1. Final Compilation of Mitigation Measures

Environmental Management Measures were prepared as part of the MPW Concept Plan Approval and revised for the MPW Stage 2 Approval as Final Compilation of Mitigation Measures (FCMM) to inform the CEMP, OEMP and sub-plans. Relevant MPW Stage 2 FCMM will continue to apply to MPW Stage 3, and have been reviewed and further revised, as required, for relevance to this Proposal.

Table 1: MPW Stage 3 Final Compilation of Mitigation Measures (FCMM)

	Mitigation Measures			Applicability	
FCMM No.		Implementation Stage	Works compound	Subdivision	Ancillary Works
0	General Environmental Management				
OA	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; fencing; investigative drilling, excavation or salvage • establishment of site compounds and construction facilities • installation of environmental mitigation measures • utilities adjustment and relocation • other pre-construction activities • Works as described in section 3 of this EIS.	Pre Construction	Y	N/A	Y
ОВ	 The Construction Environmental Management Plan (CEMP) and sub-plans prepared for MPW Stage 2 (listed below) will be amended, where required, to accommodate MPW Stage 3 conditions: Construction Traffic and Access Management Plan (CTAMP) 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 (CSWMP), prepared in accordance with Managing Urban Stormwater, 4th Edition, Volume 1, (2004) 	Construction	Y	N/A	Y

	Mitigation Measures			Applicability	
FCMM No.		Implementation Stage	Works compound	Subdivision	Ancillary Works
	Erosion and Sediment Control Plan				
	Construction Emergency Response Plan				
	Bushfire Risk Management Strategy				
	Community Communication Strategy				
	Flora and Fauna Management Plan (FFMP).				
1	Traffic and Transport				
1A	A Construction Traffic and Access Management Plan (CTAMP) prepared for MPW Stage 2 details management controls to be implemented to avoid or minimise impacts to traffic, pedestrian and cyclist access, and the amenity of the surrounding environment would be amended, where required, to accommodate MPW Stage 3 conditions. The following key initiatives, included in the MPW Stage 2 CTAMP, continue to apply to MPW Stage 3: 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 Communication 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 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		Y	N/A	Y

	Mitigation Measures	Landan and Alban	Applicability			
FCMM No.		Implementation Stage	Works compound	Subdivision	Ancillary Works	
	 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	Importation of fill to site during construction of the Proposal is to not exceed a total of 22,000 m³ of material per day. This limit is to be further reduced by an amount equivalent to any fill being imported to the MPW Stage 2 (SSD 7709) and MPE Stage 2 (SSD 7628) on the same day such that the combined importation of fill to the MPW site and MPE site does not exceed 22,000 m³ on any given day.		Y	N/A	Y	
2	Noise and Vibration					
2A	A Construction Noise and Vibration Management Plan (CNVMP) prepared for MPW Stage 2 will be further amended, as required, to accommodate MPW Stage 3 conditions.	Construction	Υ	N/A	Y	
2B	The ambient noise monitoring surveys undertaken within Casula, Wattle Grove and Glenfield would be continued throughout the construction of the Proposal (with annual reporting of noise results up to two years beyond the completion of the Proposal).	Construction	Y	N/A	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	Y	N/A	Y	
3	Air Quality					
3A	 A Construction Air Quality Management Plan prepared for MPW Stage 2 (and based on the Air Quality Management Plan) includes the following key initiatives which will continue to apply to MPW Stage 3: 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 adverse weather (hot, dry and windy conditions) and when dust is seen leaving the site. Haulage and heavy plant and equipment movements 	Construction	Y	N/A	Y	
	 Haulage and heavy plant and equipment movements Water carts would be operated on all unsealed internal roadways and travel routes. 					

	Mitigation Measures		Applicability			
FCMM No.		Implementation Stage	Works compound	Subdivision	Ancillary Works	
3B	 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 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 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 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 dust leaving the site. Vehicle movements would be limited to designated entries and exits and haulage routes. 		Y	N/A	Y	
3B 4	Biodiversity	Construction	Ť	IN/A	Ť	

	Mitigation Measures	lood on out ation		Applicability	
FCMM No.		Implementation Stage	Works compound	Subdivision	Ancillary Works
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: • general impact mitigation • staff/contractor inductions • identification of exclusion zones • weed control • pest management • monitoring.	Construction	Υ	N/A	Y
4B	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	N/A	Y
4C	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	Y	N/A	Y
4D	Erosion and sediment control measures 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	Υ	N/A	Y
4E	The CEMP (or equivalent) would include detailed measures for minimising the risk of introducing weeds and pathogens for construction related vehicles and equipment.	Construction	Υ	N/A	Y
5	Stormwater and Flooding				
5A	A Construction Soil and Water Management Plan (CSWMP) and Erosion and Sediment Control Plan (ESCP), or equivalent, have been prepared for MPW Stage 2, and where required, amended in accordance with MPW Stage 3 conditions. The CSWMP and ESCPs would be prepared in accordance with the principles and requirements of the Blue Book and based on the Preliminary ESCPs provided	Construction	Y	N/A	Y

	Mitigation Measures	local and at the		Applicability	
FCMM No.		Implementation Stage	Works compound	Subdivision	Ancillary Works
	in the Stormwater and Flooding Assessment Report. The following aspects have been addressed within the SWMP and ESCPs, and would continue to apply to MPW Stage 3 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 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 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 bas				

	. Mitigation Measures	luudan askatiaa	Applicability		
FCMM No.		Implementation Stage	Works compound	Subdivision	Ancillary Works
	Turbidity / TSSOil and grease.				
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	Υ	N/A	Υ
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, to be determined based on the duration of the construction work. 	Construction	Y	N/A	Y
5D	To minimise potential flood impacts during construction of the Proposal, the following measures would be implemented and documented in the CSWMP prepared for MPW Stage 2, and will continue to apply to MPW Stage 3:	Construction	Υ	N/A	Υ
	 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.				
5E	A Construction Emergency Response Plan has been prepared and implemented for the construction phase of MPW Stage 2 to allow work sites to be safely evacuated and secured in advance of flooding occurring at the MPW site. The plan has been prepared in consultation with the State Emergency Service.	Construction	Y	N/A	Y

	Mitigation Measures	local and a state		Applicability	
FCMM No.		Implementation Stage	Works compound	Subdivision	Ancillary Works
5F	Stockpile sites established during construction are to be managed in accordance with relevant stockpile management principles and procedures already in place for the site. Mitigation measures may 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 3 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 MPW Stage 3 construction access point(s). 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 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.		Y	N/A	Y

	Mitigation Measures	luaniam autatia	Applicability			
FCMM No.		Implementation Stage	Works compound	Subdivision	Ancillary	
	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					
	2530 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.					
	• 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 					
	o Application of hydro-seed or hydromulch					
	 Covering batters with mulch to provide ground cover. 					
	o Covering batters with geofabric					
	o 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.					

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FCMM No.	Mitigation Measures	Implementation Stage	Works compound	Subdivision	Ancillary Works
6	Geology, Soils and Land Contamination				
6A	The CEMP prepared for MPW Stage 2 would be updated, as required to identify the actions to be taken should additional contamination be identified during the development of the site (i.e. an unexpected finds protocol).	Construction	Y	N/A	Y
6B	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	Y	N/A	Υ
6C	Findings within the Geotechnical Interpretive Report (Golder, 2016) prepared for MPW Stage 2 regarding excavations, earthworks, pavements and structural footings are to be considered during detailed design.	Detailed design	Y	N/A	Y
6D	 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. 		Y	N/A	Y
6E	The CEMP prepared for MPW Stage 2, and revised, as required, to accommodate MPW Stage 3 conditions, provides 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	Y	N/A	Y
6F	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	Y	N/A	Y

	. Mitigation Measures	In the second second		Applicability	
FCMM No.		Implementation Stage	Works compound	Subdivision	Ancillary Works
7	Hazard and Risk				
7A	The following measures have been included in the CEMP (or equivalent) to minimise hazards and risks:	Construction	Υ	N/A	Υ
	Procedures for safe removal of asbestos				
	An Incident Response Plan that would include a Spill Management Procedure.				
7B	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.	Construction	Y	N/A	N/A
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 	Construction	Y	N/A	Y
	• 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				
	• 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.				

				Applicability	
FCMM No.	Mitigation Measures	Implementation Stage	Works compound	Subdivision	Ancillary Works
8B	The following initiatives would be implemented for mitigation of light spill:	Detailed	Υ	N/A	Υ
	• Lighting would be designed to minimise impacts on surrounding existing and future residents and the proposed conservation zone	design			
	• 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.				
9	Indigenous Heritage				
9A	An unexpected finds procedure would be included in the ACHAR and in place for the construction phase of the Proposal.	Construction	Y	N/A	Υ
9B	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	Y	N/A	Y
9C	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.	Construction	Y	N/A	Y
10	Non-Indigenous Heritage				
10A	Naming of roads would consider previous School of Military Engineering (SME) street names.	Detailed Design	Υ	N/A	Υ
10B	Naming of roads (in addition to above) would consider commemoration of significant events and individuals related to the Moorebank Cultural Landscape.	Detailed Design	Υ	N/A	Υ
10C	An unexpected finds protocol is included within the CEMP prepared for MPW Stage 2, and will be revised, as required to accommodate MPW Stage 3 conditions. If unexpected finds are identified during works, the stop works procedure would be followed and a suitably qualified archaeological	Construction	Υ	N/A	Y

FCMM No.	Mitigation Measures	Implementation Stage	Applicability		
			Works compound	Subdivision	Ancillary Works
	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.				
11	Greenhouse Gas				
11A	 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 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 would be reviewed and considered where appropriate for incorporation into the CEMP to accommodate MPW Stage 3 conditions. 	Construction	Y	N/A	Y
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 	Construction	Y	N/A	Y

FCMM No.	Mitigation Measures	Implementation Stage	Applicability		
			Works compound	Subdivision	Ancillary Works
	 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. 				
12B	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.	Construction	Υ	N	N
13	Bushfire				
13A	 A bushfire management strategy prepared for MPW Stage 2 will be considered for implementation, where reasonable and feasible, for mitigation of bushfire risk during construction of MPW Stage 3 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	N/A	Υ
	• All site offices would be accessible via access roads suitable for firefighting appliances similar to NSW Rural Fire Service category 1 tankers.				
14	Socio-Economic Socio-Economic				
14A	A Community Communication Strategy prepared for MPW Stage 2 would be reviewed, as required, to accommodate MPW Stage 3 conditions.	Construction	Υ	Υ	Υ
14B	 Security at the Proposal site would include: Fencing around the perimeter of the Proposal site, 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. 	Construction			