Appendix C
CONDITIONS OF CONSENT COMPLIANCE MATRIX

Table C1 – Conditions of Consent (CoC) – SSD 7709			
CoC / FCMM	**Requirement**	**Document Reference**	**How Addressed**
B171	Upon completion of importation and placement of fill and prior to construction of permanent built surface works, the Applicant must submit to the Planning Secretary, a Site Audit Report and a Site Audit Statement A for the whole site, prepared in accordance with the NSW Contaminated Land Management - Guidelines for the NSW Site Auditor Scheme 2017, which demonstrates the site is suitable for its intended land uses under MPW Stage 2 SSD 7709.	NA	To be actioned by the Site Auditor
B172	Where remediation outcomes for the site require long term environmental management, a suitably qualified and experienced person must prepare a Long-Term Environmental Management Plan (LTEMP), to the satisfaction of the Site Auditor. The plan must:	This Plan	LTEMP prepared by a suitably qualified and experienced person – Certified Environmental Practitioner – Contaminated Land (CEnvP CL). This Plan has been sent to the Site Auditor for approval.
	a) be submitted to the Planning Secretary and EPA prior to commencement of construction (other than vegetation clearing); and		Qube to provide this Plan to the Planning Secretary once approved by the Site Auditor.
	b) include, but not be limited to:		
	i. a description of the nature and location of any contamination remaining on site,		**Appendix A** of this Plan.
	ii. provisions to manage and monitor any remaining contamination, including details of any restrictions placed on the land to prevent development over the containment cell,		**Appendix B** of the LTEMP provides Environmental Management Procedures including details of restrictions. A containment cell is not proposed in this Plan.
	iii. a description of the procedures for managing any leachate generated from the containment cell, including any requirements for testing, pumping, treatment and/ or disposal,		A containment cell is not proposed in this Plan.
	iv. a description of the procedures for monitoring the integrity of the containment cell,		A containment cell is not proposed in this Plan.

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	v. a surface and groundwater monitoring program,		The surface and groundwater monitoring program is detailed in **Section 5** of this Plan and **EMP 12** and **EMP 13** in **Appendix B** of this Plan.
	vi. mechanisms to report results to relevant agencies,		Reporting mechanisms provided in Section 5 and **Appendix B** of this Plan. **EMP 20** in **Appendix B** provides protocols for the cessation of monitoring post development subject to approval by the Site Auditor and / or NSW EPA.
	vii. triggers that would indicate if further remediation is required, and		An unexpected finds protocol to manage further remediation is provided as **Appendix D** of the LTEMP.
	viii. details of any contingency measures that the Applicant is to carry out to address any ongoing contamination.		A contingency plan is provided as **EMP 16** in **Appendix B** of this Plan.
B173	The LTEMP must be registered on the title to the land.	This Plan	**Section 1.3** and **Section 1.4**
B180	The Applicant must assess and classify all liquid and nonliquid wastes to be taken off site in accordance with the latest version of EPA's Waste Classification Guidelines Part 1: Classifying Waste (NSW EPA 2014) and dispose of all wastes to a facility that may lawfully accept the waste.	**Appendix B**	**EMP 6** in **Appendix B** addresses liquid and non-liquid waste classification
C1	The applicant must ensure that the environmental management plans required under this consent are prepared in accordance with any relevant guidelines, and include: a) Baseline data; b) A description of: (i) The relevant statutory requirements (including any relevant approval, licence or lease conditions); (ii) Any relevant limits or performance measures/criteria; and (iii) The specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any measurement measures;	a) **Section 3** and **Appendix B** b) i) **Section 4** ii) **Appendix B** iii) **Appendix B** c) **Appendix B** d) i) **Appendix B** ii) **Section 5** e) **EMP 16** f) **EMP 19** g) **EMP 16 and 17** h) **Section 4.1** i) **EMP 28**	a) Includes known site conditions and summarised remaining contamination issues. b) (i) Covers any relevant approval and/or licence. (ii) Specifies adopted criteria to be used for assessment and validation. (iii) Specifies sampling and validation plans and the decision questions needing to be answered for each different type of assessment/validation. c) Specifies the details of each management plan as required by Golder (2016a).

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	c) A description of the management measures to be implemented to comply with the relevant statutory requirements, limits or performance measures/criteria; d) A program to monitor and report on the: (i) Impacts and environmental performance of the development; and (ii) Effectiveness of any management measures (see (c) above); e) A contingency plan to manage any unpredicted impacts and their consequences; f) A program to investigate and implement ways to improve the environmental performance of the development over time; g) A protocol for management and reporting any: (i) Incidents and non-compliances; (ii) Complaints; (iii) Non-compliances with statutory requirements; and h) Roles and responsibilities for implementing the plan; and i) A protocol for periodic review of the plan.		d) (i) Describes the sampling analysis and reporting program for each contamination issue requiring management; and (ii) The sampling and validation programs will report on the effectiveness of the management measures. e) Details the Unexpected Finds Procedure in relation to contamination. f) Continual improvement for the LTEMP is discussed. g) **Appendix B** provides protocols and reporting: (i) Specifies how incidents and non-compliances will be managed. (ii) Specifies how complaints in relation to contamination will be managed. (iii) Specifies how non-compliance to statutory requirements will be managed. h) Lists the responsibilities for the LTEMP Implementation. i) Specified how the LTEMP will be reviewed/updated.
OB	The 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)	**CEMP**	CEMP prepared by the Principal Contractor during construction

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CoC / FCMM	**Requirement**	**Document Reference**	**How Addressed**
	• 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) • ESCP • 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)		
5A	A SWMP and 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: Stockpiles would be located away from flow paths on appropriate impermeable surfaces, to minimise potential sediment transportation.	**CEMP**	While this plan is separate to the SWMP and ESCP it does include this requirement for the management of stockpiles.

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CoC / FCMM	**Requirement**	**Document Reference**	**How Addressed**
	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		
5I	Stockpile sites established during construction are to be managed in accordance with stockpile management principles set out in Appendix L of this 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 virgin excavated natural material (VENM) / excavated natural material (ENM) must be provided. Each truck entering the 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 Site access located from Moorebank Avenue. Ingress and egress to the stockpiling areas would be arranged so that the reversing of trucks within the site is minimised.	**EMP 4, EMP 6** and **CEMP**	These measures have been included in the LTEMP.

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CoC / FCMM	**Requirement**	**Document Reference**	**How Addressed**
	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. 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 2530 m lengths, facilitated by the provision of spine drains which would convey water		

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CoC / FCMM	**Requirement**	**Document Reference**	**How Addressed**
	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). 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 exposed 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		
6A	The CEMP would identify the actions to be taken should additional contamination be identified during the development of the site (i.e. an	**CEMP**	To be addressed in the CEMP.

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	unexpected finds protocol), and will address REMM items 8H, 8T, 8U, 8V and 8W (of the MPW Concept Plan Approval (SSD 5066)).		
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).	**JBS&G 2022**	Currently Stage 2 works are completed and have been completed in accordance with the RAP (Golder 2016) and MPW TLEMP (EP Risk 2020a). The outcomes of the remediation are documented in the Validation Report (JBS&G 2022) under review by the Site NSW EPA Accredited Auditor.
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.	**CEMP**	The plan outlines the review and actions required to manage any unexpected finds in relation to the UXO Risk.
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).	**Golder 2016b**	The asbestos in soils management plan has been developed in accordance with current Guidelines and codes of practice.
6E	An Acid Sulfate Soils Management Plan (ASSMP) (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	**EP Risk 2020b**	A separate ASSMP has been prepared for the Site.

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	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).		
6F	The existing groundwater monitoring undertaken for the Proposal would continue. A 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. Provide appropriate trigger levels for key contaminants (where available), based on the receptor of interest and identified contaminants	**EMP 12**	A groundwater sampling strategy is included in **EMP 12**.

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	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. The approach to PFAS management will be confirmed following further monitoring in consultation with, and the approval of, the NSW EPA Accredited Site Auditor.		
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.	**JBS&G 2022**	Currently Stage 1 works are completed and have been completed in accordance with the RAP (Golder 2016a) and MPW LTEMP (EP Risk 2020a). The outcomes of the remediation are documented in the Validation Report (JBS&G 2022) under review by the Site NSW EPA Accredited Auditor.

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CoC / FCMM	**Requirement**	**Document Reference**	**How Addressed**
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.	**This Plan**	Provides requirements to revise the LTEMP post construction.
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.	**Golder 2016 RAP** **EMP 4**	Both requirements for the acceptance of fill are stated within this section.
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.	**CEMP**	This plan includes procedures for the safe removal of asbestos. The remaining two requirements are not the scope of this plan.

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CoC / FCMM	**Requirement**	**Document Reference**	**How Addressed**
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.	**CEMP**	To be included in the CEMP
OB	The 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	**CEMP**	CEMP prepared by the Principal Contractor during construction

Table C1 – Conditions of Consent (CoC) – SSD 7709			
CoC / FCMM	**Requirement**	**Document Reference**	**How Addressed**
	• Construction Soil and Water Management Plan (SWMP), prepared in accordance with Managing Urban Stormwater, 4th Edition, Volume 1, (2004) • ESCP • 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)		
5A	A SWMP and 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: 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	**CEMP**	While this plan is separate to the SWMP and ESCP it does include this requirement for the management of stockpiles.
5I	Stockpile sites established during construction are to be managed in accordance with stockpile management principles set out in Appendix L of this 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 virgin	**EMP 4, EMP 7** and **CEMP**	These measures have been included in the LTEMP.

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CoC / FCMM	**Requirement**	**Document Reference**	**How Addressed**
	excavated natural material (VENM) / excavated natural material (ENM) must be provided. Each truck entering the 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 Site access located 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 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.		

Table C1 – Conditions of Consent (CoC) – SSD 7709			
CoC / FCMM	**Requirement**	**Document Reference**	**How Addressed**
	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 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. Stockpiling of clean fill material is to be carried out during Works Period A (pre-construction) and Works Period D (bulk earthworks). 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		

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CoC / FCMM	**Requirement**	**Document Reference**	**How Addressed**
	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 exposed 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		

Table C2 – Conditions of Approval (CoA) – EPBC 2011/6086			
CoA	**Reference**	**Condition Requirement**	**Document Reference and How Addressed**
8a)	MPW Concept EIS, Soil and Contamination PEMF Section 6.2 – Management controls – Early Works and Construction phase	Contaminated soil/fill material present will be 'chased out' during the excavation works based on visual, olfactory and preliminary field test results.	**Section 3** provides an overview on the remaining contamination issues remaining at the Site. **Appendix B** – **EMP 5-9** describes the chase out of impacted soils and fill for unexpected finds.
		Excavated soil would be temporarily stockpiled, sampled and analysed for waste classification processes. Following receipt of waste classification results, the material would be transported to a licensed off-site waste disposal facility as soon as practicable to minimise dust and odour issue through storage of materials on-site	**EMP 4, EMP5, EMP 6, EMP 7**, **EMP 10** and **EMP 11**
		Stockpiled soils would be stored on a sealed surface and the stockpiled areas would be securely bunded using silt fencing to prevent silt laden surface water from entering or leaving the stockpiles or the Project site.	**EMP 2, EMP 3, EMP 4** and **EMP 5**
		All excavation works would be undertaken by licensed contractor experienced in remediation projects and the handling of contaminated soils.	**Section 4**
		All asbestos removal, transport and disposal must be performed in accordance with the Work Health and Safety Regulation 2011 (WH&S Regulation).	**EMP 3, EMP 4, EMP 5** and **EMP7**
		The removal works would be conducted in accordance with the National Occupational Health and Safety Commission Code of Practice for the Safe Removal of	**EMP 3, EMP 4, EMP 5** and **EMP7**

Table C2 – Conditions of Approval (CoA) – EPBC 2011/6086			
CoA	**Reference**	**Condition Requirement**	**Document Reference and How Addressed**
		Asbestos, 2nd Edition [NOHSC 2002 (2005)] (NOHSC 2005a).	
		An appropriate asbestos removal licence issued by WorkCover would be required for the removal of asbestos impacted soil.	**EMP 3, EMP 4, EMP 5** and **EMP7**
		Environmental management and WH&S procedures would be put in place for the asbestos removal during excavation to protect workers, surrounding residents and the environment.	**EMP 3, EMP 4, EMP 5** and **EMP7**
		Temporary stockpiles of asbestos containing material (ACM) soils would be covered to minimise dust and potential asbestos release	**EMP 3, EMP 4, EMP 5** and **EMP7**
		An asbestos removal clearance certification would be prepared by an occupational hygienist at the completion of the removal work. This would follow the systematic removal of asbestos containing materials and any affected soils from the Project site and validation of these areas (through visual inspection and laboratory analysis of selected soil samples).	**EMP 3, EMP 4, EMP 5, EMP 6, EMP7, EMP 10** and **EMP 11**
		Asbestos fibre air monitoring would be undertaken during the removal of the asbestos materials and in conjunction with the visual clearance inspection. The monitoring would be conducted in accordance with the National Occupational Health and Safety Commission Guidance Note on the Membrane Filter Method for the Estimating	**EMP 3, EMP 6** and **EMP 10**

Table C2 – Conditions of Approval (CoA) – EPBC 2011/6086			
CoA	**Reference**	**Condition Requirement**	**Document Reference and How Addressed**
		Airborne Asbestos Fibre, 2nd Edition [NOHSC 3003 (2005)] (NOHSC 2005b).	
		All stockpiles would be maintained in an orderly and safe condition. Batters would be formed with sloped angles that are appropriate to prevent collapse or sliding of the stockpiled materials.	**EMP 5**
		Stockpiles would be placed at approved locations and would be strategically located to mitigate environmental impacts while facilitating material handling requirements. Contaminated or potentially contaminated materials would only be stockpiled in unremediated areas of the Project site or at locations that did not pose any risk of environmental impairment of the stockpile area or surrounding areas (e.g. hardstand areas).	**EMP 5**
		Stockpiles would only be constructed in areas of the Project site that had been prepared in accordance with the requirements of the Project Preliminary RAP in Appendix G of Technical Paper 5 – Environmental Site Assessment (Phase 2), Volume 4. All such preparatory works would be undertaken prior to the placement of material in the stockpile. Stockpiles must be located on sealed surfaces such as sealed concrete, asphalt, high density polyethylene or a mixture of these, to appropriately mitigate potential cross contamination of underlying soil.	**EMP 5**
		The stockpiles of contaminated material would be covered with a waterproof membrane (such as polyethylene sheeting) to prevent increased moisture from rainwater	**EMP 5**

Table C2 – Conditions of Approval (CoA) – EPBC 2011/6086			
CoA	**Reference**	**Condition Requirement**	**Document Reference and How Addressed**
		infiltration and to reduce windblown dust or odour emission	
		Before the reuse of any material on-site, it would be validated so that the lateral and vertical extent of the contamination is defined	**EMP 2, EMP 3, EMP 6, EMP 10** and **EMP 11**
		Where required, contaminated materials and wastes generated from the Project remediation and construction works would be taken to suitable licensed offsite disposal facilities	**EMP 7**
8a)	MPW Concept EIS, Soil and Contamination PEMF Section 6.4– monitoring	Within each of the Project specific management plans, the private sector developer would need to detail what monitoring would be undertaken to ensure compliance with the following:	
		The Project's EIS, with respect to the commitments made as well as the management and mitigation measures proposed;	**EMP 17, EMP 18, EMP 19** and **EMP 20**
		Project approvals issued under the EPBC Act and EP&A Act;	Approval provided
		Contractual requirements established between MIC and the developer and operator for the Project;	N/A
		Other permits and/or licences required during the Project; and	N/A
		Objectives, targets and indicators as presented in this PEMF.	CEMP

Table C2 – Conditions of Approval (CoA) – EPBC 2011/6086			
CoA	**Reference**	**Condition Requirement**	**Document Reference and How Addressed**
8a)	MPW Concept EIS, Soil and Contamination PEMF Section 6.5 – Management response to incidents and non-compliances	Contaminated soil/spoil and hazardous materials have not been appropriately managed (i.e. classification, handling, storage, transport, and disposal).	**EMP 2, EMP 3, EMP 4, EMP 5, EMP 6** and **EMP 10**
8b) and c)	REMM 7A	To minimise the risk of leakages involving natural gas, liquid 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 referred to in the detailed design process; correct schedule pipes would be used; a fire protection system would be installed if necessary for gas users; cathodic protection would be installed for external corrosion if appropriate; and access to the Project site would be secure.	CEMP
	REMM 7B	To minimise the risks of leakage of LNG and liquid petroleum gas (LPG) and flammable liquids during transport: materials would be transported according to the Australian Dangerous Goods (ADG) Code, relevant standards and regulations; and contractors delivering the gas would be trained, competent and certified by the relevant authorities	CEMP

Table C2 – Conditions of Approval (CoA) – EPBC 2011/6086			
CoA	**Reference**	**Condition Requirement**	**Document Reference and How Addressed**
	REMM 7C	To minimise hazards associated with venting of natural gas, LNG and LPG: LNG storage would be designed to AS/NZS 1596-2008 standards; access to the Project site would be secure; and significant separation distances to residences and other assets would be put in place	CEMP
8b) and c)	REMM 7D	Storage of flammable/combustible liquids would be carried out in accordance with AS 1940, with secondary containment in place and location away from drainage paths	CEMP
	REMM 7E	Standby or emergency generators and transformers would all have secondary containment	CEMP
	REMM 7F	Oil coolers would generally be located in areas where leaks and runoff are appropriately controlled at source or in a retention basin.	CEMP
	REMM 7I	No hazardous or regulated wastes would be disposed of onsite.	**EMP 4 and EMP 6**
	REMM 7J	All offsite disposals would be carried out by approved transport operators and to approved facilities	**EMP 6** and CEMP
	REMM 7K	Other dangerous goods, including any waste materials present on the Project site, would be suitably contained, with secondary containment and runoff controls implemented where appropriate to prevent leaks or spills	CEMP

Table C2 – Conditions of Approval (CoA) – EPBC 2011/6086			
CoA	**Reference**	**Condition Requirement**	**Document Reference and How Addressed**
		migrating to environmentally sensitive areas, in particular via stormwater systems that drain to the Georges River.	
	REMM 8B	Before construction, a remediation program would be implemented in accordance with the Moorebank Intermodal Terminal Preliminary Remediation Action Plan (RAP) (or equivalent). The program will have been formally reviewed and approved by the Site Auditor under Part 4 of the NSW Contaminated Land Management Act 1997 (CLM Act).	Currently Stage 1 works have been completed in accordance with the RAP (Golder 2016a) and MPW LTEMP (EP Risk 2020a). The outcomes of the remediation are documented in the JBS&G (2022) Summary Report under review by the Site NSW EPA Accredited Auditor. The remaining contamination is documented in this Plan in **Appendix A** along with the management measures in **Appendix B**
	REMM 8D	An unexploded ordnance (UXO) management plan (or equivalent) would be developed for the Project site. This plan would detail a framework for addressing the discovery of UXO or explosive ordnance waste (EOW) to ensure a safe environment for all Project staff, visitors and contractors.	**EMP 10**
	REMM 8E	An ASS management plan (or equivalent) would be developed in accordance with the ASSMAC Assessment Guidelines (1998), with active ongoing management through the construction phases. Offsite disposal would need to be in accordance with the NSW Waste Classification Guidelines Part 4: Acid Sulfate Soils (2009).	EP Risk (2020b) has prepared an Acid Sulfate Soil Management Plan which has been included in the CEMP for Stage 2 works.
	REMM 8F	Further testing of residual sediments would be undertaken to gather data to inform the management of sediments likely to be disturbed/dewatered during construction.	Further testing of sediments has been undertaken by JBS&G 2018a[1] as part of greater MPW works during Stage 1.

[1] L144 (PFAS Soil Assessment - Swales and Basins) Rev 0. JBS&G April 2018.

Table C2 – Conditions of Approval (CoA) – EPBC 2011/6086			
CoA	**Reference**	**Condition Requirement**	**Document Reference and How Addressed**
	REMM 8G	Ground penetrating radar (GPR) or similar techniques would be used to locate and document all existing and underground tank infrastructure across the Project site.	This process was conducted as part of the Stage 1 MPW works and is documented in the validation report (JBS&G 2022).
	REMM 8H	A management tracking system for excavated materials would be developed to ensure the proper management of the material movements at the Project site, particularly during excavation works.	**EMP 3** and **EMP 4**
	REMM 8I	Contaminated soil/fill material present will be 'chased out' during the excavation works based on visual, olfactory and preliminary field test results.	**EMP 1, EMP 2, EMP 3, EMP 6, EMP 10** and **EMP 11**
	REMM 8J	Excavated soil would be temporarily stockpiled, sampled and analysed for waste classification processes. Subject to receipt of waste classification results, the material would be transported to a licensed offsite waste disposal facility as soon as practicable to minimise dust and odour issue through storage of materials on site.	**EMP 4** and **EMP 6**
8b) and c)	REMM 8K	Stockpiled soils would be stored on a sealed surface and the stockpiled areas would be securely bunded using silt fencing to prevent silt laden surface water from entering or leaving the stockpiles or the Project site	**EMP 2, EMP 3, EMP 4, EMP 5, EMP 6** and **EMP 10**
	REMM 8L	All excavation works associated with potential contaminated lands would be undertaken by licensed contractors, experienced in remediation projects and the handling of contaminated soils.	**Section 4**

Table C2 – Conditions of Approval (CoA) – EPBC 2011/6086			
CoA	**Reference**	**Condition Requirement**	**Document Reference and How Addressed**
	REMM 8M	All asbestos removal, transport and disposal would be performed in accordance with the Work Health and Safety Regulation 2011 (WHS Regulation)	**EMP3, EMP 5, EMP 6, EMP 8** and **EMP 10**
	REMM 8N	The removal works would be conducted in accordance with the National Occupational Health and Safety Commission Code of Practice for the Safe Removal of Asbestos, 2nd Edition [NOHSC 2002 (2005)] (NOHSC 2005a).	**EMP3, EMP 5, EMP 6, EMP 8** and **EMP 10**
	REMM 8RO	An appropriate asbestos removal licence issued by WorkCover NSW would be required for the removal of asbestos contaminated soil.	**EMP3, EMP 5, EMP 6, EMP 8** and **EMP 10**
	REMM 8P	Environmental management and WHS procedures would be put in place for the asbestos removal during excavation to protect workers, surrounding residents and the environment.	**EMP3, EMP 5, EMP 6, EMP 8** and **EMP 10**
	REMM 8Q	Temporary stockpiles of asbestos containing material (ACM) soils would be covered to minimise dust and potential asbestos release	**EMP 3, EMP 5** and **EMP 10**
	REMM 8R	An asbestos removal clearance certification would be prepared by an occupational hygienist at the completion of the removal work. This would follow the systematic removal of asbestos containing materials and any affected soils from the Project site, and validation of these areas (through visual inspection and laboratory analysis of selected soil samples)	**EMP 3, EMP 6, EMP 10** and **EMP 11**

Table C2 – Conditions of Approval (CoA) – EPBC 2011/6086			
CoA	**Reference**	**Condition Requirement**	**Document Reference and How Addressed**
8b) and c)	REMM 8S	Asbestos fibre air monitoring would be undertaken during the removal of ACMs and in conjunction with the visual clearance inspection. The monitoring would be conducted in accordance with the National Occupational Health and Safety Commission Guidance Note on the Membrane Filter Method For the Estimating Airborne Asbestos Fibre, 2nd Edition [NOHSC 3003 (2005)] (NOHSC 2005b).	**EMP 3**, **EMP 6** and **EMP 10**
	REMM 8T	All stockpiles would be maintained in an orderly and safe condition. Batters would be formed with sloped angles that are appropriate to prevent collapse or sliding of the stockpiled materials	**EMP 5**
	REMM 8U	Stockpiles would be placed at approved locations and would be strategically located to mitigate environmental impacts while facilitating material handling requirements. Contaminated or potentially contaminated materials would only be stockpiled in unremediated areas of the Project site or at locations that did not pose any risk of environmental impairment of the stockpile area or surrounding areas (e.g. hardstand areas)	**EMP 5**
	REMM 8V	Stockpiles would only be constructed in areas of the Project site that had been prepared in accordance with the requirements of the Project Preliminary RAP in Appendix G of Technical Paper 5 – Environmental Site Assessment (Phase 2), Volume 5A and 5B. All such preparatory works would be undertaken before material is placed in the stockpile. Stockpiles must be located on sealed surfaces such as sealed concrete, asphalt, high density	**EMP 5**

Table C2 – Conditions of Approval (CoA) – EPBC 2011/6086			
CoA	**Reference**	**Condition Requirement**	**Document Reference and How Addressed**
		polyethylene or a mixture of these, to appropriately mitigate potential cross contamination of underlying soil	
8b) and c)	REMM 8W	Any stockpiles of contaminated material would be covered with a waterproof membrane (such as polyethylene sheeting) to prevent increased moisture from rainwater infiltration and to reduce windblown dust or odour emission	**EMP 5**
	REMM 8X	Before the reuse of any material on site, it would be validated so that the lateral and vertical extent of the contamination is defined.	**EMP 2, EMP 3, EMP 10** and **EMP 11**
	REMM 8Y	Where required, contaminated materials and wastes generated from the Project remediation and construction works would be taken to suitable licensed offsite disposal facilities	**EMP 7**
	REMM 8Z	Where necessary, consider undertaking further investigations to determine whether other buildings have organochlorine pesticides (OCP) impacts subgrade materials, and to quantify the volume of OCP impacted materials across the site	Not relevant as all buildings have been removed as part of the Stage 1 Early Works.
	REMM 8AA	Additional Aqueous Film Forming Foam assessment (AFFF) be undertaken to determine if any direct remedial and/or management actions are required. A stage approach is considered appropriate and is detailed in the Preliminary AFFF Assessment (Golder Associates 2015b).	Additional PFAS Investigations have been undertaken on the Site and are summarised by EP Risk (2018) and ongoing requirements presented in **Appendix B**.
8 d)	-	In relation to management of PFAS:	

Table C2 – Conditions of Approval (CoA) – EPBC 2011/6086			
CoA	**Reference**	**Condition Requirement**	**Document Reference and How Addressed**
	i)	be consistent with: • National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013) (ASC NEPM 2013). • Australian and New Zealand Guidelines for Fresh and Marine Water Quality (under the National Water Quality Management Strategy) including the draft default guideline values for perfluorooctanoic acid (PFOS) and perfluorooctane sulfonic acid (PFOA) in freshwater as applied by the State government • relevant Commonwealth environmental management guidance on PFOS and PFOA	**Section 4** and **Appendix B** of this Plan are consistent with these guidelines (where relevant).
	ii)	detail implementation and operational procedures, appropriate to the risk posed by any contamination, including: • roles and responsibilities • management of potential PFAS contaminated sites as yet un-investigated • management of areas of known PFAS contamination, including strategies to reduce runoff, dewatering and migration of contamination across and off the proposed site • a contingency action plan for unexpected PFAS contaminant discoveries	**Section 4.1** EP Risk (2018) **EMP 2, EMP 3, EMP 4, EMP 5, EMP6, EMP 7, EMP 8, EMP 9, EMP 10, EMP 12, EMP 13 and EMP 16**
	iii)	detail soil, groundwater and surface water PFAS contamination monitoring requirements and testing and	**EMP 12** and **EMP 13**

Table C2 – Conditions of Approval (CoA) – EPBC 2011/6086			
CoA	**Reference**	**Condition Requirement**	**Document Reference and How Addressed**
		disposal procedures appropriate to the risk posed by any contamination	
	iv)	include requirements for site validation reports appropriate to the risk posed by any contamination	Golder 2016a RAP
	v)	include requirements for remedial action plans appropriate to the risk posed by any contamination	Golder 2016a RAP
	vi)	detail review procedures appropriate to the risk posed by any contamination	**EMP 19**
	vii)	impose the following performance measures for managing earthworks and the potential for effects to occur due to disturbance of PFAS contaminated soils during construction: • contaminated sediment to be discharged outside the site of the action to be minimised • contaminated waste material, including excavated soil, to be released through dewatering to be handled appropriately to the risk posed by the contamination and disposed of in an environmentally sound manner such that potential for the PFAS content to enter the environment is minimised contaminated waste material, including excavated soil, with a PFOS or PFOA content above 50 milligrams per kilogram (mg / kg) to be stored or disposed of in an environmentally sound manner, such that PFAS content does not enter the environment	**Appendix B**

Table C2 – Conditions of Approval (CoA) – EPBC 2011/6086			
CoA	**Reference**	**Condition Requirement**	**Document Reference and How Addressed**
		• all soil remaining at the site of the action to be suitable for purpose	

Appendix D
UNEXPECTED FINDS PROTOCOL

Construction

UNEXPECTED FINDS PROTOCOL

Moorebank Precinct West Stage 2

02 AUGUST 2019

SYDNEY INTERMODAL TERMINAL ALLIANCE

Moorebank Precinct East Stage 2

Unexpected Finds Protocol

Author	[redacted]
Checker	[redacted]
Approver	[redacted]
Report No	MIC2-QPMS-EN-APP-00022
Date	27/08/2019
Revision Text	005

Author Details

Author Details	Qualifications and Experience
[redacted]	PhD Molecular and Cellular Biology BS Biochemistry [redacted] has over 15 years of experience including post-approval environmental management and compliance on large infrastructure projects.

REVISIONS

Revision	Date	Description	Prepared by	Approved by
001	27/07/2018	Draft for review	[redacted]	[redacted]
002	14/09/2018	Second draft for client review	[redacted]	[redacted]
003	26/10/2018	Issued for ER Review	[redacted]	[redacted]
004	02/08/2019	Updated based on Conditions of Consent	[redacted]	[redacted]
005	27/08/2019	Updated to reflect the CFFMP	[redacted]	[redacted]

ACRONYMS AND DEFINITIONS

Acronym/Term	Meaning
BAR	Biodiversity Assessment Report
CFFMP	Construction Flora and Fauna Management Plan
CoCs	Conditions of Consent
DoTEE	Commonwealth Department of the Environment and Energy
EM	Contractor's Environment Manager
EP&A Act	*Environmental Planning and Assessment Act, 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
MPW	Moorebank Precinct West
OEH	NSW Office of Environment and Heritage
PE	Project Ecologist
PFAS	Per & Poly-Fluoroalkyl Substances
RCMM	Revised Compilation of Mitigation Measures
SIMTA	Sydney Intermodal Terminal Alliance
SSD	State significant development
UFP	Unexpected Finds Protocol

CONTENTS

APPENDICES

LIST OF TABLES

1 INTRODUCTION

The Sydney Intermodal Terminal Alliance (SIMTA) received approval for the construction and operation of Stage 2 of the Moorebank Precinct West (MPW) Project (SSD 7709), which comprises the second stage of development under the MPW Concept Approval (SSD 5066). This Unexpected Finds Protocol (UFP) has been developed to manage the unexpected discovery of contamination within imported spoil, heritage items, threatened flora and fauna, and onsite contamination during the construction phase of Stage 2 of the Moorebank Precinct West (MPW) Project (the Project).

Within this protocol, a strategy has been established to demonstrate the Construction Contractor's approach to the management of unexpected discoveries.

1.1 Objectives and Targets

Refer to Table 1 for high level objectives and targets set for the Project for the management of unexpected discoveries.

Table 1 Objectives and Targets

Objective	Target	Timeframe	Accountability
To implement the unexpected finds protocol to minimise impacts of imported spoil	STOP works in 100% cases where potential contamination is identified in accordance with the Unexpected (Contamination within Imported Spoil) Finds Protocol (Appendix A)	Duration of works	Contractor's CM
To implement the unexpected finds protocol to minimise impacts on unknown heritage items	STOP works in 100% cases where potential heritage is identified in accordance with the Unexpected (Heritage) Finds Protocol (Appendix B)	Duration of works	Contractor's CM
To implement the unexpected finds protocol to minimise impacts on threatened flora and/or fauna species or threatened ecological communities that have not been previously recorded within the Project Site	Stop relevant works in 100% of cases where potential threatened flora and/or fauna species or threatened ecological communities are identified in accordance with the Unexpected (Biodiversity) Finds Protocol (Appendix C)	Duration of works	Contractor's CM
To implement the unexpected finds protocol to minimise the impacts of onsite contamination that has not previously been recorded within the Project site.	Stop relevant works in 100% of cases where potential contamination is identified in accordance with the Unexpected Finds (Onsite Contamination) Protocol (Appendix D)	Duration of works	Contractor's CM

2 ENVIRONMENTAL MANAGEMENT

2.1 Compliance Matrices

The Project is being delivered under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act, 1979* (EP&A Act). The Conditions of Consent (CoCs) include requirements to be addressed in this protocol and delivered during the Project. These requirements, and how they are addressed are provided within Table 2.

Table 2 Conditions of Consent (CoCs)

CoC	Requirement	Plan Section	How Addressed
B174	Unexpected Ordnance (UXO), Exploded Ordnance (EO) and Exploded Ordnance Waste (EOW) protocols must be prepared by an UXO contractor listed on the Defence Panel of suitably qualified UXO consultants and contractors.	Appendix D	This Protocol
B175	The CEMP required under **Condition C2** must include an Unexpected Finds Protocol(s) for, but not limited to, contamination, ordnances, Aboriginal sites, non-indigenous heritage and flora and fauna.	Appendix B	This Protocol

The Revised Compilation of Mitigation Measures (RCMMs) were prepared as part of the Response to Submissions (Arcadis 2017). A list of the RCMMs as relevant to the Project and how they have been complied within this protocol are provided in Table 3.

Table 3 Revised Compilation of Mitigation Measures (RCMMs)

RCMM	Requirement	Document Reference
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 Approval (SSD 5066)).	Appendix D
9E	An unexpected finds procedure would be included in the ACHAR and in place for the construction phase of the Proposal.	Appendix B
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.	Appendix A Appendix B
10C	An unexpected finds protocol (or equivalent) would be included within the CEMP. 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.	Appendix B

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approval for the MPW Concept was granted by the Commonwealth Department of the Environment and Energy (DoTEE) in September 2016 (No. 2011/6086). This approval was provided for the impact of the MPW Project on listed threatened species and communities (Sections 18 and 18A of the EPBC Act) and Commonwealth action (Section 28 of the EPBC Act).

The construction and operation of the Project has been designed to be consistent with the EPBC Act Approval conditions, where relevant. EPBC Act Approval conditions for the Project include specific conditions

and commitments that are required to be addressed in this UFP. These conditions relevant to this UFP are identified below in Table 4.

Table 4 Commonwealth Approvals

Commonwealth	Requirement	Document Reference
8	Sections of the CEMP and OEMP relating to contamination and soils must be prepared by a suitably qualified expert and must: … (d) in relation to management of PFAS: … ii) detail implementation and operational procedures, appropriate to the risk posed by any contamination, including: … • a contingency action plan for unexpected PFAS contaminant discoveries	Refer to the Moorebank Precinct West – Early Works Per & Poly-Fluoroalkyl Substances (PFAS) Management Plan

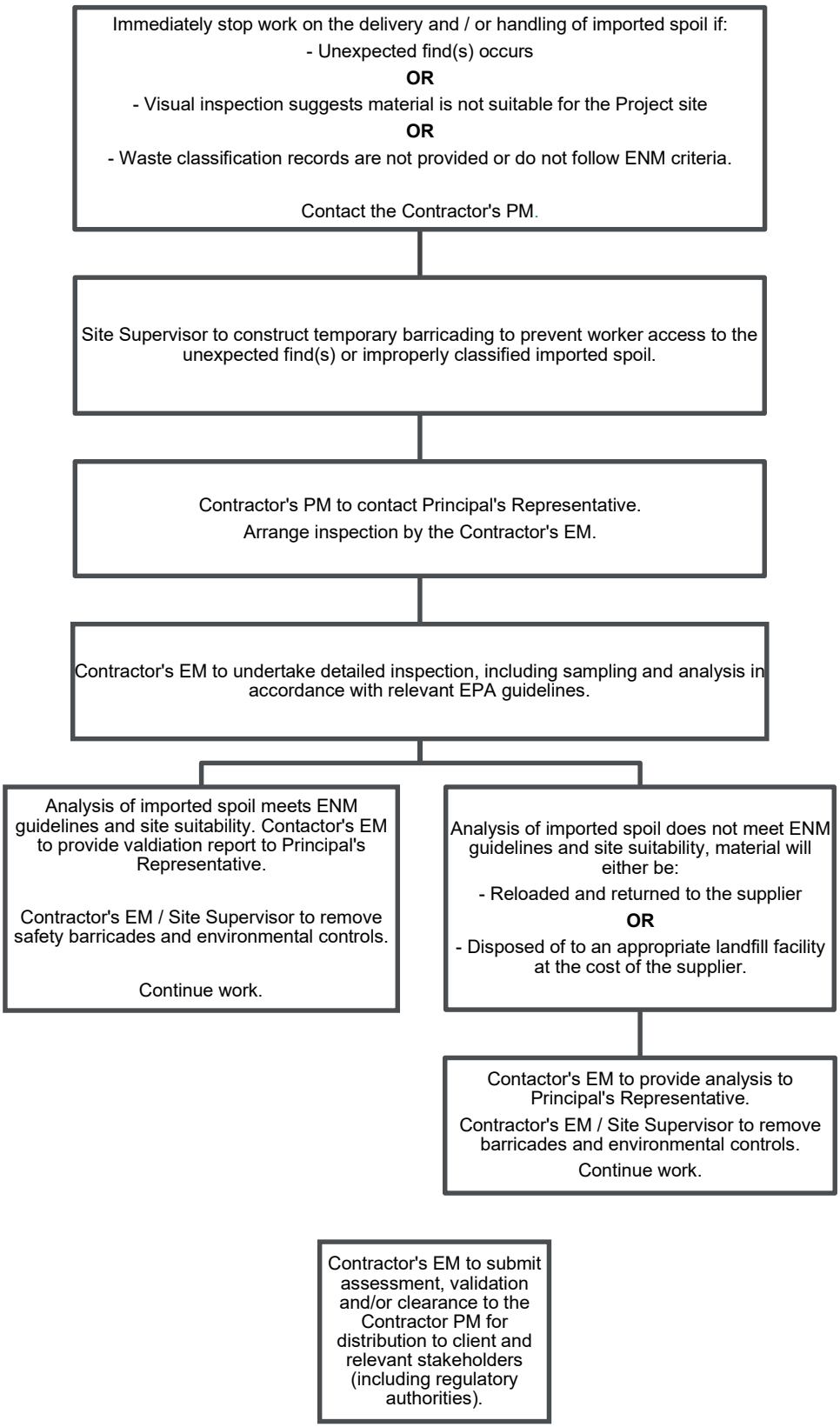
2.2 Unexpected Finds Protocols

Specific protocols for the discovery of unexpected finds have been developed for potential:

- Contamination within imported spoil
- Aboriginal and non-Aboriginal finds
- Threatened flora and/or fauna species or threatened ecological communities
- Onsite contamination including ordnance.

Each of these specific protocols is included in the following appendices.

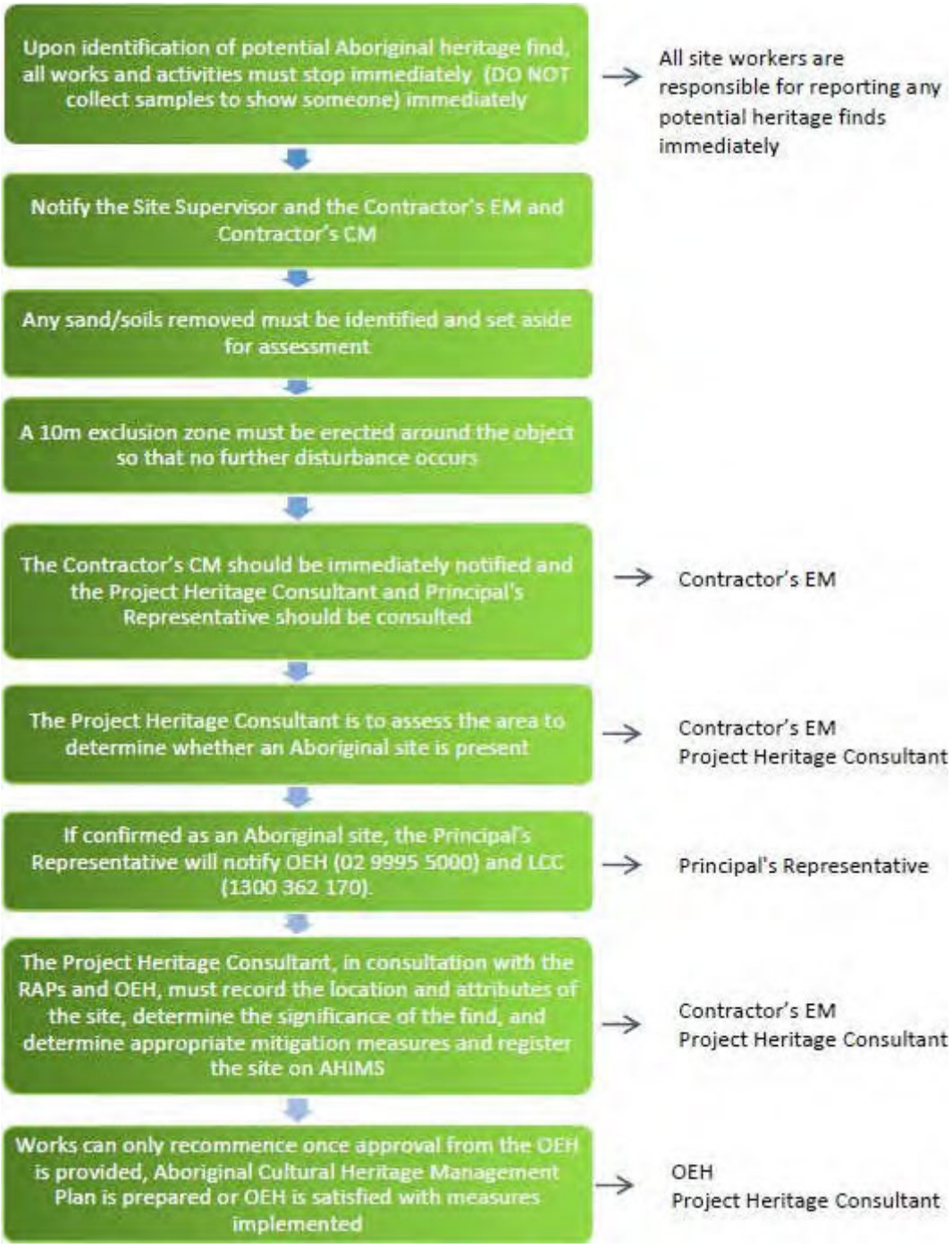
APPENDIX A UNEXPECTED (CONTAMINATION WITHIN IMPORTED SPOIL) FINDS PROTOCOL


Immediately stop work on the delivery and / or handling of imported spoil if:
- Unexpected find(s) occurs
OR
- Visual inspection suggests material is not suitable for the Project site
OR
- Waste classification records are not provided or do not follow ENM criteria.
Contact the Contractor's PM.
Site Supervisor to construct temporary barricading to prevent worker access to the unexpected find(s) or improperly classified imported spoil.
Contractor's PM to contact Principal's Representative.
Arrange inspection by the Contractor's EM.
Contractor's EM to undertake detailed inspection, including sampling and analysis in accordance with relevant EPA guidelines.
Analysis of imported spoil meets ENM guidelines and site suitability. Contactor's EM to provide valdiation report to Principal's Representative.
Contractor's EM / Site Supervisor to remove safety barricades and environmental controls.
Continue work.
Analysis of imported spoil does not meet ENM guidelines and site suitability, material will either be:
- Reloaded and returned to the supplier
OR
- Disposed of to an appropriate landfill facility at the cost of the supplier.
Contactor's EM to provide analysis to Principal's Representative.
Contractor's EM / Site Supervisor to remove barricades and environmental controls.
Continue work.
Contractor's EM to submit assessment, validation and/or clearance to the Contractor PM for distribution to client and relevant stakeholders (including regulatory authorities).

APPENDIX B UNEXPECTED (HERITAGE) FINDS

Unexpected (Heritage) Finds Protocol

Aboriginal Heritage



Examples of Potential Unexpected Aboriginal Finds

It is highly unlikely that any Aboriginal artefacts will be identified on the site due to the historical disturbance of the area. However, the most likely finds are isolated finds such as flaked stone tools.

Typical characteristics of flaked stone tools include:

- Sharp edges.
  - Retouch along one or more edges.
  - Stone rich in silica.

  - Stone type often different to the natural rock in the area.
- Flakes
  - Usually less than 50 mm long.
  - A ‘striking platform’ visible.
  - Impact point often present on the striking platform.
  - A ‘bulb of percussion’ often present below the striking platform.
  - May have been shaped into a recognisable tool form, such as a point or scraper.
- Cores
- May be fist-sized or smaller.
- May have one or more scars where flakes have been removed.

It is noted that not all features can be seen on each stone tool and some require an experienced eye to identify them. Breakage can remove key features.

Skeletal Remains

Non-Aboriginal Heritage

Note: In the context of this UFP, an unexpected find is defined as a previously unknown heritage item or evidence of heritage value. It does not include uncovering findings within previously identified potential archaeological deposits.

APPENDIX C UNEXPECTED (BIODIVERSITY) FINDS

Unexpected (Biodiversity) Finds protocol

Purpose

This Unexpected Finds Protocol explains the actions and measures to be implemented if any threatened flora and/or fauna species or threatened ecological communities that have not been previously recorded within the Project Site (as identified in the documents outlined in CoC A3) are identified during construction.

Training

All personnel undertaking construction activities within the Project site will be inducted on the identification of known and potential threatened species and ecological communities occurring on site, and will be trained in this protocol through Toolbox Talks or a site induction.

Protocol

Upon detection of a threatened species or ecological community during construction activities, the following steps must be followed.

1. **STOP ALL WORK** in the vicinity of the find. Immediately notify the Contractor's Environment Manager (Contractor's EM) who will notify the Project Ecologist (PE) and Principal's Representative. The project ecologist must confirm the presence of the threatened species.
2. **EXCLUSION ZONE.** In consultation with the PE, create a buffer zone/ exclusion zone around the find
3. **EXTERNAL NOTIFICATION.** Principal's Representative to notify OEH of previously unidentified species
4. **ASSESS IMPACT**. An assessment is to be undertaken by the Contractor's EM, PE and Principal's Representative in consultation with OEH to identify the flora and/or fauna species level, the likely impact to them and appropriate management options, such as re-location measures.
5. **OBTAIN APPROVALS**. Obtain any relevant licences, permits or approvals required if the threatened species / ecological community is likely to be significantly impacted. Consultation with OEH must be completed for any proposed amendments to the location or reclassification of threatened species, populations and ecological communities as identified in the updated BAR.
6. **RECOMMENCE WORKS**. Construction works may recommence once the Contractor's EM has:
    a. Obtained approvals as required, and
    b. Confirmed that all corrective actions and additional mitigation measures have been implemented.
7. **UPDATE PLANS AND PROCEDURES**. The Contractor's EM must ensure that the threatened species / ecological community is included in subsequent site plans and/or sensitive area drawings, inductions and Toolbox Talks. The Contractor's EM must provide information to enable an update of ecological monitoring and/ or biodiversity offset requirements

APPENDIX D UNEXPECTED (ONSITE CONTAMINATION) FINDS PROTOCOL

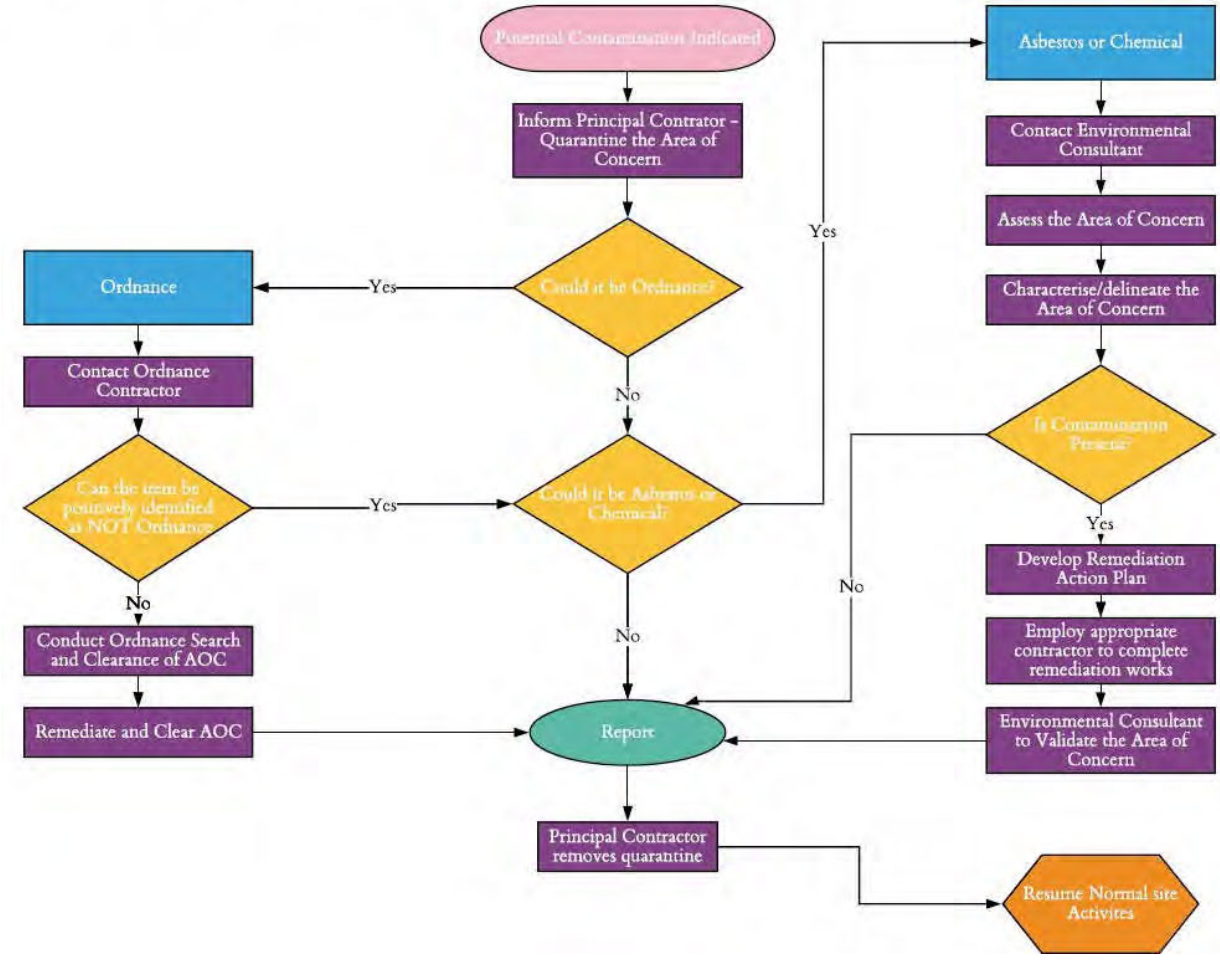
Potential Site Hazards

If you SEE or SMELL anything unusual

STOP WORK & contact Site Foreman

Do not restart work before the area has been investigated and cleared by an Environmental Consultant

Unexpected Finds Protocol (UFP)



Operation

8D – Process Report Form

Customer:		Report no:	
Report Title:			
Project Number:			
Project Description:			
Date Opened:		Updated:	
Team Leader:			
Team Members: (D1)			

Problem Description (D2)

Immediate Containment Action (D3)	Responsibility	Effective Date(s):

Verification of Containment Action (D3)	By Whom	Date(s):

Root Causes (D4)		% Contribution

Permanent Corrective/Preventative Action (Short and/or Long Term) (D5)	Responsibility	Effective Date(s):

Verification of Permanent Corrective/Preventative Action (D6)	By Whom	Date(s):

Prevent Recurrence / Lessons Learned (D7)

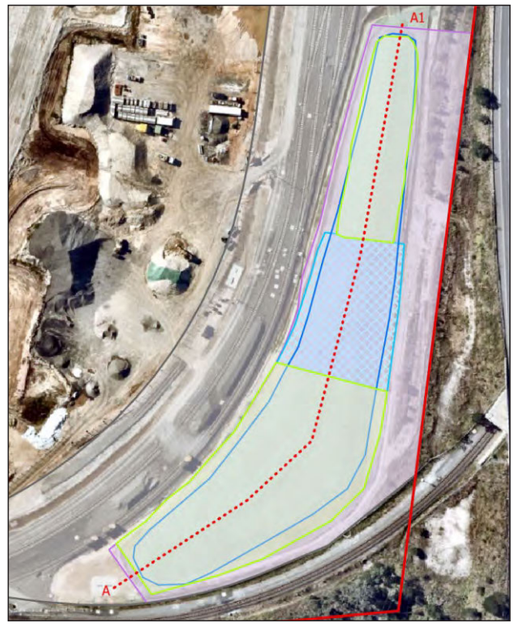
Signature & Congratulate Team (D8)		
Team Leader:		Quality Systems Manager
Date:		*for external customers*
		Other signatures - nominate as required Date:

WI_007

Appendix E

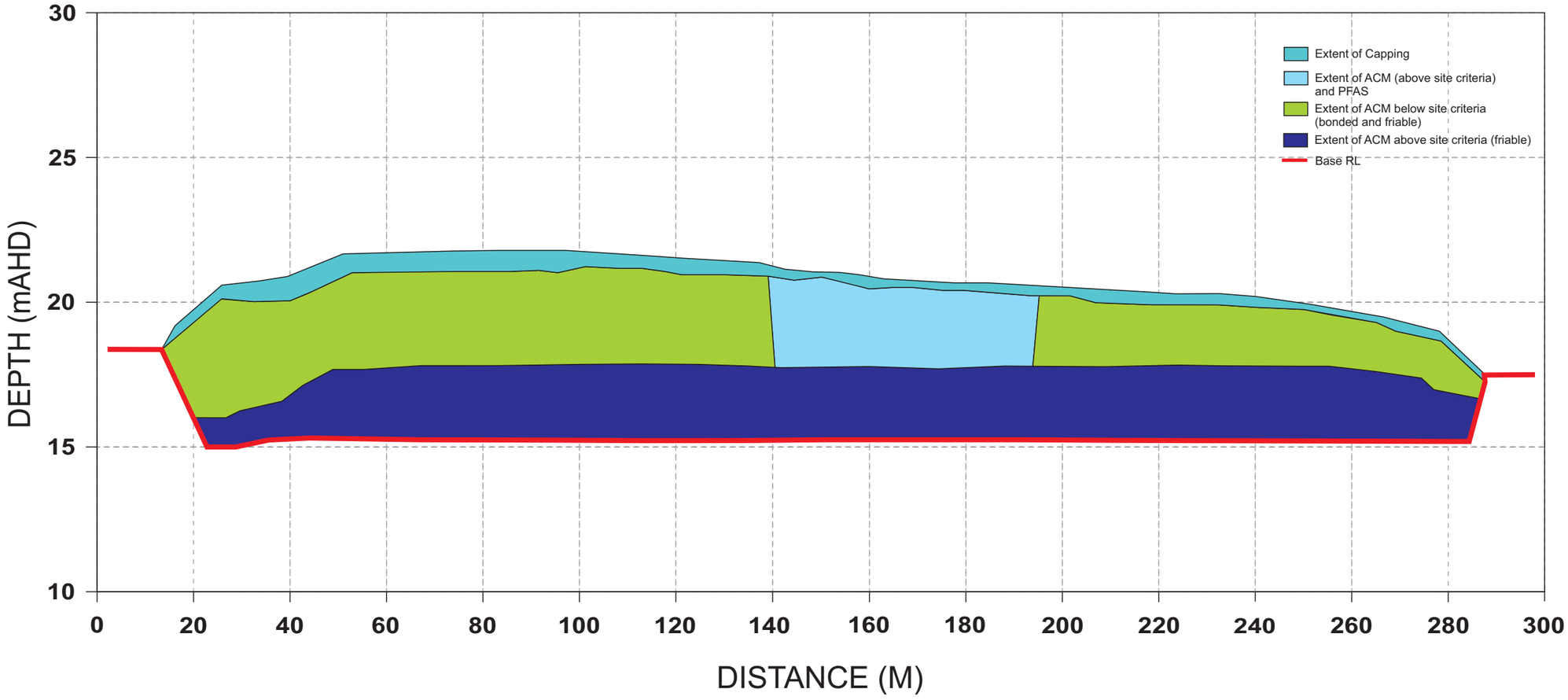
AEC 3 AND AEC 4 PLACEMENT SURVEY PLANS (JBS&G 2024)

Eagles Beak Audit Area
Soil Reuse and Capping
Cross-Section



South - A

North - A1



Legend:

- Approximate Site Boundary
- Eagles Beak Audit Area
- Audit Areas Previously Reported
- Extent of ACM (above site criteria) and PFAS
- Extent of ACM Above Site Criteria (Friable)
- Extent of ACM Below Site Criteria (Bonded and Friable)
- Transect

JBS&G

Job No: 58753	
Client: J Wyndham Prince	
Version: R10 Rev A	Date: 25/07/2024
Drawn By: RF/HW	Checked By: ST
Scale: Approx.	

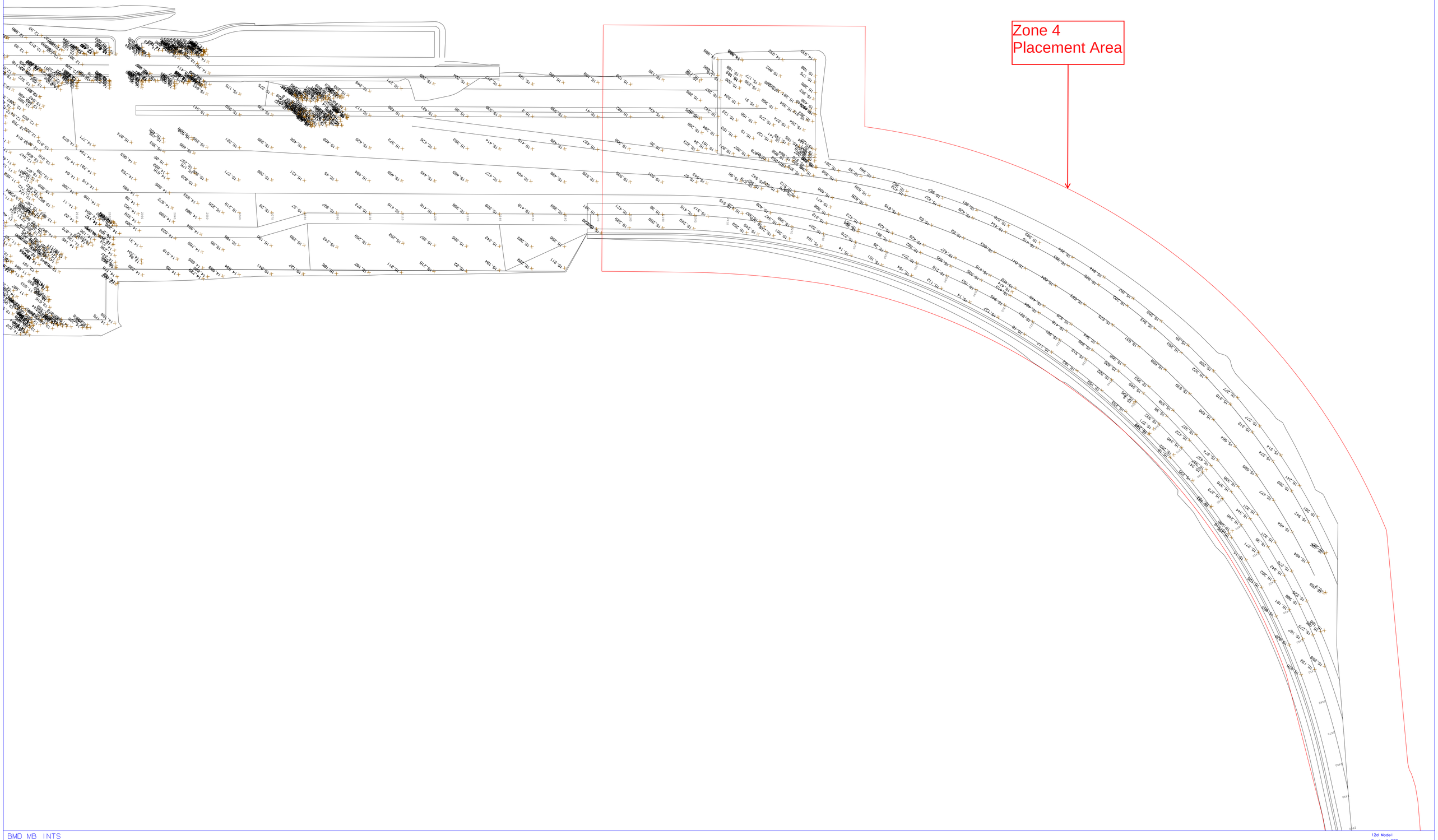
MWP

Moorebank, NSW

Eagles Beak Acoustic Mound
Soil Reuse and Capping
Cross Section

FIGURE 4A:

FIGURE 6A - Foundation RLs 6/6



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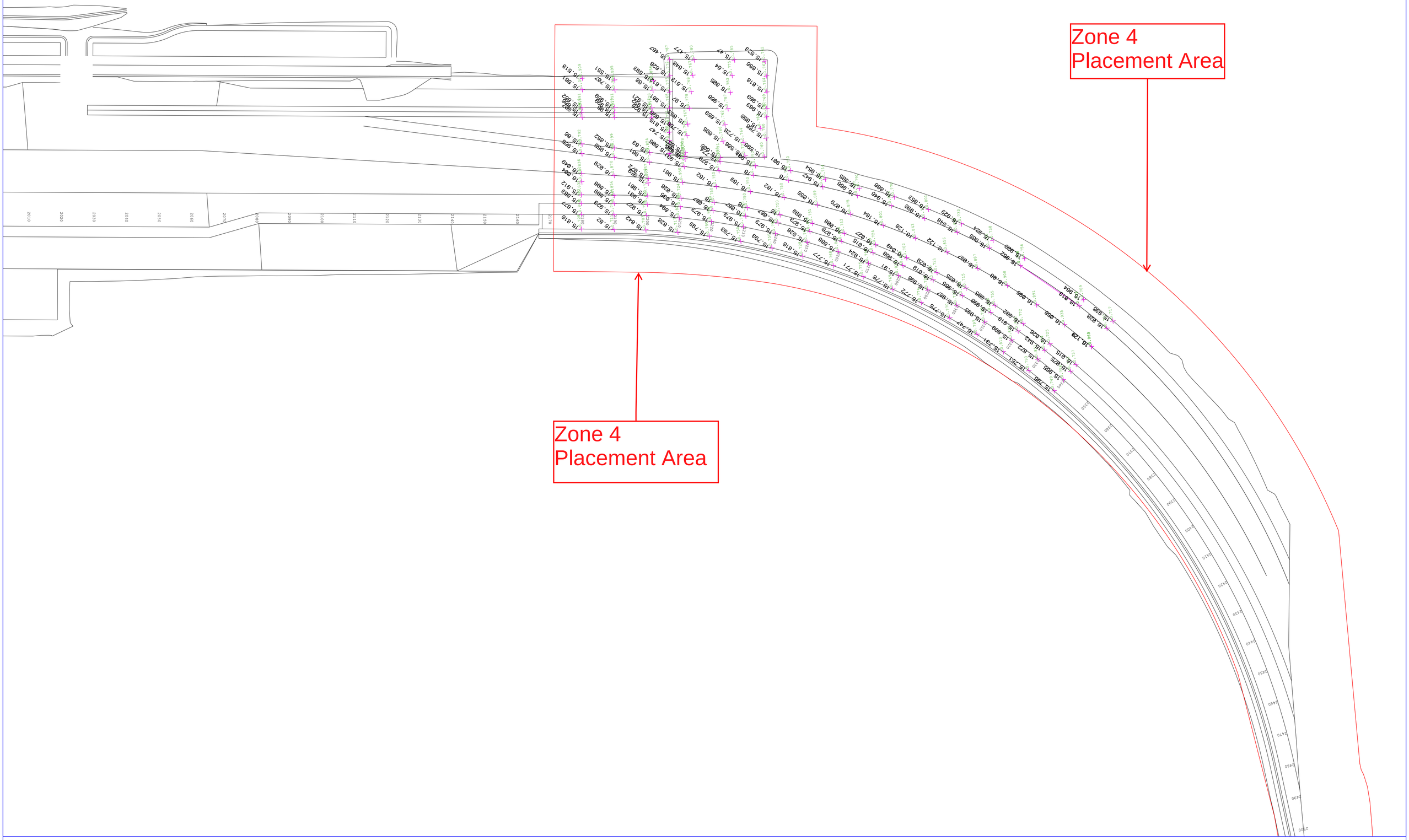
20210806 INTS FDN RLs plot SRF1370

12d Model
Scale 1:373
Fri Aug 6 15:26:00 2021

FIGURE 6B - PFAS Fill RLs 6/6



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12d Model
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Y = 6239998.640
Z = 16.919

Coords:
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Y = 6239997.339
Z = 17.028

Area 9087.5m²

Coords:
X = 307750.232
Y = 6239794.564
Z = 18.004

Coords:
X = 307843.057
Y = 6239811.960
Z = 17.367

Coords:
X = 307756.952
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NOTES:

EAGLES BEAK

WAE SUBGRADE

10 X 10 GRID

CLIENT:

Georgiou

INTEGRAL SURVEYS

QUALITY RECORD			
REVIEW	NAME	SIGNATURE	DATE
SURVEYED BY	LK	-	22/08/2023
DRAWN BY	LS	-	31/08/2023
CHECKED	-	-	-
DATE CREATED	Thursday, August 31, 2023		

FILE LOCATION:
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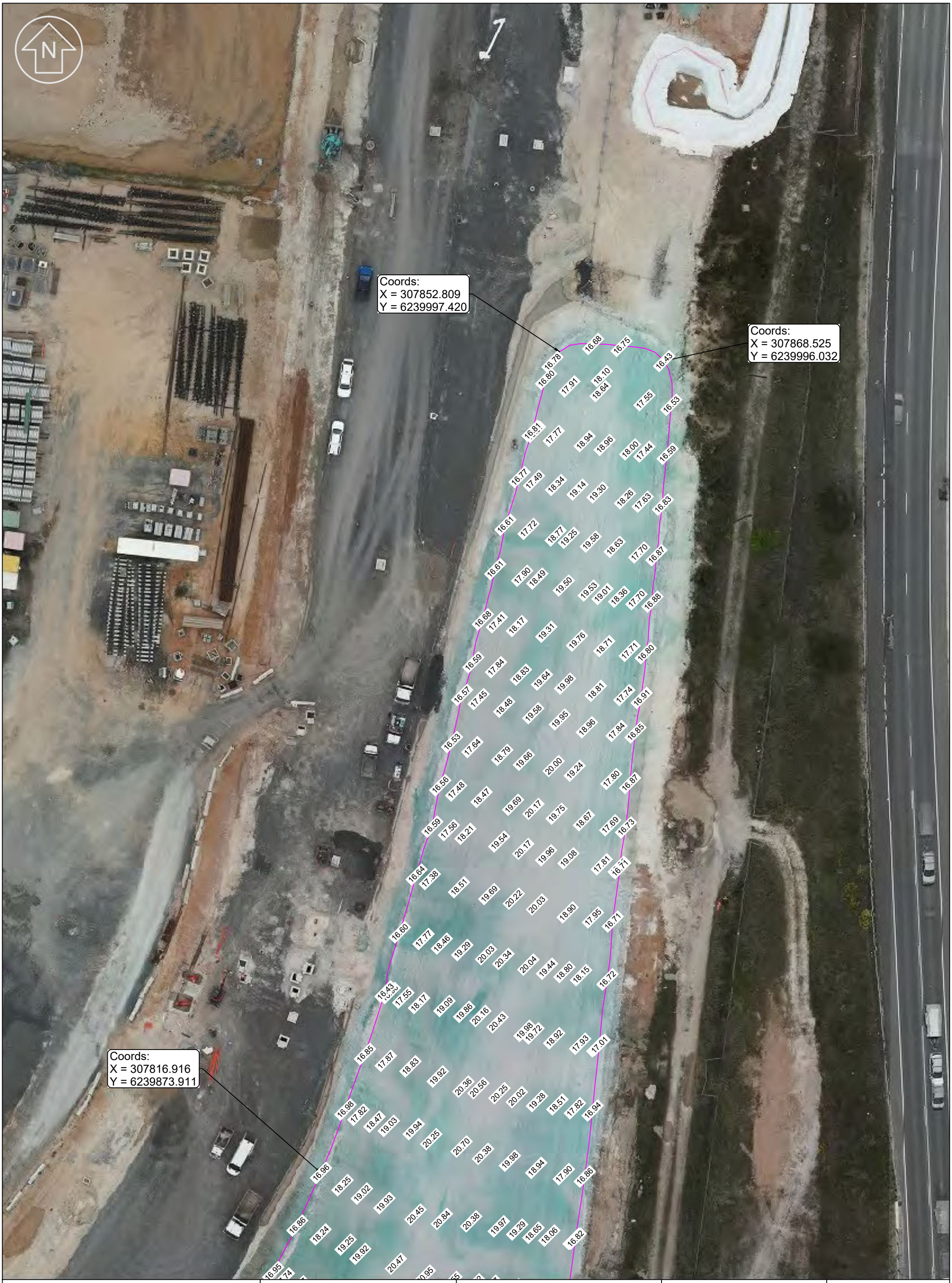
SCALE: 1:1000

DATUM: A.H.D / M.G.A

PLOT FILE: Page 1 PLOT TIME: Thursday, August 31, 2023 12D PRJOJECT: EAGLES BEAK PROJECT NO. 190050



NOTES:

EAGLES BEAK
TOP OF CONTAMINATION
RL REPORT

CLIENT: Georgiou

INTEGRAL SURVEYS

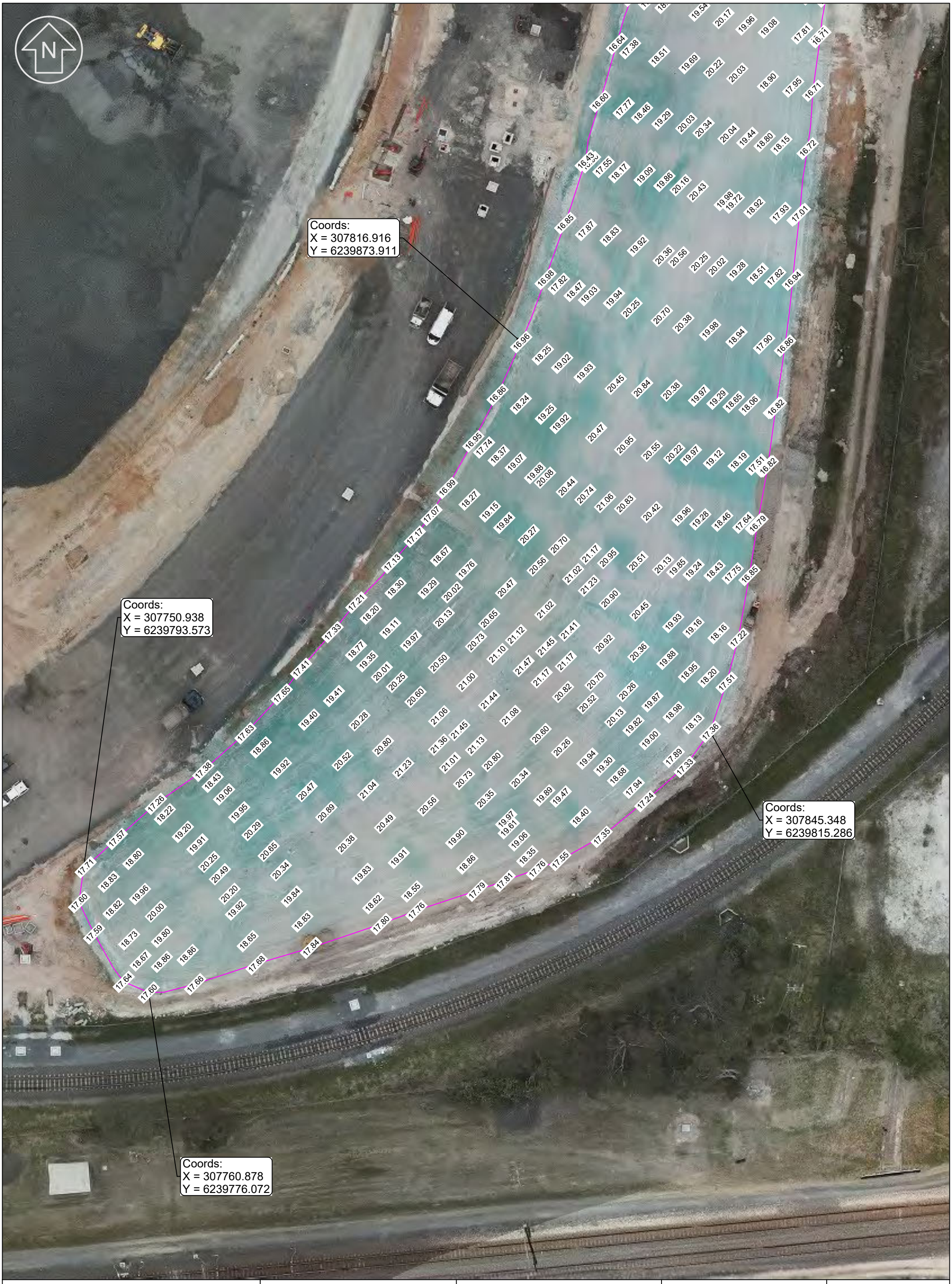
QUALITY RECORD			
REVIEW	NAME	SIGNATURE	DATE
SURVEYED BY	VRS	-	VRS
DRAWN BY	JS	-	22/11/2023
CHECKED	-	-	-
DATE CREATED	Wednesday, November 22, 2023		

SCALE: 1:1000

DATUM: A.H.D / M.G.A

FILE LOCATION: C:\12d\14.00\CONTROLLED PROJECTS\SITEWIDE EARTHWORKS\EAGLES BEAK

PLOT FILE: Page 1 PLOT TIME: Wednesday, November 22, 2023 12D PRJOJECT: EAGLES BEAK PROJECT NO. 190050



NOTES:

EAGLES BEAK
TOP OF CONTAMINATION
RL REPORT

CLIENT: Georgiou

INTEGRAL SURVEYS

QUALITY RECORD			
REVIEW	NAME	SIGNATURE	DATE
SURVEYED BY	VRS	-	VRS
DRAWN BY	JS	-	22/11/2023
CHECKED	-	-	-
DATE CREATED	Wednesday, November 22, 2023		

SCALE: 1:1000

DATUM: A.H.D / M.G.A

FILE LOCATION: C:\12d\14.00\CONTROLLED PROJECTS\SITEWIDE EARTHWORKS\EAGLES BEAK

PLOT FILE: Page 2 PLOT TIME: Wednesday, November 22, 2023 12D PRJOJECT: EAGLES BEAK PROJECT NO. 190050

EAGLES BEAK		
Date	Total Placement	Daily Placement
24/08/2023	1,024.671m³	1,024.671m³
25/08/2023	2,378m³	1,353.329m³
28/08/2023	4,354m³	1,976m³
30/08/2023	5,758.683m³	1,404.683m³
04/09/2023	6,534.781m³	776.098m³
05/09/2023	7,497m³	962.219m³
06/09/2023	8,663m³	1,166m³
07/09/2023	9,722m³	1,059m³
11/09/2023	11,340m³	1,618m³
12/09/2023	12,506m³	1,166m³
13/09/2023	13,998m³	1,492m³
14/09/2023	15,388m³	1,390m³
15/09/2023	16,205m³	817m³
18/09/2023	17,425m³	1,220m³
19/09/2023	18,317m³	892m³
20/09/2023	18,731m³	414m³
21/09/2023	19,095m³	364m³
22/09/2023	19,095m³	0m³
26/09/2023	19,381m³	286m³
09/10/2023	20,063m³	681.5m³
10/10/2023	21,231m³	1,168m³
11/10/2023	22,527m³	1,296m³
12/10/2023	23,385m³	858m³
13/10/2023	24,326m³	941m³
16/10/2023	25,888m³	1,562m³
17/10/2023	26,983m³	1,095m³
18/10/2023	27,532m³	549m³
19/10/2023	28,991m³	1,459m³
20/10/2023	30,468m³	1,477m³
23/10/2023	32,390m³	1,922m³
24/10/2023	33,931m³	1,541m³
25/10/2023	34,748m³	817m³

NOTES:

EAGLES BEAK

DAILY PLACEMENT

VOLUME

CLIENT: Georgiou

INTEGRAL SURVEYS

QUALITY RECORD			
REVIEW	NAME	SIGNATURE	DATE
SURVEYED BY	AL	-	26/10/2023
DRAWN BY	JS	-	27/10/2023
CHECKED	-	-	-
DATE CREATED	Friday, October 27, 2023		

SCALE: 1:1000

DATUM: A.H.D / M.G.A

FILE LOCATION: X:\190050 - BELL, Georgiou\01. 12d\1.1 Controlled Projects\SITEWIDE EARTHWORKS\EAGLES BEAK

NOTES:

EAGLES BEAK

RL REPORT

SANDSTONE CAPPING

CLIENT: Georgiou

INTEGRAL SURVEYS

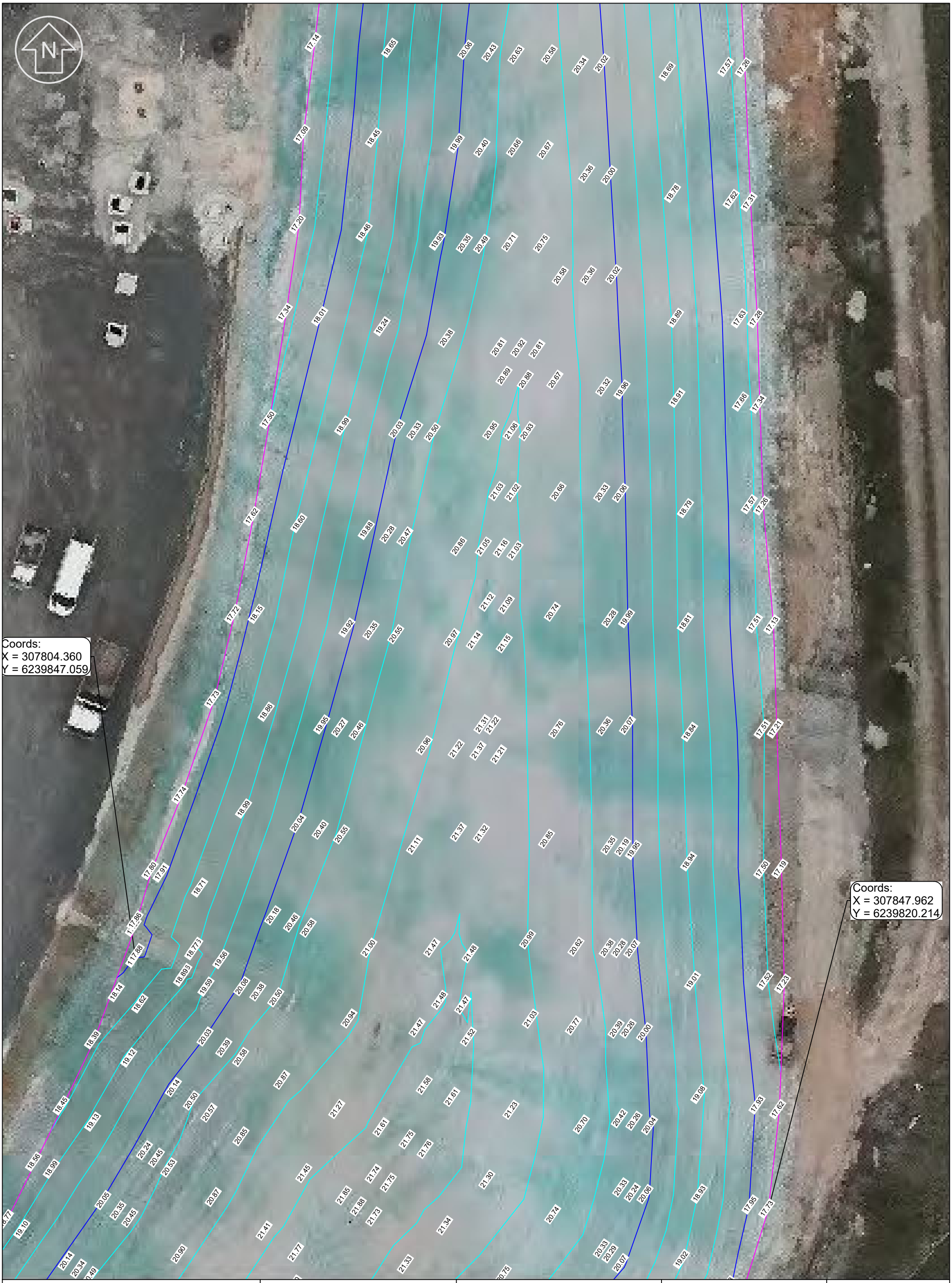
QUALITY RECORD			
REVIEW	NAME	SIGNATURE	DATE
SURVEYED BY	GD, JS	-	30/10/2023
DRAWN BY	JS	-	22/11/2023
CHECKED	-	-	-
DATE CREATED	Wednesday, November 22, 2023		

FILE LOCATION: C:\12d\14.00\CONTROLLED PROJECTS\SITEWIDE EARTHWORKS\EAGLES BEAK

SCALE: 1:1000

DATUM: A.H.D / M.G.A

PLOT FILE: Page 1 PLOT TIME: Wednesday, November 22, 2023 12D PRJOJECT: EAGLES BEAK PROJECT NO. 190050



NOTES:

EAGLES BEAK
RL REPORT
SANDSTONE CAPPING

CLIENT: Georgiou

INTEGRAL SURVEYS

QUALITY RECORD			
REVIEW	NAME	SIGNATURE	DATE
SURVEYED BY	GD, JS	-	30/10/2023
DRAWN BY	JS	-	22/11/2023
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DATE CREATED	Wednesday, November 22, 2023		

FILE LOCATION: C:\12d\14.00\CONTROLLED PROJECTS\SITEWIDE EARTHWORKS\EAGLES BEAK

SCALE: 1:1000

DATUM: A.H.D / M.G.A

PLOT FILE: Page 2 PLOT TIME: Wednesday, November 22, 2023 12D PRJOJECT: EAGLES BEAK PROJECT NO. 190050

NOTES:

EAGLES BEAK

RL REPORT

SANDSTONE CAPPING

CLIENT: Georgiou

INTEGRAL SURVEYS

QUALITY RECORD			
REVIEW	NAME	SIGNATURE	DATE
SURVEYED BY	GD, JS	-	30/10/2023
DRAWN BY	JS	-	22/11/2023
CHECKED	-	-	-
DATE CREATED	Wednesday, November 22, 2023		

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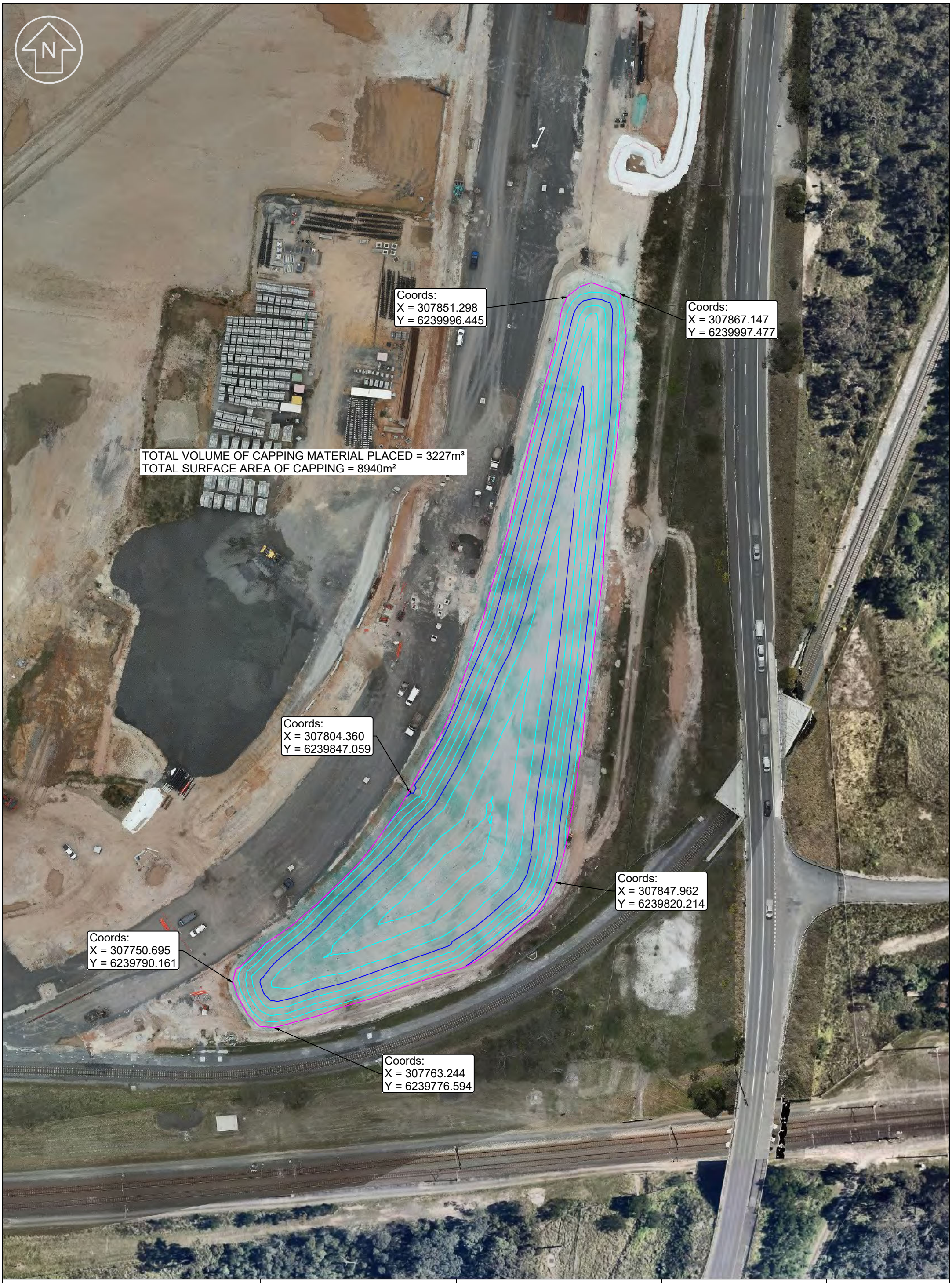
SCALE: 1:1000

DATUM: A.H.D / M.G.A

PLOT FILE: Page 3 PLOT TIME: Wednesday, November 22, 2023 12D PRJOJECT: EAGLES BEAK PROJECT NO. 190050



NOTES:

EAGLES BEAK
CAPPING VOLUME
AND SURFACE AREA

CLIENT: Georgiou

INTEGRAL SURVEYS

QUALITY RECORD			
REVIEW	NAME	SIGNATURE	DATE
SURVEYED BY	GD, JS	-	30/10/2023
DRAWN BY	JS	-	22/11/2023
CHECKED	-	-	-
DATE CREATED	Wednesday, November 22, 2023		

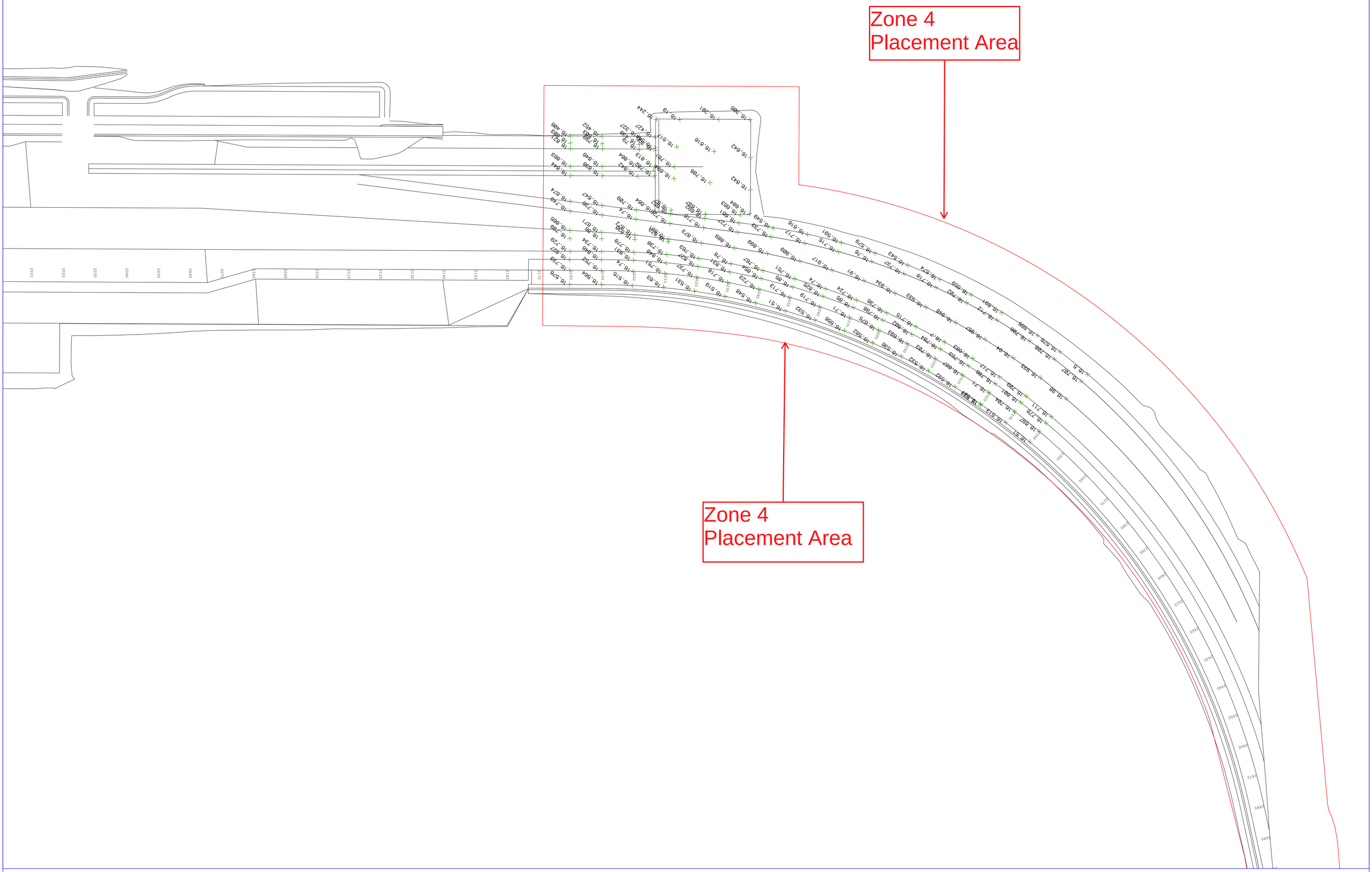
SCALE: 1:1000

DATUM: A.H.D / M.G.A

FILE LOCATION: C:\12d\14.00\CONTROLLED PROJECTS\SITEWIDE EARTHWORKS\EAGLES BEAK

PLOT FILE: Page 1 PLOT TIME: Wednesday, November 22, 2023 12D PRJOJECT: EAGLES BEAK PROJECT NO. 190050

FIGURE 6C - Final Level RLs 6/6



BMD MB INTS
20210809 INTS FL RLs plot SRF1370

12d Model
Scale 1:518
Mon Aug 9 17:05:20 2021

NOTES:

EAGLES BEAK

CAPPING MATERIAL

THICKNESS REPORT

CLIENT:

Georgiou

INTEGRAL SURVEYS

QUALITY RECORD			
REVIEW	NAME	SIGNATURE	DATE
SURVEYED BY	GD, JS	-	30/10/2023
DRAWN BY	JS	-	31/10/2023
CHECKED	-	-	-
DATE CREATED	Tue Oct 31 08:35:03 2023		

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SCALE: 1:500

DATUM: A.H.D / M.G.A

PRECINCT INFRASTRUCTURE WORKS WEST

TITLE

MRW - Project Bell
Chatham Ave
Moorebank

THIRD ANGLE PROJECTION

Sheet No. 1

PLOT FILE: Page 1

PLOT TIME: Tue Oct 31 08:35:03 2023

12D PRJOJECT: EAGLES BEAK

PROJECT NO. 190050

NOTES:

EAGLES BEAK

CAPPING MATERIAL

THICKNESS REPORT

CLIENT:

Georgiou

INTEGRAL SURVEYS

QUALITY RECORD			
REVIEW	NAME	SIGNATURE	DATE
SURVEYED BY	GD, JS	-	30/10/2023
DRAWN BY	JS	-	31/10/2023
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SCALE: 1:1000

DATUM: A.H.D / M.G.A

PRECINCT INFRASTRUCTURE WORKS WEST

TITLE

MRW - Project Bell
Chatham Ave
Moorebank

THIRD ANGLE PROJECTION

Sheet No. 2

PLOT FILE: Page 2

PLOT TIME: Tue Oct 31 08:35:21 2023

12D PRJOJECT: EAGLES BEAK

PROJECT NO. 190050

Appendix F
REPORTING REGISTERS

Appendix F

Table F-1: Incidents and Non-conformances Register

Name of Person Who Raised Issue	Date Raised	Category (Int Audit, NCR, Injury/Incident, System Imp, Inspection)	Details of Issue	Has it already been resolved? How?	What action was or will be taken to prevent recurrence of the problem or improve the system?	Responsibility	Verification Results: Action verified as effective? Verification outcomes	Open / Closed?	Name & date when action veified as effective

Appendix F

Table F-2: Complaints Register

Name of Person Who Complained	Date Raised	Contact details - address	Contact details - Phone	Contact details - email	Details of Complaint	Action taken to prevent recurrence of the problem or improve the system?	Responsibility	Verification Results: Action verified as effective? Verification outcomes	Open / Closed?	Name & date when action veified as effective

Appendix G
ADDENDUM 02 (EP RISK 2023)

29 June 2023
Ref: EP1489.019_Addendum 02_v1

[redacted]
Via email: [redacted]

Attention: [redacted]

Addendum 02 – Moorebank Precinct West (MPW) Long-Term Environmental Management Plan (LTEMP) Version 12 – Engineered Fill in Warehouse PFAS Re-use Zone 3
400 Moorebank Avenue, Moorebank NSW

INTRODUCTION

Logos Property Pty Ltd (Logos) engaged EP Risk Management Pty Ltd (EP Risk) to prepare this Addendum (02) to the Moorebank Precinct West (MPW) Long-Term Environmental Management Plan (LTEMP) (EP Risk 2020[1]) for the reuse of soil with Per- and Poly-Fluoroalkyl Substances (PFAS) underneath the warehouse areas (Zone 3, EP Risk 2020) at 400 Moorebank Avenue, Moorebank NSW (the Site).

BACKGROUND

Environmental Risk Sciences Pty Ltd (enRiskS) prepared a risk assessment (EnRiskS 2020[2]) in relation to the reuse of PFAS in soil at the Site. EP Risk was subsequently engaged to prepare an LTEMP for the Site (EP Risk 2020) which was approved by the NSW Environmental Protection Authority (EPA) Accredited Site Auditor (Enviroview 2020[3]).

Prior to completion of filling works at the Site, EP Risk was engaged to prepare an Addendum (01) (EP Risk 2022[4]) to the MPW LTEMP (EP Risk 2022). The Addendum (01) refined the allowable reuse concentration of Perfluorooctane sulfonate (PFOS) within Zone 3 (Warehouse Areas) to return to ≤0.14 mg/kg and was approved by the Auditor via Interim Advice (Enviroview 2022[5]).

EnRiskS (2022[6]) was engaged to prepare a letter outlining a potential reduction to the minimum thickness and material changes of engineered fill within Zone 3 (EP Risk 2020) previously defined by EnRiskS (2020). EnRiskS (2022) concluded the following:

[1] EP Risk (2020), *Long-Term Environmental Management Plan, Moorebank Precinct West (MPW),* dated 27 October 2020 (ref: EP1489.001_v12).
[2] enRiskS (2020) *Moorebank Intermodal Terminal: LTEMP Material Reuse Risk Assessment for PFAS,* letter dated 9 October 2020.
[3] Enviroview (2020) *Stage 2 Works – Completion of Remediation Pre- Construction (Condition B169 Audit)* Moorebank Precinct West Moorebank Intermodal and Logistics Park (MLP) Moorebank Avenue, Moorebank, NSW, dated 20 November 2020 (ref: 600099_0301-2014)
[4] EP Risk (2022), *Addendum 01 – Moorebank Precinct West (MPW) Long-Term Environmental Management Plan (LTEMP) Version 12 – PFAS Re-use in Warehouse Areas 400 Moorebank Avenue, Moorebank NSW*, dated 1 September 2022 (ref: EP1489.012_LTR01_v1).
[5] Enviroview (2022), *RE: Site Audit Interim Advice 0301-2020-0_06 – Review of the EP Risk MPW LTEMP v12 Addendum 01 – PFAS Re-use in Warehouse Areas,* dated 20 September 2022 (ref: IA 0301-2020-0_06).
[6] enRiskS (2022), PFAS at MPW: engineered fill in the warehouse area, letter dated 14 October 2022.

1. *"The potential for the leaching of PFAS from re-used soil beneath inside and outside pavements is negligible; this means that the exposure pathway between PFAS in re-used soil beneath pavements and environmental receptors is incomplete, and there are no environmental risks following the re-use of soil.*
2. *The placement of engineered fill beneath inside and outside pavements, or any other management measures to manage leaching to the environment, is not considered necessary (although it is acknowledged that the placement of fill may be required for geotechnical reasons or site levelling).*
3. *The required thickness of engineered fill in areas not covered by pavements is as follows:*
    - *Engineered fill permeability of ≥1x10^{-7} m/s: ≥0.8 m; or*
    - *Engineered fill permeability of ≥1x10^{-8} m/s: ≥0.1 m; or*
    - *Engineered fill permeability ≥1x10^{-9} m/s: to ≥0.01m.*
4. *It is the permeability and depth of the engineered fill that determines leaching potential, not the type of fill per se, hence, all reviewed engineered fill types are considered appropriate for use so long as they comply with all other requirements including those specified in the LTEMP for total concentrations of PFAS.*
5. *It is acceptable to "mix and match" engineered fill types depending on availability and/or compaction and development considerations, to maximise project outcomes and the re-use of soil with PFAS at MPW, in accordance with the NSW waste hierarchy."*

The letter was reviewed by Enviroview (2022a[7]), who agreed with the abovementioned points with the exception of point 3: *"However, the auditor does not agree that either 10cm or 1cm of fill (as discussed), in the absence of a slab/pavement, would be sufficient (though it is noted that this is not specifically the consultant's recommendation)".* No further update to the enRiskS (2022) letter was recommended. Instead it was recommended an addendum to the LTEMP would be an adequate way to address engineered fill changes to the approved LTEMP.

JBS&G prepared a Technical Memo (JBS&G 2023[8]) for the capping of areas of PFAS reuse. The Technical Memo included a summary of previous information provided by EnRiskS (2022) and the LTEMP (EP Risk 2020) indicating:

- The risk assessment assumed a permeability value for engineered fill of around 1x10^{-7} m/s which related to mixtures of sand, silt and clay (likely uncompacted).
- *"In relation to proposed landscape areas a clay* (maximum permeability of 1x10^{-9} m/s) *cap of 0.5 m (or geosynthetic liner) is required,"* and "*a growth medium greater than the maximum root depth of vegetation above the clay (LTEMP 2020). However, reuse of PFAS under proposed landscape areas has not been finalised and therefore the extent of clay capping required (or equivalent geosynthetic liners) is not currently defined."* (JBS&G 2023).

[7] Enviroview (2022a), *RE: Site Audit Interim Advice 07 – Review of the EnRiskS letter discussing PFAS at MPW – engineered fill in the warehouse area,* dated 31 October 2022 (ref: IA 0301-2020-0_07).
[8] JBS&G (2023), *Technical Memo: Moorebank Precinct West (MPW) – Capping for Areas of PFAS Reuse, Moorebank Intermodal Precinct (MIP), NSW,* dated 6 March 2023 (ref: 58753-150453 (Rev 0)

Additional information provided by [redacted] was summarised by JBS&G as follows:

- *"Conservatively, imported shale fill would have a permeability in place of less than 10^{-8} m/s;*
- *The site won material is variable, varying between sand, silty sand, clayey sand to sandy clays. Site won clay or sandy clay is likely to have a permeability between $1x10^{-8}$ and $5x10^{-8}$ m/s. The clayey sands and silt sand probably has permeability in the order of $1x10^{-7}$ m/s;*
- *In relation to the EnRiskS estimate of minimum required thickness of Engineered Fill (October 2022), the geotechnical advice is that:*
    - *1 layer - 300 mm of imported shale would be sufficient to satisfy permeability requirements.*
    - *2 layers - 600 mm of site won clay and sandy clay would be sufficient. Some testing to confirm advice would be required.*
    - *Sandy site won material is unlikely to be suitable.*
- *Nevertheless, from a geotechnical suitability point of view, two layers of imported shale, or imported shale blended with site won or sandstone fill provides advantages regarding long term trafficability, reactivity, and potentially CBR."*

For landscaping areas, reworking of capping thickness may be required to satisfy EMP 13 of the MPW LTEMP (EP Risk 2020) during the construction phase (JBS&G 2023). JBS&G (2023) considered the placement of engineered fill to satisfy geotechnical requirements would satisfy the requirements of the LTEMP, and the placement of site imported materials and/or site won VENM / ENM would also be advantageous for the management of potential PFAS impacted stormwater runoff and infiltration.

Enviroview (2023[9]) reviewed the Technical Memo and reiterated advice within an earlier Interim Advice (Enviroview 2022a). The Auditor recommended EP Risk prepare this Addendum (02) to version 12 of the MPW LTEMP (EP Risk 2020) to be read in conjunction with the MPW LTEMP and Addendum 01 (EP Risk 2022), or relevant LTEMP for the land.

A copy of the enRiskS (2022), JBS&G (2023) and PSM (2023) email is provided within **Attachment 1- 3** (respectively).

[9] Enviroview (2023), *RE: Site Audit Interim Advice 0301-2020-0_11 – Review of the JBS&G Technical Memo – Capping for Areas of PFAS Reuse, MPW,* dated 23 March 2023 (ref: IA 0301-2020-0_11).

SUMMARY

EnRiskS (2022) proposed an "*Engineered fill permeability of ≥1x10^{-7} m/s: ≥0.8 m*". PSM (2023) proposed the following as an equivalent capping:

- *"1 layer - 300 mm of imported shale would be sufficient to satisfy permeability requirements."*

  OR

- *2 layers - 600 mm of site won clay and sandy clay would be sufficient. Some testing to confirm advice would be required."*

Noting that: *"Sandy site won material is unlikely to be suitable."* (PSM 2023).

Therefore, based on the information provided by EnRiskS (2022), JBS&G (2023) and PSM (2023), the acceptable capping thickness is:

- Imported shale – one layer of ≥300 mm assuming a permeability of 1x10^{-8} m/s would be sufficient;

  OR

- Site won Clay and Sandy Clay – two layers of ≥300 mm assuming a permeability of between 1x10^{-8} and 5x10^{-8} m/s would be sufficient.

CHANGES TO THE MPW LTEMP (EP RISK 2020)

Changes to the existing MPW LTEMP (EP Risk 2020) include an update to **Table 8** footnotes as provided below in RED. No changes are proposed for **Figure 5** with the MPW LTEMP (EP Risk 2020), which has been provided as **Attachment 1**.

Section 4.5 – Table 8

Changes to **Table 8** from the MPW LTEMP (EP Risk 2020) are provided below.

Table 8 – PFAS Trigger Levels for Soil Reuse Within the Construction Area				
Soil Reuse Zone	**Analyte**	**Land use**	**Criteria**	**Management Measures**
Soil Reuse Zone 1 (all areas)	Soil - PFOS[10]	All land uses	≤ 0.01 mg/kg	Materials must be placed at least 1 m above groundwater (seasonal maximum). These criteria relate to material that may be placed adjacent to OSD basins and overflow drainage channels that have a clay liner or equivalent geosynthetic liner[11].
	Leachate (neutral pH) -PFOS + PFHxS[12]		≤ 0.07 µg/L	
Soil Reuse Zone 2 (beneath surface cover materials as described in management measures)	Soil - PFOS	All land uses	≤ 0.01 mg/kg	Materials must be placed at least 1 m above groundwater (seasonal maximum). Materials must be placed beneath Engineered Fill[13], concrete or a clay liner or equivalent geosynthetic liner[11].
Soil Reuse Zone 3 – Soil beneath subdivided area for warehouse development / lease area.	Soil - PFOS	Intensively developed sites	≤ 0.14 mg/kg	Materials must be placed at least 1 m above groundwater (seasonal maximum). Materials must be placed beneath Engineered Fill[13], concrete, or a clay liner or equivalent geosynthetic liner [11].
Soil Reuse Zone 4 – Soil beneath the western ring road and interstate terminal/access areas	Soil - PFOS	Intensively developed sites	≤ 0.14 mg/kg	Materials must be placed at least 1 m above groundwater (seasonal maximum). Materials must be placed beneath Engineered Fill[13], concrete, or a clay liner or equivalent geosynthetic liner[11].

[10] PFOS - Perfluorooctane sulfonate.

[11] The clay liner/geosynthetic liner must comply with the following requirements:

- Install clay liners (or equivalent geosynthetic liners) through embankments and basin floors (minimum 600 mm) and under bio-retention basins (minimum 300 mm), as well as OSD overflow drainage channels to mitigate any preferential pathways for soil leachate to directly enter surface water and stormwater to migrate to groundwater. The clay/geosynthetic liner should meet a maximum permeability of $1x10^{-9}$ m/s.
- The liners should be monitored via inspection if possible (minimum yearly) or by installation and testing of monitoring well(s) and repaired if damaged or deteriorated.
- All works undertaken in the area of the OSD stormwater infrastructure should not damage these liners. If damage occurs the liners need to be repaired as soon as practicable.

[12] PFHxS – Perfluorohexane sulfonate.

[13] Engineered Fill ~~of a minimum 1 m thickness~~ is to conform to one of the following:

- Sandstone Fill from road header excavation, tunnel boring machine excavation or ripped or rock hammer excavation.
- Approved imported fill materials.
- Site won VENM or Excavated Natural Material (ENM).

Engineered Fill acceptance is subject to confirmation testing of permeability by an accredited laboratory and must comply with the following:

- Shale – one layer of ≥300 mm assuming a permeability of $1x10^{-8}$ m/s;
  OR
- Site won Clay and Sandy Clay – two layers of ≥300 mm assuming a permeability between $1x10^{-8}$ and $5x10^{-8}$ m/s.
- Sandy site won material is unlikely to be suitable.

Where the thickness of Engineered Fill is less than ~~1m~~ that described above, the surface cover must also include concrete pavement or a building slab.

Engineered Fill shall be placed in accordance with the following requirements:

- In near horizontal, laterally extensive layers of uniform material and thickness, deposited systematically across the work area as determined by the Geotechnical Inspection and Testing Authority (GITA).
- The compacted thickness of each layer shall be equal to or less than 300 mm. Engineered Fill shall only be placed on subgrade in accordance with the Moorebank Intermodal Logistics Precinct: Bulk Earthworks Specification Area A, B, D (EPSM3813-021S REV 1) and approved by the GITA.
- Engineered Fill shall be placed and compacted to a Dry or Hilf Density Ratios (Standard Compaction) of between 98% and 102%.
- The placement moisture variation or Hilf moisture variation shall be controlled to be between 2% dry of optimum and 2% wet of optimum.

Appendix D – EMP07

References to capping and engineered fill requirements also reflected within procedure EMP07 (**Appendix D**):

"Soil Reuse Zone 3 (beneath sub-divided area for warehouse development / lease area)

Soil that meets the criteria in Table 8 for Soil Reuse Zone 3 (beneath sub-divided area for warehouse development / lease area) can be used within the areas presented in Figure 5, subject to the following management measures:

- *Materials must be placed at least 1 m above groundwater (seasonal maximum).*
- *Materials must be placed beneath Engineered Fill, concrete or a clay liner or equivalent geosynthetic liner.*
- *Engineered Fill ~~of a minimum 1 m thickness~~ is to conform to one of the following:*
    - *Sandstone Fill from road header excavation, tunnel boring machine excavation or ripped or rock hammer excavation.*
    - *Approved imported fill materials.*
    - *Site won VENM or excavated natural material (ENM).*
    - *Where the thickness of Engineered Fill is less than ~~1m~~ that described below, the surface cover must also include concrete pavement or a building slab.*
- *Engineered Fill acceptance is subject to confirmation testing of permeability by an accredited laboratory and must comply with the following:*
    - *Shale – one layer of ≥300 mm assuming a permeability of $1x10^{-8}$ m/s;*
      OR
    - *Site won Clay and Sandy Clay – two layers of ≥300 mm assuming a permeability of between $1x10^{-8}$ and $5x10^{-8}$ m/s.*
    - *Sandy site won material is unlikely to be suitable."*

RECOMMENDATIONS

The capping of landscape areas is required under the MPW LTEMP (EP Risk 2020). Additional excavation in areas of PFAS reuse may be required to satisfy the MPW LTEMP (EP Risk 2020) or LTEMP for the land.

If the capped surface is to remain exposed for extended periods prior to completion of surface works, desiccation, wetting up and erosion of the pad surface is possible. To reduce the likelihood of damage and to maintain the cap integrity, the following should be considered (PSM 2023):

- Placement of a sacrificial layer (comprising road base or equivalent).
- Grade the pad surface to reduce standing water and likelihood of concentrated flows.
- Minimise time between bulk earthworks and surface completion works.
- Limit vehicular and plant access.
- Provide routine inspections.

If the surface is damaged, it must be replaced in accordance with the MPW LTEMP (EP Risk 2020) and this Addendum (02).

Additional management measures are included within the CostinRoe Consulting (ContinRoe 2021[14]) Construction Soil and Water Management Plan (CSWMP).

Temporary management of the capping surface is to be included within the LTEMP for the land.

CLOSURE

This summary letter has been prepared by Alex Thomson, a Certified Environmental Practitioner (CEnvP) of EP Risk Management Pty Ltd. Please feel free to contact the undersigned on 0433 309 328 should you have any queries.

Yours sincerely,

[redacted]

[redacted]
Senior Environmental Scientist
Certified Environmental Practitioner (1403)
EP Risk Management Pty Ltd
ABN: 81 147 147 591

[14] ConstinRoe (2021), *Construction Soil and Water Management Plan,* dated 30 November 2021 (ref: Co13455.07-03_18.rpt)

Attachments:
Attachment 1 – EnRiskS (2022)
Attachment 2 – JBS&G (2023)
Attachment 3 – PSM (2023)

QUALITY CONTROL

Version	Author	Date	Reviewer	Date	Quality Review	Date
vA_DRAFT	[redacted]	15.05.2023	[redacted]	15.05.2023	[redacted]	15.05.2023
vB_DRAFT	[redacted]	29.05.2023	[redacted]	29.05.2023	[redacted]	29.05.2023
v1	[redacted]	29.06.2023	[redacted]	29.06.2023	[redacted]	29.06.2023

DOCUMENT CONTROL

Version	Date	Reference	Submitted to
vA_DRAFT	*15.05.2023*	*EP1489.019_Logos_MPW LTEMP Addendum 02_Zone 3 Reuse_vA_DRAFT*	*Logos Property Pty Ltd*
vB_DRAFT	*29.05.2023*	*EP1489.019_Logos_MPW LTEMP Addendum 02_Zone 3 Reuse_vB_DRAFT*	*Logos Property Pty Ltd*
v1	*29.06.2023*	*EP1489.019_Logos_MPW LTEMP Addendum 02_Zone 3 Reuse_v1*	*Logos Property Pty Ltd*

LIMITATIONS

This Addendum 02 – Moorebank Precinct West (MPW) Long-Term Environmental Management Plan (LTEMP) Version 12 – Engineered Fill in Warehouse PFAS Re-use Zone 3 was conducted on the behalf of Logos Property Pty Ltd for the purpose/s stated above.

EP Risk has prepared this document in good faith, but is unable to provide certification outside of areas over which EP Risk had some control or were reasonably able to check. The report also relies upon information provided by third parties. EP Risk has undertaken all practical steps to confirm the reliability of the information provided by third parties and do not accept any liability for false or misleading information provided by these parties.

It is not possible in an Addendum 02 – Moorebank Precinct West (MPW) Long-Term Environmental Management Plan (LTEMP) Version 12 – Engineered Fill in Warehouse PFAS Re-use Zone 3 to present all data, which could be of interest to all readers of this report. Readers are referred to any referenced investigation reports for further data.

Users of this document should satisfy themselves concerning its application to, and where necessary seek expert advice in respect to, their situation.

All work conducted and reports produced by EP Risk are based on a specific scope and have been prepared for Logos Property Pty Ltd and therefore cannot be relied upon by any other third parties unless agreed in writing by EP Risk.

The report(s) and/or information produced by EP Risk should not be reproduced and/or presented/reviewed except in full.

29 June 2023
Ref: EP1489.019_Addendum 02_v1

Attachment 1 – EnRiskS (2022)

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14 October 2022

[redacted]

[redacted]

PFAS at MPW: engineered fill in the warehouse area

1.0 Introduction and background

Environmental Risk Sciences Pty Ltd (enRiskS) has been engaged by Logos Property (Logos) to prepare a letter in relation to the re-use of soil with per- and polyfluoroalkyl substances (PFAS) at Moorebank Precinct West (MPW).

The letter relates to the re-use of soil in *Soil Re-use Zone 2 – soil beneath the warehouse areas* previously considered by enRiskS in our risk assessment entitled:

- enRiskS (2020), *Moorebank Intermodal Terminal: LTEMP Material Reuse Risk Assessment for PFAS*, letter to Moorebank Intermodal Company, dated 30 September 2020 and updated on 9 October 2020.

It is noted that this area is described as *Soil Re-use Zone 3 – soil beneath subdivided area for warehouse development/lease area* in Table 8 of the EP Risk (2020) *Long-Term Environmental Management Plan*, Moorebank Precinct West (MPW), reference EP1489.001 version 12, 27 October 2020 (the "LTEMP").

The enRiskS (2020) risk assessment considered 2 management measures that were proposed to be implemented for this soil re-use zone comprising the presence of impervious pavements and the presence of at least 1 m thickness of engineered fill. Logos have indicated that the thickness and type of engineered fill is currently being reviewed and have requested further assessment to determine the required thickness and type of engineered fill, without reinstating the need for leachability testing of the fill for PFAS.

Relevant background information for MPW is provided in enRiskS (2020) and is not repeated in this letter.

2.0 Objectives

The objectives of the risk assessment presented in this report are to:

- determine the required minimum thickness of engineered fill
- review the required type of engineered fill from the following options:
  - sandstone fill from road header excavation, tunnel boring machine excavation or ripped or rock hammer excavation
  - approved imported fill materials
  - site won virgin excavated natural material (VENM) or excavated natural material (ENM)
  - site won materials that are not VENM or ENM

The presence of impervious pavements has also been addressed for completeness.

This assessment comprises as review of the enRiskS (2020) risk assessment in relation to the required depth and type of engineered fill (as specified above) in the context of PFAS risk issues relevant to *Soil Re-use Zone*

2 – soil beneath the warehouse area, based on the information available to 26 September 2022. No other risk issues, parts of MPW or requirements of the LTEMP have been considered.

3.0 Methodology

Consistent with enRiskS (2020), the approach taken for the assessment of human health and environmental risks is in accordance with guidelines/protocols endorsed by Australian regulators, including:

- Australian and New Zealand Fresh and Marine Water Guidelines (ANZG 2018)
- enHealth Environmental Health Risk Assessment, Guidelines for Assessing Human Health Risks from Environmental Hazards (enHealth 2012).
- PFAS National Environmental Management Plan (the "PFAS NEMP"), Version 2.0, January 2020 (HEPA 2020)
- National Environmental Protection Measure – Assessment of Site Contamination (ASC NEPM).

Additional guidance has been sought from international sources, and referenced within this document where relevant, however, international guidance has not been adopted where it is inconsistent with Australian regulatory or policy settings.

It is noted that enRiskS (2020) was based on existing information assessments including the following:

- enRiskS (2019a), *Land Human Health and Ecological Risk Assessment (Land HHERA)*, Report to Moorebank Intermodal Company Limited, Draft, 6 May 2019
- enRiskS (2019b), *Waterway Human Health and Ecological Risk Assessment (Waterway HHERA)*, Report to Moorebank Intermodal Company Limited, Draft, 6 May 2019
- EP Risk (2020), *Long-Term Environmental Management Plan, Moorebank Precinct West (MPW)*, reference EP1489.001 version 10, 24 September 2020 (the "LTEMP")
- GHD (2019), *Detailed Site Investigation (DSI) Summary Report, Moorebank Intermodal Company Limited, Moorebank Precinct West*, July 2019
- NSW EPA (2019), *Environment Protection Licence (EPL) 21054*.

4.0 Review of risk issues

4.1 Soil Re-use Zone 2

Logos have indicated that 90% of Soil Re-use Zone 2 will be covered with impervious pavements comprising warehouses/offices, hard landscaping, car parks and internal access roads. The remainder of the zone is required to be covered with soft landscaping.

Given the significant coverage of this zone with impervious pavements, and the highly disturbed nature of the environment in this zone post construction, there are not expected to be any risk issues of concern for terrestrial receptors. Potential risks to terrestrial ecosystems have not been considered further in this assessment. However, water may infiltrate the surface in areas of the zone with soft landscaping, and there is the potential for the leaching of PFAS to groundwater and the aquatic environment of the Georges River following the re-use of soil with PFAS. This may result in PFAS impacts to the aquatic environment, through direct toxicity or following bioaccumulation.

There are no water features present in Soil Re-use Zone 2, and this zone is located over 200 m away from the Georges River (to the west) and 50 m away from the OSD infrastructure (also to the west). Hence, significant dilution and mixing of PFAS would occur prior to any water with PFAS sourced from the re-used soil reaching and entering the aquatic environment of Georges River. Irrespective of this, the potential for leaching has been considered further in this assessment.

The key factor that affects the potential for the leaching of PFAS from soil to groundwater/surface water is the rate of water infiltration through the overlying (PFAS free) materials and then through the re-used soil containing PFAS. The infiltration rate describes the gradual movement of water (rainwater or stormwater) through an unsaturated zone comprising layers of soil (or other materials including pavements). The infiltration rate is directly related to the permeability of the materials and the permeability of the materials is dependent on the porosity of the materials. This process is very different to the movement of water in a saturated zone, such as an aquifer, where there is a hydraulic head which causes flow under pressure.

For water to infiltrate to the soil containing PFAS (which could result in the leaching of PFAS from such soil), it would need to move through the compacted fill materials and/or the overlying impervious pavements. Where infiltration through the surface materials is negligible or does not occur, infiltration water would not reach the underlying soil with PFAS. Hence, there is no (or a negligible) mechanism for the leaching of PFAS to occur. Where no (or negligible) leaching can occur, there would be no migration of PFAS from re-used soil to groundwater and surface water.

Further discussion is provided below.

4.2 Presence of impervious pavements

Impervious pavements expected to be present in Soil Re-use Zone 2 post development include:

- warehouse slabs – expected to be between 0.25 and 0.5 m thick
- terminal pavements that include concrete or asphalt overlying a cementitious base course – expected to be between 0.3 to 0.5 m thick
- roads, car parks and other areas with asphalt paving – expected to be between 0.15 to 0.2 m thick.

Logos have indicated that 44% of these pavements would be within warehouses, where the warehouse building would ensure no water was present on the concrete, at any time, and hence no infiltration can occur. For concrete beneath warehouse buildings, there would be no rainfall on these surfaces, and no infiltration. Where there is no infiltration of water, there is no potential for the leaching of PFAS from re-used soil. This means that the exposure and transport pathway between PFAS in re-used soil and groundwater and environmental receptors within the Georges River is incomplete. Where there are no exposures to PFAS in re-used soil, there are no environmental risks from PFAS in re-used soil, and no need for any further assessment of risks.

The remainder of the pavement area, that is outdoors, would receive rainfall. This rainfall would need to penetrate the pavement before reaching the soil with PFAS, where this water could then leach PFAS from the soil and transport it further (where sufficient ongoing infiltration may occur) to groundwater. However, the published permeability of concrete is very low, around $1x10^{-11}$ m/s for brick aggregate concrete and hardened concrete (Ahmad & Hossain 2017). The time in days for rainfall to penetrate pavements proposed for Soil Re-use Zone 2, based on a permeability of $1x10^{-11}$ m/s, is (in round figures):

- minimum pavement thickness of 0.15 m: 174,000 days[1]
- maximum pavement thickness of 0.5 m: 579,000 days.[2]

For the Moorebank area, the annual rainfall is on average 868 mm/year, with 82.3 days/year recording ≥1 mm rain (average for Bankstown Airport for 1968 to 2022)[3]. This number of rain days is orders of magnitude less than needed for infiltration of the proposed impervious pavements that will be present above the re-used soil. Based on an upper bound estimate of 82 rain days/year, the time in years for rainfall to penetrate

[1] Calculated as follows: 0.15 m divided by $1x10^{-11}$ m/s, divided by 86,400 s/d.
[2] Calculated as follows: 0.5 m divided by $1x10^{-11}$ m/s, divided by 86,400 s/d.
[3] http://www.bom.gov.au/climate/averages/tables/cw_066137.shtml.

pavements proposed for Soil Re-use Zone 2 (assuming no evaporation and no runoff), based on a permeability of $1x10^{-11}$ m/s, is (in round figures):

- minimum pavement thickness of 0.15 m: 2,000 years
- maximum pavement thickness of 0.5 m: 7,000 years.

In addition, rainfall on these surfaces would be expected to runoff or evaporate between rainfall events, which means the water would not accumulate on the concrete surface for sufficient time for infiltration to occur.

Hence, the exposure pathway between PFAS in re-used soil beneath outside pavements and environmental receptors is also considered to be incomplete, and there is no need for any further assessment of risks.

As there is not expected to be any infiltration through impervious pavements, either inside of outside of buildings, the placement of engineered fill beneath the pavements, or any other management measures to manage leaching to the environment, is not considered necessary (although it is acknowledged that the placement of fill may be required for geotechnical reasons or site levelling).

The need for the placement of engineered fill in areas of Soil Re-use Zone 2 with no impervious pavements is considered in **Section 4.3**.

4.3 Engineered fill

In areas not covered by impervious pavements, the potential for PFAS in re-used soil to leach to the environment will depend on the permeability of the engineered fill, the thickness of the engineered fill, and the amount of rainfall on the engineered fill (where evaporation is neglected).

The following information is available in relation to how the engineered fill will be placed:

1. Engineered Fill shall be placed in accordance with the following requirements:
    a) In near horizontal, laterally extensive layers of uniform material and thickness, deposited systematically across the work area as determined by the Geotechnical Inspection and Testing Authority (GITA).
    b) The compacted thickness of each layer shall be equal to or less than 300 mm. Engineered Fill shall only be placed on subgrade in accordance with the Moorebank Intermodal Logistics Precinct: Bulk Earthworks Specification Area A, B, D (EPSM3813-021S REV 1) and approved by the GITA.
2. Engineered Fill shall be placed and compacted to a Dry or Hilf Density Ratios (Standard Compaction) of between 98% and 102%.
3. The dry bulk density for the imported sandstone VENM is approximately 2,100 kg/m^3 loose material. Compaction, as specified, would increase the bulk density (and decrease porosity).
4. The placement moisture variation or Hilf moisture variation shall be controlled to be between 2% dry of optimum and 2% wet of optimum.

It is understood that compaction of engineered fill is required to achieve the geotechnical characteristics required for the development. Compaction is the compression of a non-saturated soil resulting in reduction of the volume and increase in the density of a given mass of soil. Compaction is used to maximise dry density, reduce compressibility and decrease permeability. The more compacted the material, the lower the porosity, and the lower the potential for infiltration of water through (and subsequent leaching of PFAS from) soil. Hence, the permeability of compacted materials is expected to be low. The permeability of such materials may be $1x10^{-5}$ to $1x10^{-11}$ m/s [4], with a value around $1x10^{-7}$ m/s relevant to mixtures of sand, silt and

[4] http://www.fao.org/tempref/FI/CDrom/FAO_Training/FAO_Training/General/x6706e/x6706e09.htm

clay (likely uncompacted) and understood to be a conservative and achievable estimate for the engineered fill.

The time for continuous rainfall to penetrate the engineered fill proposed for Soil Re-use Zone 2, based on assumed permeabilities of $1x10^{-7}$ to $1x10^{-9}$ m/s, and a range of potential engineered fill depths, is summarised in **Table 4.1**. As noted above, the upper bound average number of rain days for MPW is conservatively assumed to be 82 days/year. These calculations assume no evaporation occurs and the rainfall does not runoff but can pool at the surface allowing infiltration to occur following rainfall. Hence these calculations are considered to be conservative.

Table 4.1: Summary of calculated infiltration times based on permeability and thickness of fill

Assumed permeability of engineered fill	Assumed thickness of engineered fill (m)	Calculated infiltration time (days)	Calculated infiltration time (years) based on 82 days/year rain
$1x10^{-7}$ m/s	0.1	12	0.1
	0.2	23	0.3
	0.3	34	0.4
	0.4	46	0.6
	0.5	58	0.7
	0.6	69	0.9
	0.7	81	1.0
	0.8	93	1.1
	0.9	104	1.3
	1.0	116	1.4
$1x10^{-8}$ m/s	0.1	116	1.4
	0.2	231	2.8
	0.3	347	4.2
	0.4	463	5.6
	0.5	597	7.1
	0.6	694	8.5
	0.7	810	10
	0.8	926	11
	0.9	1,042	13
	1.0	1,157	14
$1x10^{-9}$ m/s	0.1	1,157	14
	0.2	2,315	28
	0.3	3,472	42
	0.4	4,630	57
	0.5	5,787	71
	0.6	6,944	85
	0.7	8,102	99
	0.8	9,259	113
	0.9	10,417	127
	1.0	11,574	141

Review of **Table 4.1** indicates that there is little difference in the calculated infiltration time in days for 0.8 m, 0.9 m and 1.0 m thickness of engineered fill with a permeability of $1x10^{-7}$ m/s. For these fill thicknesses, the calculated infiltration time in days is greater than the upper bound average estimate of 82 rain days/year. Hence, the required thickness of engineered fill with a permeability of $1x10^{-7}$ m/s can be decreased from 1.0 m to ≥0.8 m.

Where the permeability of the engineered fill is ≥$1x10^{-8}$ m/s, the thickness of the engineered fill can be reduced to ≥0.1 m to achieve the same outcome.

Where the permeability of the engineered fill is ≥1x10^{-9} m/s, the thickness of the engineered fill can be reduced to ≥0.01 m to achieve the same outcome.

The following types of engineered fill are proposed for the site (refer to **Section 2.0**):

- sandstone fill from road header excavation, tunnel boring machine excavation or ripped or rock hammer excavation
- approved imported fill materials
- site won VENM or ENM
- site won materials that are not VENM or ENM.

All the above types of engineered fill are considered appropriate for use, so long as they comply with all other requirements including those specified in the LTEMP for total concentrations of PFAS. As noted above, it is the permeability and depth of the engineered fill that determines leaching potential, not the type of fill *per se*. Hence, it is acceptable to "mix and match" engineered fill types depending on availability and/or compaction and development considerations, to maximise project outcomes and the re-use of soil with PFAS at MPW, in accordance with the NSW waste hierarchy.

4.4 Uncertainties

The assessment has assumed that the upper bound average estimate of 82 rain days/year. This upper bound average estimate is considered conservative as it assumes that:

- rain days are consecutive
- water pools at the surface allowing for infiltration to occur
- all rainwater infiltrates the soil profile:
    - there is no drying of soil in between rain days
    - there is no runoff
    - there is no transpiration (water uptake by plants which is released as vapour into the air)
    - there is no evaporation of water from the soil surface.

It is also unlikely that 1 mm rainfall would be adequate to facilitate the leaching of PFAS from re-used soil to the environment; higher rainfall volumes are likely to be required. The number of days with ≥10 mm and ≥20 mm rainfall relevant to MPW over the last 14 months is presented in **Table 4.2**.

Table 4.2: Summary of MPW rainfall (BOM Bankstown Airport AWS)

Year	Number of days with ≥1 mm rainfall	Number of days with ≥10 mm rainfall	Number of days with ≥20 mm rainfall
August 2021	3	2	2
September 2021	3	1	0
October 2021	9	2	0
November 2021	10	8	2
December 2021	7	3	1
January 2022	11	4	4
February 2022	18	8	5
March 2022	20	15	11
April 2022	14	3	2
May 2022	12	4	1
June 2022	1	0	0
July 2022	16	5	4
August 2022	7	0	0
TOTAL	**131**	**55**	**32**

Review of **Table 4.2** indicates that the use of rainfall averages ≥1 mm for the assessment is conservative, as rainfall of ≥10 mm and ≥20 mm, which would be more likely to facilitate leaching, is 42% and 24% less likely

to occur respectively. If the upper bound average estimate of 82 rain days/year was decreased to 34 rain days/year (i.e. 42% of the value), the thickness of fill with a permeability of $1x10^{-7}$ m/s could be decreased to ≥0.3 m (refer to **Table 4.1**).

5.0 Conclusions

The following can be concluded based on the assessment undertaken and considering the identified uncertainties:

- the potential for the leaching of PFAS from re-used soil beneath inside and outside pavements is negligible; this means that the exposure pathway between PFAS in re-used soil beneath pavements and environmental receptors is incomplete, and there are no environmental risks following the re-use of soil
- the placement of engineered fill beneath inside and outside pavements, or any other management measures to manage leaching to the environment, is not considered necessary (although it is acknowledged that the placement of fill may be required for geotechnical reasons or site levelling).
- the required thickness of engineered fill in areas not covered by pavements is as follows:
    - engineered fill permeability of ≥$1x10^{-7}$ m/s: ≥0.8 m
    - engineered fill permeability of ≥$1x10^{-8}$ m/s: ≥0.1 m
    - engineered fill permeability ≥$1x10^{-9}$ m/s: to ≥0.01
- it is the permeability and depth of the engineered fill that determines leaching potential, not the type of fill *per se*, hence, all reviewed engineered fill types are considered appropriate for use so long as they comply with all other requirements including those specified in the LTEMP for total concentrations of PFAS
- it is acceptable to "mix and match" engineered fill types depending on availability and/or compaction and development considerations, to maximise project outcomes and the re-use of soil with PFAS at MPW, in accordance with the NSW waste hierarchy.

6.0 Limitations

Environmental Risk Sciences Pty Ltd has prepared this report for the use of Logos in accordance with the usual care and thoroughness of the consulting profession. It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report.

It is prepared in accordance with the scope of work and for the purpose outlined in this report.

The methodology adopted and sources of information used are outlined in this report. Environmental Risk Sciences Pty Ltd has made no independent verification of this information beyond the agreed scope of works and assumes no responsibility for any inaccuracies or omissions. No indications were found that information contained in the reports provided for use in this assessment was false.

This report was prepared in August to October 2022 and is based on the information provided and reviewed at that time. Environmental Risk Sciences Pty Ltd disclaims responsibility for any changes that may have occurred after this time.

This report should be read in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties. This report does not purport to give legal advice. Legal advice can only be given by qualified legal practitioners.

Yours sincerely,

Dr [redacted] (Fellow ACTRA)
Principal/Director
Environmental Risk Sciences Pty Ltd

References

Ahmad, SI & Hossain, MA 2017, 'Water Permeability Characteristics of Normal Strength Concrete Made from Crushed Clay Bricks as Coarse Aggregate', *Advances in Materials Science and Engineering,* vol. 2017, 2017/11/06, p. 7279138.

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NEPC 1999 amended 2013b, *Schedule B4, Guideline on Site-Specific Health Risk Assessment Methodology, National Environment Protection (Assessment of Site Contamination) Measure*, National Environment Protection Council. <https://www.legislation.gov.au/Details/F2013L00768/Download>.

NEPC 1999 amended 2013c, *Schedule B5 Guideline for Ecological Risk Assessment, National Environment Protection (Assessment of Site Contamination) Measure*, National Environment Protection Council.

NEPC 1999 amended 2013d, *Schedule B6 Guideline on Risk Based Assessment of Groundwater Contamination, National Environment Protection (Assessment of Site Contamination) Measure*, National Environment Protection Council. <https://www.legislation.gov.au/Details/F2013L00768/Download>.

NEPC 1999 amended 2013e, *Schedule B7, Guideline on Derivation of Health-Based Investigation Levels, National Environment Protection (Assessment of Site Contamination) Measure*, National Environment Protection Council. <https://www.legislation.gov.au/Details/F2013L00768/Download>.

Attachment 2 – JBS&G (2023)

TECHNICAL MEMO
JBS&G 58753-150453 (Rev 0)

DATE: 6 March 2023

TO: [redacted]

CC: [redacted]

FROM: [redacted]

Moorebank Precinct West (MPW) – Capping for Areas of PFAS Reuse, Moorebank Intermodal Precinct (MIP), NSW

Introduction

JBS&G Australia Pty Ltd (JBS&G) was engaged by LOGOS Property (LOGOS, the Client) to provide environmental services for Moorebank Precinct West (MPW) at the Moorebank Intermodal Precinct (MIP), Moorebank, NSW. LOGOS requested JBS&G to review recent advice regarding the capping of PFAS impacted soils in reuse areas and summarise the approach to be adopted for the ongoing capping at Moorebank.

The reviewed documents included:

- LTEMP Material Reuse Risk Assessment for PFAS. 9 October 2020. Environmental Risk Sciences Pty Ltd (EnRiskS 2020)
- Long-Term Environmental Management Plan, Moorebank Precinct West. 27 October 2020. EP Risk Management Pty Ltd. EP1489.001 v12. (LTEMP, EP Risk 2020)
- PFAS at MPW – Engineered Fill in the Warehouse Area. 14 October 2022. Environmental Risk Sciences Pty Ltd (EnRiskS October 2022).
- Site Audit Interim Advice 07 – Review of the EnRiskS letter discussing PFAS at MPW – engineered fill in the warehouse area. 31 October 2022. Enviroview (IA 0301-2020-0_07)
- Approved Imported Fill for PFAS Capping Technical Memo. 16 December 2022. JBS&G (58753-149068 (Rev 0)).
- Email: Memo - LTEMP 1m Cap. Enviroview 19 December 2022
- Email RE: Permeability of Materials on site. Pells Sullivan Meynink (PSM) 22 February 2023

Background

Where site won PFAS soils are reused on site, the management measures outlined in the LTEMP Table 8 and EMP07 indicate that for Soil Reuse Zone 2, 3 and 4, materials must be placed at least 1 m above groundwater (seasonal maximum), and materials must be placed beneath Engineered Fill, concrete, or a clay liner or equivalent geosynthetic liner.

The risk assessment on which PFAS management measures were based (enRiskS 2020), assumed a permeability value of around $1x10^{-7}$ m/s for Engineered Fill and relates to “mixtures of sand, silt and clay (likely uncompacted)”.

The LTEMP requires Engineered Fill to be a minimum of 1 m thickness, and conform to one of the following:

- Sandstone Fill from road header excavation, tunnel boring machine excavation or ripped or rock hammer excavation.

- Approved imported fill materials.
- Site won VENM or Excavated Natural Material (ENM).

Following a review of assessments provided to LOGOS, and interim advice from the Site Auditor, the following is noted in relation capping of PFAS reuse areas within the developable portion of MPW:

- Under pavements/warehousing there is no depth requirement for Engineering Fill within a PFAS reuse, or other, areas (LTEMP 2020).
- In relation to proposed landscape areas a clay[1] cap of 0.5 m (or geosynthetic liner) is required, and/or a growth medium greater than the maximum root depth of vegetation above the clay (LTEMP 2020). However, reuse of PFAS under proposed landscape areas has not been finalised and therefore the extent of clay capping required (or equivalent geosynthetic liners) is not currently defined.
- Further to the assessments undertaken by EnRiskS in support of the LTEMP (EP Risk 2020), EnRiskS undertook an assessment of the required minimum thickness of Engineered Fill (EnRiskS October 2022) for MPW. While it was estimated by EnRiskS that the minimum required thickness of Engineered Fill in areas not covered by pavements were as follows:
    - engineered fill permeability of ≥$1x10^{-7}$ m/s: ≥0.8 m
    - engineered fill permeability of ≥$1x10^{-8}$ m/s: ≥0.1 m
    - engineered fill permeability ≥$1x10^{-9}$ m/s: to ≥0.01,

  the Auditor did not agree that either 10cm or 1cm of fill, in the absence of a slab/pavement, would be sufficient (Enviroview, October 2022). He notes the fill serves the purpose to also provide a clear 'isolating' layer above the PFAS-impacted materials and where no pavement is proposed it provides a 'durable' surface material to protect from damage over time.

- Geotechnical permeability testing (PSM 2023) has established:
    - Conservatively, imported shale fill would have a permeability in place of less than 10^{-8} m/s;
    - The site won material is variable, varying between sand, silty sand, clayey sand to sandy clays. Site won clay or sandy clay is likely to have a permeability between $1x10^{-8}$ and $5x10^{-8}$ m/s. The clayey sands and silt sand probably has permeability in the order of $1x10^{-7}$ m/s;
    - In relation to the EnRiskS estimate of minimum required thickness of Engineered Fill (October 2022), the geotechnical advice is that:
        - 1 layer - 300 mm of imported shale would be sufficient to satisfy permeability requirements.
        - 2 layers - 600 mm of site won clay and sandy clay would be sufficient. Some testing to confirm advice would be required.
        - Sandy site won material is unlikely to be suitable.
    - Nevertheless, from a geotechnical suitability point of view, two layers of imported shale, or imported shale blended with site won or sandstone fill provides advantages regarding long term trafficability, reactivity, and potentially CBR.

[1] Maximum permeability of $1x10^{-9}$ m/s.

Advice

Under proposed pavements/warehousing the placement of Engineering Fill to satisfy geotechnical requirements would satisfy the requirements of the LTEMP. The placement of imported materials and/or site won VENM/ENM would additionally have an advantage in reducing the generation of PFAS impacted stormwater runoff prior to the construction of pavements/warehousing and reduce water management costs, as well as mitigate the potential migration of PFAS to groundwater.

In landscape areas a clay cap of 0.5 m (or geosynthetic liner) and a growing medium is required, however the location of PFAS impacted soil reuse coincident with landscaping is not currently defined. It is recommended that consideration be given to “retrofitting” the capping of landscape areas required under the under LTEMP (EP Risk 2020) during the construction phase. Retrofitting may require the management of surplus PFAS impacted spoil, either within MPW or disposed offsite. Retrofitting could be managed under an area specific LTEMP.

The Site Auditor should be consulted in relation to the retrofitting of capping requirements in landscape areas overlying PFAS impacted soils reuse areas.

Attachments:

1) Limitations

Attachment 1 - Limitations

This advice has been prepared for use by the client who has commissioned the works in accordance with the project brief only, and has been based in part on information obtained from the client and other parties.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

JBS&G accepts no liability for use or interpretation by any person or body other than the client who commissioned the works. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by JBS&G, and should not be relied upon by other parties, who should make their own enquires.

Sampling and chemical analysis of environmental media is based on appropriate guidance documents made and approved by the relevant regulatory authorities. Conclusions arising from the review and assessment of environmental data are based on the sampling and analysis considered appropriate based on the regulatory requirements.

Limited sampling and laboratory analyses were undertaken as part of the investigations undertaken, as described herein. Ground conditions between sampling locations and media may vary, and this should be considered when extrapolating between sampling points. Chemical analytes are based on the information detailed in the site history. Further chemicals or categories of chemicals may exist at the site, which were not identified in the site history and which may not be expected at the site.

Changes to the subsurface conditions may occur subsequent to the investigations described herein, through natural processes or through the intentional or accidental addition of contaminants. The conclusions and recommendations reached in this report are based on the information obtained at the time of the investigations.

This advice does not provide a complete assessment of the environmental status of the site, and it is limited to the scope defined herein. Should information become available regarding conditions at the site including previously unknown sources of contamination, JBS&G reserves the right to review the advice in the context of the additional information.

Attachment 3 – PSM (2023)

[redacted]

From: [redacted]
Sent: Thursday, 30 March 2023 12:31 PM
To: [redacted]
Cc: [redacted]
Subject: FW: Permeability of Materials on site.

Hi [redacted]

PSM email as discussed.

[redacted]

[redacted]
Gadigal Country | Level 1, 50 Margaret Street, Sydney, NSW
T: 02 8245 0300 | M: [redacted] W: jbsg.com.au | L: Conditions and Limitations

Exceptional Outcomes

From: [redacted]
Sent: Wednesday, 22 February 2023 9:23 AM
To: [redacted]
Cc: [redacted]
Subject: RE: Permeability of Materials on site.

[redacted]

1. Minimum thickness of imported shale fill cap

Based on the information provided in your email on 14 February, where the permeability of the "capping" is 10^{-8} m/s a minimum capping thickness of 0.1 m can be adopted.

Based on the testing completed to date we consider that it would be appropriately conservative to assume that imported shale fill shall have a permeability in place of less than 10^{-8} m/s. The lab permeabilities are an order of magnitude less than this.

It follows that a single layer of 300 mm imported shale fill would provide sufficient capping from an environmental point of view.

2. Use of site won materials as the environmental cap

The site won material is variable, varying between sand, silty sand, clayey sand to sandy clays.

Site won material that can be characterised by the GITA as comprising clay or sandy clay is likely to have a permeability between $1x10^{-8}$ and $5x10^{-8}$ m/s site won material. Our understanding of the email you have provided indicates that for such materials a thickness of between 0.4 m and 0.5 m would be equivalent to the 0.8 m of $1x10^{-7}$ m/s. Some testing of the site won material would be useful to confirm an appropriate permeability.

The clayey sands and silt sand probably has permeability in the order of $1x10^{-7}$ m/s. The sands with minor fine components would be more permeable than this. It would be difficult to consider these materials for use as the capping.

3. Geotechnical implications

Our IGDA for the project says the following relating to the surface material:

> *We note that desiccation or wetting up and erosion of the pad surface is possible should it be exposed to the*
> *elements for an extended period of time following completion of the bulk earthworks and prior to the builder*
> *taking responsibility for the pad.*
> *To reduce the likelihood of this and to preserve the pad condition we recommend the following should be*
> *considered following completion of the bulk earthworks:*
> - *Placement of a sacrificial layer comprising road base or other equivalent material.*
> - *Grade the pad surface to:*
> – *Reduce the extent and severity of standing water during and after weather events*
> – *Reduce the likelihood of concentrated flows resulting in localised channel erosion*
> - *Minimise the time between the completion of earthworks and the builder commencing construction of the warehouse roof.*
> - *Limit vehicular and plant access until a roof has been installed.*

Where the more sandy site won material has been used and has been exposed to the weather it has resulted in need for reworking and sometimes deeper than a few 100 mm as well. The same risks could be present for the sandy clays and clays should they be used as the capping.

Using at least 600 mm of Sandstone or Shale fill on the surface significantly reduces the risk of exposure of finished surfaces resulting in need for reworking of the surface. Sandstone Fill also increases the CBR and reduces the shrink reactivity. Shale fill may also reduce the reactivity.

That is from a geotechnical performance point of view keeping imported fill or a blend of imported and site won fill in the upper 600 mm has significant up side.

4. Summary

From contamination point of view:

- 1 layer - 300 mm of imported shale would be sufficient
- 2 layers – 600 mm of site won clay and sandy clay would be sufficient. Some testing to confirm would be helpful.
- Sandy site won material is unlikely to be suitable.

From a geotechnical point of view:

- 2 layers of imported shale, or imported shale blended with site won or sandstone fill provides upsides with long term trafficability, reactivity, and potentially CBR.

Please do not hesitate to contact the undersigned should you have any queries.

[redacted]
Principal | BE Civil (Hons), MEngSc, NER
Direct: **02 9812 5025** | [redacted]

From: [redacted]
Sent: Tuesday, February 21, 2023 3:09 PM
To: [redacted]
Cc: [redacted]

[redacted]
Subject: RE: Permeability of Materials on site.

[redacted]

Have you had a chance to review?

Thanks,

[redacted]

[redacted]
[redacted]ager
[redacted]
[redacted]
logosproperty.com

LOGOS

From: [redacted]
Sent: Tuesday, 14 February 2023 2:57 PM
To: [redacted]
Cc: [redacted]
Subject: Permeability of Materials on site.

[redacted],

We are investigating whether we can replace the entire top 1m of the site with a material as an alternative to Sandstone.

Sandstone is identified in the LTEMP as suitable due a risk analysis (attached) which references a permeability of 10^{-7}m/s. It also references a range of permeabilities:

- the required thickness of engineered fill in areas not covered by pavements is as follow
  - engineered fill permeability of ≥1x10^{-7} m/s: ≥0.8 m
  - engineered fill permeability of ≥1x10^{-8} m/s: ≥0.1 m
  - engineered fill permeability ≥1x10^{-9} m/s: to ≥0.01

As per your testing below, it indicates that we are actually achieving 10^{-9}m/s which would allow a significant reduction in the capping thickness (at least environmentally).

Is there a way we can assume all shale we import will meet this? Is there any due diligence we should undertake?

Further, is there a way we can characterise materials won on site as achieving a certain permeability under the compaction specified in the specification so that we can utilise site won materials as well?

Kind regards,

[redacted]

LOGOS

From: [redacted]
Sent: Tuesday, 24 January 2023 1:14 PM
To: [redacted]
Subject: FW: PSM3813 - Permeability tests on shale fill

[redacted]

Please find attached completed reports from the lab.

Reports confirm the material meets the requirement of:

- Minimum permeability: 10^{-7}m/s

[redacted]
Geotechnical Engineer | BE (Hons)
Direct: **02 9812 5932** | [redacted]

From: [redacted]
Sent: Monday, 23 January 2023 10:47 AM
To: [redacted]
Cc: [redacted]
Subject: PSM3813 - Permeability tests on shale fill

[redacted]

We have received preliminary results from the lab via email regarding the permeability testing of the shale sampled on 10th Jan 2023 from crushed shale materials located within WH1. See email below for preliminary results.

The results of all the permeability testing satisfy the requirement of:

- Minimum permeability: 10^{-7} m/s.

The complete report from the lab is expected to arrive Tuesday or Wednesday.

Regards,

[redacted]
Geotechnical Engineer | BE (Hons)
Direct: **02 9812 5932** | [redacted]

From: [redacted]
Sent: Monday, 23 January 2023 10:14 AM
To: [redacted]
Subject: RE: PSM3813 - Permeability tests on shale fill

Hi [redacted],

Please find a table of the concluded triaxial permeability test results for the 5 shale samples below.

Alliance Lab ID	Sample Source	MDD & OMC	Permeability (m/s)
23-22975A	Shale Sample #1	2.12 t/m^3 & 8.5%	$1*10^{-9}$
23-22975B	Shale Sample #2	2.06 t/m^3 & 8.5%	$2*10^{-9}$
23-22975C	Shale Sample #3	2.12 t/m^3 & 8.5%	$5*10^{-10}$
23-22975D	Shale Sample #4	2.21 t/m^3 & 7.5%	$9*10^{-10}$
23-22975E	Shale Sample #5	2.12 t/m^3 & 8.5%	$2*10^{-9}$

We are waiting for the index test results to finalise the sample descriptions shown on the reports, which will be ready tomorrow. The finalised reports will be forwarded to you by COB this Tuesday.

Regards,

[redacted]
PhD, MEng, BEng

Soil and Rock Technical Manager, Geotechnical Engineer

[redacted]

alliance
geotechnical & environmental solutions

Office Phone: 1800 288 188
Admin Email: admin@allgeo.com.au
Website: allgeo.com.au
Office & Lab: 8-10 Welder Road, Seven Hills NSW 2147
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Appendix H
CONSULTATION LOG

Consultation Log – Long Term Environmental Management Plan (LTEMP) – Eagles Beak							
Item	**Original Version**	**Date**	**Stakeholder**	**Communication Method**	**Comments**	**Changes**	**Finalised Version**
1	-	05.10.2021	JBS&G	*Email – JBS&G email to Tactical (05.10.2021)*	Provision of Technical Memo: *JBS&G 51997 – 136836 (Rev 2),* dated 19 May 2021. Email: *"It is recommended that it be confirmed with the Auditor that the use of asphalt paving as a isolating layer/management measure is appropriate and consistent with the risk assessment, and that subsequently asphalt paving as an isolating layer be explicitly incorporated into future LTEMPs applying to MPW."*	Section 4.5.	vA_DRAFT
2	-	02.07.2024	JBS&G	*JBS&G (2024), Moorebank Precinct West (MPW) Eagles Beak Audit Area Summary Report, Moorebank Avenue, Moorebank NSW, dated 2 July 2024 (ref: 58753/160,597 (Rev A)).* -		-	vA_DRAFT
3	-	23.09.2024	JBS&G	*JBS&G (2024), Moorebank Precinct West (MPW) Eagles Beak Audit Area Summary Report, Moorebank Avenue, Moorebank NSW, dated 23 September 2024 (ref: 58753/161,922(Rev 0)).*		Inclusion of additional survey data. Inclusion of INTS PFAS reuse following review by EP Risk.	vA_DRAFT
4	-	16.10.2024	Logos / Tactical	N/A	Issued to Client (vA_DRAFT)	N/A	vA_DRAFT
5	vA_DRAFT	22.10.2024	Aspect Environmental	PDF comments	Comments in relation to: - Removal of reference to 'acoustic'. - Changes to responsibilities and UFP/engagement of EC. - Removal of reference to proposed in ground services works.	Amended as required.	vB_DRAFT

Consultation Log – Long Term Environmental Management Plan (LTEMP) – Eagles Beak							
Item	**Original Version**	**Date**	**Stakeholder**	**Communication Method**	**Comments**	**Changes**	**Finalised Version**
					- Comments in relation to ANZAC Creek buffer. - Other minor comments.		
6	vA_DRAFT	08.11.2024	Logos / Tactical	N/A	Issued to Client (vB_DRAFT)	N/A	vB_DRAFT
7	vB_DRAFT	09.11.2024	Tactical	Email (09.11.2024)	Issue as v0	- Issue as v0	v0
8	vB_DRAFT	11.11.2024	Logos / Tactical	N/A	Issued to Client (v0)	N/A	v0