



**REPORT TO
ERILYAN**

**ON
REMEDIATION ACTION PLAN**

**FOR
PROPOSED COMMERCIAL DEVELOPMENT
(GENESIS CARE)**

**AT
CORNER KELLICAR AND CAMDEN ROADS,
CAMPBELLTOWN, NSW**

Date: 8 November 2021

Ref: E33438PLrpt3-RAP

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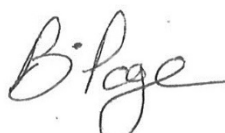
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Executive Summary

Erilyan ('the client') commissioned JK Environments (JKE) to prepare a Remediation Action Plan (RAP) for the proposed commercial development at the corner of Kellicar and Camden Roads, Campbelltown, NSW ('the site'). The site location is shown on Figure 1 and the RAP applies to the land within the site boundaries as shown on Figure 2 in Appendix A.

JKE has previously completed a Preliminary Site Investigation (PSI) and a Detailed Site Investigation (DSI) at the site. The investigations identified bonded/non-friable asbestos containing material (ACM) in soil, which triggered the need for site remediation. Key information from the PSI and DSI is summarised in Section 2 and throughout this report where relevant.

This report has been prepared with regards to State Environmental Planning Policy No.55 – Remediation of Land (1998)¹, to support the lodgement of a Development Application (DA) with Campbelltown City Council (Ref: 2036/2021/DA-C). The proposed development includes removal of two trees and construction of a four-storey health services facility. The proposed facility will include radiation/oncology, medical imaging and consultations rooms. The building will be constructed in the south-eastern portion of the site and does not include any basement levels. The remaining areas of the site will include a car park and landscaping.

The proposed development will generally be constructed close to the existing grade. It is understood that excavation will generally be required to remove the grass/topsoil/root-affected soils, and for the construction of a lift pit and on-site stormwater detection tank, for underground services and to treat soft-spots and other areas of fill/soil that are not geotechnically suitable.

The objectives of the RAP are to:

- Provide a methodology to remediate and validate the site;
- Provide a contingency plan for the remediation works;
- Outline site management procedures to be implemented during remediation work; and
- Provide an unexpected finds protocol to be implemented during the development works.

The remediation strategy includes excavation and off-site disposal of fill as required for engineering/construction purposes, and also to the extent required to achieve an appropriate cap over any fill that remains in-situ. A visual marker layer will be installed over the remaining fill prior to the reinstatement of these areas with clean capping materials. The site will subsequently be managed under a long-term management plan. The 'cap and contain' remediation approach was assessed to be suitable on the basis of the following:

- Capping in-situ minimises unnecessary disturbance of ACM in soil and aligns with the guideline hierarchy for managing asbestos;
- The strategy requires less excavation and less disposal of waste to landfill which reduces the overall carbon footprint for the remediation exercise and is more sustainable from a waste minimisation perspective; and
- The strategy is commensurate with the level of risk posed by ACM in soil and is not expected to result in onerous management of the site during future day-to-day use.

JKE is of the opinion that the site can be made suitable for the proposed development via remediation and the implementation of this RAP. A site validation report is to be prepared on completion of remediation activities and submitted to the consent authority to demonstrate that the site is suitable for the proposed development. The site will require management via a long-term Asbestos Management Plan (AMP) or Environmental Management Plan (EMP). The management plan will provide a passive management approach which would not impose any onerous constraints on the day-to-day site use under the proposed development scenario.

It is noted that the in-situ capping process occurs concurrently with construction as the capping layers largely comprise the built form of the development (e.g. building slabs and pavements etc). The client must liaise with the consent authority at the time of the DA so that this can occur.

The conclusions and recommendations should be read in conjunction with the limitations presented in the body of this report.

¹ State Environmental Planning Policy No. 55 – Remediation of Land 1998 (NSW) (referred to as SEPP55)



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Appendix E: Guidelines and Reference Documents



Abbreviations

Asbestos Fines/Fibrous Asbestos	AF/FA
Added Contaminant Limits	ACL
Asbestos Containing Material	ACM
Australian Height Datum	AHD
Acid Sulfate Soil	ASS
Below Ground Level	BGL
Benzo(a)pyrene Toxicity Equivalent Factor	BaP TEQ
Benzene, Toluene, Ethylbenzene, Xylene	BTEX
Contaminated Land Management	CLM
Contaminant(s) of Potential Concern	CoPC
Chain of Custody	COC
Conceptual Site Model	CSM
Development Application	DA
Dial Before You Dig	DBYD
Data Quality Indicator	DQI
Data Quality Objective	DQO
Detailed Site Investigation	DSI
Ecological Investigation Level	EIL
Ecological Screening Level	ESL
Environmental Management Plan	EMP
Excavated Natural Material	ENM
Environment Protection Authority	EPA
Environment Protection Licence	EPL
Health Investigation Level	HILs
Health Screening Level	HSL
International Organisation of Standardisation	ISO
JK Environments	JKE
Lab Control Spike	LCS
Map Grid of Australia	MGA
National Association of Testing Authorities	NATA
National Environmental Protection Measure	NEPM
Organochlorine Pesticides	OCP
Organophosphate Pesticides	OPP
Polycyclic Aromatic Hydrocarbons	PAHs
Potential ASS	PASS
Polychlorinated Biphenyls	PCBs
Photo-ionisation Detector	PID
Protection of the Environment Operations	POEO
Practical Quantitation Limit	PQL
Quality Assurance	QA
Quality Control	QC
Remediation Action Plan	RAP
Relative Percentage Difference	RPD
Site Assessment Criteria	SAC
Sampling, Analysis and Quality Plan	SAQP
Standing Water Level	SWL
Toxicity Characteristic Leaching Procedure	TCLP
Total Recoverable Hydrocarbons	TRHs
Upper Confidence Limit	UCL
United States Environmental Protection Agency	USEPA
Validation Assessment Criteria	VAC
Virgin Excavated Natural Material	VENM
Work Health and Safety	WHS



Units

Metres BGL	mBGL
Metres	m
Millilitres	ml or mL
Milligrams per Kilogram	mg/kg
Percentage	%
Percentage weight for weight	%w/w

1 INTRODUCTION

Erilyan ('the client') commissioned JK Environments (JKE) to prepare a Remediation Action Plan (RAP) for the proposed commercial development at the corner of Kellicar and Camden Roads, Campbelltown, NSW ('the site'). The site location is shown on Figure 1 and the RAP applies to the land within the site boundaries as shown on Figure 2 in Appendix A.

This report has been prepared with regards to State Environmental Planning Policy No.55 – Remediation of Land (1998)², to support the lodgement of a Development Application (DA) with Campbelltown City Council (Ref: 2036/2021/DA-C).

JKE has previously completed a Preliminary Site Investigation (PSI)³ and a Detailed Site Investigation (DSI)⁴ at the site. The investigations identified bonded/non-friable asbestos containing material (ACM) in soil, which triggered the need for site remediation. Key information from the PSI and DSI is summarised in Section 2 and throughout this report where relevant.

The PSI was undertaken concurrently with a geotechnical investigation⁵ by JK Geotechnics (JKG). The JKG 2020 report should be read in conjunction with this RAP.

1.1 Proposed Development Details

The proposed development includes removal of two trees and construction of a four-storey health services facility. The proposed facility will include radiation/oncology, medical imaging and consultations rooms. The building will be constructed in the south-eastern portion of the site and does not include any basement levels. The remaining areas of the site will include a car park and landscaping.

The proposed development will generally be constructed close to the existing grade. It is understood that excavation will generally be required to remove the grass/topsoil/root-affected soils, and for the construction of a lift pit and on-site stormwater detection tank, for underground services and to treat soft-spots and other areas of fill/soil that are not geotechnically suitable.

A selection of the civil drawings is attached in Appendix B.

² State Environmental Planning Policy No. 55 – Remediation of Land 1998 (NSW) (referred to as SEPP55)

³ JKE, (2020). *Report to Erilyan on Preliminary (Stage 1) Site Investigation – Contamination Assessment and Waste Classification for Proposed Commercial Development at Corner Kellicar and Camden Roads, Campbelltown, NSW* (Ref: E33438PLrpt, dated 30 September 2020). (Referred to as PSI)

⁴ JKE, (2021). *Report to Erilyan on Detailed (Stage 2) Site Investigation for Proposed Commercial Development (Genesis Care) at Corner Kellicar and Camden Roads, Campbelltown, NSW* (Ref: E33438PLrpt2, dated 24 February 2021) (referred to as the DSI)

⁵ JKG, (2020). *Report to Erilyan Pty Ltd on Geotechnical Investigation for Proposed Genesiscare Campbelltown at Cnr Kellicar & Camden Roads, Campbelltown, NSW*. (Ref: 33438Arpt, dated 7 October 2020) (referred to as the JKG 2020 report)

1.2 Remediation Goal, Aims and Objectives

The goal of the remediation is to render the site suitable for the proposed development from a contamination viewpoint. The primary aim of the remediation at the site is to reduce the human health risks posed by site contamination to an acceptable level.

The objectives of the RAP are to:

- Provide a methodology to remediate and validate the site;
- Provide a contingency plan for the remediation works;
- Outline site management procedures to be implemented during remediation work; and
- Provide an unexpected finds protocol to be implemented during the development works.

1.3 Scope of Work

The RAP was prepared generally in accordance with a JKE proposal (Ref: EP52719PL) of 23 September 2020 and written acceptance from the client of 15 October 2021. The scope of work included a review of previous reports, review of the Conceptual Site Model (CSM), review of the proposed development details, consultation with the client and preparation of the RAP.

The RAP was prepared with reference to the National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)⁶, SEPP55 and other guidelines made under or with regards to the Contaminated Land Management Act (1997)⁷, including the Consultants Reporting on Contaminated Land (2020)⁸ guidelines.

A list of reference documents/guidelines is included in the appendices.

⁶ National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)*. (referred to as NEPM 2013)

⁷ Contaminated Land Management Act 1997 (NSW). (referred to as CLM Act 1997)

⁸ NSW EPA, (2020). *Consultants reporting on contaminated land, Contaminated Land Guidelines*. (referred to as Consultants Reporting Guidelines)

2 SITE INFORMATION

2.1 Summary of PSI and DSI

The PSI included a review of historical information and sampling from eight borehole locations (BH1 to BH8 – as shown on Figure 2). The primary aims of the PSI were to make a preliminary assessment of site contamination and provide a preliminary waste classification for soil waste that may be generated during the proposed development works.

A summary of the site history, as established during the PSI, is presented in the following table:

Table 2-1: Summary of Historical Land Uses / Activities

Year(s)	Potential Land Use / Activities
1911-1980	The site was likely used for agricultural (grazing) purposes at various times during this period. The aerial photographs indicated various small-scale construction and demolition activities took place at the site, most likely associated with residential land uses. The surrounds were mostly used for agricultural and residential purposes.
1980-1991	The site was gradually bought by Campbelltown City Council. It was around this time the aerial photographs indicated the residential and ancillary buildings were demolished and the site became a public recreation area. The surrounds continued to be utilised for residential and agricultural land purposes with other construction activities/uses taking place.
1980-present day	The site was maintained as a public recreation area with grass and other vegetation. The surrounds continued to be developed.

The PSI identified bonded ACM within the fill (i.e. historically imported/disturbed soil) from BH2, located in the eastern area of the site. Asbestos was also identified in fill/soil from BH7 (0.1-0.2m) in the western area of the site. Based on the Tier 1 risk assessment, the contamination identified at the site was considered to potentially pose a risk to human-health if not managed properly during the construction phase of the proposed development. The asbestos-related risks in the context of the current land use were assessed to be low due to the most likely form of asbestos being ACM (i.e. bonded/non-friable) and there being consistent grass coverage across the majority of the site.

A PSI recommended a DSI to address the identified data gaps and to facilitate preparation of a RAP and/or asbestos management plan (AMP). The PSI concluded that the DSI was to include the following:

- Additional soil sampling from 26 locations for asbestos quantification of asbestos/ACM in fill (recommended to be grid-based sampling across the site using an excavator); and
- Additional soil sampling and analysis of the fill and natural soil from at least eight of these locations to confirm the waste classification and provide additional characterisation for the identified contaminants of potential concern (CoPC).

It is noted that the PSI applied Health Investigation Levels (HILs) for a 'public open space; secondary schools; and footpaths' exposure scenario (land use Type C), in accordance with the general philosophy of the NEPM

(2013) in relation to hospitals and medical land uses where there is a potential for children to visit the site from time to time. This land use exposure scenario was subsequently reviewed for the purpose of this DSI, and a decision was made to use a 'commercial/industrial' (land use Type D) exposure setting based on the proposed health services development.

Soil samples were obtained from 26 test pit locations across the site for the DSI (TP101 to TP126 – as shown on Figure 2). The test pits generally encountered fill material (i.e. historically imported soil) to depths of between approximately 0.3m below ground level (BGL) to 0.8mBGL, underlain by natural (alluvial) silty clay. The fill contained inclusions of igneous, siltstone and sandstone gravel, siltstone cobbles, plastic, glass, fibre cement fragments (FCF)/ACM, tile fragments, concrete fragments, brick fragments, steel, sand, ash, slag and root fibres.

ACM was encountered at two locations during the PSI and at 10 locations during the DSI. The occurrence of ACM in the fill was widespread across the site and there was no clear delineation between fill/areas where ACM was and was not observed. Asbestos concentrations exceeded the site assessment criteria (SAC) in three of the test pits. Elevated concentrations of the remaining CoPC were not encountered above the adopted SAC.

Based on the Tier 1 risk assessment, the contamination identified in soil was assessed to pose a potential risk in the current site configuration and in the context of the proposed development. Interim management of asbestos was recommended and a RAP was also recommended to document the procedure for remediating the site.

The data summary tables from the PSI and DSI are attached in Appendix C and the contamination data is shown on Figure 3 in Appendix A.

2.2 Site Identification

Table 2-2: Site Identification

Current Site Owner (certificate of title):	Campbelltown City Council
Site Address:	Cnr Kellicar and Camden Roads, Campbelltown, NSW
Lot & Deposited Plan:	Lot 1 in DP883417
Current Land Use:	Public Open Space
Proposed Land Use:	Commercial Development (Genesis Care Medical Facility)
Local Government Authority:	Campbelltown City Council
Current Zoning:	B4: Mixed Use
Site Area (m²) (approx.):	4,744m ²

RL (AHD in m) (approx.):	66-68
Geographical Location (decimal degrees) (approx.):	Latitude: -34.071297 Longitude: 150.80588
Site Location Plan:	Figure 1
Sample Location Plan:	Figure 2

2.3 Site Location, Topography and Regional Setting

The site is located in a predominantly commercial and residential area of Campbelltown and is bound by Kellicar Road to the south-east and Camden Road to the south-west. The site is located approximately 70m west of Birunji Creek and approximately 90m south of Bow Bowling Creek.

The regional topography is an alluvial floodplain and is characterised by a hillside that falls gently toward the south-west. The site itself is located mid-slope of the hillside and falls gently to the south-west, towards Buirunji Creek at approximately 3°.

2.4 Summary of Site Inspections

A walkover inspection of the site was undertaken by JKE on 16 December 2020 for the DSI. The site observations are summarised below:

- The site was vacant grassed land and used as a public reserve and there were no visible indicators of former land use;
- The site was fenced along the western boundary by a steel mesh fence. The remaining boundaries were open with no fencing. The site predominantly consisted of grass cover with minimal exposed soil at the surface. No signs of soil erosion were identified;
- No evidence was identified of chemicals or waste being stored at the site;
- Where bare soil was exposed at the surface, the material visually appeared to be fill/disturbed soil. No odours, visible staining or visible ACM was identified at the time of the inspection;
- An open stormwater drain was located parallel to the northern site boundary which discharged directly into Birunji Creek. Surface water runoff was assumed to follow the general slope of the site towards the south-west;
- Birunji Creek was located approximately 70m south-west of the site. This creek feeds into a man-made duck pond and wetland area approximately 150m south-west of the site; and
- The site was predominantly grassed with minor areas of exposed soil at the surface. Large exotic and native trees and shrubs were located along the western boundary and towards the northern corner of the site. No visible signs of plant stress or dieback was identified.

During the site inspection, JKE observed the following land uses in the immediate surrounds:

- North – Camden Road and Railway Line;
- South – Junction of Narellan and Kellicar Roads and Campbelltown Catholic Club beyond
- East – Camden Road and Campbelltown Library; and

- West – Narellan Road and Birunji Creek.

JKE did not observe any land uses in the immediate surrounds that were identified as potential contamination sources for the site.

2.5 Summary of Geology, Soils and Hydrogeology

2.5.1 Regional Geology

Regional geological information reviewed as part of the PSI indicated that the site is underlain by Quaternary alluvium, then Ashfield Shale of the Wianamatta Group.

2.5.2 Acid Sulfate Soil (ASS) Risk and Planning

ASS information reviewed as part of the PSI indicated that the site is not mapped as being in an ASS risk area.

2.5.3 Hydrogeology

Hydrogeological information reviewed as part of the PSI indicated that there were no registered bores within 500m of the site. There were approximately 11 groundwater bores within 1,000m of the site. In summary:

- The nearest registered bore was located approximately 650m from the site. This was utilised for monitoring purposes;
- The majority of the registered bores were registered for monitoring purposes;
- There were no nearby bores (i.e. within 500m) registered for domestic or irrigation uses; and
- The drillers log information from the closest registered bores typically identified fill and/or clay soil to depths of 1.6-2.7m, underlain by shale (siltstone) bedrock. Standing water levels (SWLs) in the bores ranged from 3.0m below ground level (BGL) to 6.2mBGL.

Based on the potential sources of contamination identified and the soil analysis results from the PSI/DSI, there was considered to be a low potential for groundwater contamination to pose a risk to receptors and an investigation of groundwater was not recommended.

2.5.4 Receiving Water Bodies

The site location and regional topography indicates that excess surface water flows have the potential to enter Birunji Creek located south-west of the site. This water body is a potential receptor.

3 REVIEW OF CONCEPTUAL SITE MODEL

NEPM (2013) defines a CSM as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM for the site is presented in the following sub-sections and is based on a review of information and the results from the PSI/DSI. Reference should also be made to the figures attached in the appendices.

3.1 Summary of Contamination (Site Characterisation)

Contamination-related risks at the site are associated with the soil (fill). The fill is impacted with scattered fragments of bonded ACM in the form of fibre cement sheeting. It is possible that the ACM was imported with the fill, or that the ACM impacts occurred from historical demolition activities on site, with the ACM being churned into the soil and moved around the site during previous earthworks.

Fill was encountered at the surface in all test pits during the DSI and extended to depths of approximately 0.3mBGL to 0.8mBGL. The fill typically comprised silty clay, sandy gravel, gravelly sand, silty sandy gravel and silty sandy clay with inclusions of igneous, siltstone and sandstone gravel, siltstone cobbles, plastic, glass, ACM, tile fragments, concrete fragments, brick fragments, steel, sand, ash, slag and root fibres. The fill depths at the test pit and borehole locations are shown on Figures 2 and 3 in Appendix A.

ACM was found in fill in 12 locations as shown on Figure 3 in Appendix A. Regarding the conceptual model, the occurrence of ACM is considered to be widespread in fill and there is no clear delineation/differentiation between the fill where ACM was found and where ACM was not found. On this basis, and for the purpose of the RAP, all fill is considered to be impacted by ACM. The highest asbestos (in ACM) concentration was 0.1247%w/w and there was a total of four locations where the asbestos concentrations exceeded the SAC of 0.05%w/w.

3.2 Review of CSM

The table below includes a review of the CSM and this CSM has been used to design the remediation strategy. The CSM will require further review as additional site data becomes available.

Table 3-1: CSM Review

Contaminant source(s) and contaminants of concern	The contamination source is the historically imported fill (soil). The contaminant of concern from a remediation standpoint is asbestos in the non-friable/bonded form (i.e. ACM).
Affected media	Soil/fill has been identified as the affected medium for remediation. Although it is also noted that asbestos fibres can mobilise to air and this will be considered during the construction-phase management of the site.
Receptor identification	Human receptors include site users (primarily including adults and, to a lesser extent children, in a commercial-type land use scenario), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users (including adults and children) generally in a public open space type scenario as the areas immediately adjoining the site include footpaths and roadways.

Exposure pathways	The exposure pathway for asbestos includes inhalation of airborne asbestos fibres.
Evaluation of data gaps	There were no data gaps following completion of the DSI.

3.3 Remediation Extent

For the purpose of the RAP, remediation will extend across the site to the full extent of the cadastral boundaries. Remediation will be limited vertically to the depth of the fill (to be confirmed via validation).

4 REMEDIATION OPTIONS

4.1 Soil Remediation

The NSW EPA follows the hierarchy set out in NEPM 2013 for the remediation of contaminated sites. The preferred order for soil remediation and management is as follows:

1. On-site treatment of soil so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level;
2. Off-site treatment of excavated material so that the contaminant is either destroyed or the associated hazard is reduced to an acceptable level, after which the soil is returned to the site;

Or if the above are not practicable:

3. Consolidation and isolation of the soil by on-site containment within a properly designed barrier; and
4. Removal of contaminated material to an approved site or facility, followed where necessary by replacement with clean material; or
5. Where the assessment indicates that remediation would have no net environmental benefit or would have a net adverse environmental effect, implementation of an appropriate management strategy.

For simplicity herein, the above hierarchy are respectively referred to as Option 1, Option 2, Option 3 etc.

The NEPM 2013 and Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2021)⁹ prefer the following asbestos remediation hierarchy:

1. Minimisation of public risk;
2. Minimisation of contaminated soil disturbance; and
3. Minimisation of contaminated material/soil moved to landfill.

The NSW EPA Contaminated Land Management Guidelines for the NSW Site Auditor Scheme (3rd Edition) (2017)¹⁰ provides the following additional requirements to be taken into consideration:

- Remediation should not proceed in the event that it is likely to cause a greater adverse effect than leaving the site undisturbed; and
- Where there are large quantities of soil with low levels of contamination, alternative strategies should be considered or developed.

⁹ Western Australian (WA) Department of Health (DoH), (2021). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia. (referred to as WA DoH 2021)

¹⁰ NSW EPA, (2017). *Contaminated land Management, Guidelines for the NSW Site Auditor Scheme (3rd ed.)*. (referred to as Site Auditor Guidelines 2017)

4.2 Remediation Options Assessment

The table below discusses and assesses a range of remediation options:

Table 4-1: Consideration of Remediation Options

Option	Discussion	Assessment/Applicability
Option 1 On-site treatment of contaminated soil	On-site treatment can provide a mechanism to reuse the processed material, and in some instances, avoid the need for large scale earthworks. Treatment options are contaminant-specific and can include bio-remediation, soil washing, air sparging and soil vapour extraction, thermal desorption and physical removal of bonded asbestos containing material (ACM) fragments. Depending on the treatment option, licences may be necessary for specific individual waste streams. Licences for re-use of treated material/waste may also be required.	Treatment of ACM impacted fill via picking/physical removal is potentially achievable. However, such treatment is generally better suited to sandy soils. As the fill is predominantly clayey, the treatment process would be slow/time consuming and could result in further breakdown of the ACM (e.g. from use of machinery to facilitate the picking process) resulting in the occurrence of asbestos fines (AF).
Option 2 Off-site treatment of contaminated soil	Contaminated soils are excavated, transported to an approved/licensed treatment facility, treated to remove/stabilise the contaminants then returned to the subject site, transported to an alternative site or disposed to an approved landfill facility. This option is also contaminant-specific. The cost per tonne for transport to and from the site and for treatment is considered to be relatively high. The material would also have to be assessed in terms of suitability for reuse as part of the proposed development works under the waste and resource recovery regulatory framework.	Not considered to be applicable for this project for the reasons described above. Additionally, this option requires excavation and movement of the soil from and back to site which increases the carbon footprint of the remedial exercise and is therefore less sustainable than other remedial alternatives.
Option 3 Consolidation and isolation of impacted soil by cap and containment	This would include the consolidation of contaminated soil within an appropriately designed cell, or capping contaminated soils in-situ beneath appropriate clean capping materials (such as pavement and/or clean soil) to reduce the potential for future exposure. The capping and/or containment must be appropriate for the specific contaminant(s) of concern. An ongoing Environmental Management Plan (EMP) may be required if contamination is capped on-site that exceeds the SAC. The EMP would need to be publicly notified and made to be legally enforceable (e.g. via listings in the Section 10.7 planning certificate, via the Dial Before You Dig records and on the land title).	Discussions with the client indicated that consolidation of asbestos impacted fill into a cell and capping the cell was not the preferred option. However, we were advised that in-situ capping could occur. In-situ capping is an applicable option as this minimises disturbance of the asbestos and the cap can provide a barrier to minimise future disturbance and exposure during day-to-day use of the site. This is also considered to be the most sustainable option as it reduces excavation/carting of soil to landfill, which reduces the carbon footprint of the remedial exercise.

Option	Discussion	Assessment/Applicability
Option 4 Removal of contaminated material to an appropriate facility and reinstatement with clean material	Contaminated soils would be classified in accordance with NSW EPA guidelines for waste disposal, excavated and disposed of off-site to a licensed landfill. The material would have to meet the requirements for landfill disposal. Landfill gate fees (which may be significant) would apply in addition to transport costs.	Applicable for this project as the risk would be eliminated from the site in the context of the future land use. However, this is not the most sustainable option as there is a need for excavation/carting of soil to landfill, which increases the carbon footprint of the remedial exercise. This also increases the risk of disturbing/mobilising asbestos fibres to air, which could result in exposure.
Option 5 Implementation of management strategy	Contaminated soils would be managed in such a way to reduce risks to the receptors and monitor the conditions over time so that there is an on-going minimisation of risk. This may occur via the implementation of monitoring programs, potentially also involving capping systems.	Applicable as described for option 3.

4.3 Rationale for the Preferred Option for Remediation

The preferred options for remediation are as follows:

- Option 4 (excavation and off-site disposal), which is applicable for all fill that is not suitable to remain on-site for geotechnical purposes, or that is waste generated during the construction process, or fill that cannot be adequately capped in-situ; and
- Option 3/5 (in-situ capping and management), which is applicable to any fill that remains in-situ and can be adequately capped by the development.

Option 4 must apply as some of the fill must be removed from the site as it is not geotechnically suitable. The rationale for implementing Option 3 is as follows:

- Capping in-situ minimises unnecessary disturbance of ACM in soil and aligns with the WA DoH 2021 and NEPM 2013 hierarchy for managing asbestos;
- This option requires less excavation and less disposal of waste to landfill which reduces the overall carbon footprint for the remediation exercise and is more sustainable from a waste minimisation perspective;
- A 'cap and contain strategy' is commensurate with the level of risk posed by ACM in soil and is not expected to result in onerous management of the site during future day-to-day use. Future management would largely be triggered by contingencies during intrusive works such as maintenance or redevelopment etc.

5 REMEDIATION DETAILS

5.1 Roles and Responsibilities

Table 5-1: Roles and Responsibilities

Role	Responsibility
Client/Developer and Project Manager	The client Erilyan and their nominated representatives. The client/project manager is required to appoint the project team for the remediation and must provide all investigation reports including this RAP to the remediation contractor, consent authority and any other relevant parties involved in the project. The project manager is required to review all documents prepared for the project and manage the implementation of the procedures outlined in this RAP. The project manager is to take reasonable steps so that the remediation contractor and others have understood the RAP and will implement it in its totality. The project manager will review the RAP and other documents and will update the parties involved of any changes to the development or remediation sequence (in consultation with the validation consultant). Further details are outlined in the sections below.
Remediation Contractor	To be appointed. The remediation contractor is required to review all documents prepared for the project, apply for any relevant removal licences or permits and implement the remediation requirements outlined in this RAP. The remediation contractor is required to collect all necessary documentation associated with the remediation activities and forward this documentation onto the client and project manager as they become available. Further details are outlined in the sections below.
Validation Consultant	To be appointed The validation consultant¹¹ provides consulting advice and validation services in relation to the remediation, and prepares the site validation report. The validation consultant is required to review any deviation to this RAP or in the event of unexpected finds if and when encountered during the site work. The validation consultant is required to liaise with the client, project manager and remediation contractor on all matters pertaining to the site contamination, remediation and validation. The validation consultant must have a Licensed Asbestos Assessor on staff.

¹¹ The consultant must be a certified practitioner (specialising in site contamination), under one of the NSW EPA endorsed certification schemes

5.2 Pre-commencement

The project team is to have a pre-commencement meeting to discuss the sequence of remediation, and the remediation and validation tasks. The site management plan for remediation works (see Section 8) must be reviewed by project manager and remediation contractor, and appropriate steps are to be taken to ensure the adequate implementation of the plan.

It is noted that the in-situ capping process occurs concurrently with construction as the capping layers largely comprise the built form of the development (e.g. building slabs and pavements etc). The client must liaise with the consent authority at the time of the DA so that this can occur.

5.3 Summary of Remediation, Validation and Associated Tasks

The following general sequence of works is anticipated:

- Site establishment;
- Excavation/fill removal to the extent required for construction and remediation, and validation of this process; and
- Capping works, including installation of visual marker layers over the remaining fill, reinstatement of excavations (where required) using suitable (validated) imported materials, construction of pavements and buildings slabs and landscaping as required, and validation of this process.

5.3.1 Site Establishment

The remediation contractor is to establish on site as required to facilitate the remediation. Consideration must be given to the work sequence and extent of remediation/excavation so that the site establishment (e.g. site sheds, fencing, access points etc) does not inhibit the remediation works.

5.3.2 Excavation/Fill Removal

It is anticipated that excavation and fill removal may occur in stages. The project manager, remediation contractor and validation consultant must agree on the sequence of these works prior to the commencement of any excavation. JKE recommends that all fill removal and capping remediation occurs as early in the construction process as possible as this will reduce the potential for cross contamination and may also facilitate the cessation (or scaling back) of asbestos management requirements under the construction-phase AMP.

The proposed remediation and validation steps for excavation/fill removal are outlined in the following table. Reference is to be made to Section 6 for the detailed validation plan.

Table 5-2: Remediation – Excavation/Fill Removal

Step	Primary Role/ Responsibility	Procedure
1.	Remediation contractor and client/developer	<u>Evaluation of Minimum Capping Requirements and Excavation Planning:</u> Prior to the commencement of any excavation works, the minimum capping requirements outlined in Section 5.3.3 must be evaluated and considered in relation

Step	Primary Role/ Responsibility	Procedure
	Validation consultant	to the fill depths, construction details and the final development levels. The detailed 'for construction' documentation (drawings, plans etc) must be updated to reflect the proposed excavation depths and capping details. If any deviations are required to the capping specification outlined in this RAP, these must be evaluated by the validation consultant and any changes must be documented in an addendum to the RAP.
2.	Remediation contractor	<u>Site Management and Geotechnical/Stability:</u> The remediation contractor is to take steps to ensure the site management plan in this RAP are implemented for the remediation works. Geotechnical advice must be sought regarding the stability of the adjacent areas/boundaries prior to commencing remediation (as required). Stability issues should be addressed to the satisfaction of a suitably qualified geotechnical engineer. All underground services are to be appropriately disconnected and/or rerouted to facilitate the works.
3.	Remediation contractor	<u>Excavation and off-site Disposal of Fill:</u> Fill is to be excavated to the required depths, loaded directly into trucks and disposed of to a licensed facility in accordance with the assigned waste classification. It is noted that the fill was classified as 'General Solid Waste (non-putrescible) containing Special Waste (asbestos)' in the DSI. Given the time that has elapsed since the DSI was prepared, JKE or the validation consultant may need to provide an addendum to the DSI confirming the classification and approximate quantities of waste to be disposed, in order for the receiving facility to approve their acceptance of the waste. The receiving facility must be contacted prior to commencement in order to clarify these requirements.
4.	Validation Consultant	<u>Validation of remedial excavations:</u> Following completion of the fill excavation/removal, the validation consultant is to obtain validation samples in accordance with the validation plan in Section 6 of this RAP. Any necessary asbestos clearances must also be provided in accordance with the RAP and construction-phase AMP.

5.3.3 Capping Works

The proposed capping specification is provided in the following table. It is noted that these capping requirements only apply to areas where fill remains. In the event that the excavations result in the complete removal of fill from an area to expose the underlying natural soil, capping of this area would not be required provided the fill removal is validated in accordance with Section 6.

As noted above in Section 5.3.2, the following capping requirements must be evaluated and considered in relation to the fill depths, construction details and the final development levels. The detailed 'for construction' documentation (drawings, plans etc) must be updated to reflect the capping details.

Table 5-3: Capping Specification

Area	Capping Specification [^]
Continuous hardstand (e.g. pavement/concrete, new building slab, or beneath permanent fixed features such as steps, walls, the OSD tank etc.)	Installation of: - Mesh geogrid¹² layer over the contaminated fill. The use of soil 'U' nails to pin down the mesh would be acceptable; - Clean imported (validated) basecourse, as required based on the engineering specification; and - Pavement materials/construction of development feature (e.g. steps, OSD, curb and guttering etc.), as required.
Landscaping/areas not covered in pavement/hardstand	Installation of: - Mesh geogrid layer over the contaminated fill. The use of soil 'U' nails to pin down the mesh would be acceptable; and - Minimum of 0.5m of clean (validated) capping material. All new plantings must occur in the clean material, above the mesh geogrid. In the event that larger tree plantings require holes deeper than 500mm to accommodate the root ball, the minimum clean capping thickness must be increased at that location so that the tree pit can be excavated to provide a minimum of 0.5m clearance from the side and base of the root ball to the side and base of the tree pit. The mesh geogrid must be installed at the walls and base of the tree pit and secured appropriately. Where a continuous layer of mesh cannot be 'wrapped' down into the pit, the sections of mesh for the tree pit must be cut out separately to achieve a continuous layer on the base and walls of the pit and overlapped with the adjoining areas by at least 1m. Under no circumstances should holes for new plantings penetrate the mesh geogrid.
Service trenches	Any new underground services installed in areas where fill remains must be installed in trenches lined with a suitable marker layer, then backfilled with clean (validated) materials. The marker layer could include a geotextile or a mesh geogrid and this is to be overlapped by at least 1m with the areas adjoining the trench.

[^] The capping specification relates to the remediation only and has not considered engineering or landscape design requirements for the site. Engineering and/or landscape design requirements must be assessed by others in the context of the RAP requirements and the validation consultant must be advised if any aspects of the capping are not achievable or require alternative solutions.

The proposed remediation and validation steps associated with the capping works are outlined in the following table. Reference is to be made to Section 6 for the detailed validation plan.

Table 5-4: Remediation – Capping

Step	Primary Role/Responsibility	Procedure
1.	Remediation contractor (or the nominated construction contractor)	<u>Installation of Marker Layers and Survey of site levels:</u> After the bulk excavation levels are achieved and validation of the excavation/fill removal has occurred in accordance with Sections 5.3.2 and 6 of this RAP, the marker layer is to be installed over the contaminated fill and secured appropriately using 'U' nails, pegs or other means.

¹² The purpose of the geogrid marker is to provide visual demarcation and a physical barrier to inhibit easy access to the underlying contaminated fill. Products commonly used on previous projects include SECUGRID® Q1 and E'GRID®. Alternatively, a geotextile could also be considered (such as TerraStop® Hi Vis Layer), subject to the relevant project consultants (e.g. engineers, landscape designers etc) approval.

Step	Primary Role/ Responsibility	Procedure
		A pre-capping levels survey is to be completed by the relevant contractor prior to the placement of any overlying clean capping layers. The purpose of the survey is to provide factual information of the site levels, prior to installation of the clean capping layers. Survey points must be taken at appropriate frequencies (say every 2-4m and/or significant change in surface elevation such as service trenches and tree pits etc). The pre-capping levels survey is to be provided to the client/project manager and the validation consultant prior to any further capping works commencing.
2.	Validation consultant/ remediation contractor (or the nominated construction contractor)	<u>Importation of Capping Materials:</u> Imported materials are to be validated in accordance with Section 6. Validated materials can then be used to achieve the minimum capping requirements for the project.
3.	Remediation contractor (or the nominated construction contractor)	<u>Post-Capping Survey of site levels:</u> After completion of capping, a post-capping levels survey is to be completed by the relevant contractor. The purpose of the survey is to provide factual information regarding the capping thickness and confirm that the minimum capping requirements have been achieved. Survey points must be taken at appropriate frequencies (say every 2-4m and also to reflect those points captured during the pre-capping levels survey above service trenches and tree pits etc). The post-capping levels survey is to be provided to the client/project manager and the validation consultant.

5.4 Remediation Documentation

The remediation contractor must retain all documentation associated with the remediation, including but not limited to:

- Waste disposal dockets;
- Asbestos management documentation, including all relevant notifications and monitoring reports (additional details in this regard are to be outlined in the AMP);
- As built drawings indicating the extent of marker layers and capping thicknesses/materials;
- Photographs of remediation works;
- Waste tracking documentation (see below and the example waste tracking form in Appendix D);
- Survey information; and
- Imported materials documentation (see below and the example imported material tracking form in Appendix D).

Copies of these documents must be forwarded to the project manager and the validation consultant for assessment and inclusion in the validation report.

5.4.1 Waste

All waste removed from the site is to be appropriately classified, tracked and managed in accordance with the relevant guidelines and regulations. The remediation contractor (and/or their nominated construction contractor/asbestos removalist) is to maintain adequate records and retain all documentation for waste disposal activities including:

- A summary register (in Microsoft Excel format) including details such as waste disposal dates, waste materials descriptions, disposal locations (i.e. facility details) and reconciliation of this information with the associated waste classification documentation and the waste disposal docket numbers;
- Waste tracking records and transport certificates (where waste is required to be tracked/transported in accordance with the regulations); and
- Disposal dockets for the waste (i.e. weighbridge dockets for each load).

Any additional soil waste classification documentation is to be prepared in accordance with the reporting requirements specified by the NSW EPA as outlined in the Consultants Reporting Guidelines and the NSW EPA Waste Classification Guidelines (2014). The documentation should be reviewed by the validation consultant (if the documentation is prepared by others) prior to the waste leaving the site.

A review of the disposal facility's Environment Protection Licence (EPL) issued under the Protection of the Environment Operations (POEO) Act (1997)¹³ is to be undertaken to assess whether the facility is appropriately licensed to receive the waste.

The above information is to be provided to the validation consultant for inclusion in the validation report. The register must be set up at the beginning of the project and provided to the validation consultant regularly so the details can be checked and any rectification of the record keeping process can occur in a timely manner.

5.4.2 Imported Materials

The remediation contractor (and/or their nominated construction contractor) is to maintain, for the duration of the project, an imported material register. This must include a register (in Microsoft Excel format) with details of each imported material type, supplier details, summary record of where the imported materials were placed on site, and importation docket numbers and a tally of quantities (separated for each import stream). Dockets for imported materials are to be provided electronically so these can be reconciled with the register.

Examples of imported materials for this project may include but would not be limited to: site preparation materials (e.g. DGB, 40/70, material to create the piling platform etc); clean capping material such as Virgin Excavated Natural Material (VENM); and landscaping materials such as topsoil garden mixes, mulches etc.

The above information is to be provided to the validation consultant for inclusion in the validation report. The register be set up at the beginning of the project and provided to the validation consultant regularly

¹³NSW Government, (1997)). *Protection of Environment Operations Act*. (referred to as POEO Act 1997)



(minimum of monthly) so the details can be checked and any rectification of the record keeping process can occur in a timely manner.

6 VALIDATION PLAN

Validation is necessary to demonstrate that remedial measures described in the RAP have been successful and that the site is suitable for the intended land use. The sampling program for the validation is outlined in Section 6.1. This is the minimum requirement based on the remedial strategies provided. Additional validation sampling may be required based on the observations or unexpected finds made during remediation.

6.1 Validation Sampling and Documentation

The following subsections outline the validation requirements for each aspect of the remediation:

6.1.1 Excavation/Fill Removal

Following the excavation works outlined in Section 5.3.2, the validation consultant is to assess the finished levels to establish whether fill remains. In areas where all fill has been completely removed, this must be confirmed via a site inspection and review of the development plans, and an asbestos clearance certificate must be provided by the validation consultant confirming the following:

1. The extent of the area where all fill was removed, with accurate set-out measurements noted on a site plan;
2. That all fill was removed and the surface is exposed natural soil; and
3. That there is no visible asbestos containing materials at the surface of the area(s) inspected as part of the clearance.

In areas where fill remains, a bulk (10L) sample is to be collected at a minimum rate of one sample per discrete area, or at one sample per 100m² (whichever is greater). The bulk sample is to be collected from the 0-0.2m depth interval at the base of the excavation, assuming there is at least 0.2m of fill remaining in-situ (if the depth of remaining fill is shallower than 0.2m, the validation sample depth interval shall be revised so only the fill is sampled). One sample per location is considered to be representative of the fill remaining at that location as the DSI generally only encountered one fill profile in each test pit. The bulk sample is to be screened (sieved) in the field using the methods outlined in NEPM 2013/WA DoH 2021.

The validation sampling locations must be recorded on a site plan along with the extent of the fill area(s) being validated.

6.1.2 Capping Works

The validation consultant and remediation contractor are to document the marker mesh installation photographically. Survey plans with pre- and post-capping levels are to be provided to the validation consultant for review as part of the validation.

All imported materials are to be validated in accordance with Section 6.1.3 below.

6.1.3 Imported Materials

Prior to the importation of any materials, the remediation contractor must provide details of the materials to the validation consultant. This must include any existing documentation relating to the products/materials, including but not limited to existing waste reports, specifications and standards under which the products are produced, waste reports, batch or routine testing under relevant Resource Recovery Order/Exemption etc.

A minimum of three samples from each imported material type must be collected and analysed for heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), total recoverable hydrocarbons (TRHs), benzene, toluene, ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAHs), organochlorine and organophosphate pesticides (OCP/OPPs), polychlorinated biphenyls (PCBs) and asbestos (500ml NEPM 2013 analysis). Additional analysis may be required depending on the material type and/or history of the material/source site, at the discretion of the validation consultant.

Material is to be inspected upon importation by the validation consultant to confirm it is free of visible/olfactory indicators of contamination and is consistent with documentation. Photographic documentation and an inspection log are to be maintained. A minimum of one inspection per imported material type must be undertaken by the validation consultant.

6.2 Validation Assessment Criteria and Data Assessment

The VAC to be adopted for the validation assessment are outlined in the table below:

Table 6-1: Validation Assessment Criteria (VAC)

Validation Aspect	VAC
Excavation/Fill Removal	The asbestos quantification data is to be compared to the HSL-D criterion for asbestos as defined in the NEPM 2013. This is 0.05%w/w asbestos in ACM. The purpose of this data is to facilitate further assessment of risk and establish the extent of long-term management for the site.
Capping Works	The purpose of the surveys is to provide factual information regarding the capping thickness and confirm that the minimum capping requirements have been achieved. Capping thicknesses demonstrated by survey will be compared to minimum capping requirements specified in Section 5.3.3 of this RAP.
Imported materials	All results for imported materials are to be compared to the HIL/HSL-D criteria in NEPM 2013 for general screening purposes. However, asbestos must be 'absent' and the asbestos HSL cannot be utilised for imported materials. Results below the criteria will indicate there is a low risk from the imported materials with regards to contaminant exposure to humans. Results for landscaping materials are to also be compared to the EIL/ESL criteria for a 'commercial/industrial' land use setting. Results for VENM and other imported materials will need to be consistent with expectations for those materials. VENM must meet the definition presented in the waste classification guidelines and the POEO Act 1997.

Validation Aspect	VAC
	Recycled materials are to meet the criteria of the relevant exemption/order under which they are produced. Aesthetics: soils to be free of staining and odours.

Laboratory data is to be assessed as above or below the VAC. Statistical analysis is not proposed.

6.3 Validation Sampling, Analysis and Quality Plan (SAQP)

Data Quality Objectives (DQOs) and Data Quality Indicators (DQIs) should be clearly outlined and assessed as part of the validation process. A framework for the DQO and DQI process is outlined below and should be reflected in the validation report.

DQOs have been broadly established for the validation with regards to the seven-step process outlined NEPM (2013). The seven steps include the following which are detailed further in the following subsections:

- State the problem;
- Identify the decisions/goal of the study;
- Identify information inputs;
- Define the study boundary;
- Develop the analytical approach/decision rule;
- Specify the performance/acceptance criteria; and
- Optimise the design for obtaining the data.

DQIs are to be assessed based on field and laboratory considerations for precision, accuracy, representativeness, completeness and comparability.

6.3.1 Step 1 - State the Problem

Validation data is required to demonstrate that the remediation is successful and that the site is suitable for the proposed land use described in Section 1.1.

6.3.2 Step 2 - Identify the Decisions of the Study

The remediation goal, aims and objectives are defined in Section 1.2. The decisions to be made reflect these objectives and are as follows:

- Was the remediation undertaken in accordance with the RAP?
- If there were any deviations, what were these and how do they impact the outcome of the validation?
- Are any of the validation results above the VAC?
- Is the site suitable for the proposed development from a contamination viewpoint?

6.3.3 Step 3 - Identify Information Inputs

The primary information inputs required to address the decisions outlined in Step 2 include the following:

- Existing relevant data from previous reports;
- Site information, including site observations, inspections, asbestos clearance certificates and survey information;
- Validation sampling;
- Laboratory analysis of soils; and
- Field and laboratory QA/QC data.

6.3.4 Step 4 - Define the Study Boundary

The remediation and validation will be confined to the site boundaries as shown in Figure 2 in appendix A and will be limited vertically to the maximum depth of fill.

6.3.5 Step 5 - Develop an Analytical Approach (or Decision Rule)

6.3.5.1 VAC

The validation data will be assessed in accordance with the requirements outlined in Section 6.1 and 6.2.

Regarding the asbestos quantification sampling of excavations, this data is to be used to establish the long-term management provisions for the site. In the event that fill remains and the validation sampling demonstrates that all remaining fill has asbestos results <VAC, then the validation will include the preparation of a long-term AMP for the site. In the event that fill remains and the validation sampling demonstrates that any of the remaining fill has asbestos results >VAC, then the validation will include the preparation of a long-term EMP for the site.

6.3.5.2 Field and Laboratory QA/QC

Field QA/QC is to include analysis of inter-laboratory duplicates (5% frequency), intra-laboratory duplicates (5% frequency), trip spike, trip blank and rinsate samples (one for each day of sampling to demonstrate adequacy of standard sampling/handling procedures). Field QA/QC samples are to be analysed for the contaminants of concern, except asbestos. The trip spike will only be analysed for BTEX. This applies to imported materials sampling only.

DQIs for field and laboratory QA/QC samples are defined below:

Field Duplicates

Acceptable targets for precision of field duplicates will be 30% or less, consistent with NEPM (2013). RPD failures will be considered qualitatively on a case-by-case basis taking into account factors such as the concentrations used to calculate the RPD (i.e. RPD exceedance where concentrations are close to the PQL are typically not as significant as those where concentrations are reported at least five or 10 times the PQL), sample type, collection methods and the specific analyte where the RPD exceedance was reported.

Trip Blanks

Acceptable targets for trip blank samples will be less than the PQL for organic analytes. Metals will be considered on a case-by-case basis with regards to the reference material used as the blank medium.

Trip Spikes

Acceptable targets for trip spike samples will be 70% to 130%.

Laboratory QA/QC

The suitability of the laboratory data will be assessed against the laboratory QA/QC criteria. These criteria are developed and implemented in accordance with the laboratory's NATA accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

A summary of the typical limits is provided below:

RPDs

- Results that are <5 times the PQL, any RPD is acceptable; and
- Results >5 times the PQL, RPDs between 0-50% are acceptable.

Laboratory Control Samples (LCS) and Matrix Spikes

- 70-130% recovery acceptable for metals and inorganics; and
- 60-140% recovery acceptable for organics.

Surrogate Spikes

- 60-140% recovery acceptable for general organics.

Method Blanks

- All results less than PQL.

In the event that acceptable limits are not met by the laboratory analysis, other lines of evidence will be reviewed (e.g. field observations of samples, preservation, handling etc) and, where required, consultation with the laboratory is to be undertaken in an effort to establish the cause of the non-conformance. Where uncertainty exists, the validation consultant is to adopt the most conservative concentration reported.

6.3.5.3 Appropriateness of PQLs

The PQLs of the analytical methods are to be considered in relation to the VAC to confirm that the PQLs are less than the VAC. In cases where the PQLs are greater than the VAC, a discussion of this is to be provided.

6.3.6 Step 6 – Specify Limits on Decision Errors

To limit the potential for decision errors, a range of quality assurance processes are adopted. A quantitative assessment of the potential for false positives and false negatives in the analytical results is to be undertaken

with reference to Schedule B(3) of NEPM (2013) using the data quality assurance information collected. There have been no limits on decision errors set for validation purposes.

6.3.7 Step 7 - Optimise the Design for Obtaining Data

The design is to be optimised via the collection of validation data to demonstrate the success of the key aspects of the remediation.

6.3.8 Sampling Plan

The proposed sampling plan for the validation is described in Section 6.1.

6.4 Validation Report and EMP or AMP

As part of the site validation process, a validation report will be prepared by the validation consultant. The report will present the results of the validation assessment and will be prepared in accordance with the Consultants Reporting Guidelines.

Depending on the outcome of the validation, there are three potential scenarios regarding future management and the preparation of a management plan as part of the site validation process:

1. If all fill is removed and this process is adequately validated, long-term management of the site via an EMP or AMP should not be required. The validation report would need to draw conclusions to this effect;
2. If fill remains and the validation of the fill confirms that the validation results for asbestos are all <VAC, then a long-term AMP must be prepared. The requirement for an AMP on a commercial site is triggered under Clause 429 of the Work Health and Safety Regulation 2017 (NSW) due to the potential for asbestos to remaining in fill (albeit at concentrations <VAC). The AMP must be integrated into the building management system; or
3. If fill remains and the validation confirms that the validation results for asbestos are >VAC, then a long-term EMP must be prepared. Provisions must be made so that this document is publicly notified and so it can reasonably be made to be legally enforceable. This is typically achieved via a notation in the Council Section 10.7 planning certificate, a covenant registered on the land title under Section 88B of the Conveyancing Act 1919 (NSW) and a listing on the DBYD registry.

The AMP/EMP will include requirements for passive management of the capping system that will focus on maintaining the cap in the areas where fill remains, to minimise the potential of exposure to the underlying fill. The plan will also include contingencies for managing intrusive works in the event that the capping system is breached.

7 CONTINGENCY PLAN

A review of the proposed remediation works has indicated that the greatest risks that may affect the success of the remediation include unexpected finds and validation failure for imported materials. A contingency plan for the remediation is provided below:

7.1 Unexpected Finds

Residual hazards that may exist at the site would generally be expected to be detectable through visual or olfactory means. At this site, these types of hazards may include odorous or stained hydrocarbon impacted soils, underground tanks, or friable types of asbestos such as fibrous asbestos and severely degraded fibre cement etc. The procedure to be followed in the event of an unexpected find is presented below:

- In the event of an unexpected find, all work in the immediate vicinity should cease and the remediation contractor should contact the validation consultant and the client/project manager;
- Temporary barricades should be erected to isolate the area from access to workers;
- The validation consultant is to attend the site, adequately characterise the contamination and provide advice in relation to site management and remediation. In the event that remediation differs from that outlined in this RAP, an addendum RAP must be prepared in consultation with the project stakeholders and submitted to the consent authority; and
- Contamination should be remediated and validated in accordance with the advice provided, and the results should be included in the validation report.

7.2 Importation Failure for VENM or other Imported Materials

Where material to be imported onto the site does not meet the importation VAC, the material should not be imported. Alternative material must be sourced that meets the importation requirements.

8 SITE MANAGEMENT PLAN FOR REMEDIATION WORKS

The information outlined in this section of the RAP is for the remediation work only. The client must make reference to the development consent for specific site management requirements for the overall development of the site.

8.1 Construction-Phase Asbestos Management Plan

Prior to the commencement of remediation, a construction-phase AMP must be prepared. The AMP must be developed with regards to this RAP and the construction/remediation requirements for the site.

8.2 Interim Site Management

As noted in the DSI, an interim AMP (for asbestos in/on soil) should be prepared and implemented to manage the site until development occurs. This interim AMP must outline measures to limit site access/activities, maintain grass cover, complete surface picks/clearances and outline contingency procedures for intrusive works where such works cannot be avoided. Alternatively, the site should be fenced to eliminate access.

8.3 Project Contacts

Emergency procedures and contact telephone numbers should be displayed in a prominent position at the site entrance gate and within the main site working areas. The contact details of key project personnel are summarised in the following table:

Table 8-1: Project Contacts

Role	Company	Contact Details
Project Manager	Erilyan	Contact: Ben Lynam Mobile: 0412 830 988 Email: blynam@erilyan.com.au
Remediation Contractor	To be appointed	-
Validation Consultant	To be appointed	-
Certifier	To be appointed	-
NSW EPA	Pollution Line	131 555
Emergency Services	Ambulance, Police, Fire	000

8.4 Security

Appropriate fencing should be installed as required to secure the site and to isolate the remediation areas. Warning signs should be erected, which outline the personal protective equipment (PPE) required for remediation work.

8.5 Timing and Sequencing of Remediation Works

The anticipated sequence of remediation works is outlined in Section 5.3. The client must engage with the consent authority so that the remediation can occur as required concurrently with construction.

8.6 Site Soil and Water Management Plan

The remediation contractor should prepare a detailed soil and water management plan prior to the commencement of site works and this should consider the requirements of the construction-phase AMP. Silt fences should be used to control the surface water runoff at all appropriate locations of the site and appropriate measures are to be implemented to manage soil/water disturbance to the satisfaction of the regulator/consent authority. Reference should be made to the consent conditions for further details.

All stockpiled materials should be placed within an erosion containment boundary with silt fences and sandbags employed to limit sediment movement. The containment area should be located away from drainage lines/low-points, gutters, stormwater pits and inlets and the site boundary. No liquid waste or runoff should be discharged to the stormwater or sewerage system without the approval of the appropriate authorities.

Reference is also to be made to the construction-phase AMP in this regard.

8.7 Noise and Vibration Control Plan

The guidelines for minimisation of noise on construction sites outlined in AS-2460 (2002)¹⁴ should be adopted. Other measures specified in the consent conditions should also be complied with. Noise producing machinery and equipment should only be operated between the hours approved by the consent authority (refer to consent documents).

All practicable measures should be taken to reduce the generation of noise and vibration to within acceptable limits. In the event that short-term noisy operations are necessary, and where these are likely to affect residences, notifications should be provided to the relevant authorities and the residents by the project manager, specifying the expected duration of the noisy works.

8.8 Dust Control Plan

All practicable measures should be taken to reduce dust emanating from the site. Factors that contribute to dust production are:

¹⁴ Australian Standard, (2002). *AS2460: Acoustics - Measurement of the Reverberation Time in Rooms*.

- Wind over a cleared surface;
- Wind over stockpiled material; and
- Movement of machinery in unpaved areas.

Visible dust should not be present at the site boundary. Measures to minimise the potential for dust generation include:

- Use of water sprays on unsealed or exposed soil surfaces;
- Covering of stockpiled materials and excavation faces (particularly during periods of site inactivity and/or during windy conditions) or alternatively the erection of hessian fences around stockpiled soil or large exposed areas of soil;
- Establishment of dust screens consisting of a 2m high shade cloth or similar material secured to a chain wire fence;
- Maintenance of dust control measures to keep the facilities in good operating condition;
- Stopping work during strong winds;
- Loading or unloading of dry soil as close as possible to stockpiles to prevent spreading of loose material around the development area; and
- Geofabric could be placed over exposed soils in the event that excavation is staged.

If stockpiles are to remain on-site or soil remains exposed for a period of longer than several days, dust monitoring should be undertaken at the site. If excessive dust is generated all site activities should cease until either wind conditions are more acceptable or a revised method of excavation/remediation is developed.

Dust is also produced during the transfer of material to and from the site. All material should be covered during transport and should be properly disposed of on delivery. No material is to be left in an exposed, un-monitored condition.

All equipment and machinery should be brushed or washed down before leaving the site to limit dust and sediment movement off-site. In the event of prolonged rain and lack of paved areas all vehicles should be washed down prior to exit from the site, and any soil or dirt on the wheels of the vehicles removed. Water used to clean the vehicles should be collected and tested prior to appropriate disposal under the relevant waste classification guidelines.

Reference is also to be made to the construction-phase AMP in this regard.

8.9 Dewatering

Temporary construction dewatering is not expected to be required under the scope of remediation.

Groundwater must not be pumped to sewer or stormwater without obtaining prior approval from the relevant authorities.

8.10 Odour Control Plan

All activities undertaken at the site should be completed in a manner that minimises emissions of smoke, fumes and vapour into the atmosphere and any odours arising from the works or stockpiled material should be controlled. Control measures may include:

- Maintenance of construction equipment so that exhaust emissions comply with the Clean Air Regulations issued under the POEO Act 1997;
- Demolition materials and other combustible waste should not be burnt on site;
- The spraying of a suitable proprietary product to suppress any odours that may be generated by excavated materials; and
- Use of protective covers (e.g. builder's plastic).

All practicable measures should be taken to reduce fugitive emissions emanating from the site so that associated odours do not constitute a nuisance and that the ambient air quality is not adversely impacted.

The following odour management plan should be implemented to limit the exposure of site personnel and surrounding residents to unpleasant odours:

- Excavation and stockpiling of material should be scheduled during periods with low winds if possible;
- A suitable proprietary product could be sprayed on material during excavation and following stockpiling to reduce odours (subject to an appropriate assessment of the product by the validation consultant);
- All complaints from workers and neighbours should be logged and a response provided. Work should be rescheduled as necessary to minimise odour problems;
- The site foreman should consider the following odour control measures as outlined in NEPM:
 - reduce the exposed surface of the odorous materials;
 - time excavation activities to reduce off-site nuisance (particularly during strong winds); and
 - cover exposed excavation faces overnight or during periods of low excavation activity.
- If continued complaints are received, alternative odour management strategies should be considered and implemented.

8.11 WHS Plan

A site specific WHS plan should be prepared by the remediation contractor for all work to be undertaken at the site. The WHS plan should meet all the requirements outlined in SafeWork NSW WHS regulations.

Reference is also to be made to the construction-phase AMP in this regard.

8.12 Waste Management

Prior to commencement of remedial works and excavation for the proposed development, the remediation contractor should develop a waste management or recycling plan to minimise the amount of waste produced from the site. Provisions are to be made to re-use natural excavated material (not fill) where possible. Such material re-use could only occur after all fill is removed from an area and an asbestos clearance certificate is provided for the material.

8.13 Incident Management Contingency

The validation consultant must be contacted if any unexpected conditions are encountered at the site. This should enable the scope of remedial/validation works to be adjusted as required. Similarly, if any incident occurs at the site, the validation consultant should be advised to assess potential impacts on contamination conditions and the remediation/validation timetable.

8.14 Hours of Operation

Hours of operation should be between those approved by the consent authority under the development approval process.

9 CONCLUSION

Investigations at the site by JKE have identified bonded/non-friable ACM in fill above the human health-based land use criteria. The remediation strategy includes excavation and off-site disposal of fill as required for engineering/construction purposes, and also to the extent required to achieve an appropriate cap over any fill that remains in-situ. A visual marker layer will be installed over the remaining fill prior to the reinstatement of these areas with clean capping materials. The site will subsequently be managed under a long-term management plan.

JKE is of the opinion that the site can be made suitable for the proposed development via remediation and the implementation of this RAP. A site validation report is to be prepared on completion of remediation activities and submitted to the consent authority to demonstrate that the site is suitable for the proposed development. The site will require management via a long-term AMP or EMP. The management plan will provide a passive management approach which would not impose any onerous constraints on the day-to-day site use under the proposed development scenario.

The RAP has met the objectives outlined in Section 1.2.

9.1 Regulatory Requirements

The regulatory requirements applicable for the remediation are discussed in the following table:

Table 9-1: Regulatory Requirement

Guideline / Legislation / Policy	Applicability
SEPP55	The client's planner indicated that the remediation falls within Category 2, which is consistent with JKE's initial assessment of the remediation category. Prior notice of Category 2 remediation work is to be provided to council at least 30 days prior to commencement in accordance with Clause 16 of SEPP55 Under Clause 17 of SEPP55, a notice of completion of remediation work is to be given to council within 30 days of completion of the work. The notice of completion of remediation works must be in accordance with Clause 18 of SEPP55.
POEO Act 1997	Section 143 of the POEO Act 1997 states that if waste is transported to a place that cannot lawfully be used as a waste facility for that waste, then the transporter and owner of the waste are each guilty of an offence. The transporter and owner of the waste have a duty to ensure that the waste is disposed of in an appropriate manner. Appropriate waste tracking is required for all waste that is disposed off-site. Activities should be carried out in a manner which does not result in the pollution of waters.
POEO (Waste) Regulation 2014	Part 7 of the POEO Waste Regulation 2014 set outs the requirements for the transportation and management of asbestos waste and Clause 79 of the POEO Waste Regulation requires waste transporters to provide information to the NSW EPA regarding the movement of any load in NSW of more than 10 square meters of asbestos sheeting, or 100 kilograms of asbestos waste. To fulfil these legal obligations, asbestos waste transporters must use WasteLocate.



Guideline / Legislation / Policy	Applicability
Work Health and Safety Regulation (2017)	Sites with asbestos become a 'workplace' when work is carried out there and require a register and AMP. Appropriate SafeWork NSW notification will be required for licensed (e.g. Class B) asbestos removal works or handling. Reference is to be made to the construction-phase AMP for further details regarding the regulatory requirements for managing asbestos during remediation.
NSW EPA Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997	The requirement to notify the EPA should be assessed as part of the site validation process.

10 LIMITATIONS

The report limitations are outlined below:

- JKE accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the JKE proposal; and terms of contract between JKE and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual observations of the site and immediate surrounds and documents reviewed as described in the report;
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, JKE has not undertaken any verification process, except where specifically stated in the report;
- JKE has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- JKE accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- JKE have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or landuse. JKE should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

Important Information About This Report

These notes have been prepared by JKE to assist with the assessment and interpretation of this report.

The Report is based on a Unique Set of Project Specific Factors

This report has been prepared in response to specific project requirements as stated in the JKE proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- The proposed land use is altered;
- The defined subject site is increased or sub-divided;
- The proposed development details including size, configuration, location, orientation of the structures or landscaped areas are modified;
- The proposed development levels are altered, eg addition of basement levels; or
- Ownership of the site changes.

JKE will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the assessment. If the subject site is sold, ownership of the assessment report should be transferred by JKE to the new site owners who will be informed of the conditions and limitations under which the assessment was undertaken. No person should apply an assessment for any purpose other than that originally intended without first conferring with the consultant.

Changes in Subsurface Conditions

Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (e.g. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an assessment report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

This Report is based on Professional Interpretations of Factual Data

Site assessments identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

Assessment Limitations

Although information provided by a site assessment can reduce exposure to the risk of the presence of contamination, no environmental site assessment can eliminate the risk. Even a rigorous professional assessment may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

Misinterpretation of Site Assessments by Design Professionals

Costly problems can occur when other design professionals develop plans based on misinterpretation of an assessment report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

Logs Should not be Separated from the Assessment Report

Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however contractors can still misinterpret the logs during bid preparation if separated from the text of the assessment. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the rest of the report to obtain a proper understanding of the assessment. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

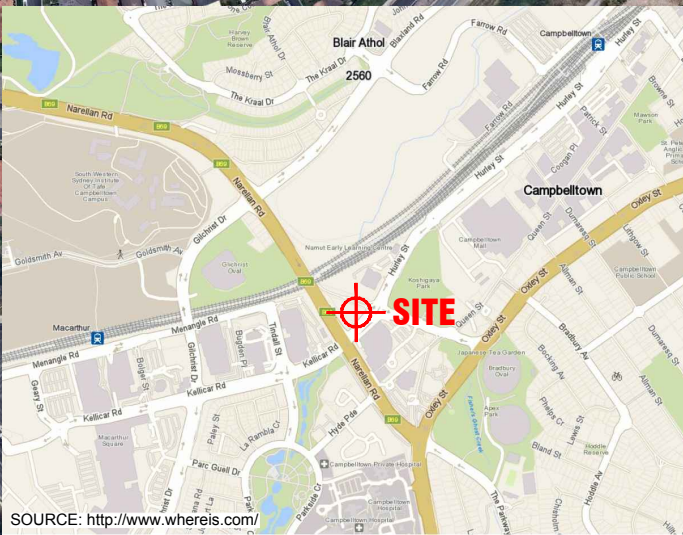
To reduce the likelihood of borehole and test pit log misinterpretation, the complete assessment should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

Read Responsibility Clauses Closely

Because an environmental site assessment is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site assessment, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.



Appendix A: Report Figures



AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

Title:

SITE LOCATION PLAN

Location:

CNR OF KELLICAR AND CAMDEN ROAD,
CAMPBELLTOWN, NSW

Report No:

E33438PLrpt3

Figure No:

1

This plan should be read in conjunction with the Environmental report.

JKEnvironments



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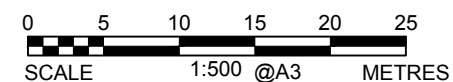
© JK ENVIRONMENTS



LEGEND

- APPROXIMATE SITE BOUNDARY
- BH(Fill Depth)
- TP(Fill Depth)
- BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE PSI LOCATIONS DRILLED SEPTEMBER 2020)
- TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m)

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM



This plan should be read in conjunction with the Environmental report.

Title: SAMPLE LOCATION PLAN	
Location: CNR OF KELLICAR AND CAMDEN ROAD, CAMPBELLTOWN, NSW	
Report No: E33438PLrpt3	Figure No: 2
JKEnvironments	



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LEGEND

- APPROXIMATE SITE BOUNDARY
 - BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE SEPTEMBER 2020 LOCATIONS)
 - TP(Fill Depth) TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m)
- | SAMPLE ID | DEPTH (metres) | SOIL/SURFACE SAMPLE EXCEEDANCE |
|-----------|----------------|--|
| CHEMICAL | CONCENTRATION | |
| TP118 | 0.0-0.4m | SOIL/SURFACE CONTAMINATION ABOVE SAC FOR HUMAN HEALTH RISK |
| ACM | 0.0726% w/w | |
| TP112 | 0.0-0.4m | LOCATION WHERE ASBESTOS IDENTIFIED IN SOIL |
| ACM | 0.1247% w/w | |

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

0 5 10 15 20 25
SCALE 1:500 @A3 METRES

This plan should be read in conjunction with the Environmental report.

Title: CONTAMINATION LOCATION PLAN	
Location: CNR OF KELLICAR AND CAMDEN ROAD, CAMPBELLTOWN, NSW	
Report No: E33438PLrpt3	Figure No: 3
JKEnvironments	





Appendix B: Proposed Development Plans

GENESIS CARE CAMPBELLTOWN CIVIL WORKS

SITE PLANSET

This drawing is copyright and is the property of TAYLOR THOMSON WHITTING (NSW) Pty Ltd and must not be used without authorisation.
THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C01

GENERAL NOTES 1. Contractor must verify all dimensions and existing levels on site prior to commencement of works. Any discrepancies to be reported to the SUPERINTENDENT. 2. Strip all topsoil from the construction area. All stripped topsoil shall be disposed of off-site unless directed otherwise. 3. Make smooth connection with all existing works. 4. Compact subgrade under buildings and pavements to minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1. Compaction under buildings to extend 2m minimum beyond building footprint. 5. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority; the Contractor is to ensure that the drawings used for construction have been approved by all relevant authorities prior to commencement site. 6. All work on public property, property which is to become public property, or any work which is to come under the control of the Statutory Authority is to be carried out in accordance with the requirements of the relevant Authority. The Contractor shall obtain these requirements from the Authority. Where the requirements of the Authority are different to the drawings and specifications, the requirements of the Authority shall be applicable. 7. For all temporary batters refer to geotechnical recommendations.	STORMWATER DRAINAGE NOTES 1 Stormwater Design Criteria : (A) Average recurrence interval – 1:10 years ARI for minor events. 1:100 years ARI for major events. (B) Rainfall intensities – Time of concentration: 6 minutes 1:100 years = 223 mm/hr 1:10 years = 143 mm/h 2. Pipes 300 dia and larger to be reinforced concrete Class " 2 " approved spigot and socket with rubber ring joints U.N.O. 3. Pipes up to 300 dia may be sewer grade uPVC with solvent welded joints, subject to approval by the engineer. 4. Equivalent strength VCP or FRP pipes may be used subject to approval. 5. Precast pits may be used external to the building subject to approval by Campbelltown city council. 6. Enlargers, connections and junctions to be manufactured fittings where pipes are less than 300 dia. 7. Where subsol drains pass under floor slabs and vehicular pavements, unslotted uPVC sewer grade pipe is to be used. 8. Grates and covers shall conform with AS 3996-2006, and AS 1428.1 for access requirements. 9. Pipes are to be installed in accordance with AS 3725. All bedding to be type H2 U.N.O. 10. Care is to be taken with invert levels of stormwater lines. Grades shown are not to be reduced without approval. 11. All stormwater pipes to be 150 dia at 1.0% min fall U.N.O. 12. Subsoil drains to be slotted flexible uPVC U.N.O. 13. Adopt invert levels for pipe installation (grades shown are only nominal).	EROSION AND SEDIMENT CONTROL NOTES 1. All work shall be generally carried out in accordance with (A) Local authority requirements, (B) EPA – Pollution control manual for urban stormwater, (C) LANDCOM NSW – Managing Urban Stormwater: Soils and Construction ("Blue Book"). 2. Erosion and sediment control drawings and notes are provided for the whole of the works. Should the Contractor stage these works then the design may be required to be modified. Variation to these details may require approval by the relevant authorities. The erosion and sediment control plan shall be implemented and adapted to meet the varying situations as work on site progresses. 3. Maintain all erosion and sediment control devices to the satisfaction of the superintendent and the local authority. 4. When stormwater pits are constructed prevent site runoff entering the pits unless silt fences are erected around pits. 5. Minimise the area of site being disturbed at any one time. 6. Protect all stockpiles of materials from scour and erosion. Do not stockpile loose material in roadways, near drainage pits or in watercourses. 7. All soil and water control measures are to be put back in place at the end of each working day, and modified to best suit site conditions. 8. Control water from upstream of the site such that it does not enter the disturbed site. 9. All construction vehicles shall enter and exit the site via the temporary construction entry/exit. 10. All vehicles leaving the site shall be cleaned and inspected before leaving. 11. Maintain all stormwater pipes and pits clear of debris and sediment. Inspect stormwater system and clean out after each storm event. 12. Clean out all erosion and sediment control devices after each storm event. Sequence Of Works 1. Prior to commencement of excavation the following soil management devices must be installed. 1.1. Construct silt fences below the site and across all potential runoff sites. 1.2. Construct temporary construction entry/exit and divert runoff to suitable control systems. 1.3. Construct measures to divert upstream flows into existing stormwater system. 1.4. Construct sedimentation traps/basin including outlet control and overflow. 1.5. Construct turf lined swales. 1.6. Provide sandbag sediment traps upstream of existing pits. 2. Construct geotextile filter pit surround around all proposed pits as they are constructed. 3. On completion of pavement provide sand bag kerb inlet sediment traps around pits. 4. Provide and maintain a strip of turf on both sides of all roads after the construction of kerbs.	BULK EARTHWORKS NOTES 1. All bulk earthworks setout from grid lines U.N.O. 2. All batters at a slope of 3 (H) : 1 (V) U.N.O. 3. Excavated material may be used as structural fill provided, (i) it complies with the specification requirements for fill material, (ii) the placement moisture content complies with the Geotechnical Consultants requirements, and allows filling to be placed and proofrolled in accordance with the specification. Where necessary the Contractor must moisture condition the excavated material to meet these requirements. 4. Compact fill areas and subgrade to not less than: <table><thead><tr><th>Location</th><th>Standard dry density (AS 1289 5.1.1)</th><th>Moisture (OMC)</th></tr></thead><tbody><tr><td>Under building slabs on ground:</td><td>98%</td><td>±2%</td></tr><tr><td>Under roads and carparks:</td><td>98%</td><td>±2%</td></tr><tr><td>Landscaped areas:</td><td>95%</td><td>±2%</td></tr></tbody></table> 5. Before placing fill, proof roll exposed subgrade with a 10 tonne minimum roller to test subgrade and then remove soft spots (areas with more than 3mm movement under roller). Fill materials must be tested and certified by NATA registered laboratory. 6. Contractor shall place safety barriers around excavations in accordance with relevant safety regulations. 7. For interpretation of bulk earthworks foot print line shown on the bulk earthworks drawings refer to the bulk earthworks construction legend. 8. Bulk earthwork drawings are not to be used for detailed excavation.	Location	Standard dry density (AS 1289 5.1.1)	Moisture (OMC)	Under building slabs on ground:	98%	±2%	Under roads and carparks:	98%	±2%	Landscaped areas:	95%	±2%	SITEWORKS LEGEND BULK EARTHWORKS LEGEND EROSION AND SEDIMENT CONTROL LEGEND EXISTING SERVICES LEGEND 		
Location	Standard dry density (AS 1289 5.1.1)	Moisture (OMC)																
Under building slabs on ground:	98%	±2%																
Under roads and carparks:	98%	±2%																
Landscaped areas:	95%	±2%																
REFERENCE DRAWINGS 1. These drawings have been based and, to be read in conjunction with the following Consultants drawings. Any conflict to the drawings must be notified immediately to the Engineer. <table><thead><tr><th>Consultant</th><th>Dwg Title</th><th>Dwg No</th><th>Rev</th><th>Date</th></tr></thead><tbody><tr><td>TEAM 2 ARCHITECTS</td><td>SITE PLAN PROPOSED</td><td>DA-012</td><td>23</td><td>15.10.21</td></tr><tr><td>VERIS</td><td>DETAIL SURVEY</td><td>DETL-001</td><td>A</td><td>15.10.21</td></tr></tbody></table>	Consultant	Dwg Title	Dwg No	Rev	Date	TEAM 2 ARCHITECTS	SITE PLAN PROPOSED	DA-012	23	15.10.21	VERIS	DETAIL SURVEY	DETL-001	A	15.10.21	CONCRETE FINISHING NOTES 1. All exposed concrete pavements are to be broomed finished. 2. All edges of the concrete pavement including keyed and doweled joints are to be finished with an edging tool. 3. Concrete pavements with grades greater than 10 % shall be heavily broomed finished. 4. Carborundum to be added to all stair treads and ramped crossings U.N.O.	WATER QUALITY TESTING REQUIREMENTS Prior to discharge of site stormwater, groundwater and seepage water into council's stormwater system, contractors must undertake water quality tests in conjunction with a suitably qualified environment consultant outlining the following: - Compliance with the criteria of the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) - If required subject to the environmental consultants advice, provide remedial measures to improve the quality of water that is to be discharged into Councils storm water drainage system. This should include comments from a suitably qualified environmental consultant confirming the suitability of these remedial measures to manage the water discharged from the site into Councils storm water drainage system. Outlining the proposed, ongoing monitoring, contingency plans and validation program that will be in place to continually monitor the quality of water discharged from this site. This should outline the frequency of water quality testing that will be undertaken by a suitably qualified environmental consultant.	BOUNDARY AND EASEMENT NOTE The property boundary and easement locations shown on Taylor Thomson Whitting drawing's have been based from information received from : <u>No boundary information received.</u> <u>Refer architect for boundary information and locations</u> Taylor Thomson Whitting makes no guarantees that the boundary or easement information shown is correct. Taylor Thomson Whitting will accept no liabilities for boundary inaccuracies. The contractor/builder is advised to check/confirm all boundaries in relation to all proposed work prior to the commencement of construction. Boundary inaccuracies found are to be reported to the superintendent prior to construction starting.
Consultant	Dwg Title	Dwg No	Rev	Date														
TEAM 2 ARCHITECTS	SITE PLAN PROPOSED	DA-012	23	15.10.21														
VERIS	DETAIL SURVEY	DETL-001	A	15.10.21														
SITEWORKS NOTES 1. Drainage trenches within road reserves to be backfilled with clean sharp sand. 2. All backfillings are to comply with Australian standards. 3. All trench backfill material shall be compacted to the same density as the adjacent material. 4. All service trenches under vehicular pavements shall be backfilled with an approved select material and compacted to a minimum 98% standard maximum dry density in accordance with AS 1289 5.1.1	SURVEY AND SERVICES INFORMATION SURVEY Origin of levels : Datum of levels : A.H.D. AUSTRALIAN HEIGHT DATUM Coordinate system : ISG OR MGA OR LOCAL Survey prepared by : VERIS surveyors Setout Points : CONTACT THE SURVEYOR Taylor Thomson Whitting does not guarantee that the survey information shown on these drawings is accurate and will accept no liability for any inaccuracies in the survey information provided to us from any cause whatsoever. UNDERGROUND SERVICES - WARNING The locations of underground services shown on Taylor Thomson Whittings drawings have been plotted from diagrams provided by service authorities. This information has been prepared solely for the authorities own use and may not necessarily be updated or accurate. The position of services as recorded by the authority at the time of installation may not reflect changes in the physical environment subsequent to installation. Taylor Thomson Whitting does not guarantee that the services information shown on these drawings shows more than the presence or absence of services, and will accept no liability for inaccuracies in the services information shown from any cause whatsoever. The Contractor must confirm the exact location and extent of services prior to construction and notify any conflict with the drawings immediately to the Engineer/Superintendent. The contractor is to get approval from the relevant state survey department, to remove/adjust any survey mark. This includes but is not limited to; State Survey Marks (SSM), Permanent Marks (PM), cadastral reference marks or any other survey mark which is to be removed or adjusted in any way. Taylor Thomson Whitting plans do not indicate the presence of any survey mark. The contractor is to undertake their own search.	HAZARDOUS MATERIALS Existing asbestos products & contaminated material may be present on site. Contractor to ensure all hazardous materials are identified prior to commencing works. Safe working practices as per relevant authority to be adopted and appropriate PPE to be used when handling all hazardous materials. Refer to geotechnical/environmental report by JK Geotechnics (ref:33438Aprt dated 7.10.20) for details. CONFINED SPACES Contractor to be aware of potential hazards due to working in confined spaces such as stormwater pits, trenches and/or tanks. Contractor to provide safe working methods and use appropriate PPE when entering confined spaces. MANUAL HANDLING Contractor to be aware manual handling may be required during construction. Contractor to take appropriate measures to ensure manual handling procedures and assessments are in place prior to commencing works. WATER POLLUTION Contractor to ensure appropriate measures are taken to prevent pollutants from construction works contaminating the surrounding environment. SITE ACCESS/EGRESS Contractor to be aware site works occur in close proximity to footpaths and roadways. Contractor to erect appropriate barriers and signage to protect site personnel and public. VEHICLE MOVEMENT Contractor to supply and comply with traffic management plan and provide adequate site traffic control including a certified traffic marshal to supervise vehicle movements where necessary.																
KERBING NOTES Includes all kerbs, gutters, dish drains, crossings and edges. 1. All kerbs, gutters, dish drains and crossings to be constructed on minimum 75mm granular basecourse compacted to minimum 98% modified maximum dry density in accordance with AS 1289 5.2.1. 2. Expansion joints (EJ) to be formed from 10mm compressible cork filler board for the full depth of the section and cut to profile. Expansion joints to be located at drainage pits, on tangent points of curves and elsewhere at 12m centres except for integral kerbs where the expansion joints are to match the joint locations in slabs. 3. Weakened plane joints to be min 3mm wide and located at 3m centres except for integral kerbs where weakened plane joints are to match the joint locations in slabs. 4. Broomed finished to all ramped and vehicular crossings, all other kerbing or dish drains to be steel float finished. 5. In the replacement of kerbs – Existing road pavement is to be sawcut 900mm from lip of gutter. Upon completion of new kerbs, new basecourse and surface is to be laid 900mm wide to match existing materials and thicknesses. Existing allotment drainage pipes are to be built into the new kerb with a 100mm dia hole. Existing kerbs are to be completely removed where new kerbs are shown.																		

DRAWING SCHEDULE

Drawing No:	Drawing Title:
C01	NOTES AND LEGEND SHEET
C02	SOIL AND WATER MANAGEMENT PLAN
C05	SITEWORKS AND STORMWATER PLAN
C07	SWEPT PATH ANALYSIS OF AN 8.8m RIGID VEHICLE
C08	SWEPT PATH ANALYSIS OF AN 8.8m RIGID VEHICLE (OPTION 2 WITH MODIFICATION)
C10	BULK EARTHWORKS PLAN
C15	DETAIL SHEET 1

ISSUE FOR DA

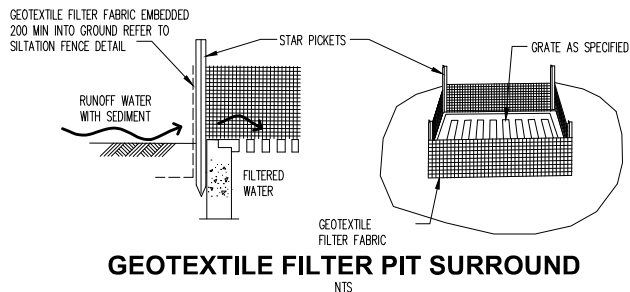
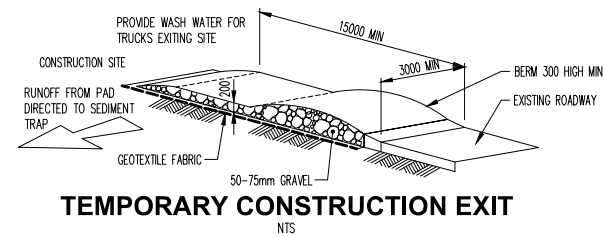
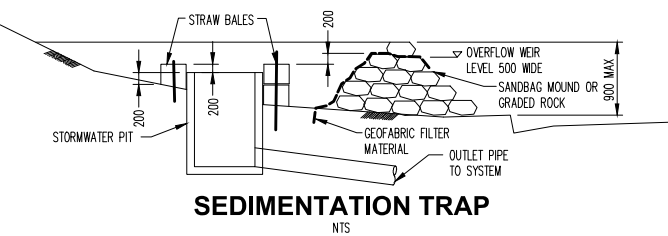
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P5 ISSUE FOR DA SUBMISSION					AA	AW	27.04.21						TEAM 2 ARCHITECTS 701/1 CHANDOS STREET, ST LEONARDS NSW 2065						GENESIS CARE, CAMPBELLTOWN			NOTES AND LEGEND SHEET			-			AS			SB																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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	Batter
	Siltation fence
	Stormwater pit with Geotextile filter surround
	Hay bale barriers
	Sandbag sediment trap
	Catch drain
	Overland flow path

Any accumulated water contaminated with sediment, from a sediment basin or excavation pit, is to be flocculated or filtered in order to lower the suspended solid load to less than 50mg per litre gypsum gas or other approved flocculant should be applied within 24 hours of the end of the storm event. The gypsum must be spread evenly over the entire water surface. Pumping is not to occur for at least 36 hours and preferably 48 hours after application. Clean water is to be discharged to the water table via a hole ball sediment filter in a way that does not pick up sediment that has dropped to the bottom.

Note: gypsum is a hydrated form of calcium sulphate and is available at many swimming pool shops and hardware stores.



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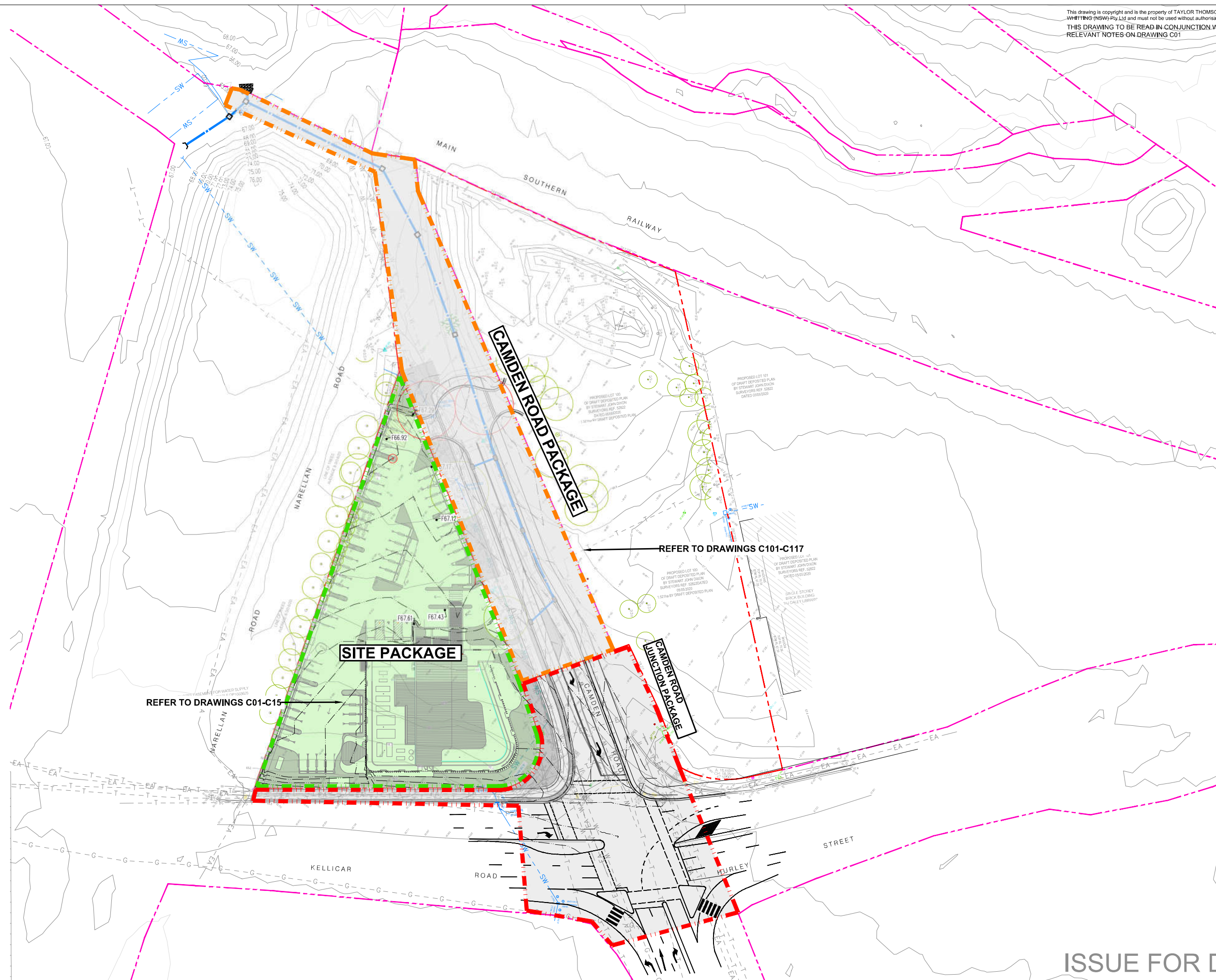
THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT NOTES ON DRAWING C01

D LOT 100
POSITION
T JOHN
RS REV 42
05/05/2014
FT DEPOSITED

PROPOSED
OF DRAFT DEF
BY STEWART
SURVEYORS RI
05/05
521ha BY DRAFT

ISSUE FOR DA

[illegible]

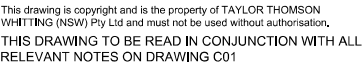


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ISSUE FOR DA

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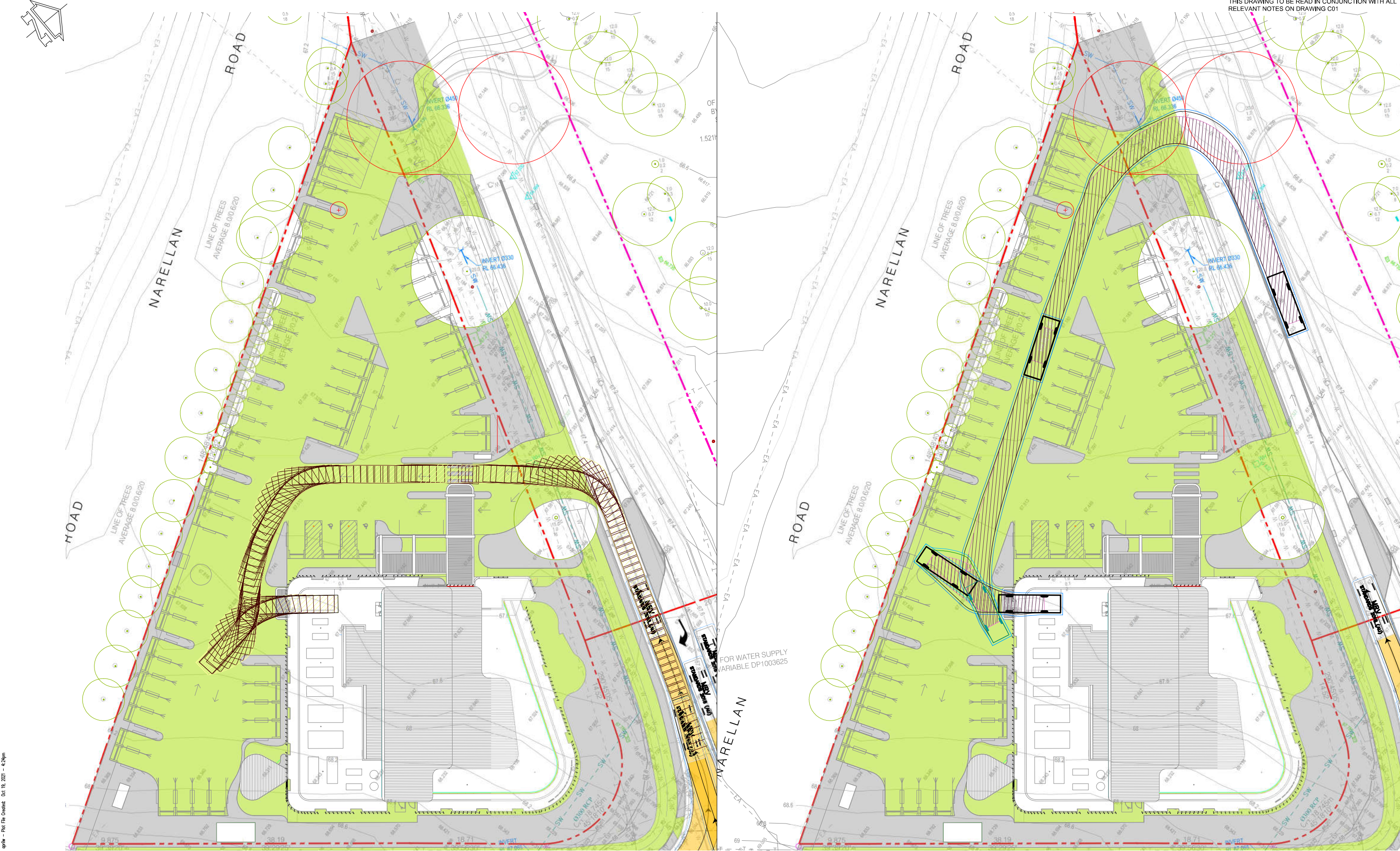


 Lot boundary from survey
 Lot boundary from Six Maps
 F22.00 Finished surface level
 F22.00 Finished contour
 Stormwater pit, flow direction and line with Pipe size
 600
 600
 ~~SW~~ Existing drainage system to be demolished
 ~~SW~~ Existing drainage system location unconfirmed



SCALE 1:250 0 2.5 5 7.5 10 12.5
AT ORIGINAL SIZE

[illegible]



Filename: 007_Ang - USDR: upthw - Plot File Created: Oct 19, 2021 - 4:24pm

SCALE 1:250 0 2.5 5 7.5 10 12.5
AT ORIGINAL SIZE m

P6	ISSUE FOR DRAFT DA SUBMISSION	AA	AW	09.06.21							
P5	ISSUE FOR DA SUBMISSION	AA	AW	27.04.21							
P4	ISSUE FOR DA SUBMISSION	AA	AW	09.04.21							
P3	ISSUE FOR DEVELOPMENT APPLICATION	AA	AW	01.04.21							
P2	ISSUE FOR DEVELOPMENT APPLICATION	AA	JW	05.02.21	P8	ISSUE FOR DA SUBMISSION	AA	WW	19.10.21		
P1	PRELIMINARY	AA	AS	01.03.21	P7	ISSUE FOR DA SUBMISSION	AA	WW	11.06.21		
Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date	Rev	Description

Architect
TEAM 2 ARCHITECTS
701/1 CHANDOS STREET, ST LEONARDS NSW 2065

Engineer
TTW **Structural Civil Traffic Façade**
612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

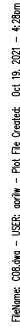
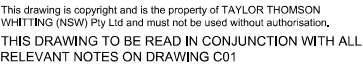
Project
GENESIS CARE, CAMPBELLTOWN

Sheet Subject
SWEPT PATH ANALYSIS OF AN 8.8m RIGID VEHICLE

Scale: A1	Drawn	Authorised
1:250	AS	SB
Job No	Drawing No	Revision
201570	C07	P8
Plot File Created: Oct 19, 2021 - 4:24pm		

NOTE
1. SWEPT PATH IS DERIVED FROM TRAFFIC REPORT 'TRAFFIC AND PARKING ASSESSMENT' (MARCH 2021 REV A) BY TTPA.

ISSUE FOR DA

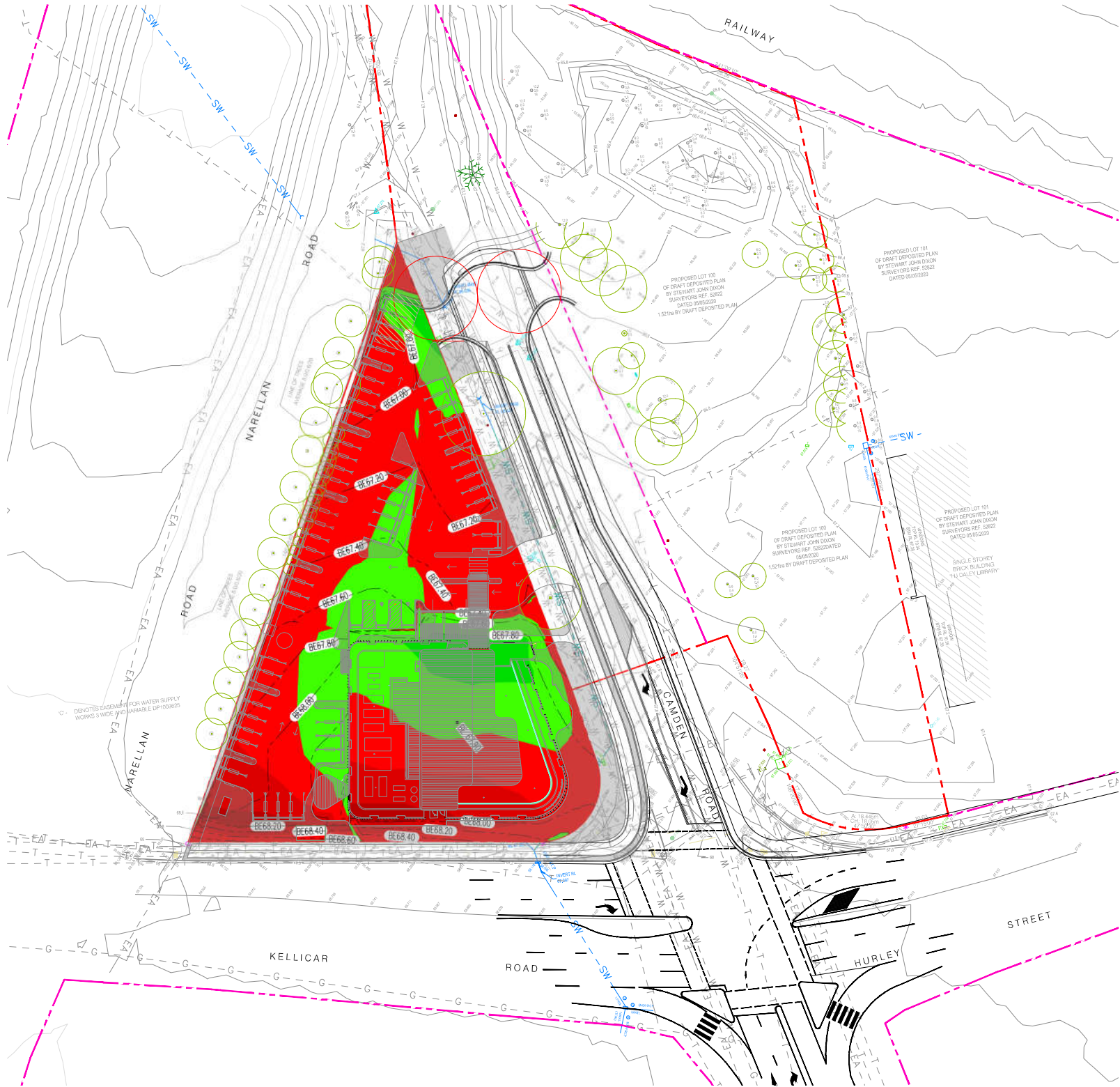


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Job No	Drawing No	Revision
201570	C08	P8
Plot File Created: Oct 19, 2021 - 4:28pm		

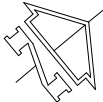
Cut/Fill Summary

Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
BULK SITE	1.000	1.000	4657.24sq.m	507.61 Cu. M.	189.11 Cu. M.	318.50 Cu. M.<Cut>
Totals			4657.24sq.m	507.61 Cu. M.	189.11 Cu. M.	318.50 Cu. M.<Cut>

Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	-1.000	-0.750	Dark Red
2	-0.750	-0.500	Red
3	-0.500	-0.250	Light Red
4	-0.250	0.000	Red
5	0.000	0.250	Light Green
6	0.250	0.500	Green
7	0.500	0.750	Dark Green
8	0.750	1.000	Dark Green
9	1.000	1.250	Dark Green



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Filename: C10.dwg - User: ttw - Plot File Created: Oct 19, 2021 - 4:29pm

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AT ORIGINAL SIZE

P6	ISSUE FOR DRAFT DA SUBMISSION	AA	AW	08.06.21					
P5	ISSUE FOR DA SUBMISSION	AA	AW	27.04.21					
P4	ISSUE FOR DA SUBMISSION	AA	AW	09.04.21					
P3	ISSUE FOR DEVELOPMENT APPLICATION	AA	AW	01.04.21					
P2	ISSUE FOR DEVELOPMENT APPLICATION	AA	JW	05.02.21					
P1	PRELIMINARY	AA	AS	01.03.21	P7	ISSUE FOR DA SUBMISSION	AA	AW	19.10.21
Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date

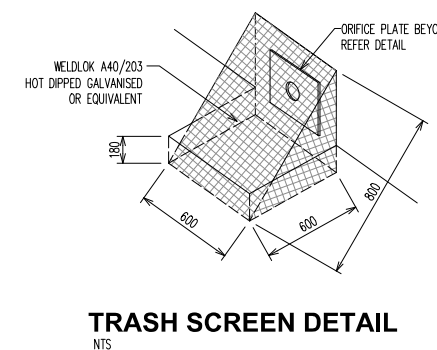
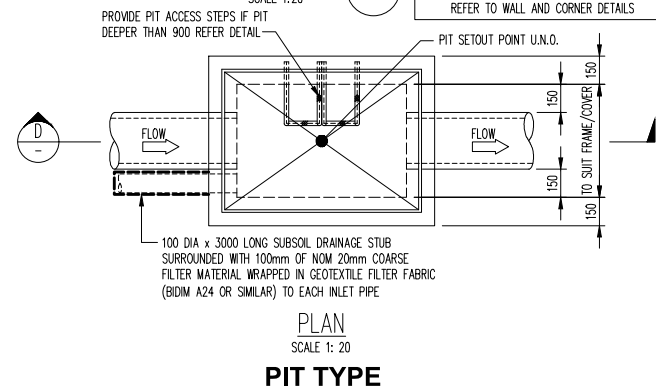
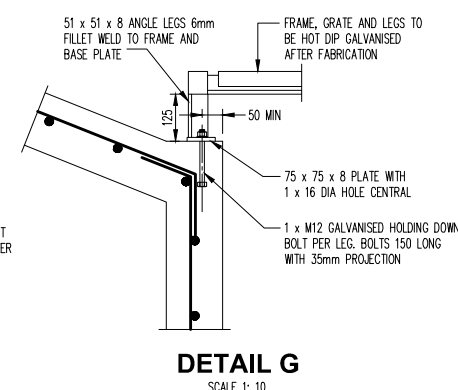
Architect
TEAM 2 ARCHITECTS
701/1 CHANDOS STREET, ST LEONARDS NSW 2065

Engineer
TTW Structural
Civil
Traffic
Façade
612 9439 7288 | 48 Chandos Street St Leonards NSW 2065

Project
GENESIS CARE,
CAMPBELLTOWN

Sheet Subject
BULK EARTHWORKS PLAN

Scale : A1	Drawn	Authorised
1:500	AS	SB
Job No	Drawing No	Revision
201570	C10	P7
Plot File Created: Oct 19, 2021 - 4:29pm		



TRASH SCREEN DETAIL

Scale : A1	Drawn	Authorised
1:250	AS	SB
Job No	Drawing No	Revision
201570	C15	P8
Plot File Created: Oct 19, 2021 - 4:24pm		



Appendix C: PSI/DSI Summary Data Tables

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ABC:	Ambient Background Concentration	PCBs:	Polychlorinated Biphenyls
ACM:	Asbestos Containing Material	PCE:	Perchloroethylene (Tetrachloroethylene or Teterachloroethene)
AF:	Asbestos Fines	PQL:	Practical Quantitation Limit
ANZG	Australian and New Zealand Guidelines	RS:	Rinsate Sample
B(a)P:	Benzo(a)pyrene	RSL:	Regional Screening Levels
CEC:	Cation Exchange Capacity	RSW:	Restricted Solid Waste
CRC:	Cooperative Research Centre	SAC:	Site Assessment Criteria
CT:	Contaminant Threshold	SCC:	Specific Contaminant Concentration
EILs:	Ecological Investigation Levels	SSA:	Site Specific Assessment
ESLs:	Ecological Screening Levels	SSHSLs:	Site Specific Health Screening Levels
FA:	Fibrous Asbestos	TB:	Trip Blank
GSW:	General Solid Waste	TCA:	1,1,1 Trichloroethane (methyl chloroform)
HILs:	Health Investigation Levels	TCE:	Trichloroethylene (Trichloroethene)
HSLs:	Health Screening Levels	TCLP:	Toxicity Characteristics Leaching Procedure
kg/L	kilograms per litre	TS:	Trip Spike
NA:	Not Analysed	TRH:	Total Recoverable Hydrocarbons
NC:	Not Calculated	UCL:	Upper Level Confidence Limit on Mean Value
NEPM:	National Environmental Protection Measure	USEPA	United States Environmental Protection Agency
NHMRC:	National Health and Medical Research Council	VOCC:	Volatile Organic Chlorinated Compounds
NL:	Not Limiting	WHO:	World Health Organisation
NSL:	No Set Limit		
OCP:	Organochlorine Pesticides		
OPP:	Organophosphorus Pesticides		
PAHs:	Polycyclic Aromatic Hydrocarbons		
%w/w:	weight per weight		
ppm:	Parts per million		

Table Specific Explanations:

HIL Tables:

- The chromium results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.
- Carcinogenic PAHs is a toxicity weighted sum of analyte concentrations for a specific list of PAH compounds relative to B(a)P. It is also referred to as the B(a)P Toxic Equivalence Quotient (TEQ).
- Statistical calculations are undertaken using ProUCL (USEPA). Statistical calculation is usually undertaken using data from fill samples.

EIL/ESL Table:

- ABC Values for selected metals have been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for old suburbs with high traffic have been quoted).

Waste Classification and TCLP Table:

- Data assessed using the NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014).
- The assessment of Total Moderately Harmful pesticides includes: Dichlorovos, Dimethoate, Fenitrothion, Ethion, Malathion and Parathion.
- Assessment of Total Scheduled pesticides include: HBC, alpha-BHC, gamma-BHC, beta-BHC, Heptachlor, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, pp-DDE, Dieldrin, Endrin, pp-DDD, pp-DDT, Endrin Aldehyde.

QA/QC Table:

- Field blank, Inter and Intra laboratory duplicate results are reported in mg/kg.
- Trip spike results are reported as percentage recovery.
- Field rinsate results are reported in µg/L.

TABLE S1
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013.
HIL-C: 'Public open space; secondary schools; and footpaths'

All data in mg/kg unless stated otherwise			HEAVY METALS							PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES	
			Arsenic	Cadmium	Chromium VI	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	Carcinogenic PAHs	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor			Chlorpyrifos
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC)			300	90	300	17000	600	80	1200	30000	300	3	10	340	400	10	70	400	10	250	1	Detected/Not Detected
Sample Reference	Sample Depth	Sample Description																				
BH1	0.1-0.2	Fill: Silty clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected	
BH2	0-0.2	Fill: Silty clay	6	<0.4	13	40	93	0.3	19	120	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
BH2 (Lab duplicate)	0-0.2	Fill: Silty clay	7	<0.4	12	42	110	0.4	16	170	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	
BH3	0-0.2	Fill: Silty clay	8	<0.4	15	31	60	<0.1	10	73	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
BH4	0.1-0.2	Fill: Silty clay	17	<0.4	15	35	120	0.2	12	170	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected	
BH7	0.1-0.2	Fill: Silty clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
BH8	0-0.2	Fill: Silty clay	8	<0.4	18	19	37	<0.1	6	34	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected	
BH9	0-0.2	Fill: Silty clay	8	<0.4	18	17	61	<0.1	8	41	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected	
BH10	0.1-0.2	Fill: Silty clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected	
SDUP1	-	Fill: Silty clay	7	<0.4	14	50	160	0.5	20	180	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
BH2-F1	0-0.5	Material (FCF)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
Total Number of Samples			7	7	7	7	7	7	7	7	6	6	4	4	4	4	4	4	4	4	4	9
Maximum Value			17	<PQL	18	50	160	0.5	20	180	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Detected
Concentration above the SAC			VALUE																			
Concentration above the PQL			Bold																			

TABLE S2
SOIL LABORATORY RESULTS COMPARED TO HSLs
All data in mg/kg unless stated otherwise

					C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Field PID Measurement
PQL - Envirolab Services					25	50	0.2	0.5	1	1	1	ppm
NEPM 2013 HSL Land Use Category					HSL-D: COMMERCIAL/INDUSTRIAL							
Sample Reference	Sample Depth	Sample Description	Depth Category	Soil Category								
BH2	0-0.2	Fill: Silty clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH2 (Lab duplicate)	0-0.2	Fill: Silty clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
	0-0.2	Fill: Silty clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0.2
BH4	0.1-0.2	Fill: Silty clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0.1
BH8	0-0.2	Fill: Silty clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	7.2
BH9	0-0.2	Fill: Silty clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0.1
SDUP1	-	Fill: Silty clay	0m to <1m	Clay	NA	NA	NA	NA	NA	NA	NA	-
Total Number of Samples					6	6	6	6	6	6	6	6
Maximum Value					<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	7.2
Concentration above the SAC					VALUE							
Concentration above the PQL					Bold							
The guideline corresponding to the concentration above the SAC is highlighted in grey in the Site Assessment Criteria Table below												

HSL SOIL ASSESSMENT CRITERIA

Sample Reference	Sample Depth	Sample Description	Depth Category	Soil Category	C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
BH2	0-0.2	Fill: Silty clay	0m to <1m	Clay	310	NL	4	NL	NL	NL	NL
BH2 (Lab duplicate)	0-0.2	Fill: Silty clay	0m to <1m	Clay	310	NL	4	NL	NL	NL	NL
BH3	0-0.2	Fill: Silty clay	0m to <1m	Clay	310	NL	4	NL	NL	NL	NL
BH4	0.1-0.2	Fill: Silty clay	0m to <1m	Clay	310	NL	4	NL	NL	NL	NL
BH8	0-0.2	Fill: Silty clay	0m to <1m	Clay	310	NL	4	NL	NL	NL	NL
BH9	0-0.2	Fill: Silty clay	0m to <1m	Clay	310	NL	4	NL	NL	NL	NL
SDUP1	-	Fill: Silty clay	0m to <1m	Clay	NA	NA	NA	NA	NA	NA	NA

TABLE S3
SOIL LABORATORY RESULTS COMPARED TO MANAGEMENT LIMITS
All data in mg/kg unless stated otherwise

			C ₆ -C ₁₀ (F1) plus BTEX	>C ₁₀ -C ₁₆ (F2) plus naphthalene	>C ₁₆ -C ₃₄ (F3)	>C ₃₄ -C ₄₀ (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			COMMERCIAL/INDUSTRIAL			
Sample Reference	Sample Depth	Soil Texture				
BH2	0-0.2	Fine	<25	<50	<100	<100
BH2 (Lab duplicate)	0-0.2	Fine	<25	<50	<100	<100
BH3	0-0.2	Fine	<25	<50	<100	<100
BH4	0.1-0.2	Fine	<25	<50	<100	<100
BH8	0-0.2	Fine	<25	<50	<100	<100
BH9	0-0.2	Fine	<25	<50	<100	<100
SDUP1	-	Fine	NA	NA	NA	NA
Total Number of Samples			6	6	6	6
Maximum Value			<PQL	<PQL	<PQL	<PQL
Concentration above the SAC			VALUE			
Concentration above the PQL			Bold			

MANAGEMENT LIMIT ASSESSMENT CRITERIA

Sample Reference	Sample Depth	Soil Texture	C ₆ -C ₁₀ (F1) plus BTEX	>C ₁₀ -C ₁₆ (F2) plus naphthalene	>C ₁₆ -C ₃₄ (F3)	>C ₃₄ -C ₄₀ (F4)
BH2	0-0.2	Fine	800	1000	5000	10000
BH2 (Lab duplicate)	0-0.2	Fine	800	1000	5000	10000
BH3	0-0.2	Fine	800	1000	5000	10000
BH4	0.1-0.2	Fine	800	1000	5000	10000
BH8	0-0.2	Fine	800	1000	5000	10000
BH9	0-0.2	Fine	800	1000	5000	10000
SDUP1	-	Fine	--	--	--	--

TABLE S4
SOIL LABORATORY RESULTS COMPARED TO DIRECT CONTACT CRITERIA
All data in mg/kg unless stated otherwise

Analyte	C ₆ -C ₁₀	>C ₁₀ -C ₁₆	>C ₁₆ -C ₃₄	>C ₃₄ -C ₄₀	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID	
PQL - Envirolab Services	25	50	100	100	0.2	0.5	1	1	1		
CRC 2011 -Direct contact Criteria	26,000	20,000	27,000	38,000	430	99,000	27,000	81,000	11,000		
Site Use	COMMERCIAL/INDUSTRIAL - DIRECT SOIL CONTACT										
Sample Reference	Sample Depth										
BH2	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH2 (Lab duplicate)	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH3	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.2
BH4	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.1
BH8	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	7.2
BH9	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.1
SDUP1	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	-
Total Number of Samples		6	6	6	6	6	6	6	6	6	6
Maximum Value		<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	7.2

Concentration above the SAC
Concentration above the PQL

VALUE
Bold

TABLE S5 ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS HSL-C: Public Open Space; secondary schools; and footpaths																											
FIELD DATA															LABORATORY DATA (QUANTIFICATION)												
Date Sampled	Sample reference	Sample Depth	Visible ACM in top 100mm	Approx. Volume of Soil (L)	Soil Mass (g)	Mass ACM (g)	Mass Asbestos in ACM (g)	[Asbestos from ACM in soil] (%w/w)	Mass ACM <7mm (g)	Mass Asbestos in ACM <7mm (g)	[Asbestos from ACM <7mm in soil] (%w/w)	Mass FA (g)	Mass Asbestos in FA (g)	[Asbestos from FA in soil] (%w/w)	Lab Report Number	Sample reference	Sample Depth	Sample Mass (g)	Asbestos ID in soil (AS4964) >0.1g/kg	Trace Analysis	Total Asbestos (g/kg)	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	ACM >7mm Estimation % (w/w)	FA and AF Estimation % (w/w)	
SAC						No	0.02			0.001			0.001			0.02										0.001	
25/08/2020	BH2	0-0.5	No	10	10,002	10.6	1.596	0.0160	No ACM <7mm observed	--	--	No FA observed	--	--	249821	BH2	0-0.2	733.18	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected.	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001	
25/08/2020	BH3	0-0.4	No	10	10,640	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
25/08/2020	BH8	0-0.4	No	10	9,680	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Concentration above the SAC						VALUE																					

TABLE S6 SOIL LABORATORY RESULTS COMPARED TO NEPM 2013 EILs AND ESLs All data in mg/kg unless stated otherwise																							
Land Use Category				COMMERCIAL/INDUSTRIAL																			
				pH	CEC (cmolc/kg)	Clay Content (% clay)	AGED HEAVY METALS-EILs						EILs		ESLs								
Arsenic	Chromium	Copper	Lead				Nickel	Zinc	Naphthalene	DDT	C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2) plus naphthalene	>C ₁₆ -C ₃₄ (F3)	>C ₃₄ -C ₄₀ (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P				
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	0.1	25	50	100	100	0.2	0.5	1	1	0.05	
Ambient Background Concentration (ABC)				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	
Sample Reference	Sample Depth	Sample Description	Soil Texture																				
BH2	0-0.2	Fill: Silty clay	Fine	NA	NA	NA	6	13	40	93	19	120	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH2 (Lab duplicate)	0-0.2	Fill: Silty clay	Fine	NA	NA	NA	7	12	42	110	16	170	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH3	0-0.2	Fill: Silty clay	Fine	NA	NA	NA	8	15	31	60	10	73	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH4	0.1-0.2	Fill: Silty clay	Fine	NA	NA	NA	17	15	35	120	12	170	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH8	0-0.2	Fill: Silty clay	Fine	NA	NA	NA	8	18	19	37	6	34	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH9	0-0.2	Fill: Silty clay	Fine	NA	NA	NA	8	18	17	61	8	41	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
SDUP1	-	Fill: Silty clay	Fine	NA	NA	NA	7	14	50	160	20	180	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples				0	0	0	7	7	7	7	7	7	6	4	6	6	6	6	6	6	6	6	6
Maximum Value				NA	NA	NA	17	18	50	160	20	180	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
Concentration above the SAC				VALUE																			
Concentration above the PQL				Bold																			
The guideline corresponding to the elevated value is highlighted in grey in the EIL and ESL Assessment Criteria Table below																							

EIL AND ESL ASSESSMENT CRITERIA																							
Sample Reference	Sample Depth	Sample Description	Soil Texture	pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2) plus naphthalene	>C ₁₆ -C ₃₄ (F3)	>C ₃₄ -C ₄₀ (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
BH2	0-0.2	Fill: Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
BH2 (Lab duplicate)	0-0.2	Fill: Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
	0-0.2	Fill: Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
BH4	0.1-0.2	Fill: Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
BH8	0-0.2	Fill: Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
BH9	0-0.2	Fill: Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
SDUP1	-	Fill: Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	--	--	--	--	--	--	--	--	--	--	--

TABLE S7 SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES All data in mg/kg unless stated otherwise																											
			HEAVY METALS							PAHs		OC/OP PESTICIDES				Total PCBs	TRH					BTEx COMPOUNDS				ASBESTOS FIBRES	
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Total Endosulfans	Chloropyrifos	Total Moderately Harmful		Total Scheduled	C ₆ -C ₉	C ₁₀ -C ₁₄	C ₁₅ -C ₂₈	C ₂₉ -C ₃₆	Total C ₁₀ -C ₃₆	Benzene	Toluene	Ethyl benzene		Total Xylenes
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	25	50	100	100	50	0.2	0.5	1	1	100
General Solid Waste CT1			100	20	100	NSL	100	4	40	NSL	200	0.8	60	4	250	50	50	650	NSL			10,000	10	288	600	1,000	-
General Solid Waste SCC1			500	100	1900	NSL	1500	50	1050	NSL	200	10	108	7.5	250	50	50	650	NSL			10,000	18	518	1,080	1,800	-
Restricted Solid Waste CT2			400	80	400	NSL	400	16	160	NSL	800	3.2	240	16	1000	50	50	2600	NSL			40,000	40	1,152	2,400	4,000	-
Restricted Solid Waste SCC2			2000	400	7600	NSL	6000	200	4200	NSL	800	23	432	30	1000	50	50	2600	NSL			40,000	72	2,073	4,320	7,200	-
Sample Reference	Sample Depth	Sample Description																									
BH1	0.1-0.2	Fill: Silty clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected	
BH2	0-0.2	Fill: Silty clay	6	<0.4	13	40	93	0.3	19	120	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH2 (Lab duplicate)	0-0.2	Fill: Silty clay	7	<0.4	12	42	110	0.4	16	170	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH3	0-0.2	Fill: Silty clay	8	<0.4	15	31	60	<0.1	10	73	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH4	0.1-0.2	Fill: Silty clay	17	<0.4	15	35	120	0.2	12	170	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH7	0.1-0.2	Fill: Silty clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
BH8	0-0.2	Fill: Silty clay	8	<0.4	18	19	37	<0.1	6	34	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH9	0-0.2	Fill: Silty clay	8	<0.4	18	17	61	<0.1	8	41	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH10	0.1-0.2	Fill: Silty clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
SDUP1	-	Fill: Silty clay	7	<0.4	14	50	160	0.5	20	180	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2-F1	0-0.2	Material (FCF)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
Total Number of Samples			7	7	7	7	7	7	7	7	6	6	4	4	4	4	4	6	6	6	6	6	6	6	6	6	9
Maximum Value			17	<PQL	18	50	160	0.5	20	180	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Detected
Concentration above the CT1			VALUE																								
Concentration above SCC1			VALUE																								
Concentration above the SCC2			VALUE																								
Concentration above PQL			Bold																								

TABLE S8

SOIL LABORATORY TCLP RESULTS

All data in mg/L unless stated otherwise

			Lead
PQL - Envirolab Services			0.03
TCLP1 - General Solid Waste			5
TCLP2 - Restricted Solid Waste			20
TCLP3 - Hazardous Waste			>20
Sample Reference	Sample Depth	Sample Description	
BH2	0-0.2	Fill: Silty clay	<0.03
BH2 (Lab duplicate)	0-0.2	Fill: Silty clay	<0.03
BH4	0.1-0.2	Fill: Silty clay	<0.03
SDUP1	-	Fill: Silty clay	<0.03
Total Number of samples			4
Maximum Value			<PQL
General Solid Waste			VALUE
Restricted Solid Waste			VALUE
Hazardous Waste			VALUE
Concentration above PQL			Bold



TABLE Q1
SOIL QA/QC SUMMARY

			TRH C6 - C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	
PQL Envirolab SYD			25	50	100	100	0.2	0.5	1	2	1	4	0.4	1	1	1	0.1	1	1	
PQL Envirolab VIC			25	50	100	100	0.2	0.5	1.0	2.0	1.0	4.0	0.4	1.0	1.0	1.0	0.1	1.0	1.0	
Intra laboratory duplicate	BH8	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	8	<0.4	18	19	37	<0.1	6	34	
	SDUP1	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	7	<0.4	14	50	160	0.5	20	180	
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	7.5	nc	16	34.5	98.5	0.275	13	107	
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	13%	nc	25%	90%	125%	164%	108%	136%	
Trip Spike	TS-S1		-	-	-	-	120%	124%	124%	122%	122%	-	-	-	-	-	-	-	-	
	25/08/20																			
Result outside of QA/QC acceptance criteria																				

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ABC:	Ambient Background Concentration	PCBs:	Polychlorinated Biphenyls
ACM:	Asbestos Containing Material	PCE:	Perchloroethylene (Tetrachloroethylene or Tetrachloroethene)
ADWG:	Australian Drinking Water Guidelines	pH_{KCL}:	pH of filtered 1:20, 1M KCL extract, shaken overnight
AF:	Asbestos Fines	pH_{ox}:	pH of filtered 1:20 1M KCL after peroxide digestion
ANZG:	Australian and New Zealand Guidelines	PQL:	Practical Quantitation Limit
B(a)P:	Benzo(a)pyrene	RS:	Rinsate Sample
CEC:	Cation Exchange Capacity	RSL:	Regional Screening Levels
CRC:	Cooperative Research Centre	RSW:	Restricted Solid Waste
CT:	Contaminant Threshold	SAC:	Site Assessment Criteria
EILs:	Ecological Investigation Levels	SCC:	Specific Contaminant Concentration
ESLs:	Ecological Screening Levels	S_{Cr}:	Chromium reducible sulfur
FA:	Fibrous Asbestos	S_{POS}:	Peroxide oxidisable Sulfur
GIL:	Groundwater Investigation Levels	SSA:	Site Specific Assessment
GSW:	General Solid Waste	SSHSLS:	Site Specific Health Screening Levels
HILs:	Health Investigation Levels	TAA:	Total Actual Acidity in 1M KCL extract titrated to pH6.5
HSLs:	Health Screening Levels	TB:	Trip Blank
HSL-SSA:	Health Screening Level-Site Specific Assessment	TCA:	1,1,1 Trichloroethane (methyl chloroform)
kg/L	kilograms per litre	TCE:	Trichloroethylene (Trichloroethene)
NA:	Not Analysed	TCLP:	Toxicity Characteristics Leaching Procedure
NC:	Not Calculated	TPA:	Total Potential Acidity, 1M KCL peroxide digest
NEPM:	National Environmental Protection Measure	TS:	Trip Spike
NHMRC:	National Health and Medical Research Council	TRH:	Total Recoverable Hydrocarbons
NL:	Not Limiting	TSA:	Total Sulfide Acidity (TPA-TAA)
NSL:	No Set Limit	UCL:	Upper Level Confidence Limit on Mean Value
OCP:	Organochlorine Pesticides	USEPA:	United States Environmental Protection Agency
OPP:	Organophosphorus Pesticides	VOCC:	Volatile Organic Chlorinated Compounds
PAHs:	Polycyclic Aromatic Hydrocarbons	WHO:	World Health Organisation
%w/w:	weight per weight		
ppm:	Parts per million		

Table Specific Explanations:

HIL Tables:

- The chromium results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.
- Carcinogenic PAHs is a toxicity weighted sum of analyte concentrations for a specific list of PAH compounds relative to B(a)P. It is also referred to as the B(a)P Toxic Equivalence Quotient (TEQ).
- Statistical calculations are undertaken using ProUCL (USEPA). Statistical calculation is usually undertaken using data from fill samples.

EIL/ESL Table:

- ABC Values for selected metals have been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for old suburbs with high traffic have been quoted).

Waste Classification and TCLP Table:

- Data assessed using the NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014).
- The assessment of Total Moderately Harmful pesticides includes: Dichlorovos, Dimethoate, Fenitrothion, Ethion, Malathion and Parathion.
- Assessment of Total Scheduled pesticides include: HBC, alpha-BHC, gamma-BHC, beta-BHC, Heptachlor, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, pp-DDE, Dieldrin, Endrin, pp-DDD, pp-DDT, Endrin Aldehyde.

QA/QC Table:

- Field blank, Inter and Intra laboratory duplicate results are reported in mg/kg.
- Trip spike results are reported as percentage recovery.
- Field rinsate results are reported in µg/L.

TABLE S1
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013.
HIL-D: 'Commercial/Industrial'

All data in mg/kg unless stated otherwise			HEAVY METALS								PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	Carcinogenic PAHs	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	Chlorpyrifos		
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC)			3000	900	3600	240000	1500	730	6000	400000	4000	40	80	2000	2500	45	530	3600	50	2000	7	Detected/Not Detected
Sample Reference	Sample Depth	Sample Description																				
TP101	0-0.2	F: Silty clay	NA	NA	NA	NA	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP101	0.5-0.8	F: Silty clay	NA	NA	NA	NA	34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP103	0-0.2	F: Silty clay	6	<0.4	14	18	58	<0.1	6	130	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP103 - [LAB_DUP]	0-0.2	F: Silty clay	6	<0.4	14	17	54	<0.1	6	120	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP105	0-0.2	F: Silty clay	NA	NA	NA	NA	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP106	0-0.1	F: Sandy gravel	NA	NA	NA	NA	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP107	0-0.2	F: Silty clay	NA	NA	NA	NA	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP108	0-0.2	F: Silty clay	7	<0.4	16	36	100	0.1	11	190	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP109	0-0.2	F: Silty clay	NA	NA	NA	NA	86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP110	0-0.2	F: Silty clay	NA	NA	NA	NA	130	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP112	0-0.2	F: Silty clay	NA	NA	NA	NA	52	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP114	0-0.1	F: Sandy gravel	NA	NA	NA	NA	90	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP116	0-0.2	F: Silty clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP118	0-0.2	F: Silty clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP119	0-0.2	F: Silty clay	4	<0.4	11	14	43	<0.1	6	27	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP121	0-0.2	F: Silty sandy clay	NA	NA	NA	NA	89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP122	0-0.2	F: Silty sandy clay	7	<0.4	16	38	190	0.4	9	140	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP122 - [LAB_DUP]	0-0.2	F: Silty sandy clay	7	<0.4	17	44	200	0.4	10	150	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP122	0.4-0.6	Silty clay	NA	NA	NA	NA	19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP123	0-0.2	F: Silty clay	NA	NA	NA	NA	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
TP125	0-0.2	F: Silty clay	NA	NA	NA	NA	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
DUP104	-	Fill	5	<0.4	14	20	55	0.1	9	120	0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
DUP106	-	Fill	7	<0.4	15	41	160	0.3	8	130	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP101 FCF1	0-0.8	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
TP109 FCF1	0-0.4	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
TP112 FCF1	0-0.4	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
TP116 FCF1	0-0.6	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
TP118 FCF1	0-0.4	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
TP121 FCF1	0-0.5	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
TP122 FCF1	0-0.4	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
TP123 FCF1	0-0.6	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
TP125 FCF1	0-0.4	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
Total Number of Samples			8	8	8	8	21	8	8	8	8	8	8	8	8	8	8	8	8	8	8	18
Maximum Value			7	<PQL	17	44	250	0.4	11	190	0.05	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Detected

Concentration above the SAC
Concentration above the PQL

VALUE
Bold

TABLE S2
SOIL LABORATORY RESULTS COMPARED TO HSLs
All data in mg/kg unless stated otherwise

					C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Field PID Measurement
PQL - Envirolab Services					25	50	0.2	0.5	1	1	1	ppm
NEPM 2013 HSL Land Use Category					HSL-D: COMMERCIAL/INDUSTRIAL							
Sample Reference	Sample Depth	Sample Description	Depth Category	Soil Category								
TP103	0-0.2	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP103 - [LAB_DUP]	0-0.2	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP108	0-0.2	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP119	0-0.2	F: Silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP122	0-0.2	F: Silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP122 - [LAB_DUP]	0-0.2	F: Silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
DUP104	-	Fill	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
DUP106	-	Fill	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
DUP107	-	Fill	0m to <1m	Sand	<25	NA	<0.2	<0.5	<1	<3	<1	0
Total Number of Samples					9	8	9	9	9	9	9	9
Maximum Value					<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
Concentration above the SAC					VALUE							
Concentration above the PQL					Bold							
The guideline corresponding to the concentration above the SAC is highlighted in grey in the Site Assessment Criteria Table below												

HSL SOIL ASSESSMENT CRITERIA

Sample Reference	Sample Depth	Sample Description	Depth Category	Soil Category	C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
TP103	0-0.2	F: Silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
TP103 - [LAB_DUP]	0-0.2	F: Silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
TP108	0-0.2	F: Silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
TP119	0-0.2	F: Silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
TP122	0-0.2	F: Silty sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
TP122 - [LAB_DUP]	0-0.2	F: Silty sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
DUP104	-	Fill	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
DUP106	-	Fill	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
DUP107	-	Fill	0m to <1m	Sand	260	NA	3	NL	NL	230	NL

TABLE S3 SOIL LABORATORY RESULTS COMPARED TO MANAGEMENT LIMITS All data in mg/kg unless stated otherwise						
			C ₆ -C ₁₀ (F1) plus BTEX	>C ₁₀ -C ₁₆ (F2) plus naphthalene	>C ₁₆ -C ₃₄ (F3)	>C ₃₄ -C ₄₀ (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			COMMERCIAL/INDUSTRIAL			
Sample Reference	Sample Depth	Soil Texture				
TP103	0-0.2	Fine	<25	<50	<100	<100
TP103 - [LAB_DUP]	0-0.2	Fine	<25	<50	<100	<100
TP108	0-0.2	Fine	<25	<50	<100	<100
TP119	0-0.2	Fine	<25	<50	<100	<100
TP122	0-0.2	Fine	<25	<50	<100	<100
TP122 - [LAB_DUP]	0-0.2	Fine	<25	<50	<100	<100
DUP104	-	Fine	<25	<50	<100	<100
DUP106	-	Fine	<25	<50	<100	<100
DUP107	-	Fine	<25	NA	NA	NA
Total Number of Samples			9	8	8	8
Maximum Value			<PQL	<PQL	<PQL	<PQL
Concentration above the SAC			VALUE			
Concentration above the PQL			Bold			

MANAGEMENT LIMIT ASSESSMENT CRITERIA

Sample Reference	Sample Depth	Soil Texture	C ₆ -C ₁₀ (F1) plus BTEX	>C ₁₀ -C ₁₆ (F2) plus naphthalene	>C ₁₆ -C ₃₄ (F3)	>C ₃₄ -C ₄₀ (F4)
TP103	0-0.2	Fine	800	1000	5000	10000
TP103 - [LAB_DUP]	0-0.2	Fine	800	1000	5000	10000
TP108	0-0.2	Fine	800	1000	5000	10000
TP119	0-0.2	Fine	800	1000	5000	10000
TP122	0-0.2	Fine	800	1000	5000	10000
TP122 - [LAB_DUP]	0-0.2	Fine	800	1000	5000	10000
DUP104	-	Fine	800	1000	5000	10000
DUP106	-	Fine	800	1000	5000	10000
DUP107	-	Fine	800	NA	NA	NA

TABLE S4
SOIL LABORATORY RESULTS COMPARED TO DIRECT CONTACT CRITERIA
 All data in mg/kg unless stated otherwise

Analyte		C ₆ -C ₁₀	>C ₁₀ -C ₁₆	>C ₁₆ -C ₃₄	>C ₃₄ -C ₄₀	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID
PQL - Envirolab Services		25	50	100	100	0.2	0.5	1	1	1	
CRC 2011 - Direct contact Criteria		82,000	62,000	85,000	120,000	1,100	120,000	85,000	130,000	29,000	
Site Use		Intrusive Maintenance Worker - DIRECT SOIL CONTACT									
Sample Reference	Sample Depth										
TP103	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP103 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP108	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP119	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP122	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP122 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
DUP104	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
DUP106	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
DUP107	-	<25	NA	NA	NA	<0.2	<0.5	<1	<3	<1	0
Total Number of Samples		9	8	8	8	9	9	9	9	9	9
Maximum Value		<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL
Concentration above the SAC		VALUE									
Concentration above the PQL		Bold									

TABLE S5
ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS
HSL-D:Commercial/Industrial

FIELD DATA															LABORATORY DATA													
Date Sampled	Sample reference	Sample Depth	Visible ACM in top 100mm	Approx. Volume of Soil (L)	Soil Mass (g)	Mass ACM (g)	Mass Asbestos in ACM (g)	[Asbestos from ACM in soil] (%w/w)	Mass ACM <7mm (g)	Mass Asbestos in ACM <7mm (g)	[Asbestos from ACM <7mm in soil] (%w/w)	Mass FA (g)	Mass Asbestos in FA (g)	[Asbestos from FA in soil] (%w/w)	Lab Report Number	Sample reference	Sample Depth	Sample Mass (g)	Asbestos ID in soil (AS4964) >0.1g/kg	Trace Analysis	Total Asbestos (g/kg)	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	ACM >7mm Estimation % (w/w)	FA and AF Estimation % (w/w)		
SAC		No				0.05				0.001				0.001		0.050.001												
16/12/2020	TP101	0.0-0.8	No	10	19,500	59.5	8.922	0.0458	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16/12/2020	TP102	0.0-0.4	No	10	18,600	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16/12/2020	TP103	0.0-0.3	No	10	18,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16/12/2020	TP104	0.0-0.4	No	10	17,300	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16/12/2020	TP105	0.0-0.4	No	10	16,900	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16/12/2020	TP106	0.0-0.1	No	-	3,300	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16/12/2020	TP106	0.1-0.4	NA	10	16,700	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16/12/2020	TP107	0.0-0.4	No	10	16,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16/12/2020	TP108	0.0-0.5	No	10	16,300	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16/12/2020	TP109	0.0-0.4	No	10	18,800	12.3	1.842	0.0098	No ACM <7mm observed	--	--	No FA observed	--	--	258622	TP109	0-0.2	584.38	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001		
16/12/2020	TP110	0.0-0.5	No	10	14,900	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16/12/2020	TP111	0.0-0.3	No	10	19,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16/12/2020	TP112	0.0-0.4	Yes	10	17,700	147.2	22.08	0.1247	No ACM <7mm observed	--	--	No FA observed	--	--	258662	TP112	0-0.2	731.62	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001		
16/12/2020	TP113	0.0-0.4	No	10	20,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16/12/2020	TP114	0.0-0.1	No	10	13,300	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16/12/2020	TP114	0.2-0.5	NA	10	16,700	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
16/12/2020	TP115	0.0-0.4	No	10	15,700	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
17/12/2020	TP116	0.0-0.6	No	10	19,200	37.2	5.58	0.0291	No ACM <7mm observed	--	--	No FA observed	--	--	258662	TP116	0-0.2	656.43	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001		
17/12/2020	TP117	0.0-0.4	No	10	17,500	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
17/12/2020	TP118	0.0-0.4	No	10	17,400	84.2	12.63	0.0726	No ACM <7mm observed	--	--	No FA observed	--	--	258662	TP118	0-0.2	573.36	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001		
17/12/2020	TP119	0.0-0.5	No	10	15,700	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
17/12/2020	TP120	0.0-0.2	No	-	3,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
17/12/2020	TP120	0.2-0.7	NA	10	17,500	30.6	4.59	0.0262	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
17/12/2020	TP121	0.0-0.5	No	10	17,900	30.6	4.59	0.0256	No ACM <7mm observed	--	--	No FA observed	--	--	258662	TP121	0-0.2	628.25	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001		
17/12/2020	TP122	0.0-0.4	No	10	17,300	4.6	0.693	0.0040	No ACM <7mm observed	--	--	No FA observed	--	--	258662	TP122	0-0.2	592.33	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001		
17/12/2020	TP123	0.0-0.6	No	10	18,400	149.7	22.455	0.1220	No ACM <7mm observed	--	--	No FA observed	--	--	258662	TP123	0-0.2	642.28	Chrysotile asbestos detected: Organic fibres detected	No asbestos detected	0.659	See previous	0.4233	--	0.0659	<0.001		
17/12/2020	TP124	0.0-0.6	No	10	17,400	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
17/12/2020	TP125	0.0-0.4	No	10	16,900	3.9	0.579	0.0034	No ACM <7mm observed	--	--	No FA observed	--	--	258662	TP125	0-0.2	675.7	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001		
17/12/2020	TP126	0.0-0.6	No	10	16,400	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	

Concentration above the SAC

VALUE

TABLE S6 SOIL LABORATORY RESULTS COMPARED TO NEPM 2013 EILs AND ESLs All data in mg/kg unless stated otherwise																							
Land Use Category				COMMERCIAL/INDUSTRIAL																			
				pH	CEC (cmolc/kg)	Clay Content (% clay)	AGED HEAVY METALS-EILs						EILs		ESLs								
Arsenic	Chromium	Copper	Lead				Nickel	Zinc	Naphthalene	DDT	C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2) plus naphthalene	>C ₁₆ -C ₃₄ (F3)	>C ₃₄ -C ₄₀ (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P				
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	0.1	25	50	100	100	0.2	0.5	1	1	0.05	
Ambient Background Concentration (ABC)				-	-	-	NSL	13	28	163	5	122	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	
Sample Reference	Sample Depth	Sample Description	Soil Texture																				
TP101	0-0.2	F: Silty clay	Fine	NA	NA	NA	NA	NA	NA	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP101	0.5-0.8	F: Silty clay	Fine	NA	NA	NA	NA	NA	NA	34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP103	0-0.2	F: Silty clay	Fine	NA	NA	NA	6	14	18	58	6	130	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
TP103 - [LAB_DUP]	0-0.2	F: Silty clay	Fine	NA	NA	NA	6	14	17	54	6	120	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
TP105	0-0.2	F: Silty clay	Fine	NA	NA	NA	NA	NA	NA	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP106	0-0.1	F: Sandy gravel	Coarse	NA	NA	NA	NA	NA	NA	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP107	0-0.2	F: Silty clay	Fine	NA	NA	NA	NA	NA	NA	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP108	0-0.2	F: Silty clay	Fine	NA	NA	NA	7	16	36	100	11	190	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
TP109	0-0.2	F: Silty clay	Fine	NA	NA	NA	NA	NA	NA	86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP110	0-0.2	F: Silty clay	Fine	NA	NA	NA	NA	NA	NA	130	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP112	0-0.2	F: Silty clay	Fine	NA	NA	NA	NA	NA	NA	52	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP114	0-0.1	F: Sandy gravel	Coarse	NA	NA	NA	NA	NA	NA	90	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP119	0-0.2	F: Silty clay	Fine	NA	NA	NA	4	11	14	43	6	27	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
TP121	0-0.2	F: Silty sandy clay	Fine	NA	NA	NA	NA	NA	NA	89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP122	0-0.2	F: Silty sandy clay	Fine	NA	NA	NA	7	16	38	190	9	140	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
TP122 - [LAB_DUP]	0-0.2	F: Silty sandy clay	Fine	NA	NA	NA	7	17	44	200	10	150	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
TP122	0.4-0.6	Silty clay	Fine	NA	NA	NA	NA	NA	NA	19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP123	0-0.2	F: Silty clay	Fine	NA	NA	NA	NA	NA	NA	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP125	0-0.2	F: Silty clay	Fine	NA	NA	NA	NA	NA	NA	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
DUP104	-	Fill	Fine	NA	NA	NA	5	14	20	55	9	120	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.05
DUP106	-	Fill	Fine	NA	NA	NA	7	15	41	160	8	130	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
DUP107	-	Fill	Fine	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	<25	NA	NA	NA	<0.2	<0.5	<1	<3	NA
Total Number of Samples				0	0	0	8	8	8	21	8	8	9	8	9	8	8	8	9	9	9	9	8
Maximum Value				NA	NA	NA	7	17	44	250	11	190	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	0.05
Concentration above the SAC				VALUE																			
Concentration above the PQL				Bold																			
The guideline corresponding to the elevated value is highlighted in grey in the EIL and ESL Assessment Criteria Table below																							

EIL AND ESL ASSESSMENT CRITERIA																							
Sample Reference	Sample Depth	Sample Description	Soil Texture	pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2) plus naphthalene	>C ₁₆ -C ₃₄ (F3)	>C ₃₄ -C ₄₀ (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
TP101	0-0.2	F: Silty clay	Fine	NA	NA	NA	--	--	--	2000	--	--	--	--	--	--	--	--	--	--	--	--	--
TP101	0.5-0.8	F: Silty clay	Fine	NA	NA	NA	--	--	--	2000	--	--	--	--	--	--	--	--	--	--	--	--	--
TP103	0-0.2	F: Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
TP103 - [LAB_DUP]	0-0.2	F: Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
TP105	0-0.2	F: Silty clay	Fine	NA	NA	NA	--	--	--	2000	--	--	--	--	--	--	--	--	--	--	--	--	--
TP106	0-0.1	F: Sandy gravel	Coarse	NA	NA	NA	--	--	--	2000	--	--	--	--	--	--	--	--	--	--	--	--	--
TP107	0-0.2	F: Silty clay	Fine	NA	NA	NA	--	--	--	2000	--	--	--	--	--	--	--	--	--	--	--	--	--
TP108	0-0.2	F: Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
TP109	0-0.2	F: Silty clay	Fine	NA	NA	NA	--	--	--	2000	--	--	--	--	--	--	--	--	--	--	--	--	--
TP110	0-0.2	F: Silty clay	Fine	NA	NA	NA	--	--	--	2000	--	--	--	--	--	--	--	--	--	--	--	--	--
TP112	0-0.2	F: Silty clay	Fine	NA	NA	NA	--	--	--	2000	--	--	--	--	--	--	--	--	--	--	--	--	--
TP114	0-0.1	F: Sandy gravel	Coarse	NA	NA	NA	--	--	--	2000	--	--	--	--	--	--	--	--	--	--	--	--	--
TP119	0-0.2	F: Silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
TP121	0-0.2	F: Silty sandy clay	Fine	NA	NA	NA	--	--	--	2000	--	--	--	--	--	--	--	--	--	--	--	--	--
TP122	0-0.2	F: Silty sandy clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
TP122 - [LAB_DUP]	0-0.2	F: Silty sandy clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
TP122	0.4-0.6	Silty clay	Fine	NA	NA	NA	--	--	--	2000	--	--	--	--	--	--	--	--	--	--	--	--	--
TP123	0-0.2	F: Silty clay	Fine	NA	NA	NA	--	--	--	2000	--	--	--	--	--	--	--	--	--	--	--	--	--
TP125	0-0.2	F: Silty clay	Fine	NA	NA	NA	--	--	--	2000	--	--	--	--	--	--	--	--	--	--	--	--	--
DUP104	-	Fill	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
DUP106	-	Fill	Fine	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	2500	6600	95	135	185	95	72
DUP107	-	Fill	Fine	NA	NA	NA	--	--	--	--	--	--	370	--	215	--	--	--	95	135	185	95	--

TABLE S7
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES
All data in mg/kg unless stated otherwise

			HEAVY METALS							PAHs		OC/OP PESTICIDES				Total PCBs	TRH					BTEX COMPOUNDS				ASBESTOS FIBRES	
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Total Endosulfans	Chloropyrifos	Total Moderately Harmful		Total Scheduled	C ₆ -C ₉	C ₁₀ -C ₁₄	C ₁₅ -C ₂₈	C ₂₉ -C ₃₆	Total C ₁₀ -C ₃₆	Benzene	Toluene	Ethyl benzene		Total Xylenes
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	25	50	100	100	50	0.2	0.5	1	1	100
General Solid Waste CT1			100	20	100	NSL	100	4	40	NSL	200	0.8	60	4	250	50	50	650	NSL			10,000	10	288	600	1,000	-
General Solid Waste SCC1			500	100	1900	NSL	1500	50	1050	NSL	200	10	108	7.5	250	50	50	650	NSL			10,000	18	518	1,080	1,800	-
Restricted Solid Waste CT2			400	80	400	NSL	400	16	160	NSL	800	3.2	240	16	1000	50	50	2600	NSL			40,000	40	1,152	2,400	4,000	-
Restricted Solid Waste SCC2			2000	400	7600	NSL	6000	200	4200	NSL	800	23	432	30	1000	50	50	2600	NSL			40,000	72	2,073	4,320	7,200	-
Sample Reference	Sample Depth	Sample Description																									
TP101	0-0.2	F: Silty clay	NA	NA	NA	NA	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected	
TP101	0.5-0.8	F: Silty clay	NA	NA	NA	NA	34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP103	0-0.2	F: Silty clay	6	<0.4	14	18	58	<0.1	6	130	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP103 - [LAB_DUP]	0-0.2	F: Silty clay	6	<0.4	14	17	54	<0.1	6	120	<0.05	<0.05	<0.1	<0.1	<0.1	0.2	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP105	0-0.2	F: Silty clay	NA	NA	NA	NA	30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP106	0-0.1	F: Sandy gravel	NA	NA	NA	NA	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP107	0-0.2	F: Silty clay	NA	NA	NA	NA	250	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP108	0-0.2	F: Silty clay	7	<0.4	16	36	100	0.1	11	190	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP109	0-0.2	F: Silty clay	NA	NA	NA	NA	86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected	
TP110	0-0.2	F: Silty clay	NA	NA	NA	NA	130	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP112	0-0.2	F: Silty clay	NA	NA	NA	NA	52	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected	
TP114	0-0.1	F: Sandy gravel	NA	NA	NA	NA	90	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP116	0-0.2	F: Silty clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected	
TP118	0-0.2	F: Silty clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected	
TP119	0-0.2	F: Silty clay	4	<0.4	11	14	43	<0.1	6	27	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP121	0-0.2	F: Silty sandy clay	NA	NA	NA	NA	89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected	
TP122	0-0.2	F: Silty sandy clay	7	<0.4	16	38	190	0.4	9	140	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
TP122 - [LAB_DUP]	0-0.2	F: Silty sandy clay	7	<0.4	17	44	200	0.4	10	150	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP122	0.4-0.6	Silty clay	NA	NA	NA	NA	19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
TP123	0-0.2	F: Silty clay	NA	NA	NA	NA	190	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
TP125	0-0.2	F: Silty clay	NA	NA	NA	NA	120	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected	
DUP104	-	Fill	5	<0.4	14	20	55	0.1	9	120	0.05	0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
DUP106	-	Fill	7	<0.4	15	41	160	0.3	8	130	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
DUP107	-	Fill	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<25	NA	NA	NA	NA	<0.2	<0.5	<1	<3	NA
TP101 FCF1	0-0.8	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
TP109 FCF1	0-0.4	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
TP112 FCF1	0-0.4	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
TP116 FCF1	0-0.6	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
TP118 FCF1	0-0.4	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
TP121 FCF1	0-0.5	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
TP122 FCF1	0-0.4	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
TP123 FCF1	0-0.6	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
TP125 FCF1	0-0.4	Material	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected	
			8	8	8	8	21	8	8	8	8	8	8	8	8	8	8	9	8	8	8	8	9	9	9	9	18
Maximum Value			7	<PQL	17	44	250	0.4	11	190	0.05	0.05	<PQL	<PQL	<PQL	0.2	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Detected

Statistical Analysis on Fill Samples																									
Number of Fill Samples *	NC	NC	NC	NC	22	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mean Value	NC	NC	NC	NC	85.27	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Standard Deviation	NC	NC	NC	NC	62.43	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
% UCL	NC	NC	NC	NC	95	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
UCL Value	NC	NC	NC	NC	108.2	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

Concentration above the CT1
Concentration above SCC1
Concentration above the SCC2
Concentration above PQL

VALUE
VALUE
VALUE
Bold

* Statistical analysis number of fill samples includes samples from the PSI and DSI dataset

TABLE S8
SOIL LABORATORY TCLP RESULTS
 All data in mg/L unless stated otherwise

			Lead
PQL - Envirolab Services			0.03
TCLP1 - General Solid Waste			5
TCLP2 - Restricted Solid Waste			20
TCLP3 - Hazardous Waste			>20
Sample Reference	Sample Depth	Sample Description	
TP107	0-0.2	F: Silty clay	<0.03
TP107 - [LAB_DUP]	0-0.2	F: Silty clay	<0.03
TP110	0-0.2	F: Silty clay	<0.03
TP122	0-0.2	F: Silty sandy clay	<0.03
TP123	0-0.2	F: Silty clay	<0.03
TP125	0-0.2	F: Silty clay	<0.03
Total Number of samples			6
Maximum Value			<PQL
General Solid Waste			VALUE
Restricted Solid Waste			VALUE
Hazardous Waste			VALUE
Concentration above PQL			Bold

Result outside of QA/QC acceptance criteria	
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Appendix D: Waste Tracking Template

Imported Materials Register									
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[illegible]

Exported (Waste) Materials Register									
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[illegible]



Appendix E: Guidelines and Reference Documents



Contaminated Land Management Act 1997 (NSW)

Conveyancing Act (1919) (NSW).

Environmental Planning and Assessment Act 1979 (NSW)

Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998)

NSW EPA, (2015). Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997

NSW EPA, (2017). Guidelines for the NSW Site Auditor Scheme, 3rd Edition

NSW EPA, (2020). Consultants Reporting on Contaminated Land, Contaminated Land Guidelines

National Environment Protection Council (NEPC), (2013). National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)

Protection of the Environment Operations Act 1997 (NSW)

State Environmental Planning Policy No.55 – Remediation of Land 1998 (NSW)

Work Health and Safety Regulation 2017 (NSW)

Western Australian Department of Health (DoH), (2021). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia