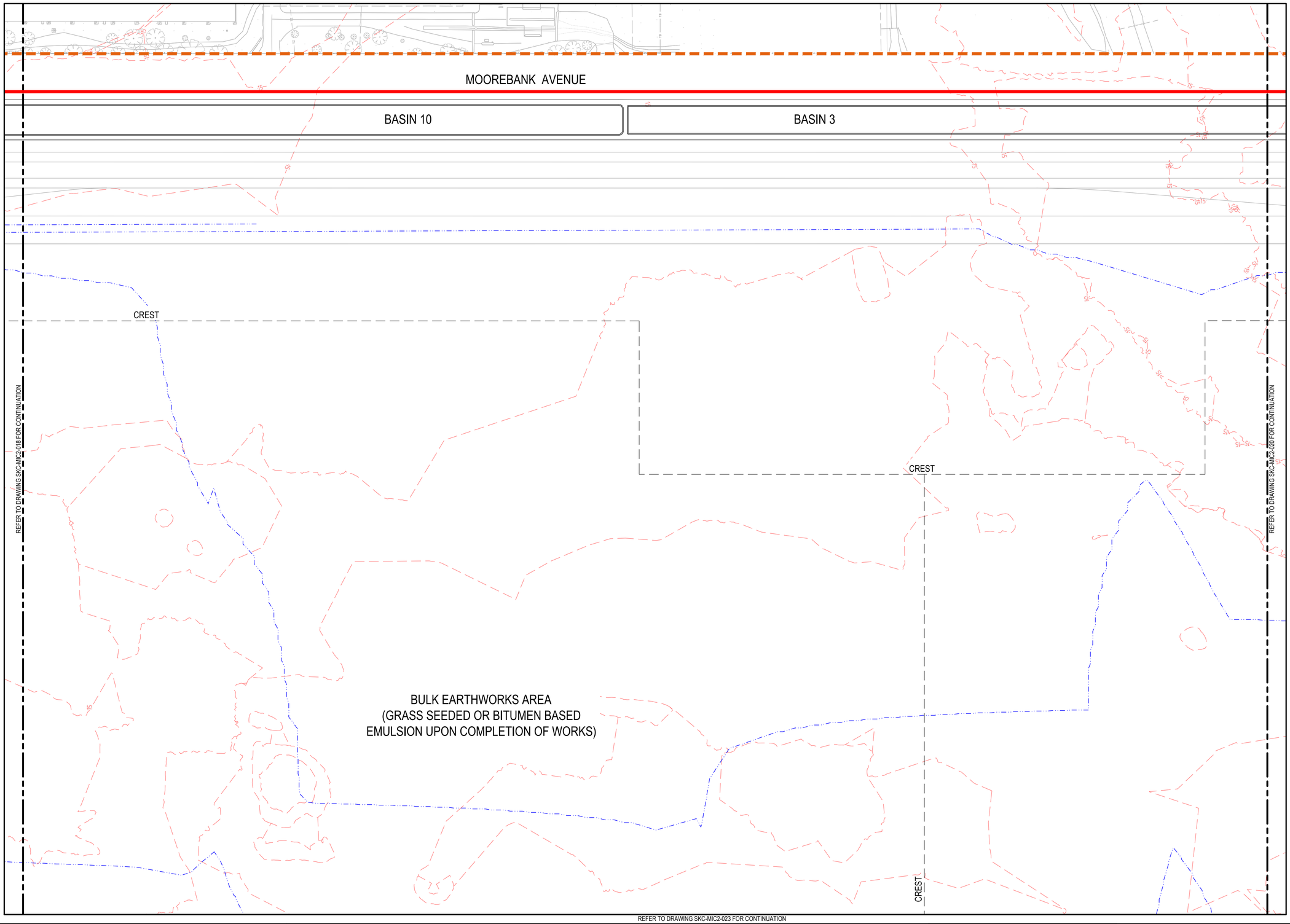

LEGEND

- MPW SITE BOUNDARY
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- SUBJECT TO MPE STAGE 1 PROPOSAL (SSD 14 - 6766)
- INDICATIVE PROPOSED CONTOUR *
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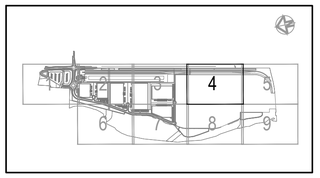

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Status: SKETCH
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Project: MPW INTERMODAL TERMINAL FACILITY - STAGE 2 STATE SIGNIFICANT DEVELOPMENT APPLICATION

Title: EXISTING AND PROPOSED CONTOUR PLAN SHEET 4

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SKC-MIC2-019	AA003760	01

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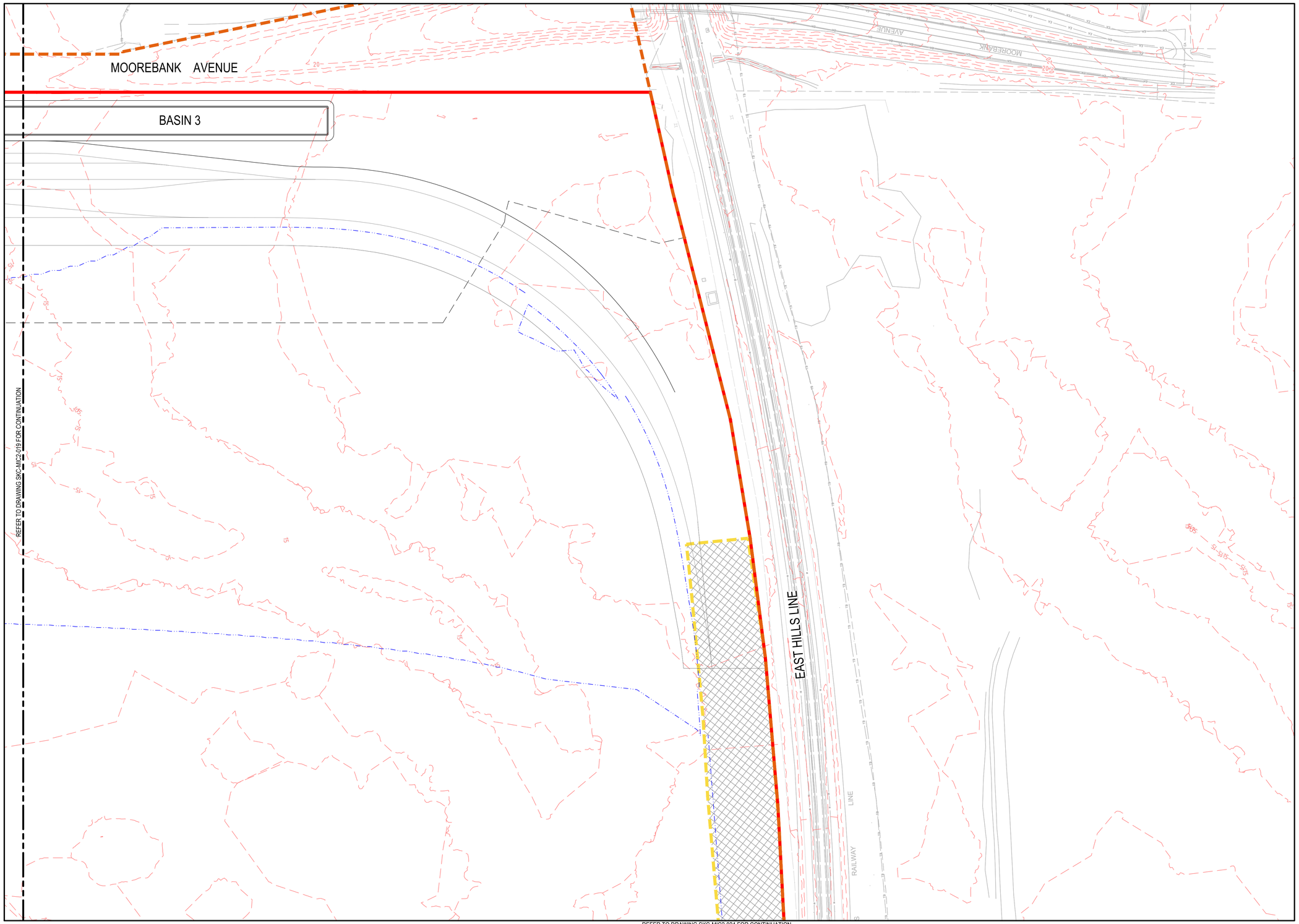

LEGEND

- MPW SITE BOUNDARY
- MPW STAGE 2 CONSTRUCTION AREA
- SUBJECT TO MPE STAGE 1 PROPOSAL (SSD 14 - 6766)
- INDICATIVE PROPOSED CONTOUR *
- EXISTING CONTOUR

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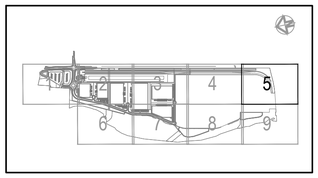

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Client

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

TACTICAL GROUP

Status

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Project

MPW INTERMODAL TERMINAL FACILITY - STAGE 2 STATE SIGNIFICANT DEVELOPMENT APPLICATION

Title

EXISTING AND PROPOSED CONTOUR PLAN SHEET 5

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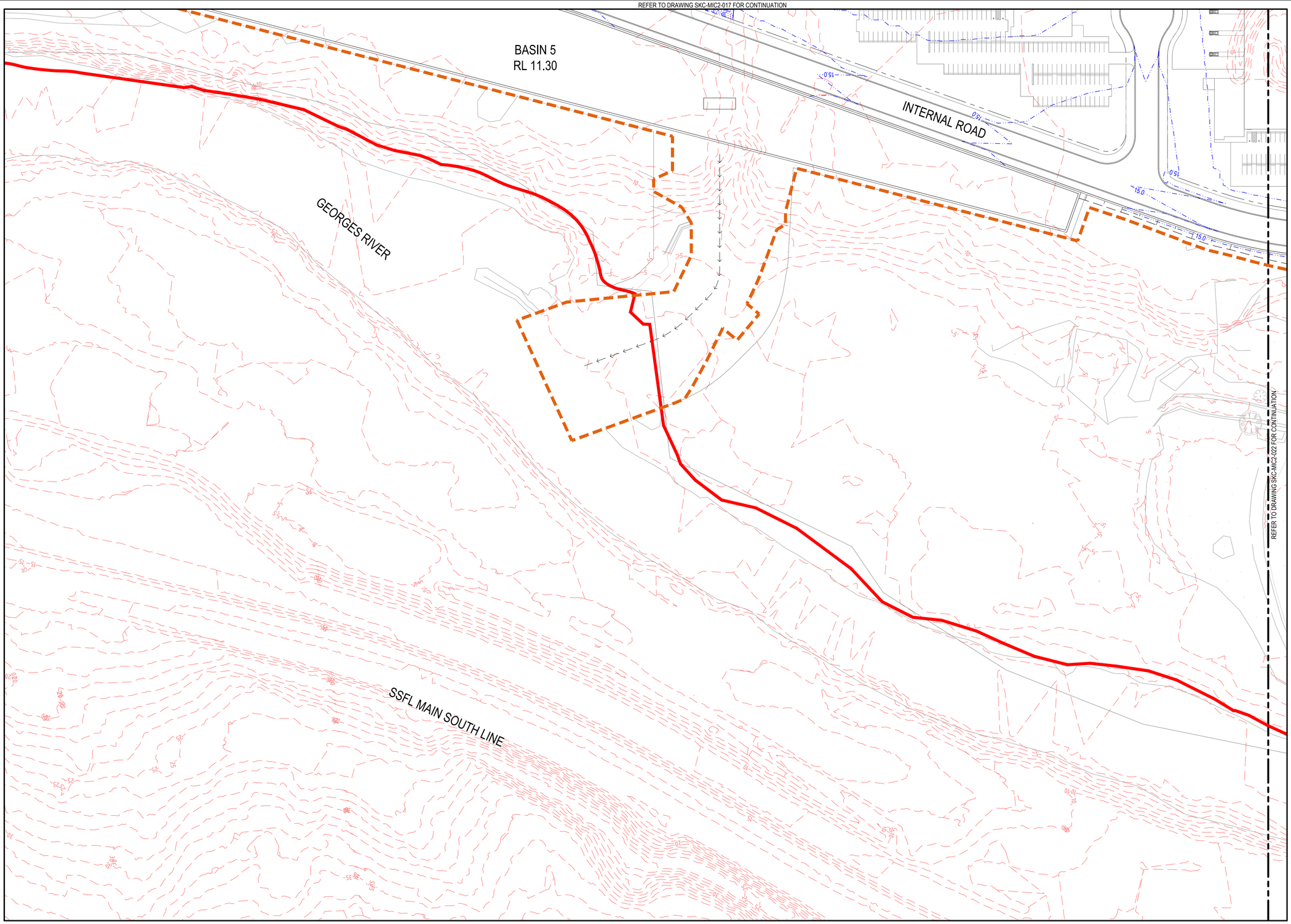

LEGEND

- MPW SITE BOUNDARY
- MPW STAGE 2 CONSTRUCTION AREA
- SUBJECT TO MPE STAGE 1 PROPOSAL (SSD 14 - 6766)
- 2.0 INDICATIVE PROPOSED CONTOUR *
- 2.0 EXISTING CONTOUR

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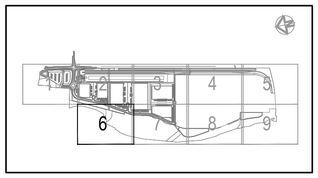

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Client

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

TACTICAL GROUP

Status

SKETCH

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Project

MPW INTERMODAL TERMINAL FACILITY - STAGE 2 STATE SIGNIFICANT DEVELOPMENT APPLICATION

Title

EXISTING AND PROPOSED CONTOUR PLAN SHEET 6

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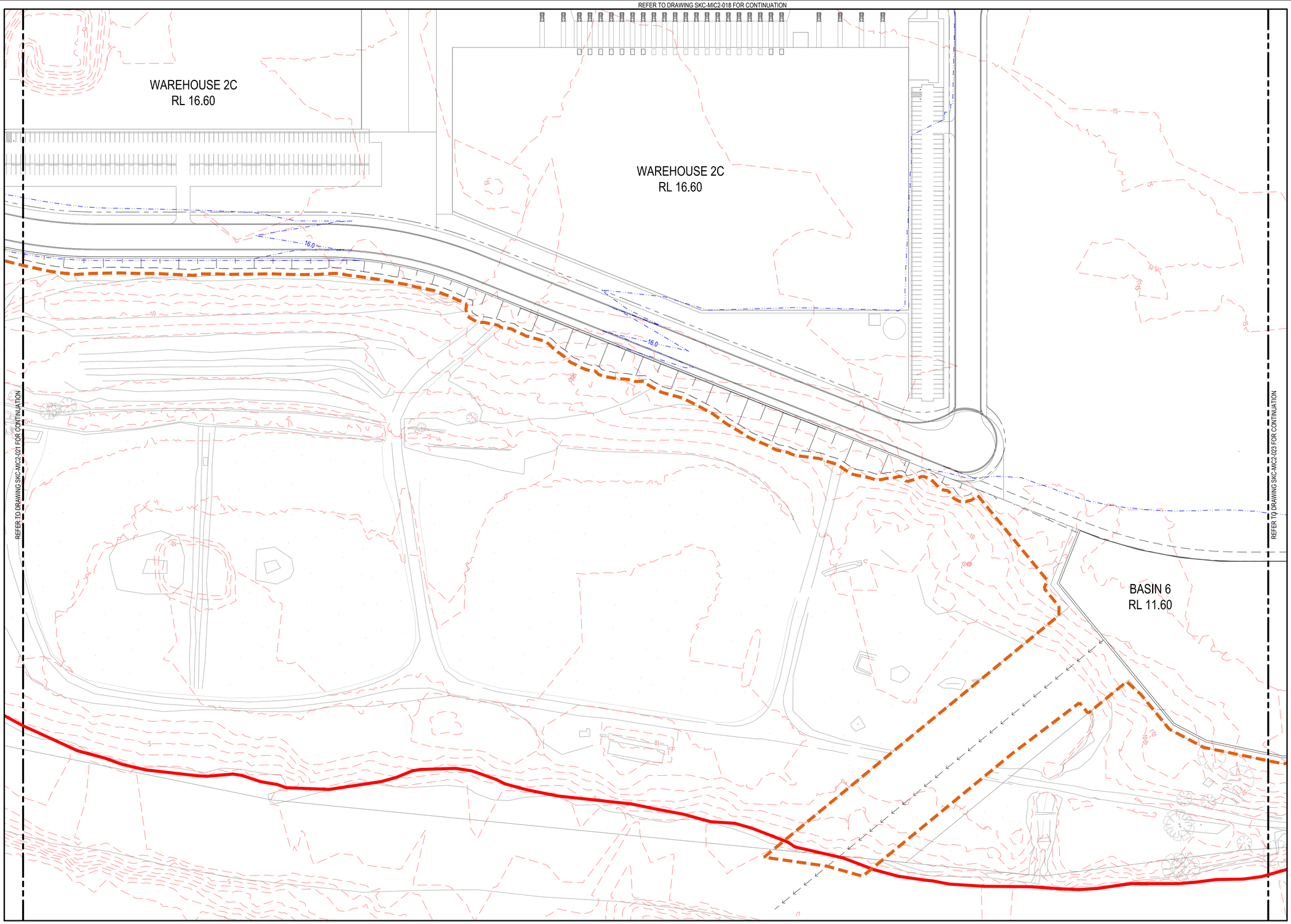

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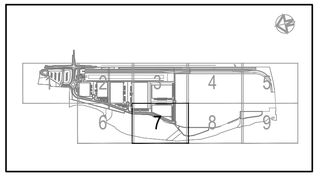
- MPW SITE BOUNDARY
- MPW STAGE 2 CONSTRUCTION AREA
- SUBJECT TO MPE STAGE 1 PROPOSAL (SSD 14 - 6766)
- 2.0 INDICATIVE PROPOSED CONTOUR *
- 2.0 EXISTING CONTOUR

NOTE

* SUBJECT TO DETAIL DESIGN



Issue	Description	Date
01	ISSUE FOR INFORMATION	07/09/2017

0 20 40 60 80 100m

1 : 1000

Client

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

TACTICAL GROUP

Status: SKETCH
NOT TO BE USED FOR CONSTRUCTION

Scales	1:1000	Current Issue Signatures	
		Drawn A.ZHAO	
Original Size	A1	Designed M. O'CALLAGHAN	
Height Datum	AHD	Checked K.MCAREAVEY	
Grid	MGA	Approved M.KEFFORD	

Filename: Skc-mic2-022-ExistingAndProposedContourPlanSheet7.dwg

Project: MPW INTERMODAL TERMINAL FACILITY - STAGE 2 STATE SIGNIFICANT DEVELOPMENT APPLICATION

Title: EXISTING AND PROPOSED CONTOUR PLAN SHEET 7

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 141 Walker St
NORTH SYDNEY NSW 2060
ABN 76 104 485 289
Tel No: +61 2 8907 9000
Fax No: +61 2 8907 9001
arcadis.com

Drawing No.	Project No.	Issue
SKC-MIC2-022	AA003760	01

100 mm on Original

Date Plotted: 7 Sep 2017 - 05:46PM File Name: F:\AA003760\E-CAD\C-Civil\B-Sketches\skc-mic2-022-ExistingAndProposedContourPlanSheet7.dwg V1

REFER TO DRAWING SKC-MIC2-019 FOR CONTINUATION

REFER TO DRAWING SKC-MIC2-022 FOR CONTINUATION

REFER TO DRAWING SKC-MIC2-024 FOR CONTINUATION

BASIN 6
RL 11.60

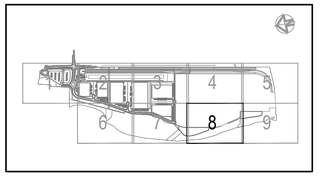
GEORGES RIVER

LEGEND

- MPW SITE BOUNDARY
- MPW STAGE 2 CONSTRUCTION AREA
- SUBJECT TO MPE STAGE 1 PROPOSAL (SSD 14 - 6766)
- 2.0 INDICATIVE PROPOSED CONTOUR *
- 2.0 EXISTING CONTOUR

NOTE

* SUBJECT TO DETAIL DESIGN



Issue	Description	Date
01	ISSUE FOR INFORMATION	17/09/2017

0 20 40 60 80 100m

1 : 1000

Client

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

TACTICAL GROUP

Status

SKETCH
NOT TO BE USED FOR CONSTRUCTION

Scales	1:1000	Current Issue Signatures	
Original Size	A1	Drawn A.ZHAO	
Height Datum	AHD	Designed M. O'CALLAGHAN	
Grid	MGA	Checked K.MCAREAVEY	
		Approved M.KEFFORD	

Filename: Skc-mic2-023-ExistingAndProposedContourPlanSheet8.dwg

Project

MPW INTERMODAL TERMINAL FACILITY - STAGE 2
STATE SIGNIFICANT DEVELOPMENT APPLICATION

Title

EXISTING AND PROPOSED CONTOUR PLAN
SHEET 8

ARCADIS

Arcadis Australia Pacific Pty Limited
Level 5, 141 Walker St
NORTH SYDNEY NSW 2060
ABN 76 104 485 289

Tel No: +61 2 8907 9000
Fax No: +61 2 8907 9001
arcadis.com

Drawing No.	Project No.	Issue
SKC-MIC2-023	AA003760	01

100 mm on Original

Date Plotted: 7 Sep 2017 - 05:44PM File Name: F:\AA003760\E-CAD\C-Civil\B-Sketches\skc-mic2-023-ExistingAndProposedContourPlanSheet8.dwg V1

REFER TO DRAWING SKC-MIC2-020 FOR CONTINUATION

REFER TO DRAWING SKC-MIC2-023 FOR CONTINUATION

BASIN 8
RL 11.80

GEORGES RIVER

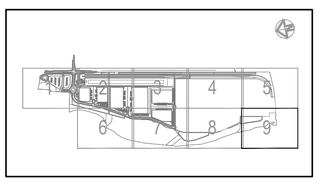
EAST HILLS LINE

LEGEND

- MPW SITE BOUNDARY
- MPW STAGE 2 CONSTRUCTION AREA
- SUBJECT TO MPE STAGE 1 PROPOSAL (SSD 14 - 6766)
- INDICATIVE PROPOSED CONTOUR *
- EXISTING CONTOUR

NOTE

* SUBJECT TO DETAIL DESIGN



Issue	Description	Date
01	ISSUE FOR INFORMATION	07/09/2017

0 20 40 60 80 100m

1 : 1000

Client

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

TACTICAL GROUP

Status

SKETCH
NOT TO BE USED FOR CONSTRUCTION

Scales	1:1000	Current Issue Signatures	
Original Size	A1	Drawn A.ZHAO	
Height Datum	AHD	Designed M. O'CALLAGHAN	
Grid	MGA	Checked K.MCAREAVEY	
		Approved M.KEFFORD	

Filename: Skc-mic2-024-ExistingAndProposedContourPlanSheet9.dwg

Project

MPW INTERMODAL TERMINAL FACILITY - STAGE 2
STATE SIGNIFICANT DEVELOPMENT APPLICATION

Title

EXISTING AND PROPOSED CONTOUR PLAN
SHEET 9

ARCADIS

Arcadis Australia Pacific Pty Limited
Level 5, 141 Walker St
NORTH SYDNEY NSW 2060
ABN 76 104 485 289

Tel No: +61 2 8907 9000
Fax No: +61 2 8907 9001
arcadis.com

Drawing No.	Project No.	Issue
SKC-MIC2-024	AA003760	01

100 mm on Original

Date Plotted: 7 Sep 2017 - 05:42PM File Name: F:\AA003760\E-CAD\C-Civil\B-Sketches\skc-mic2-024-ExistingAndProposedContourPlanSheet9.dwg V1

LEGEND

- Amended construction area
- Amended operational area
- Moorebank Avenue and Anzac Road design
- Vegetation Communities
  - Hard-leaved Scribbly Gum - Parramatta Red Gum heathy woodland of the Cumberland Plain, Sydney Basion Bioregion

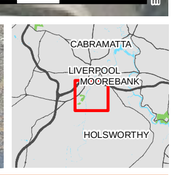
ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Date issued: September 6, 2017
Aerial imagery supplied by Nearmap (09/08/2017)

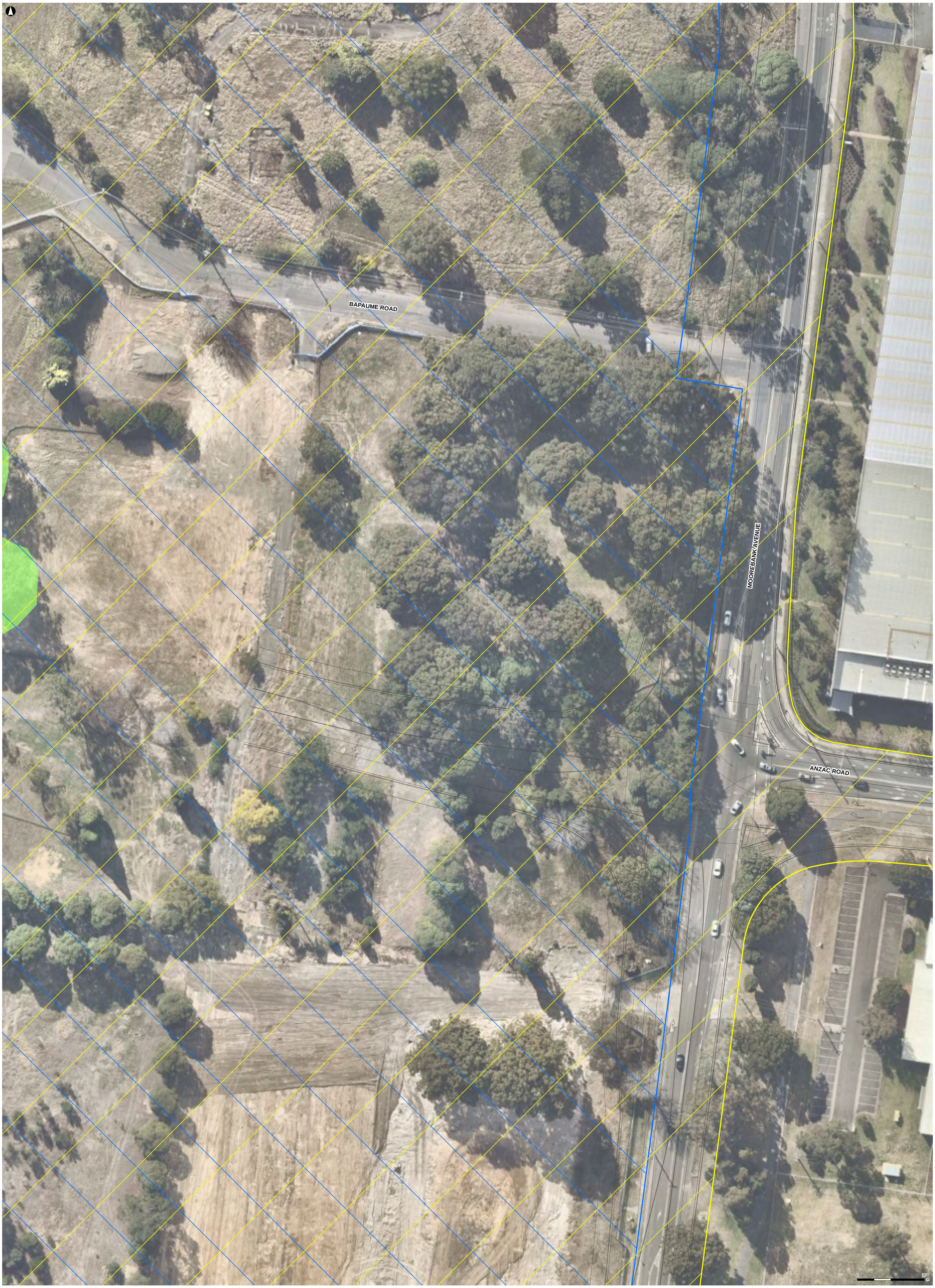
1:500 at A1

ARCADIS

SIMTA



Edge effect plan - Page 1 of 12



LEGEND

Amended construction area

Amended operational area

Moorebank Avenue and Anzac Road design

Vegetation Communities

Forest Red Gum - Rough-barked apple grassy woodland on alluvial flats of the Cumberland Plain Sydney Basin

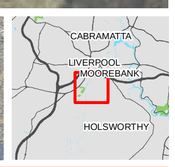
ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Date issued: September 8, 2017
Aerial imagery supplied by Nearmap (09/08/2017)

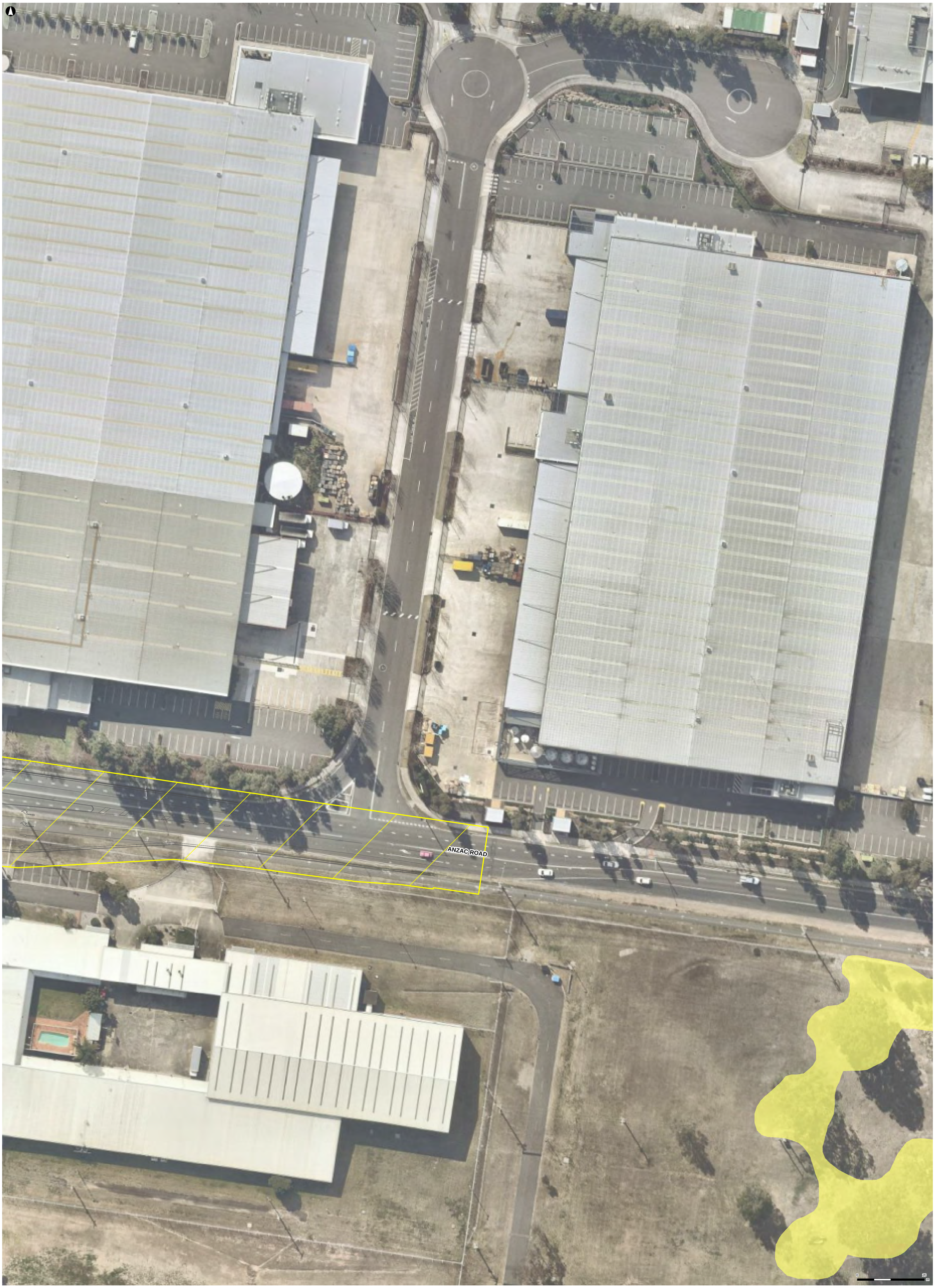
1:500 at A1

ARCADIS

SIMTA



Edge effect plan - Page 2 of 12



LEGEND

Amended construction area

Moorebank Avenue and Anzac Road design

Vegetation Communities

Broad-leaved Ironbark - Grey Box - Melaleuca decora grassy open forest on clay/gravel soils of the Cumberland Plain, Sydney Basin Bioregion

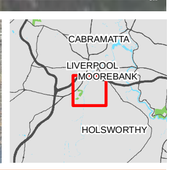
ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Date issued: September 6, 2017
Aerial imagery supplied by Nearmap (09/08/2017)

1:500 at A1

ARCADIS

SIMTA



Edge effect plan - Page 3 of 12

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Created by : CC
QA by : RB

LEGEND

- Amended construction area
- Amended operational area
- Moorebank Avenue and Anzac Road design

Vegetation Communities

- Forest Red Gum - Rough-barked apple grassy woodland on alluvial flats of the Cumberland Plain Sydney Basin

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Date issued: September 6, 2017
Aerial imagery supplied by Nearmap (09/08/2017)

1:500 at A1

ARCADIS

SIMTA

Edge effect plan - Page 4 of 12

LEGEND

- Amended construction area
- Amended operational area
- Riparian corridor
- Vegetation Communities
  - Forest Red Gum - Rough-barked apple grassy woodland on alluvial flats of the Cumberland Plain Sydney Basin

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Date issued: September 6, 2017
Aerial imagery supplied by Nearmap (09/08/2017)

1:500 at A1

Date: 6/09/2017 Path: \\hc-aus-ns-fs-01\jobs\AA008765\L-GIS\A_Current\B_Maps\MPWS2\MPWS2_EIS_RIS\AA008765_MPWS2_EISRIS_041_EdgeEffectPlan_A1P_v1.mxd
Created by : CC
QA by : RB

LEGEND

- Amended construction area
- Amended operational area
- Riparian corridor
- Vegetation Communities
  - Forest Red Gum - Rough-barked apple grassy woodland on alluvial flats of the Cumberland Plain Sydney Basin

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Date issued: September 8, 2017
Aerial imagery supplied by Nearmap (09/08/2017)

1:500 at A1

Edge effect plan - Page 6 of 12

LEGEND

Riparian corridor

Existing railway

Vegetation Communities

Forest Red Gum - Rough-barked apple grassy woodland on alluvial flats of the Cumberland Plain Sydney Basin

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Date issued: September 6, 2017
Aerial imagery supplied by Nearmap (09/08/2017)

1:500 at A1

Edge effect plan - Page 7 of 12

LEGEND

Riparian corridor

Existing railway

Vegetation Communities

Forest Red Gum - Rough-barked apple grassy woodland on alluvial flats of the Cumberland Plain Sydney Basin

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Date issued: September 6, 2017
Aerial imagery supplied by Nearmap (09/08/2017)

1:500 at A1

ARCADIS

SIMTA

Edge effect plan - Page 8 of 12

Date: 6/09/2017 Path: \\hc-aus-ns-fs-01\jobs\AA008765\L-GIS\A_Current\B_Maps\MPWS2\MPWS2_EIS_RTS\AA008765_MPWS2_EISRTS_041_EdgeEffectPlan_A1P_v1.mxd
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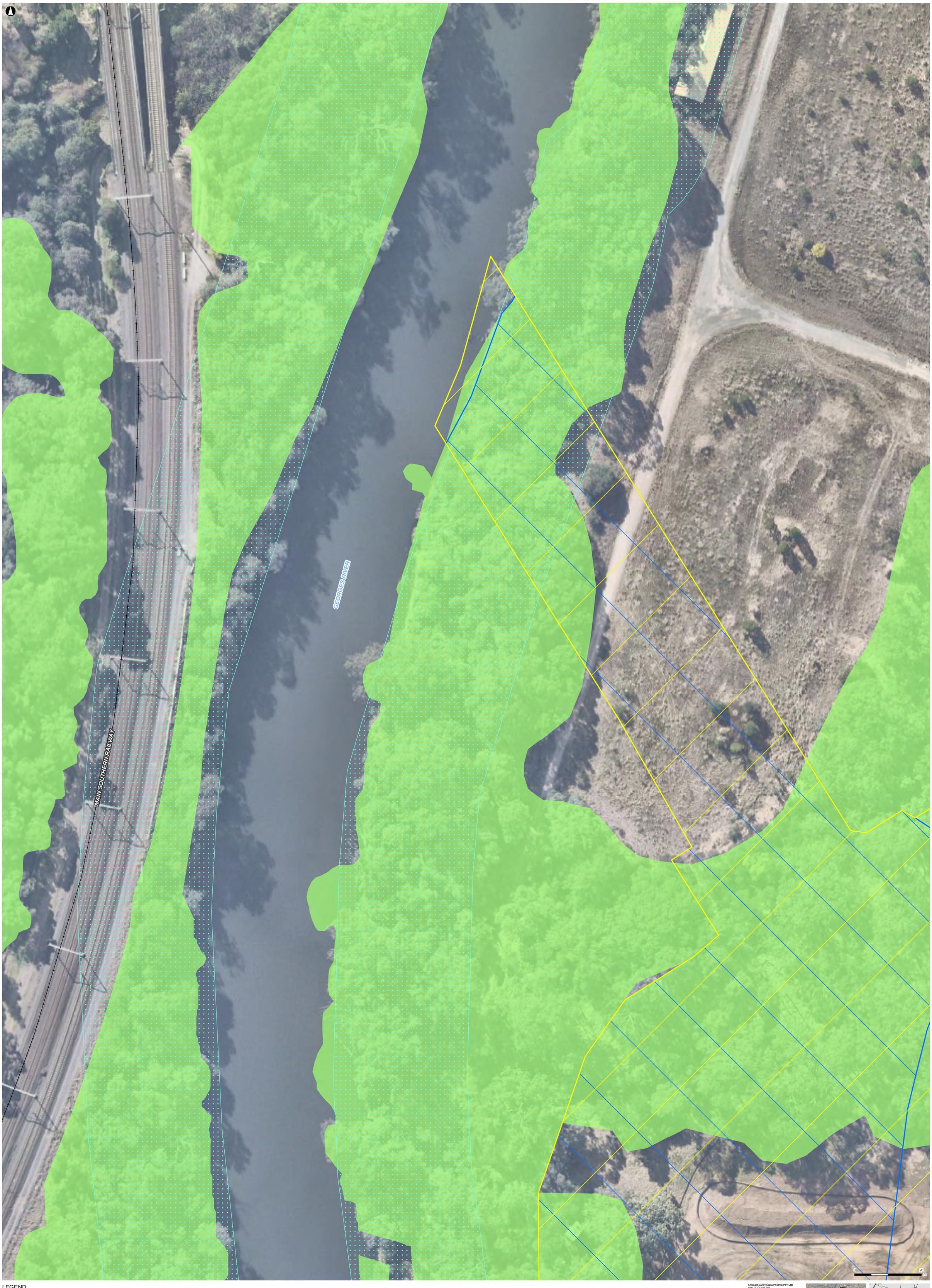
QA by : RB



LEGEND

- Amended construction area
- Amended operational area
- Riparian corridor
- Existing railway

Vegetation Communities

- Forest Red Gum - Rough-barked apple grassy woodland on alluvial flats of the Cumberland Plain Sydney Basin

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Date issued: September 6, 2017
Aerial imagery supplied by Nearmap (09/08/2017)

1:500 at A1

ARCADIS

SIMTA

Edge effect plan - Page 9 of 12

LEGEND

- Amended construction area
- Amended operational area
- Riparian corridor

Vegetation Communities

- Forest Red Gum - Rough-barked apple grassy woodland on alluvial flats of the Cumberland Plain Sydney Basin

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Date issued: September 6, 2017
Aerial imagery supplied by Nearmap (09/08/2017)

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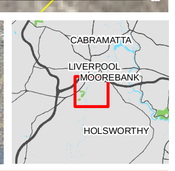
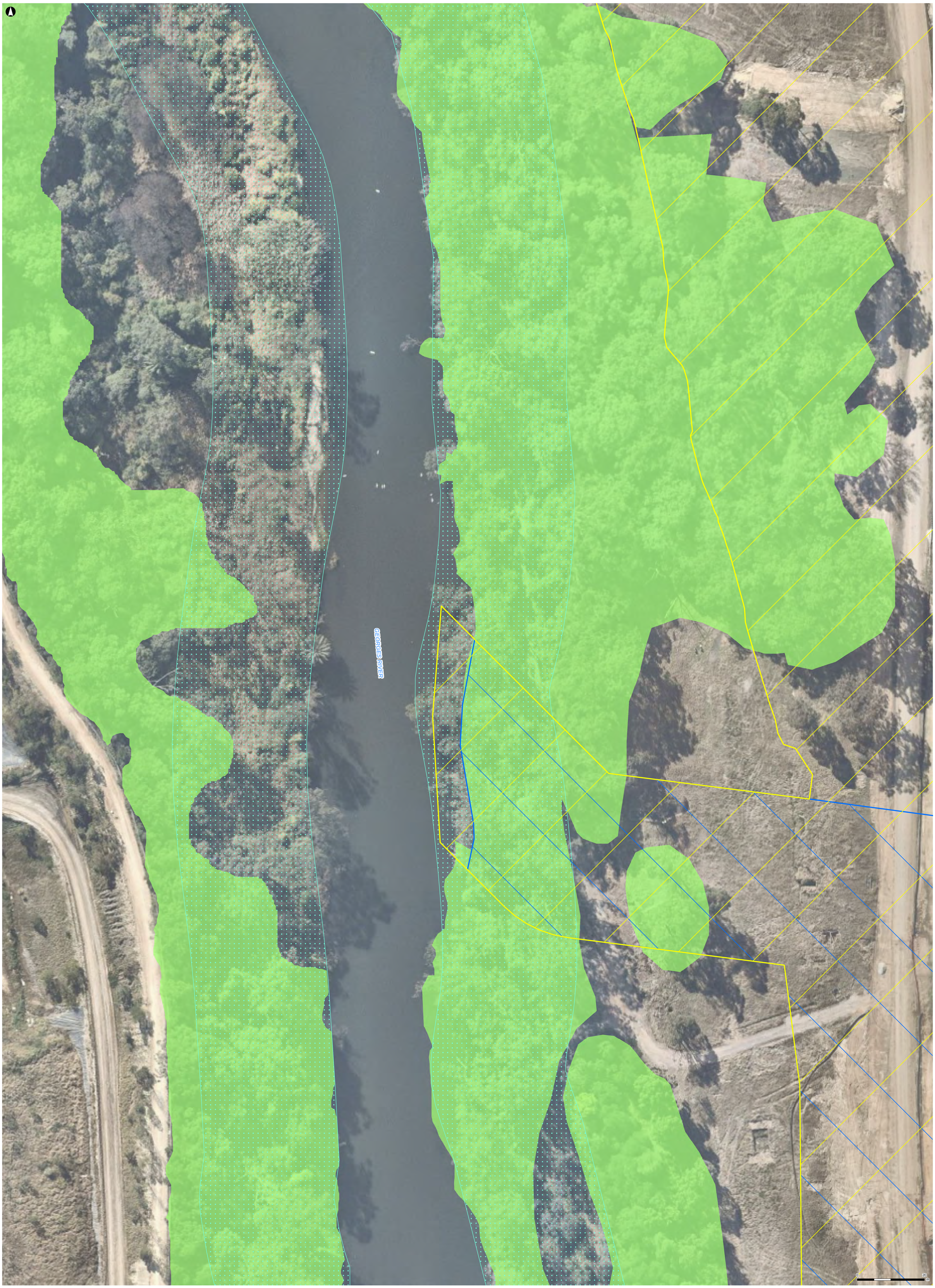


Edge effect plan - Page 10 of 12



LEGEND

- Amended construction area
- Amended operational area
- Riparian corridor
- Vegetation Communities
  - Forest Red Gum - Rough-barked apple grassy woodland on alluvial flats of the Cumberland Plain Sydney Basin

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001

Coordinate System: GDA 1994 MGA Zone 56
Date issued: September 6, 2017
Aerial imagery supplied by Nearmap (09/08/2017)

1:500 at A1

Edge effect plan - Page 11 of 12

LEGEND

- Amended construction area
- Amended operational area
- Riparian corridor
- Existing railway

Vegetation Communities

- Forest Red Gum - Rough-barked apple grassy woodland on alluvial flats of the Cumberland Plain Sydney Basin

ARCADIS AUSTRALIA PACIFIC PTY LTD
ABN 76 104 485 289
Level 16, 580 George St | Sydney NSW 2000
P: +61 (0) 2 8907 9000 | F: +61 (0) 2 8907 9001
Coordinate System: GDA 1994 MGA Zone 56
Date issued: September 6, 2017
Aerial imagery supplied by Nearmap (09/08/2017)

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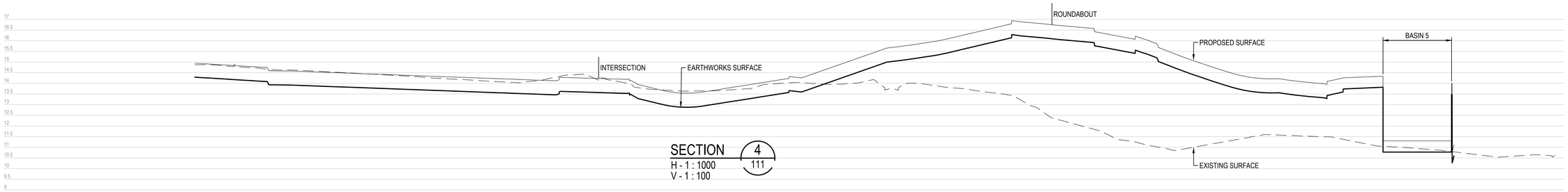
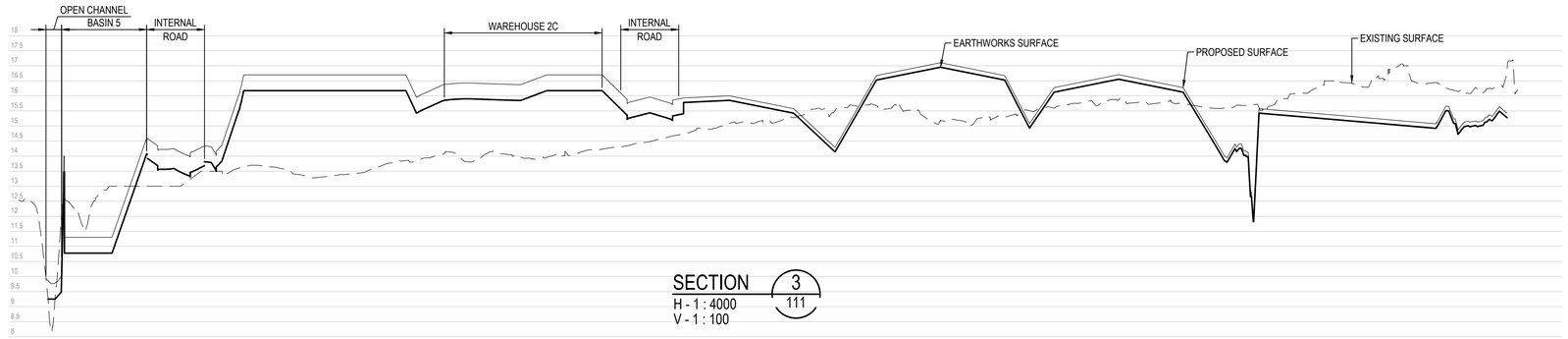
Date: 6/09/2017 Path: \\hc-aus-ns-fs-01\jobs\AA008765L-GISA_Current\B_Maps\MPWS2\MPWS2_EIS_RIS\AA008765_MPWS2_EISRIS_041_EdgeEffectPlan_A1P_v1.mxd
Created by : CC
QA by : RB



SECTION 4 / 111
H - 1 : 1000
V - 1 : 100



SECTION 3 / 111
H - 1 : 4000
V - 1 : 100

NOTE

1. SURFACE SHOWN REPRESENT THE BULK EARTHWORKS SURFACE AND THE PROPOSED SURFACE (+/- 500mm).

SECTION 2 / 111
H - 1 : 4000
V - 1 : 200

SECTION 1 / 111
H - 1 : 2500
V - 1 : 100

Issue	Description	Date
07	ISSUE FOR SSD APPLICATION (RESPONSE TO SUBMISSIONS)	30/05/2017
06	ISSUE FOR SSD APPLICATION (RESPONSE TO SUBMISSIONS)	26/05/2017
05	ISSUE FOR SSD APPLICATION (RESPONSE TO SUBMISSIONS)	27/04/2017
04	ISSUE FOR SSD APPLICATION	27/07/2016
03	ISSUE FOR SSD APPLICATION	22/06/2016
02	ISSUE FOR SSD APPLICATION	06/05/2016
01	ISSUE FOR SSD APPLICATION	22/04/2016

0 50 100 150 200 250m
1 : 2500 HORIZONTAL

0 100 200 300 400m
1 : 4000 HORIZONTAL

0 2 4 6 8 10m
1 : 100 VERTICAL

100 mm on Original

Client
SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE
TACTICAL GROUP

Status
FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

Scales	AS SHOWN	Current Issue Signatures	
		Drawn J. WOOD	
Original Size	A1	Designed L.CORSCADDEN	
Height Datum	AHD	Checked K.MCAREAVEY	
Grid	MGA	Approved M.KEFFORD	

Filename C-MIC2-SSD-116-AA003760-nsd-EarthworksSectionsSheet1.dwg

Project
MPW INTERMODAL TERMINAL FACILITY - STAGE 2
STATE SIGNIFICANT DEVELOPMENT APPLICATION

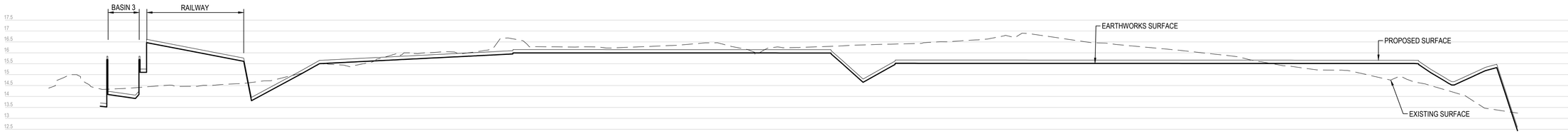
Title
EARTHWORKS SECTIONS
SHEET 1

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 141 Walker St
NORTH SYDNEY NSW 2060
ABN 76 104 485 289

Tel No: +61 2 8907 9000
Fax No: +61 2 8907 9001
arcadis.com

Drawing No.	Project No.	Issue
C-MIC2-SSD-116–AA003760–		07

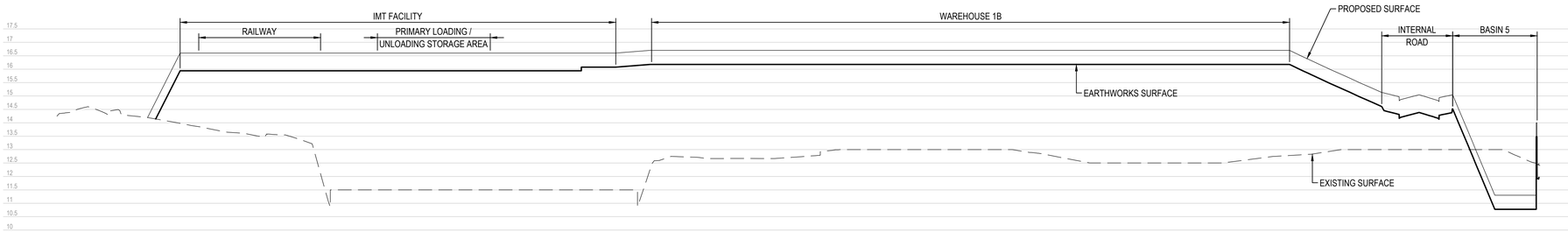
Date Plotted: 30 May 2017 - 04:54PM File Name: \\hc-aus-ns-fs-01\jobs\AA003760\E-CAD\C-Civil\D-Final\C-MIC\B-Stage2\B-SSD\C-MIC2-SSD-116-AA003760-nsd-EarthworksSectionsSheet1.dwg



SECTION 8 / 112
H - 1 : 1000
V - 1 : 100

SECTION 7 / 112
H - 1 : 1000
V - 1 : 100

SECTION 6 / 111
H - 1 : 1000
V - 1 : 100



SECTION 5 / 111
H - 1 : 1000
V - 1 : 100

NOTE

1. SURFACE SHOWN REPRESENT THE BULK EARTHWORKS SURFACE AND THE PROPOSED SURFACE (+/- 500mm).

Issue	Description	Date
07	ISSUE FOR SSD APPLICATION (RESPONSE TO SUBMISSIONS)	30/05/2017
06	ISSUE FOR SSD APPLICATION (RESPONSE TO SUBMISSIONS)	26/05/2017
05	ISSUE FOR SSD APPLICATION (RESPONSE TO SUBMISSIONS)	27/04/2017
04	ISSUE FOR SSD APPLICATION	27/07/2016
03	ISSUE FOR SSD APPLICATION	22/06/2016
02	ISSUE FOR SSD APPLICATION	06/05/2016
01	ISSUE FOR SSD APPLICATION	22/04/2016

0 50 100 150 200 250m
1 : 2500 HORIZONTAL

0 100 200 300 400m
1 : 4000 HORIZONTAL

0 2 4 6 8 10m
1 : 100 VERTICAL

100 mm on Original

Client
SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE
TACTICAL GROUP

Status
FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION

Scales	AS SHOWN	Current Issue Signatures	
		Drawn J. WOOD	
Original Size	A1	Designed L.CORSCADDEN	
Height Datum	AHD	Checked K.MCAREAVEY	
Grid	MGA	Approved M.KEFFORD	

Filename C-MIC2-SSD-117-AA003760-nsd-EarthworksSectionsSheet2.dwg

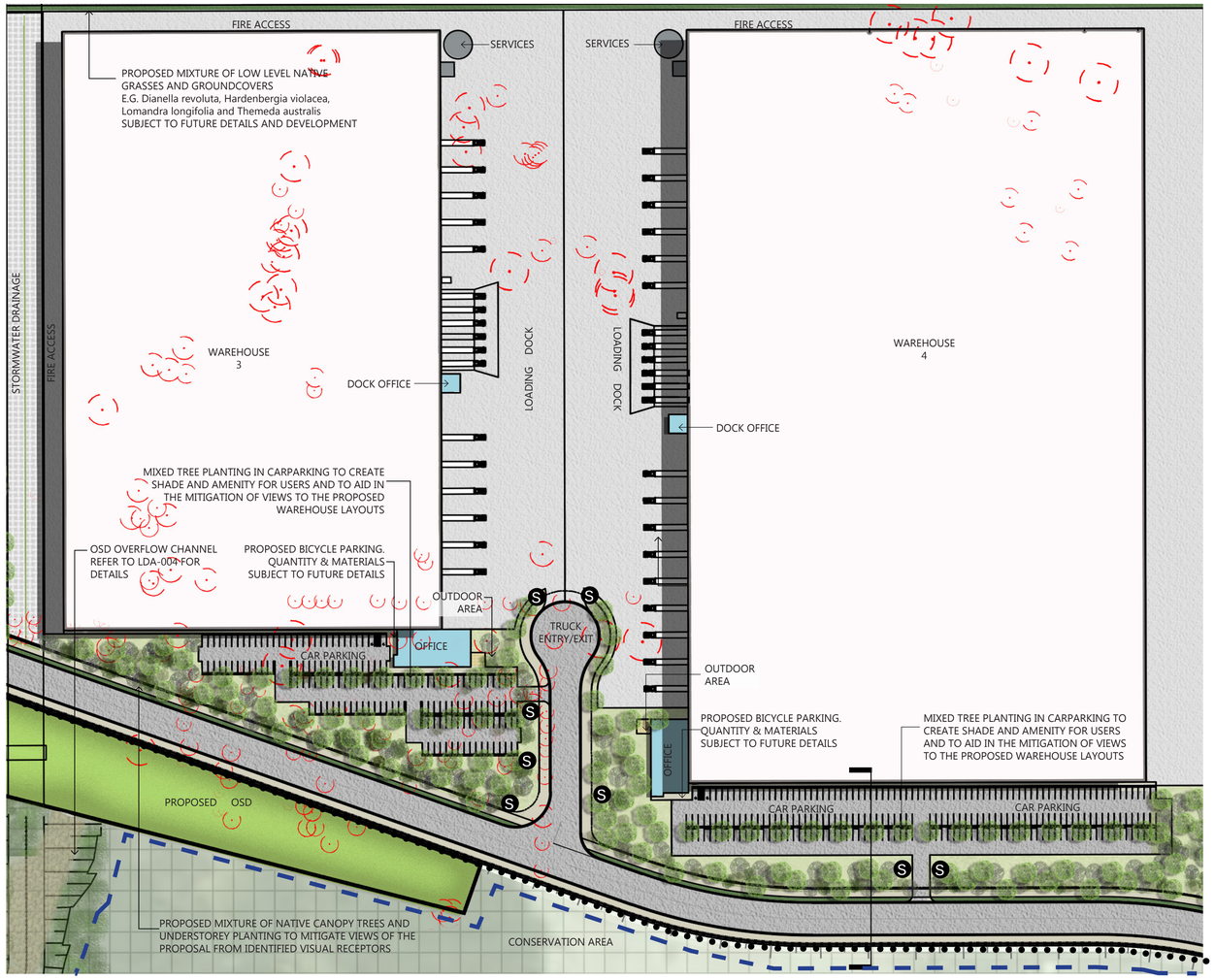
Project
MPW INTERMODAL TERMINAL FACILITY - STAGE 2
STATE SIGNIFICANT DEVELOPMENT APPLICATION

Title
EARTHWORKS SECTIONS
SHEET 2

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 5, 141 Walker St
NORTH SYDNEY NSW 2060
ABN 76 104 485 289
Tel No: +61 2 8907 9000
Fax No: +61 2 8907 9001
arcadis.com

Drawing No.	Project No.	Issue
C-MIC2-SSD-117	AA003760	07

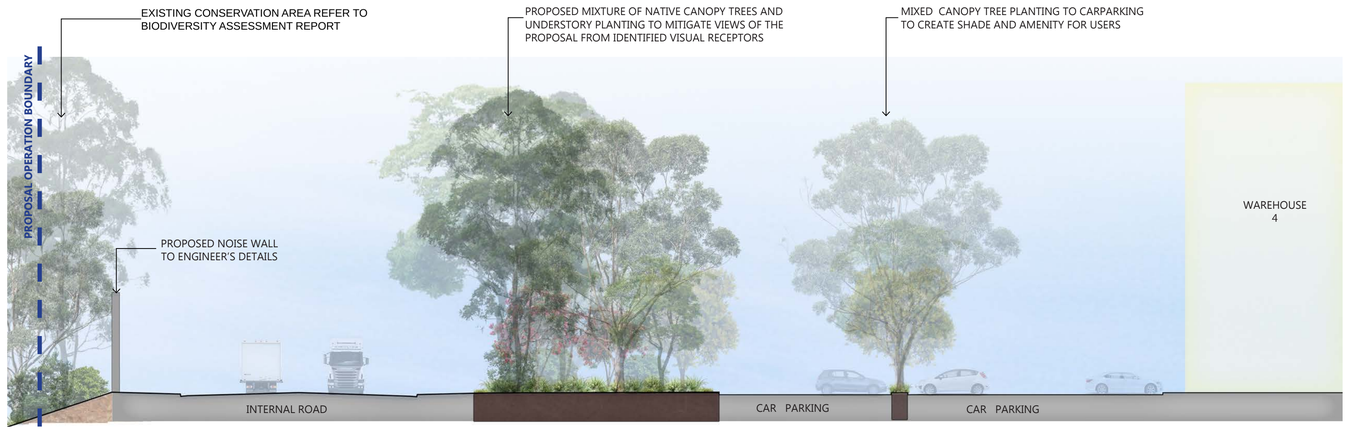
Date Plotted: 30 May 2017 - 04:54PM File Name: \\hc-aus-ns-fs-01\jobs\AA003760\E-CAD\C-Civil\D-Final\C-MIC\B-Stage2\B-SSD\C-MIC2-SSD-117-AA003760-nsd-EarthworksSectionsSheet2.dwg



PRECINCT B LANDSCAPE PLAN

SCALE: 1:1000 @ A1 (1:2000 @ A3)

0 5 10 20 30 40 50m



PRECINCT B LANDSCAPE SECTION

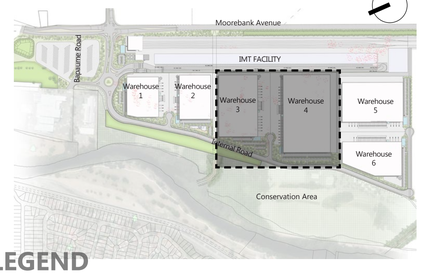
SCALE: 1:200 @ A1 (1:400 @ A3)

0 2 4 6 8 10 12 14 16 18 20M

INDICATIVE PLANT SCHEDULE

BOTANICAL NAME	COMMON NAME	NATIVE	EXPECTED MATURE HEIGHT	INSTALL SIZE
Trees				
Acmena smithii	*Lilly-pilly*	✓	12m	100L
Angophora bakeri	*Narrow-leaved Apple*	✓	10m	100L
Angophora floribunda	*Rough-barked Apple*	✓	20m	100L
Angophora subvelutina	*Broad-leaved Apple*	✓	20m	100L
Corymbia maculata	*Spotted Gum*	✓	20-25m	100L
Eucalyptus racemosa	*Snappy Gum, Scribbly Gum*	✓	15m	100L
Melaleuca decora	*White Cloud Tree*	✓	6-10m	45L
Melaleuca linariifolia	*Flax-leaved Paperbark*	✓	10m	45L
Shrubs				
Acacia decurrens	*Black Wattle*	✓	10-15m	200mm
Acacia falcata	*Sickle Wattle*	✓	4m	200mm
Acacia parramattensis	*Parramatta Green Wattle*	✓	10m	200mm
Bossiaea heterophylla	*Variable Bossiaea*	✓	1m	200mm
Callistemon citrinus	*Scarlet Bottlebrush*	✓	4m	200mm
Callistemon linearis	*Narrow-leaved Bottlebrush*	✓	3m	200mm
Callistemon salignus	*White Bottlebrush, Pink-tips*	✓	9m	200mm
Daviesia ulicifolia	*Gorse Bitter-pea*	✓	2m	200mm
Kunzea ambigua	*Tick-bush*	✓	2.5m	200mm
Leptospermum polygalifolium	*Tantoon*	✓	0.5-3m	200mm
Leptospermum trinervium	*Slender Tea-tree*	✓	4m	200mm
Melaleuca armillaris	*Bracelet Honey-myrtle*	✓	5m	200mm
Melaleuca nodosa	*Ball Honey-myrtle*	✓	4m	200mm
Melaleuca thymifolia	*Thyme Honey-myrtle*	✓	0.8m	200mm
Philotheca salsolifolia	*Philotheca*	✓	1m	200mm
Pittosporum undulatum	*Pittosporum*	✓	10m	200mm
Groundcovers				
Dianella caerulea	*Blue Flax-lily*	✓	0.6m	150mm
Dianella revoluta	*Blue Flax-lily, Spreading Flax-lily*	✓	0.8m	150mm
Dichondra repens	*Kidney-weed, Mercury Bay Weed*	✓	0.3m	150mm
Hardenbergia violacea	*False Sarsaparilla*	✓	Creeper	150mm
Imperata cylindrica	*Blady Grass*	✓	1.2m	150mm
Lomandra longifolia	*Spiny-headed Mat-rush*	✓	0.7m	150mm
Microlaena stipoides	*Weeping Grass, Meadow Rice-grass*	✓	0.7m	150mm
Themeda australis	*Kangaroo Grass*	✓	0.8m	150mm

KEY PLAN



LEGEND

- Proposed Canopy Tree Planting (refer to Plant Schedules on relevant plans)
- MPW Site Boundary
- Proposal Operational Boundary
- Proposed Landscape Area
- Conservation Area (refer to Biodiversity Assessment Report)
- Proposed Noise Wall (refer to engineer's details)
- Indicative Truck Parking
- Proposed Site Signage refer to Architectural Drawing 115123_A_SSD_5000
- Existing Trees to be Removed

DESIGN STATEMENT

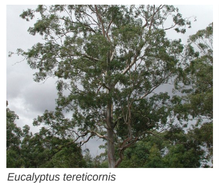
The warehouses have been located to provide opportunities for landscaping and screen planting along the western edges of the facade, responding to visual receptors to the west of the development. This arrangement allows for maximum planting along the western side of the internal road. This strategy provides opportunities for screening built forms from the surrounding urban context. The proposed carparking areas include a mixture of large canopy trees providing shade and amenity to the hard-stand area and reducing the heat island effect in these zones.

A variety of tree forms - both small and large - are proposed to create a hierarchy in the proposed landscape works.

PLANT IMAGES

Corymbia maculata

Eucalyptus sideroxylon


Eucalyptus tereticornis

Melaleuca decora

Melaleuca linariifolia

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Architect: REIDCAMPBELL

Project Manager: TACTICAL GROUP

Issue	Date	Description	Drawn	Checked
A	3.8.16	FOR DEVELOPMENT APPLICATION	BH	RL
B	29.5.17	FOR DEVELOPMENT APPLICATION	BH	RL

Landscape Architect
groundink landscape architecture - design visuals
ABN 55 163 025 45 ACN 163 025 456
Suite 201, 75 Archer St, Chatswood NSW 2067
Ph (02) 9411 3279 www.groundink.com.au

Project
MOOREBANK PRECINCT WEST STAGE 2

Project Address
Moorebank Avenue, Moorebank, NSW

Date	Revision	Job Number	Drawing Number
29.05.2017	B	20150728	LDA-007

Scale: 1:1000 @ A1 (1:2000 @ A3)
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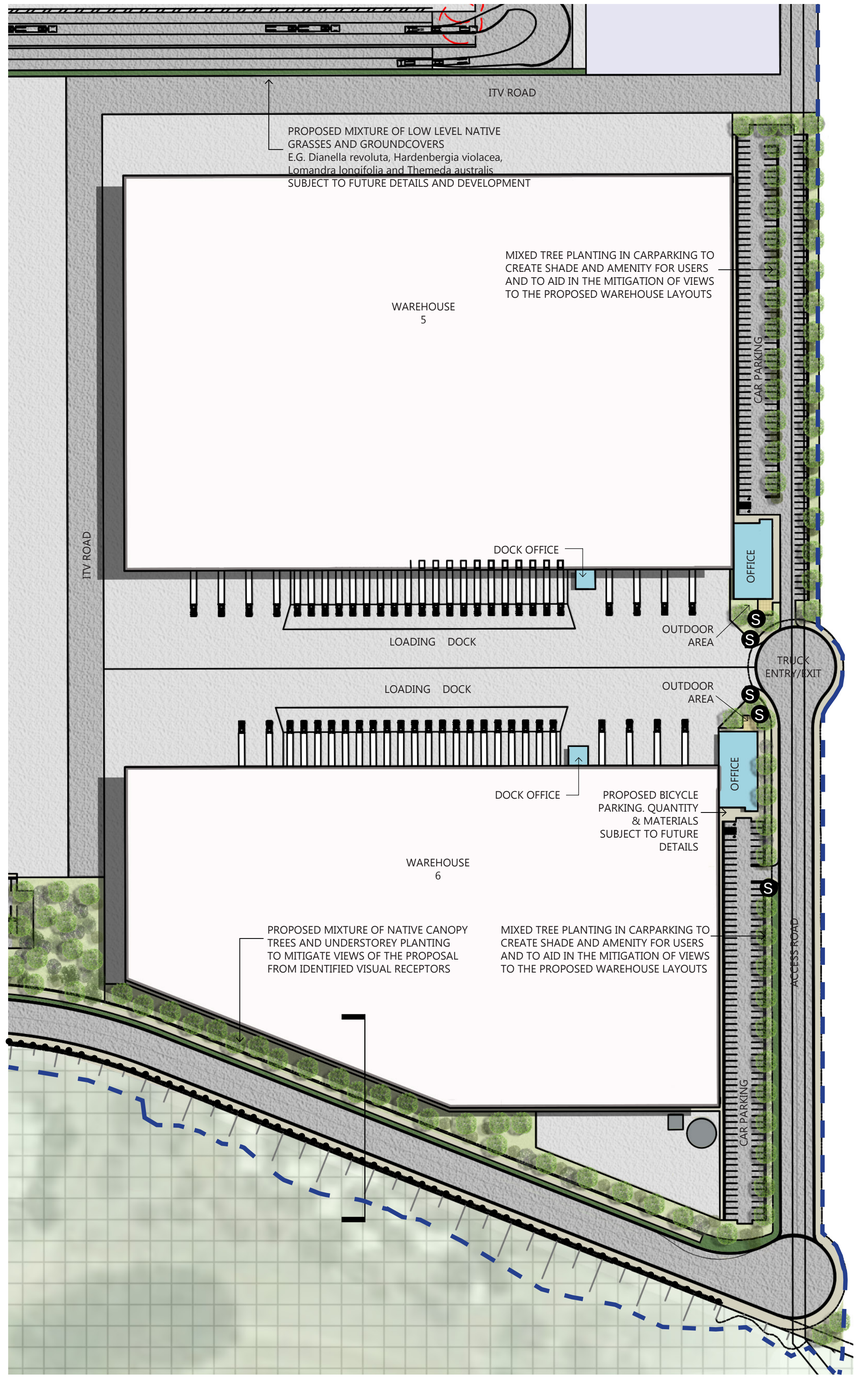
North

Drawing Name
LANDSCAPE PLAN - WAREHOUSES 1B & 2B



PRECINCT C LANDSCAPE PLAN

SCALE: 1:1000 @ A1 (1:2000 @ A3)

0 5 10 20 30 40 50m

INDICATIVE PLANT SCHEDULE

BOTANICAL NAME	COMMON NAME	NATIVE	EXPECTED MATURE HEIGHT	INSTALL SIZE
Trees				
Acmena smithii	*Lilly-pilly*	✓	12m	100L
Angophora bakeri	*Narrow-leaved Apple*	✓	10m	100L
Angophora floribunda	*Rough-barked Apple*	✓	20m	100L
Angophora subvelutina	*Broad-leaved Apple*	✓	20m	100L
Corymbia maculata	*Spotted Gum*	✓	20-25m	100L
Eucalyptus racemosa	*Snappy Gum, Scribbly Gum*	✓	15m	100L
Melaleuca decora	*White Cloud Tree*	✓	6-10m	45L
Melaleuca linariifolia	*Flax-leaved Paperbark*	✓	10m	45L
Shrubs				
Acacia decurrens	*Black Wattle*	✓	10-15m	200mm
Acacia falcata	*Sickle Wattle*	✓	4m	200mm
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Callistemon linearis	*Narrow-leaved Bottlebrush*	✓	3m	200mm
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Leptospermum polygalifolium	*Tantoon*	✓	0.5-3m	200mm
Leptospermum trinervium	*Slender Tea-tree*	✓	4m	200mm
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Melaleuca thymifolia	*Thyme Honey-myrtle*	✓	0.8m	200mm
Philotheca salsolifolia	*Philotheca*	✓	1m	200mm
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Groundcovers				
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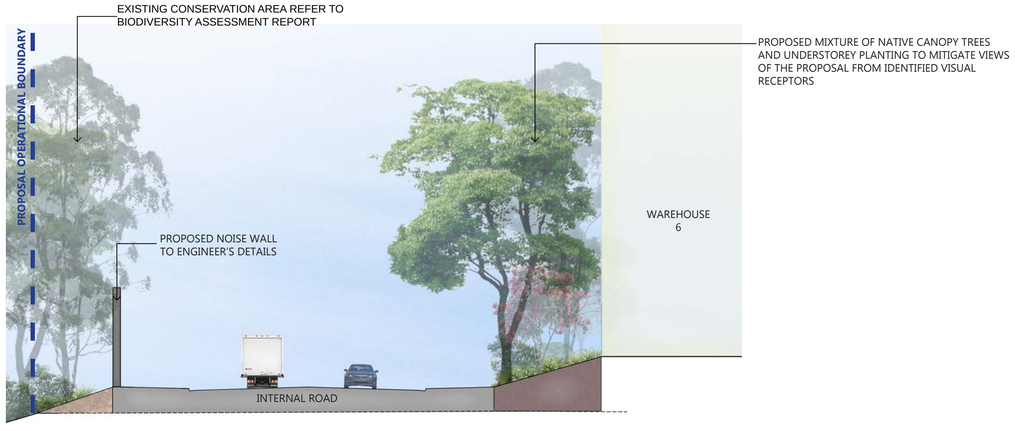
Dianella revoluta	*Blue Flax-lily, Spreading Flax-lilly*	✓	0.8m	150mm
Dichondra repens	*Kidney-weed, Mercury Bay Weed*	✓	0.3m	150mm
Hardenbergia violacea	*False Sarsaparilla*	✓	Creeper	150mm
Imperata cylindrica	*Blady Grass*	✓	1.2m	150mm
Lomandra longifolia	*Spiny-headed Mat-rush*	✓	0.7m	150mm
Microlaena stipoides	*Weeping Grass, Meadow Rice-grass*	✓	0.7m	150mm
Themeda australis	*Kangaroo Grass*	✓	0.8m	150mm

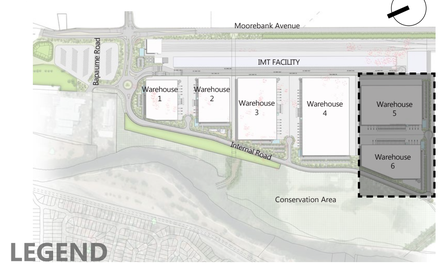


PRECINCT C LANDSCAPE SECTION

SCALE: 1:200 @ A1 (1:400 @ A3)

0 2 4 6 8 10 12 14 16 18 20M

KEY PLAN



LEGEND

- Proposed Canopy Tree Planting (refer to Plant Schedules on relevant plans)
- MPW Site Boundary
- Proposal Operational Boundary
- Proposed Landscape Area
- Conservation Area (refer to Biodiversity Assessment Report)
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DESIGN STATEMENT

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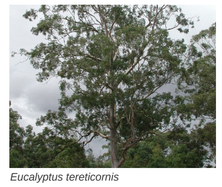
A variety of tree forms - both small and large - are proposed to create a hierarchy in the proposed landscape works.

PLANT IMAGES

Corymbia maculata

Eucalyptus sideroxylon


Eucalyptus tereticornis

Melaleuca decora

Melaleuca linariifolia

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Architect: REIDCAMPBELL

Project Manager: TACTICAL GROUP

Issue	Date	Description	Drawn	Checked
A	3.8.16	FOR DEVELOPMENT APPLICATION	BH	RL
B	29.5.17	FOR DEVELOPMENT APPLICATION	BH	RL

Landscape Architect: groundink. landscape architecture - design visuals
ABN 55 163 025 45 ACN 163 025 456
Suite 201, 75 Archer St, Chatswood NSW 2067
Ph (02) 9411 3279 www.groundink.com.au

Project: **MOOREBANK PRECINCT WEST STAGE 2**

Project Address: Moorebank Avenue, Moorebank, NSW

Date	Revision	Job Number	Drawing Number
29.05.2017	B	20150728	LDA-008

Scale: 1:1000 @ A1 (1:2000 @ A3)

0 5 10 20 30 40 50m

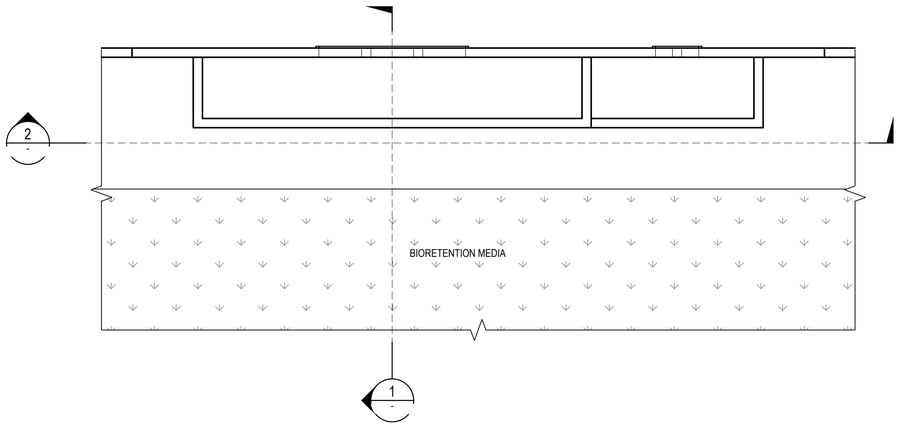
North

Drawing Name: **LANDSCAPE PLAN - WAREHOUSES 1C& 2C**

Attachment H – Drainage

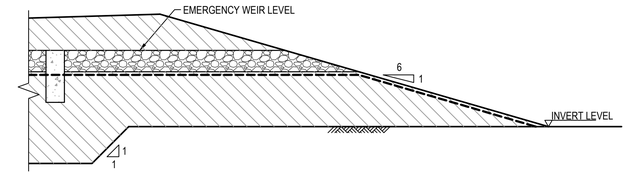
NOTES

1. ON SITE DETENTION OUTLET DETAILS BASED ON DRAINS MODEL: F:\AA003760\D-CALCULATIONS\CIVILIA-STORMWATER\D-STAGE 2 MIC\A-DRAINS\C-MODELS\STAGE2PROPOSED.DRN



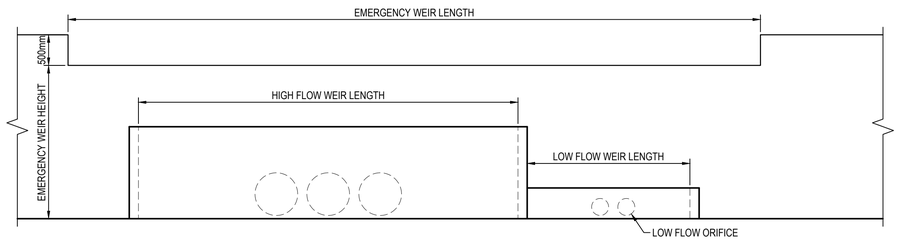
TYPICAL WALLED BASIN AND RAINGARDEN OUTLET PLAN

NTS



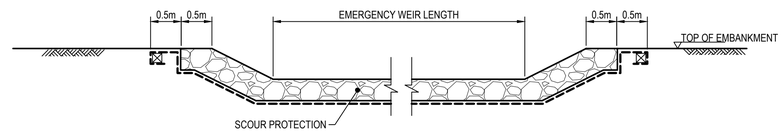
TYPICAL BASIN EMBANKMENT SECTION AT WEIR

SCALE 1 : 50



SECTION 2

N.T.S.



TYPICAL WEIR SECTION

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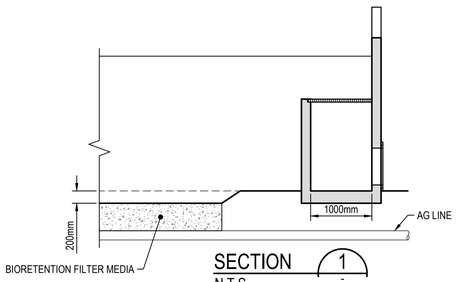
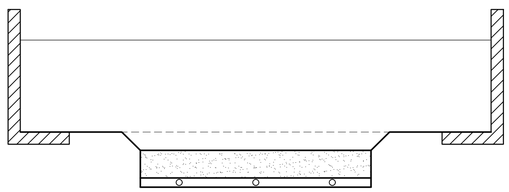


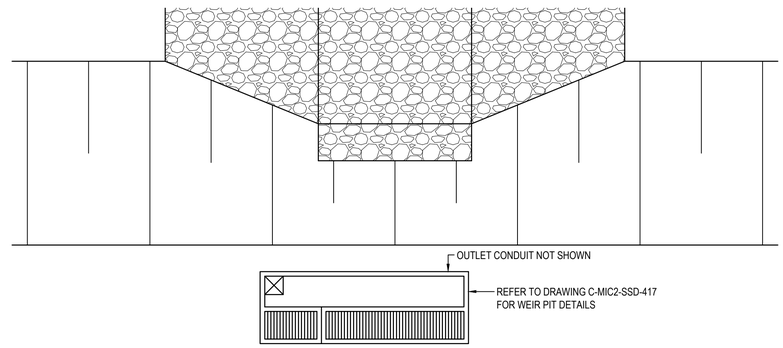
SECTION 1

N.T.S.



STORMWATER BASIN TYPICAL DETAIL

NTS



TYPICAL BASIN EMBANKMENT PLAN AT WEIR

SCALE 1 : 100

Outlet Structure Details

Basin	Storage Area (m^2)	Invert Level (mAHD)	Top of Wall Level (mAHD)	1% AEP Water Level (mAHD)	Low Flow Orifice (mm)	High Flow Orifice (mm)	Low Flow Weir Level (mAHD)	Low Flow Weir Length (m)	High Flow Weir Level (mAHD)	High Flow Weir Length (m)	Emergency Weir Level (mAHD)	Emergency Weir Length (m)
OSD 3*	7500	14.9	16.5	16.0	225	2x525	15.0	4.5	15.6	10.0	16.1	12.0
OSD 4*	7100	11.0	12.0	11.5	2x150	1x450	11.3	4.5	11.4	10.0	11.5	3.0
OSD 5*	27600	11.3	14.0	13.6	3x400	1x550	11.6	4.5	13.3	10.0	14.0	40.0
OSD 6*	27300	11.6	14.0	13.4	5x380	2x570	11.8	4.5	13.5	10.0	14.0	35.0
OSD 8*	19800	11.8	14.7	13.4	3x190	1x405	12.1	4.5	13.7	10.0	14.5	12.0
OSD 10*	17728	13.5	16.5	15.6	200x700	300x2200	13.8	4.2	14.0	18.0	-	-

* BASINS DESIGNED FOR FUTURE ALL STAGES DEVELOPMENT

Issue	Description	Date
06	ISSUE FOR SSD APPLICATION (RESPONSE TO SUBMISSIONS)	26/05/2017
05	ISSUE FOR SSD APPLICATION (RESPONSE TO SUBMISSIONS)	27/04/2017
04	ISSUE FOR SSD APPLICATION	27/07/2016
03	ISSUE FOR SSD APPLICATION	22/06/2016
02	ISSUE FOR SSD APPLICATION	06/05/2016
01	ISSUE FOR SSD APPLICATION	22/04/2016

100 mm on Original

0 1 2 3 4 5m

1 : 50

0 2 4 6 8 10m

1 : 100

Client

SIMTA SYDNEY INTERMODAL TERMINAL ALLIANCE

TACTICAL GROUP

Status

FOR APPROVAL

NOT TO BE USED FOR CONSTRUCTION

Scales	AS SHOWN	Current Issue Signatures	
		Drawn J.WOOD	
Original Size	A1	Designed G.DUNSTAN	
Height Datum	AHD	Checked B.CALDWELL	
Grid	MGA	Approved M.KEFFORD	

File Name: C-MIC2-SSD-416-AA003760-nsd-BasinAndRaingardenTypicalDetailsSheet1.dwg

Project

MPW INTERMODAL TERMINAL FACILITY - STAGE 2 STATE SIGNIFICANT DEVELOPMENT APPLICATION

Title

STORMWATER DRAINAGE BASIN & RAINGARDEN TYPICAL DETAILS SHEET 1

ARCADIS

Arcadis Australia Pacific Pty Limited
Level 5, 141 Walker St
NORTH SYDNEY NSW 2060
ABN 76 104 485 289

Tel No: +61 2 8907 9000
Fax No: +61 2 8907 9001
arcadis.com

Drawing No.	Project No.	Issue
C-MIC2-SSD-416	AA003760	06

Date Plotted: 26 May 2017 - 02:46PM File Name: F:\AA003760\E-CAD\C-Civil\D-Final\C-MIC\B-Stage2\B-SSD\C-MIC2-SSD-416-AA003760-nsd-BasinAndRaingardenTypicalDetailsSheet1.dwg