REPORT TO

SYESUN PTY LTD

ON

REMEDIATION ACTION PLAN

FOR

PROPOSED GARDEN CENTRE REDEVELOPMENT

AT

277 MONA VALE ROAD, TERREY HILLS, NSW

Date: 6 April 2022
Ref: E34278PHrpt3-RAP

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Executive Summary

Syesun Pty Ltd ('the client') commissioned JK Environments (JKE) to prepare a Remediation Action Plan (RAP) for the proposed garden centre redevelopment at 277 Mona Vale Road, Terrey Hills, NSW. JKE has previously undertaken a Preliminary Site Investigation (PSI) and a Detailed Site Investigation (DSI) at the site.

Investigations at the site by JKE have identified asbestos in fill that represents a potential risk to human receptors during site development/excavation works and future site use.

The remediation strategy includes a combination of excavation and off-site disposal of fill where required to achieve the development levels, and cap and containment of the fill that remains in-situ. A visual marker layer will be installed over the remaining contaminated fill prior to the reinstatement of these areas with clean capping materials. The areas where fill remains will be managed under a Long Term Environmental Management Plan (LTEMP).

The capping specifications are shown in the table below:

Area	Capping Specification^
Continuous hardstand (e.g. pavement/concrete, or beneath permanent fixed features such as steps, retaining walls etc.)	Installation of: • Geotextile (or geogrid) marker[1] layer over the contaminated fill; • Clean imported (validated) basecourse, as required based on the engineering specification; and • Pavement material (i.e. concrete) as per engineering specification, or construction of the above ground feature.
Other areas with non-continuous hardstand (e.g. tiled areas, paving/pavers etc.)	Installation of: • Geotextile (or geogrid) marker over the contaminated fill; • At least 200mm clean imported (validated) capping material; and • Surface finish to required development design.
Landscaped areas, new plantings (trees, shrubs etc) and underground services	Any landscaped areas must be capped as follows: • Geotextile (or geogrid) marker over the contaminated fill; • At least 500mm clean imported (validated) capping material; and • Surface finish to required development design. All new plantings and underground services are to be placed above (not within) the contaminated fill (i.e. must be above the marker layer). Depending on the service depths and tree planting depths, this may require excavation and the placement of additional clean (validated) material to depths of >500mm. Installation of a marker layer is not required for existing services/service trenches to remain.

Prior to commencement of remediation, a data gap investigation must occur in accordance with Section 4 of this RAP. The outcome of that investigation must be considered in the context of the remediation and an updated RAP or Remedial Works Plan (RWP) must be prepared to outline any additional requirements relating to site remediation and validation.

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

[1] The purpose of the geotextile (or geogrid) marker is to provide visual demarcation to the underlying contaminated fill, should the overlying capping layers be disturbed. The client/project manager, remediation contractor and validation consultant are to agree on appropriate materials based on the project requirements (including but not limited to landscaping and engineering requirements).

require management via a LTEMP. The LTEMP 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 client must engage with the consent authority so that the remediation can occur as required concurrently with construction.

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

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Abbreviations

Asphaltic Cement	**AC**
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**
Hazardous Ground Gas	**HGG**
International Organisation of Standardisation	**ISO**
JK Environments	**JKE**
Lab Control Spike	**LCS**
Long-Term Environmental Management Plan	**LTEMP**
Material Tracking Plan	**MTP**
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**
Remedial Works Plan	**RWP**
Relative Percentage Difference	**RPD**
Site Assessment Criteria	**SAC**
Sampling, Analysis and Quality Plan	**SAQP**
Source, Pathway, Receptor	**SPR**
Standing Water Level	**SWL**
Toxicity Characteristic Leaching Procedure	**TCLP**

Total Recoverable Hydrocarbons	**TRHs**
Trip Spike	**TS**
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

Syesun Pty Ltd ('the client') commissioned JK Environments (JKE) to prepare a Remediation Action Plan (RAP) for the proposed garden centre redevelopment at 277 Mona Vale Road, Terrey Hills, 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 Figures 2 and 3 in Appendix A.

This report has been prepared to support the lodgement of a Development Application (DA) for the proposed garden centre redevelopment, with regards to State Environmental Planning Policy (Resilience and Hazards) 2021 (formerly known as SEPP55)[2].

JKE has previously undertaken a Preliminary Site Investigation (PSI) at the site. (Ref: E24278PHrpt)[3] and a Detailed Site Investigation (DSI) (Ref: E27318PHrpt)[4] was also undertaken to address the recommendations of the PSI. A summary of this information has been included in Section 2.

A geotechnical investigation was undertaken previously to this DSI by JK Geotechnics (JKG). The results of the geotechnical investigation are presented in a separate report (Ref: 34278Brpt, dated 3 September 2021)[5]. This report should be read in conjunction with the JKG report.

1.1 Proposed Development Details

The site is occupied by a garden centre and is to be redeveloped as a new garden centre. Works will include:

- Excavation and filling of the site;
- Construction of a new garden centre (main shop); open nursery; café; children's play area; bulk landscape and trade materials zone, pickup area and shop; loading facilities; staff and visitor amenities; associated driveways; storage space; landscaping and plant areas;
- Construction of separate fruit and pet shop tenancies; and
- Construction of car parking for approximately 400 cars in both on grade and underground carparking, that will require excavation up to approximately 3m deep.

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.

[2] State Environmental Planning Policy (Resilience and Hazards) 2021, which includes the provisions of SEPP55 – Remediation of Land 1998 (NSW) in Chapter 4 (referred to as SEPP)

[3] JKE (2021). *Report to Syesun Pty Ltd on Preliminary (Stage 1) Site Investigation for Proposed Garden Centre Redevelopment at 277 Mona Vale Road, Terrey Hills, NSW.* (Ref: E24278PHrpt, dated 28 October 2021) *(referred to as PSI)*

[4] JKE (2022). *Report to Syesun Pty Ltd on Detailed (Stage 1) Site Investigation for Proposed Garden Centre Redevelopment at 277 Mona Vale Road, Terrey Hills, NSW.* (Ref: E24278PHrpt, dated 25 January 2022) (referred to as DSI)

[5] JKG, (2021). *Report to Syesun Pty Ltd on Geotechnical Investigation for Proposed Redevelopment of Garden Centre at 277 Mona Vale Road, Terrey Hills, NSW* (referred to as JKG report)

The objectives of the RAP are to:

- Provide a rationale to support the extent of the proposed remediation and the remedial/site validation approach;
- Document a methodology that is to be implemented to remediate and validate the site;
- Outline site management procedures to be implemented during remediation work; and
- Document a strategy that can be implemented in the event of uncovering any unexpected, contamination-related finds.

1.3 Scope of Work

The RAP was prepared generally in accordance with a JKE proposal (Ref: EP56099PH) of 4 March 2022 and written acceptance from the client of 17 March 2022. 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], SEPP 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 Screenings, PSI and DSI

The PSI included an assessment of the site history, a walkover site inspection and soil sampling from 10 boreholes.

The PSI identified that the site has historically been used for agricultural and horticultural activities from around the mid-1900s onwards. An above-ground storage tank (AST) was also observed during the site inspection. It was noted that agricultural/horticultural activities are listed in Table 1 of the SEPP Planning Guidelines as activities that may cause contamination. This triggered a need for a DSI under the purview of SEPP.

The following potential contamination sources/areas of environmental concern (AEC) were identified:

- Fill material;
- The AST;
- Historical agricultural use of the site;
- Pesticides may have been used beneath the buildings and/or around the site; and
- Hazardous building materials from former building and demolition activities. These materials may also be present in the existing buildings/structures on site.

The DSI included a review of the PSI, soil sampling from 30 location, groundwater sampling from three locations and Hazardous Ground Gas (HGG) sampling from two locations.

At the time of the inspection, the majority of site was occupied by a plant nursery, landscape/garden centre and a café.

Fill was encountered at the surface or beneath the pavement in all boreholes, except BH113 and BH116, and extended to depths of approximately 0.2m to 4.5m. The fill typically comprised silty gravelly sand/gravelly silty sand, silty sand and silty clayey sand/silty sandy clay with inclusions of igneous and ironstone gravel, ash, slag and building rubble (brick, concrete, asphaltic concrete [AC], glass and tile fragments). During the PSI, fill was also found to contain organic material.

Groundwater monitoring wells were installed in BH101A (MW101A), BH102 (MW102) and BH105 (MW105). Standing Water Levels (SWLs) measured in the monitoring wells installed at the site ranged from 0.53m to 2.76m.

Methane and carbon dioxide were encountered both during drilling of BH101 and spot monitoring in MW101. We note that MW101 is located in the north-east corner of the site, outside of the proposed building/basement footprint. The methane and carbon dioxide are considered most likely to be associated with organic material in fill.

All of the soil analysis results were less than the Site Assessment Criteria (SAC), with the exception of asbestos. We note that asbestos was detected at concentrations that exceeded the SAC in fill samples from

BH101 and BH128. Asbestos was also detected at concentrations less than the SAC in fill samples from BH104, BH106, BH110 and TP127. The asbestos impact would be limited vertically to the depth of fill and appears to extend horizontally across the entire site. The asbestos was found as bonded fibre cement/asbestos containing material (ACM) and as Asbestos Fines/Fibrous Asbestos (AF/FA). The AF/FA is considered to be friable based on the NEPM (2013) definitions and represents a greater risk to human receptors compared to the ACM.

There was no visible asbestos at the ground surface and only limited samples containing asbestos were from at or near the surface. On this basis, there was considered to be a low risk of a complete source-pathway-receptor (SPR) linkage in the current site configuration and risks from asbestos were considered likely to remain low whilst the fill remains undisturbed. The risk of exposure to asbestos could increase during excavation/disturbance of the fill if such activities are not managed appropriately.

JKE considered that the site can be made suitable for the proposed development via remediation. The following was recommended:

- A RAP should be prepared to outline measures to reduce the risks associated with the asbestos in fill at the site. The RAP must also outline the details of additional HGG monitoring at the site and other site management protocols to address the data gaps;
- An Asbestos Management Plan (AMP) is to prepared for the construction phase of the proposed development for the removal of the asbestos waste, as required under the NSW Work Health and Safety Regulation 2017; and
- An AMP is to be prepared for management of asbestos in soil whilst the existing retail premises continue to operate.

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

2.2 Site Identification

Table 2-1: Site Identification

Site Owner:	Syesun Pty Limited
Site Address:	277 Mona Vale Road (also known as 62 Myoora Road), Terrey Hills, NSW
Lot & Deposited Plan:	Lot 4 in DP 737411
Current Land Use:	Garden Centre
Proposed Land Use:	Garden Centre
Local Government Authority:	Northern Beaches Council
Current Zoning:	RU4 Primary Production Small Lots
RL (AHD in m) (approx.):	200

Site Area (m^2 approximately):	28,000
Geographical Location in decimal degrees (centre point approx.):	Latitude: -33.686399 Longitude: 151.225561
Site Location Plan	Figure 1
Sample Location Plan:	Figure 2

2.3 Site Location, Topography and Regional Setting

The site is located in a mixed residential and commercial area of Terrey Hills and is bound by Mona Vale Road to the east, Cooyong Road to the north and Myoora Road to the west. The site is located approximately 500m to the west of Kimbriki Resource Recovery Centre (landfill).

The site is located towards the crest of a south-east facing hillside that falls towards Deep Creek and eventually Narrabeen Lagoon. The site itself falls to the south-east at approximately 1-3°. Parts of the site appear to have been levelled to account for the slope and accommodate the existing development. The hill becomes markedly steeper on the east side of Mona Vale Road.

2.4 Summary of Site Inspections

Walkover site inspections were undertaken for the PSI and DSI. In summary:

- At the time of the inspection, the majority of site was occupied by a plant nursery, landscape/garden centre and a café. The main retail building, located in the east section of the site, was single storey and of brick construction. A group of three smaller buildings was located south of the main building and included a toilet block, storage shed and cashier. Two portable buildings were located in the centre of the site and were occupied by office space. A large greenhouse was located west of the main building and generally contained potted plants and garden products. Concrete paved footpaths extended through the greenhouse. Two buildings (an existing or former house and a garage) were located in the south-west corner of the site and appeared to include fibre-cement cladding). The cladding on the former garage was damaged;
- AC-paved car parks were located along the east and north site boundaries;
- An AST was located in a brick and concrete bund, adjacent to the west end of a row of landscaping supply bays (see Figure 2). The bund was filled with mulch and, although no staining was observed within the bund, the mulch appeared wet in sections. Staining was observed on the ground surface immediately east of the AST. Consultation with the client indicated that the AST was used to store diesel.;
- Native shrubs and trees were present along the east, north and west site boundaries. Some native and exotic plants were located throughout the site associated with the nursery; and
- The surrounding land uses included residential areas to the north, a school to the west, a mixed rural and commercial area to the south and a vegetation corridor beyond Mona Vale Road to the east with Kimbriki Recycling Centre within the corridor.

2.5 Underground Services

The 'Dial Before You Dig' (DBYD) plans were reviewed for the PSI/DSI. Major services were not identified that would be expected to act as preferential pathways for contamination migration.

2.6 Summary of Geology, Soils and Hydrogeology

2.6.1 Regional Geology

Regional geological information sourced from a Lotsearch *Environmental Risk and Planning Report* was reviewed for the PSI. The report indicated that the site is underlain by Hawkesbury Sandstone, which typically consists of medium to coarse grained quartz sandstone with minor shale and laminite lenses. The PSI/DSI encountered fill across the entire site that extended to depths of approximately 0.2m to 4.5m, underlain by silty clay and siltstone/sandstone bedrock.

2.6.2 Acid Sulfate Soil (ASS) Risk and Planning

The site is not located in an ASS risk area according to the risk maps prepared by the Department of Land and Water Conservation.

2.6.3 Hydrogeology

Hydrogeological information presented in the PSI report indicated that the regional aquifer on-site and in the areas immediately surrounding the site includes porous, extensive aquifers of low to moderate productivity. There was several registered bores within the report buffer of 2,000m. In summary:

- The nearest registered bore was located approximately 160m to the north-east of the site. This was utilised for domestic purposes;
- The majority of the bores were registered for domestic purposes and were located west of the site;
- The nearest down-gradient bore (east or south-east) from the site was located over 650m from the site; and
- The drillers log information from the closest registered bores typically identified fill and/or clay soil to depths of 0.4-3.3m, underlain by sandstone bedrock. Standing water levels (SWLs) in the bores ranged from 16mBGL to 112mBGL.

The PSI indicated that the subsurface conditions at the site consist of residual soils (anticipated to be of relatively low permeability) overlying shallow bedrock. The potential for viable groundwater abstraction and use of groundwater under these conditions is considered to be low and only available using very deep wells.

Groundwater monitoring wells were installed in BH101A (MW101A), BH102 (MW102) and BH105 (MW105) for the DSI. The SWLs were measured at depths between 0.53mBGL to 2.76mBGL. Groundwater flow would generally be expected occur in a down gradient direction perpendicular to the ground surface elevation contours. Based on this, groundwater is expected to generally flow towards the south-east.

2.6.4 Receiving Water Bodies

Surface water bodies were not identified in the immediate vicinity of the site. The closest surface water body is Deep Creek located approximately 1,800m to the south-east of the site. This is down-gradient from site, however, due to the distance from the site, is unlikely to be a potential receptor.

3 REVIEW OF CONCEPTUAL SITE MODEL/SITE CHARACTERISATION

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 Contamination Sources and Contaminants of Concern/Potential Concern

The PSI identified a range of potential contamination sources and AEC. These have been refined in the table below based on a review of the PSI/DSI and the sampling and analysis that occurred for these assessments:

Table 3-1: Known and Potential Contamination Sources

Source / AEC	Contaminants of Concern and Contaminants of Potential Concern (CoPC)
Fill material – The site has been historically filled to achieve the existing levels. The fill may have been imported from various sources and could be contaminated. Fill can also become contaminated in situations where former buildings are demolished and where soils are moved around the site during cut/fill earthworks. Fill material was encountered during the PS/DSI that extended to depths of approximately 0.2m to 4.5m. The fill depths are shown on Figure 2 in Appendix A. Asbestos was encountered at multiple locations within the fill across the site. The asbestos in fill is considered to be associated with historical demolition of former structures. There is a potential for HGG, primarily including methane and carbon dioxide, to be associated with the deep fill where organic materials are present. Methane and carbon dioxide were encountered both during drilling of BH101 and spot monitoring in MW101. We note that MW101 is located in the north-east corner of the site, outside of the proposed building/basement footprint.	Asbestos is considered to be the primary contaminant of concern for remediation and validation across the entire site. HGG: primarily methane and carbon dioxide. Further investigation, monitoring and assessment of HGG risks will be required. Based on the current proposed development details it appears that the proposed basement will likely remove all fill from the basement footprint. However, fill may remain in the surrounding setback areas and it is these areas that are to be targeted during further investigations.
Fuel storage – One AST was identified at the site (see Figure 2). The AST was located in a concrete bund, however staining was observed on the ground surface immediately east. No contamination was identified associated with the AST, however, the potential exists for localised and unidentified impacts directly beneath the AST. A sample was not obtained from beneath the footprint of the bund during the DSI.	Lead, TRH, BTEX and polycyclic aromatic hydrocarbons (PAHs)

3.2 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways

At this stage, the risk driving the remediation relates to asbestos in fill. The mechanisms for contamination, affected media, receptors and exposure pathways have been identified below relevant to this contamination. The CSM will be developed further as a result of the data gap investigation findings.

Table 3-2: CSM

Mechanism for contamination	The mechanism for asbestos in soil contamination includes fill placement/demolition of structures and 'top down' impacts.
Affected media	Soil has been identified as an affected medium. It is noted that asbestos fibres can also affect the air. Asbestos has not been found on the ground surface to-date.
Receptor identification	Human receptors include site users (including adults and children using the retail facilities, and adult workers), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users, primarily in a commercial land use scenario.
Exposure pathways and mechanism	The exposure pathway for asbestos includes inhalation of airborne asbestos fibres.

3.3 Data Gaps

The primary data gap included:

- The HGG assessment was limited to field screening during drilling and a single monitoring event from two HGG wells. Additional monitoring and risk analysis was considered necessary to meet guideline requirements. Recommendations for additional HGG assessment are included in the report to address this data gap; and
- The source of the TRH (F2) detected in MW101 groundwater samples has not been confirmed and JKE recommended that this would need to be managed via the implementation of appropriate procedures during and following demolition.

It is also acknowledged that a sample was not obtained from directly beneath the AST bund.

Section 4 of this RAP outlines requirements for a data gap investigation following site establishment so that these gaps are sufficiently addressed.

3.4 Remediation Extent

For the purpose of the RAP, remediation will extend across the site to the full extent of the cadastral boundaries. Remediation is expected to be limited vertically to the depth of the fill, however, this will be confirmed via the validation process.

4 DATA GAP INVESTIGATION REQUIREMENTS

A data gap investigation must occur prior to the commencement of remediation works to adequately inform the final remediation process. Based on typical turnaround times, the data gap investigation and finalisation of the associated report may take approximately six months and must be complete before finalising the detailed development design. The client and project manager are to factor this into the project timeline.

A Sampling, Analysis and Quality Plan (SAQP) must be prepared for the data gap investigation in accordance with NEPM 2013 and the NSW EPA Consultants reporting on contaminated land, Contaminated Land Guidelines (2020)[9] and the NSW EPA Assessment and management of hazardous ground gases (2020)[10]. The SAQP is to account for the following:

- HGG monitoring around the north and east sides of the proposed basement. Six HGG monitoring wells should be installed outside the proposed basement footprint. Monitoring must occur over a period of between two to 24 months and must include measurements during falling atmospheric pressure. We that this is based on spot monitoring and that the installation of continuous gas monitors may reduce this monitoring period;
- An additional round of groundwater sampling from all three monitoring wells to better assess the TRH encountered in MW101;
- Groundwater samples are to be analysed for TRH and BTEX;
- The groundwater flow direction is to be confirmed via a survey of the well heights and modelling;
- Additional soil sampling should be undertaken within the footprint of the AST bund. This could occur via coring the concrete in the bund and sampling beneath, or this could occur following demolition of the bund. Sampling should occur from two locations;
- One sample per fill profile, per location, is to be analysed for the contaminants of concern/CoPC associated with the AST, including Lead, TRH, BTEX and PAHs. Analysis of the underlying natural soils is also to occur if elevated concentrations of contaminants (above the SAC) are identified in fill; and
- Quality Control/Quality Assurance (QA/QC) sampling/analysis.

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

[10] NSW EPA (2020). *Contaminated Land Guidelines for the Assessment and Management of Hazardous Ground Gases* (referred to as NSW EPA HGG 2020)

5 EXTENT OF REMEDIATION

The extent of remediation is to be confirmed following the data gap investigation described in Section 4. Once this occurs, a Remedial Works Plan (RWP) (or an updated RAP) is to be prepared to outline the remediation and validation requirements.

For the purpose of this RAP, it is assumed all fill across the entire site is impacted by asbestos and that remediation of HGG or groundwater will not be required.

The final extent of remediation will be confirmed via the site validation process.

6 REMEDIATION OPTIONS

6.1 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)[11] require consideration of the following in assessing remediation options:

1. Minimisation of public risk;
2. Minimisation of contaminated soil disturbance; and
3. Minimisation of contaminated material/soil moved to landfill, including minimisation of risks associated with transportation.

The NSW EPA Contaminated Land Management Guidelines for the NSW Site Auditor Scheme (3rd Edition) (2017)[12] 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.

[11] 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)

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

6.2 Remediation Options Assessment

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

Table 6-1: 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 due to the potential for air pollution and the formation of harmful by-products during incineration processes. Licences for re-use of treated material/waste may also be required.	Not applicable. There are no available treatment methods to remove asbestos in the form of AF/FA in soil.
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 applicable, as noted above.
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 contaminants of concern. A Long-Term Environmental Management Plan (LTEMP) would be required and an LTEMP would need to be publicly notified and made to be legally enforceable (e.g. via listings in the Section 10.7 planning certificate and on the land title).	In-situ capping is applicable for the site, in particular in the areas that will require filling (i.e. areas where excavation is not proposed). Risks associated with asbestos can be adequately mitigated by eliminating disturbance of the material via covering the material with physical barriers. This is the most sustainable option as it eliminates unnecessary excavation and transport of materials and disposal of waste etc.

Option	Discussion	Assessment/Applicability
<u>Option 4</u> 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 any areas where excavation is required to achieve the required development design levels that will result in removal of the fill (e.g. such as the proposed basement area). Not considered to be applicable for all areas where fill will remain.
<u>Option 5</u> 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.

6.3 Rationale for the Preferred Option for Remediation

The preferred options for remediation are as follows:

- Option 3/5 (in-situ capping and long-term management of the capped areas via an LTEMP), applicable in all areas where fill will remain. Excavation/removal of all fill is not proposed across the majority of areas of the site, as the construction of pavements is proposed across much of the site. This option also aligns with sustainability and safety/risk-based principles by minimising waste disposal to landfill and minimising unnecessary disturbance/excavation of asbestos contaminated soils; and
- Option 4 (excavation and off-site disposal), applicable to any areas where excavation of all fill will be required to achieve finished levels.

7 REMEDIATION DETAILS

7.1 Roles and Responsibilities

Table 7-1: Roles and Responsibilities

Role	Responsibility
Client/Developer and Project Manager	The client (Syesun Pty Ltd) and Project Manager (Statewide Project Management). 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 consultant[13] provides consulting advice and validation services in relation to the remediation, completes the data gap investigation, and prepares the site validation report, LTEMP and any other associated documentation such as the AMP. 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. It is recommended that the validation consultant has a Licensed Asbestos Assessor on staff. 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, carry out the required site inspections during excavation and capping remediation, and collect validation samples for imported materials.

[13] It is recommended that the consultant be a certified practitioner (specialising in site contamination), under one of the NSW EPA endorsed certification schemes

7.2 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 10) should be reviewed by project manager and remediation contractor, and appropriate steps are to be taken to ensure the adequate implementation of the plan.

7.3 Summary of Remediation, Validation and Associated Tasks

The following general sequence of works is anticipated:

- Data gap investigation (Section 4);
- Site establishment;
- Demolition/removal of structures;
- Inspection of the site by the validation consultant to assess unexpected conditions;
- Excavation/fill removal to the extent required for remediation or to reach proposed finished levels; and
- Capping works, including installation of visual marker layers over the areas where fill remains, followed by reinstatement of excavations (where required) using suitable (validated) imported materials, and validation of this process.

7.3.1 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 so that the site establishment (e.g. site sheds, fencing, access points etc) does not inhibit the works. Any materials imported onto site during the site establishment (e.g. 40/70 or DGB gravels for driveways and site shed areas etc) must be validated in Accordance with Section 8.

7.3.2 Demolition/Removal of Structures

A hazardous building materials survey is to be undertaken prior to demolition. The demolition is to occur with regards to the findings of the hazardous building materials survey and must be undertaken in accordance with the relevant codes, standards, guidelines and regulations. All structures and materials are to be removed from the site and clearance certificates are to be provided for the removal of all hazardous materials.

All waste from the demolition is to be disposed to facilities that are licenced by the NSW EPA to accept the waste. The demolition contractor is to maintain adequate records and retain all documentation for such activities including:

- A summary register including details such as waste disposal dates, waste materials descriptions, disposal locations (i.e. facility details) and reconciliation of this information with waste disposal docket numbers; and
- 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.

The above information is to be supplied to the validation consultant for assessment and inclusion in the site validation report.

7.3.3 Post-Demolition Inspection

Following removal of the buildings and pavement at the site, the validation consultant must undertake an inspection paying particular attention to the potential for odours and/or soil staining that may be indicators of unexpected contamination. This inspection process may need to be staged in the event that the removal of buildings and pavements is staged. The consultant must assess the visual consistency in fill across the site and with that encountered during the DSI. A hold point must be recorded in the remediation contractors programme so that this occurs and any identified issues can be managed accordingly.

In the event of an unexpected find, reference is to be made to the contingency plan outlined in Section 9 of this RAP.

7.3.4 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 8 for the detailed validation plan.

Table 7-2: Remediation – Excavation/Fill Removal

Step	Primary Role/ Responsibility	Procedure
1.	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 and the AMP are implemented for the remediation works. Geotechnical advice must be sought regarding the stability of the adjacent structures and/or adjacent areas prior to commencing remediation (as required). Stability issues should be addressed to the satisfaction of a suitably qualified geotechnical engineer. This may require the installation of additional temporary shoring systems. All underground services are to be appropriately disconnected and/or rerouted to facilitate the works.
2.	Remediation contractor	<u>Excavation and off-site Disposal of Fill:</u> A waste classification for the fill is provided in the DSI. Fill is to be excavated to the required depth (including in those areas to be capped – to achieve the required pre-

Step	Primary Role/ Responsibility	Procedure
		capping levels), loaded directly into trucks and disposed of to a licensed facility in accordance with the AMP and the assigned waste classification. The depth of excavation will be dictated by the proposed final surface levels for the development and the minimum capping requirements outlined in Section 7.3.5 of this RAP.
3.	Validation Consultant Remediation contractor	<u>Validation of remedial excavations:</u> Should any complete excavation of fill occur to the point that natural soil is exposed (e.g. within the basement footprint), the validation consultant is to obtain validation samples in accordance with the validation plan in Section 8 of this RAP. Any necessary asbestos clearances must also be provided in accordance with the validation plan and the AMP. The remediation contractor is to arrange a survey of all areas where fill is removed and where successful validation of fill/asbestos removal occurs. The survey is to include levels as well as boundaries/delineation of the remediated/validated areas. Once an area has been validated and surveyed, the remediation contractor is to ensure these areas are not cross contaminated by site activities associated with works in adjoining areas.

7.3.5 Capping Works

This section of the RAP outlines the generalised approach for capping and containing contaminated soil on site. Where necessary, the RWP can further refine this approach.

The premise for implementing this option is based around capping the fill/soil beneath appropriate (clean) capping layers in order to eliminate exposure to the fill/soil. The proposed capping system requires consideration during the detailed design process so that the minimum capping requirements are achieved.

A summary of the proposed capping strategy is provided in the following table. These requirements must be reviewed by the project team prior to finalising the design, and all relevant design drawings must include the capping specification details.

Table 7-3: Capping Specification

Area	Capping Specification^
Continuous hardstand (e.g. pavement/concrete, or beneath permanent fixed features such as steps, retaining walls etc.)	Installation of: • Geotextile (or geogrid) marker[14] layer over the contaminated fill; • Clean imported (validated) basecourse, as required based on the engineering specification; and • Pavement material (i.e. concrete) as per engineering specification, or construction of the above ground feature.
Other areas with non-continuous hardstand	Installation of: • Geotextile (or geogrid) marker over the contaminated fill;

[14] The purpose of the geotextile (or geogrid) marker is to provide visual demarcation to the underlying contaminated fill, should the overlying capping layers be disturbed. The client/project manager, remediation contractor and validation consultant are to agree on appropriate materials based on the project requirements (including but not limited to landscaping and engineering requirements).

Area	Capping Specification^
(e.g. tiled areas, paving/pavers etc.)	• At least 200mm clean imported (validated) capping material; and • Surface finish to required development design.
Landscaped areas, new plantings (trees, shrubs etc) and underground services	Any landscaped areas must be capped as follows: • Geotextile (or geogrid) marker over the contaminated fill; • At least 500mm clean imported (validated) capping material; and • Surface finish to required development design. All new plantings and underground services are to be placed above (not within) the contaminated fill (i.e. must be above the marker layer). Depending on the service depths and tree planting depths, this may require excavation and the placement of additional clean (validated) material to depths of >500mm. Installation of a marker layer is not required for existing services/service trenches to remain.

^ 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 8 for the detailed validation plan.

Table 7-4: Remediation – Capping

Step	Primary Role/ Responsibility	Procedure
1.	Remediation contractor	<u>Installation of Marker Layers and Survey of site levels:</u> The remediation contractor is to complete the earthworks required to facilitate the proposed capping of the site. Where piling is required, piling is to occur prior to capping to minimise the potential for cross-contamination. After the bulk excavation levels are achieved to facilitate the minimum capping requirements, the geotextile (or geogrid) marker is to be installed over the contaminated fill and secured appropriately using 'U' nails, pegs or other means. A pre-capping levels survey is to be completed by the remediation 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, and the horizontal extent of the geotextile marker, prior to installation of the clean capping layers. Survey points must be taken at appropriate frequencies (say every 5m lineal for narrow areas, a 5m grid for broader areas, at the corners/edges of the geotextile, and more frequently for 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 and remediation contractor	<u>Importation of Capping Materials:</u> Imported materials are to be validated in accordance with Section 8.1.2. Validated materials can then be used to achieve the minimum capping requirements for the project.
3.	Remediation contractor	<u>Post-Capping Survey of site levels:</u> After completion of capping, a post-capping levels survey is to be completed by the remediation contractor. The purpose of the survey is to provide factual information

Step	Primary Role/ Responsibility	Procedure
		regarding the capping thickness and confirm that the minimum capping requirements have been achieved. Survey points must be taken at appropriate frequencies as noted for the pre-capping survey. The post-capping levels survey is to be provided to the client/project manager and the validation consultant.

7.4 Remediation Documentation

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

- Waste/surplus soil disposal dockets (see additional details below) and waste tracking documentation (e.g. WasteLocate consignments);
- Asbestos management documentation, including all relevant notifications and monitoring reports, and clearance certificates (additional details in this regard are to be outlined in the AMP);
- 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 additional details below in Sections 7.4.1 and 7.4.2 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.

7.4.1 Waste

The capping specification and sequence of remediation/construction works must be considered early in the design process in order to minimise the generation of 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 soil waste classification documentation is to be prepared in accordance with the reporting requirements specified by the NSW EPA as outlined in the Reporting Guidelines.

Waste information is to be reviewed by the validation consultant on completion of the works and an assessment of the quantities of soil disposed off-site (e.g. comparison with the estimated and actual volumes) is to occur. A review of the disposal facility's Environment Protection Licence (EPL) issued under the Protection of the Environment Operations (POEO) Act (1997)[15] 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.

7.4.2 Imported Materials Register

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 pavement base 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 so the details can be checked and any rectification of the record keeping process can occur in a timely manner.

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

8 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 8.1. This is the minimum requirement based on the remedial strategies provided. Additional validation sampling may be required based on the outcome of the post-demolition investigation and/or observations made during remediation.

8.1 Validation Sampling and Documentation

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

8.1.1 Capping Works

The table below outlines the validation requirements for the site:

Table 8-1: Validation Requirements

Aspect	Sampling	Analysis	Observations and Documentation
Excavation and Off-site Disposal (Section 7.3.4)			
Validation sampling after fill removal	One sample per 100m^2 at the base of the excavation (i.e. on a 10m by 10m square grid), obtained from the surface (i.e. top 10-20mm).	500ml soil samples analysed for asbestos	**Validation consultant** is to: - Document observations to confirm fill removal is acceptable; - Photograph the excavation; - Evaluate waste disposal information; and - Undertake an asbestos clearance and provide an asbestos clearance certificate. **Remediation contractor** to provide documentation relating to waste disposal.
Waste Classification of Natural Soil/Bedrock	In conjunction with the asbestos validation, a waste classification assessment must be undertaken in areas where natural soil or bedrock is required to be excavated (e.g. where bulk excavation extends deeper for the basement). The sampling density for the waste classification must be calculated based on the area of excavation and must meet the minimum sampling densities specified in	Heavy metals (arsenic, cadmium, chromium, lead, mercury, nickel), PAHs, TRHs and BTEX.	**Validation consultant** is to: - Prepare a waste classification report that meets the requirements outlined in Section7.4.1; and - Evaluate waste disposal information. **Remediation contractor** to provide documentation relating to waste disposal.

Aspect	Sampling	Analysis	Observations and Documentation
	the NSW EPA Contaminated Sites Sampling Design Guidelines (1995) (reduced sampling densities may be considered for localised excavations, following consultation and agreement between the validation consultant).		
Capping Works (Section 7.3.5)			
Survey of site levels.	NA	NA	**Remediation contractor** to obtain the survey as required in Section 7.3.5. It is also expected that the remediation contractor or their nominated construction contractor will provide as-built drawings for the project which document the capping layers.
Inspections.	NA	NA	**Validation consultant** to carry out inspections to document the installation of the cap. Key hold points for inspections include: - Geotextile/geogrid installation; - During importation of materials used to construct the cap; and - Finished surface levels. A photographic record is to be maintained by the **remediation contractor** and **validation consultant**. The **validation consultant** is also to carry out an inspection following removal of the pavements/slabs, as noted in Section 7.3.3.

All imported materials are to be validated in accordance with Section 8.1.2 below.

8.1.2 Imported Materials

The table below outlines the validation requirements for material imported onto the site:

Table 8-2: Validation Requirements

Aspect	Sampling	Analysis	Observations and Documentation
Imported Materials – validation of imported materials is required for any materials imported onto the site during the remediation and to the point in time that the site validation report is prepared (e.g. general fill to raise the site levels, imported materials to create piling platform, gravels for site preparation, material used for capping layers etc).			
Imported Virgin Excavated Natural Material (VENM) backfill	Minimum of three samples per source	Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), TRHs, BTEX, PAHs, OCPs, PCBs and asbestos (500ml). Additional analysis may be required depending on the site history of the source property.	**Remediation contractor** to supply existing VENM documentation/report (report to be prepared in accordance with the NSW EPA waste classification reporting requirements). A hold point remains until the **validation consultant** approves the material for importation or advises on the next steps. 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. Where check sampling occurs by the **validation consultant** due to deficiencies or irregularities in existing VENM documentation, the following is required: - Date of sampling and description of material sampled; - An estimate of the volume of material imported at the time of sampling; - Sample location plan; and - Analytical reports and tabulated results with comparison to the Validation Assessment Criteria (VAC).
Imported engineering materials such as recycled aggregate, road base etc Excavated Natural Material (ENM)	Minimum of three samples per source/material type. ENM testing must meet the specification within the ENM Order. If the analysis is not compliant, the validation consultant	Heavy metals (as above), TRHs, BTEX, PAHs, OCPs, PCBs and asbestos (500ml quantification). As required in the ENM Order.	**Remediation contractor** to provide product specification and documentation to confirm the material has been classified with reference to a relevant Resource Recovery Order/Exemption. A hold point remains until the **validation consultant** approves the material for importation or advises on the next steps. Review of the facility's Environment Protection Licence (EPL), where relevant. Material is to be inspected by the **validation consultant** upon importation to

Aspect	Sampling	Analysis	Observations and Documentation
	must carry out an ENM assessment and prepare a report in accordance with the ENM Order/Exemption prior to material being imported.		confirm it is free of visible/olfactory indicators of contamination and is consistent with documentation. Where check sampling occurs by the **validation consultant** due to deficiencies or irregularities in existing documentation, the following is required: - Date of sampling and description of material sampled; - An estimate of the volume of material imported at the time of sampling; - Sample location plan; and - Analytical reports and tabulated results with comparison to the VAC.
Imported engineering materials comprising only natural quarried products.	At the validation consultant's discretion based on robustness of supplier documentation.	At the validation consultant's discretion based on robustness of supplier documentation.	**Remediation contractor** to provide documentation from the supplier confirming the material is a product comprising only natural quarried material. A hold point remains until the **validation consultant** approves the material for importation or advises on the next steps. Review of the quarry's EPL. Material is to be inspected by the **validation consultant** upon importation to confirm it is free of anthropogenic materials, visible and olfactory indicators of contamination, and is consistent with documentation. Where check sampling occurs by the **validation consultant** due to deficiencies or irregularities in existing documentation, the following is required: - Date of sampling and description of material sampled; - An estimate of the volume of material imported at the time of sampling; - Sample location plan; and - Analytical reports and tabulated results with comparison to the VAC.
Imported garden mix/topsoil and mulches	Minimum of three samples per source	Heavy metals (as above), TRHs, BTEX, PAHs, OCPs, PCBs and asbestos (500ml). Analysis of mulch can be limited to visual observations to confirm there are	**Remediation contractor** to provide documentation from the supplier confirming the product specification. This must include a description of the Australian Standard under which the material is produced, and the components. A hold point remains until the **validation consultant** approves the material for importation or advises on the next steps.

Aspect	Sampling	Analysis	Observations and Documentation
		no anthropogenic materials.	Material is to be inspected by the **validation consultant** upon importation to confirm it is free of anthropogenic materials, visible and olfactory indicators of contamination, and is consistent with documentation. The validation consultant is to review any existing/available analysis results for the materials. A minimum of one batch for each imported material type (from each individual supplier) must be inspected by the validation consultant. This inspection must be repeated for each material type from each supplier, a minimum of once per month thereafter. Where check sampling occurs by the **validation consultant** due to deficiencies or irregularities in existing documentation, the following is required: - Date of sampling and description of material sampled; - An estimate of the volume of material imported at the time of sampling; - Sample location plan; and - Analytical reports and tabulated results with comparison to the VAC.

8.2 Validation Assessment Criteria and Data Assessment

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

Table 8-3: Validation Assessment Criteria (VAC)

Validation Aspect	VAC
Excavation/Fill Removal	Any areas that will expose natural soil: all fill confirmed to be removed via visual inspection, no visible fibre cement/ACM observed at the surface (as demonstrated by an asbestos clearance inspection/certificate) and concentrations of base samples to be below the land use 'D' criteria specified in Schedule B1 of NEPM which includes ACM concentrations of <0.05%w/w and AF/FA concentrations <0.001%w/w.
Natural Soil Waste Classification	Waste: in accordance with the NSW EPA Waste Classification Guidelines - Part 1: Classifying Waste (2014)[16]. Additionally, VENM is defined in the Protection of the Environment Operations Act (1997)[17] as material: • That has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial mining or agricultural activities; • That does not contain sulfidic ores or other waste; and

[16] NSW EPA, (2014). *Waste Classification Guidelines, Part 1: Classifying Waste.* (referred to as Waste Classification Guidelines 2014)

[17] Protection of Environment Operations Act 1997 (NSW) (POEO Act 1997)

Validation Aspect	VAC
	• Includes excavated natural material that meets such criteria for virgin excavated natural material as may be approved from time to time by a notice published in the NSW Government Gazette.
Capping Works	The purpose of the surveys is to provide factual information regarding the capping thickness, delineate the extent of the geotextile marker layers 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 7.3.5 of this RAP. Validation of capping will occur via a review of survey information, as-built drawings and via the inspection process. The validation report is to include cross-sections documenting the completed capping details for the various areas of the site.
Imported materials	All results for imported materials are to be compared to the HIL/HSL-D criteria to check they do not pose a risk to human health in the proposed land use scenario. Note however that these criteria must be considered concurrently with those outlined below as applicable. 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. The following VAC also apply: - Asbestos not detected; - Heavy metal concentrations are to be less than the most conservative Added Contaminant Limit (ACL) concentrations for a commercial/industrial exposure setting presented in Schedule B1 of the NEPM 2013; and - Organic compounds are to be less than the laboratory Practical Quantitation Limits (PQLs) and asbestos is to be absent. 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.

8.3 Validation Report

As part of the validation process, a site 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 Reporting Guidelines.

An LTEMP will be required to manage contamination that is capped at the site and the LTEMP will be documented as part of the overall validation process. Public notification and enforcement mechanisms for the LEMP are to be arranged and the consent authority and the local council are to be provided with a draft copy of the LEMP for consultation prior to finalisation of the document.

The notification and enforcement mechanisms are to include notation on the planning certificate under Section 10.7 of the Environmental Planning and Assessment Act (1979) and a covenant registered on the title to land under Section 88B of the Conveyancing Act (1919).

The LTEMP will include requirements for passive management of the capping system that will focus on maintaining the capping layers to minimise the potential of exposure to the underlying fill. The LTEMP will also include contingencies for managing intrusive works in the event that the capping system is breached.

It should also be noted that any material changes to the remediation or validation strategy will require revision of the RAP and/or preparation of a RWP.

8.4 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.

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), noting that these will be documented separately for the data gap investigation outlined in Section 4. 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.

8.4.1 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.

8.4.2 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 data gap investigation completed and were the findings adequately considered in the RAP or in a separate RWP?
- Was the remediation undertaken in accordance with the RAP (and/or RWP)?
- 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?

8.4.3 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, HGG monitoring, asbestos clearance certificates, survey information, as-built drawings, waste and imported materials registers;
- Validation sampling of potentially affected media, including imported materials;
- Laboratory analysis of soils; and
- Field and laboratory QA/QC data.

8.4.4 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 depth of fill that is required to be removed to achieve the design level for the proposed development, to achieve the minimum capping thicknesses or to expose natural soil that will not require capping.

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

8.4.5.1 VAC

The validation data will be assessed in accordance with the requirements outlined in Section 8.1 and 8.2.

8.4.5.2 Field and Laboratory QA/QC

It is noted that no QA/QC is proposed for the asbestos analysis portion of the validation works.

Field QA/QC for validation is required for waste classification assessment and for imported materials validation. This is to include:

- Analysis of inter-laboratory duplicates (5% frequency) and intra-laboratory duplicates (5% frequency), analysed for the same analytical suite as the primary samples;
- Trip blank samples (one per batch), analysed for the same analytical suite as the primary samples excluding asbestos;
- Trip spike samples (one per batch), analysed for BTEX; and
- Rinsate samples (one per batch), analysed for the same analytical suite as the primary samples excluding asbestos, only where re-usable sampling equipment is utilised.

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.

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.

8.4.5.3 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.

8.4.6 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. Data will be assessed as above or below the VAC. Statistical analysis is not proposed, therefore there have been no limits on decision errors set for validation purposes.

8.4.7 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.

8.4.8 Sampling Plan

The proposed sampling plan for the validation is described in Section 8.1.

9 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. A contingency plan for the remediation is provided below:

9.1 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 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 to inspect the find;
- The validation consultant is to 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 are to be included in the validation report.

9.2 Importation Failure for VENM or other Imported Materials

Where material to be imported onto the site does not meet the importation VAC detailed in Section 8.2, the material should not be imported. Alternative material must be sourced that meets the importation requirements.

9.3 Validation Failure – Excavation to Natural Soil

Considering the contaminant of concern (i.e. asbestos) and the simplicity of the proposed remediation strategy, the potential for the remediation strategy to fail is considered to be low. In the event that a surface clearance inspection fails or asbestos is encountered in validation samples above the VAC, additional material can either be 'chased out' and disposed off-site, then the area re-validated. Or alternatively, the area can be considered contaminated with asbestos and remediated via implementation of the capping procedure outlined previously in this RAP.

9.4 Construction of a Borrow Pit/Containment Cell

The RAP acknowledges that in-situ capping may not be achievable in all areas and the ability to cap contaminated soil in situ will depend largely on the depths of contaminated soil and the proposed design levels for the site. This contingency plan is to be implemented if a containment cell is to be constructed for contaminated soil, as an alternative to or in conjunction with the in-situ capping.

An appropriate area is to be identified for the location of the containment cell. If there is no available information on the subsurface conditions in this area, an investigation must occur to establish the depth of fill, natural soil and bedrock, and the potential occurrence of groundwater. It is noted that any constructed cell must be above the groundwater table and must not be regularly/permanently inundated with water.

Once the preferred location of the cell is established, the remediation contractor is to prepare a RWP to the satisfaction of the project manager/client and the validation consultant. The RWP is to include, as a minimum:

- Survey plans indicating the nominated area for the cell, including survey coordinates for the horizontal extent of the cell;
- Design details including relative levels (RLs) for the base of the cell, top of the contaminated soil to be placed within it, RLs to the top of the clean soil cap, and details regarding the site features and surface finishes to be constructed over the cell as part of the proposed development (e.g. pavements etc);
- Details for the earthworks, including geotechnical requirements (including but not limited to compaction of the cell contents and capping layers, batter requirements, and consideration of root-affected/organic content in root-affected soils to be excavated), locations of access ramps, temporary stockpiling locations for material excavated from the cell area during its construction, and materials management practices to minimise the potential for cross contamination with the remediation areas;
- A process so that some of the virgin excavated natural material (VENM) excavated to create the cell is preferably re-used to cap the cell;
- A specification for a clean soil cap over the cell to reflect the capping requirements specified in Section 7.3.5; and
- A contingency plan in the event that additional capacity is required, including the location of secondary cells or areas where the original cell could be expanded.

The containment cell is to be constructed as outlined in the following table. A detailed validation plan is to be established by the validation consultant based on the requirements of the RWP. The generalised remediation steps for the cell are outlined in the following table:

Table 9-1: Remediation – Construction of Containment Cell

Step	Procedure
1.	Waste Classification: Prior to commencement of excavation, the validation consultant is to undertake a waste classification assessment for any surplus materials to be excavated and disposed off-site during the cell construction. Preferably, site-won VENM (i.e. excavated to construct the cell) is to be used to cap the cell to reduce the off-site disposal of waste.
2.	Implementation of RWP to construct the cell: The cell is to be excavated/constructed in accordance with the RWP. As-built details for the cell are to be documented on construction drawings by the remediation contractor.

9.5 Remediation Strategy Changes

Any material change to the proposed remediation strategy will require revision of the RAP.

10 SITE MANAGEMENT PLAN FOR REMEDIATION WORKS

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

10.1 Asbestos Management Plan

Prior to the demolition and the removal of the existing pavements/floor slabs, a Construction Phase AMP is to be prepared by the validation consultant (or the remediation contractor, if agreed to by the relevant parties involved) to document the asbestos-related management requirements for the remediation and construction. The AMP is to be implemented by the remediation contractor (and their nominated subcontractors where relevant) throughout the remediation and construction. The AMP must consider that asbestos has been identified as friable (AF/FA) and non-friable (ACM), based on the definitions of asbestos forms detailed in NEPM 2013 and relevant codes of practice.

10.2 Interim Site Management

An AMP for continued site use is currently being prepared by JKE. Measured detailed in this AMP should be implemented until such time as the remediation contractor takes possession of the site. The current site users should be advised not to disturb the soils across the site.

10.3 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 10-1: Project Contacts

Role	Company	Contact Details
Project Manager	Statewide Project Management Pty Ltd	Contact: Brent Jones Mobile: 0405 505 580 Email: bj@statewidepm.com
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

10.4 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.

10.5 Timing and Sequencing of Remediation Works

The anticipated sequence of remediation works is outlined in Section 7.3. Remediation will occur concurrently with the development works as the built form of the development and the landscaping forms part of the capping requirements. The client must engage with the consent authority so that the remediation can occur as required concurrently with construction.

10.6 Site Soil and Water Management Plan, and on-site Material Tracking 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 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.

A Material Tracking Plan (MTP) is to be prepared by the validation consultant, in consultation with the remediation contractor (or vice versa). The primary objective of the MTP is to document a procedure for the on-site management and movement of materials, to reduce the potential for cross-contamination. The MTP must include details and procedures regarding the following:

- Documentation requirements for the contractors and the form of such documentation (i.e. searchable excel files, hard copy inspection/check forms etc), including an example material tracking register relevant to on-site movement of materials;
- Identification of hold points and approval requirements for movement of materials, and the documentation that must be completed to track the material movement from source area to destination;
- Implementation of a grid system across the site for the purpose of describing the movement of materials;
- Stockpile management, including signage/storage requirements for clean and contaminated stockpiles, imported materials etc. This must include specific requirements for materials handling during the borrow pit works, should this contingency be implemented; and
- Details of how cross-contamination of clean/capped areas will be prevented.

10.7 Noise and Vibration Control Plan

The guidelines for minimisation of noise on construction sites outlined in AS-2460 (2002)[18] 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.

10.8 Dust Control Plan

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

- 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.

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

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.

10.9 Dewatering

Temporary dewatering is not anticipated to be required as part of the remediation works. If a rain event occurs during the construction, this water should be managed appropriately on site in accordance with the remediation contractor's soil and water management plan. This water should not be pumped to stormwater or sewer unless a prior application is made and this is approved by the relevant authorities.

10.10 Air Monitoring

Air monitoring details must be outlined as part of the Construction Phase AMP to be prepared for the site. Air monitoring must only be carried out by personnel registered and accredited by NATA (National Association of Testing Authorities). Filter analysis must only be carried out within a NATA certified laboratory. The monitoring results must conform to the requirements of the NOHSC Guidance note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres 2nd Edition [NOHSC:3003 (2005)].

A monitoring program will be used to assess whether the control procedures being applied are satisfactory and that criteria for airborne asbestos fibre levels are not being exceeded. The following levels will be used as action criteria during the air monitoring:

- <0.01 Fibres/ml: Work procedures deemed to be successful;
- 0.01 to 0.02 Fibres/ml: Inspection of the site and review of procedures; and
- >0.02 Fibres/ml: Stop work, inspection of the site, review of procedures, clean-up, rectification works where required and notify the relevant regulator.

10.11 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.

10.12 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.

As a minimum requirement, personnel must wear appropriate protective clothing, including long sleeve shirts, long trousers, steel cap boots and hard hats. Additional asbestos-related PPE will be required and this will be specified in the Construction Phase AMP. Washroom and lunchroom facilities should also be provided to allow workers to remove potential contamination from their hands and clothing prior to eating or drinking.

10.13 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.

10.14 Incident Management Contingency

The validation consultant should 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 (e.g. a fuel spill during refuelling of machinery), the validation consultant should be advised to assess potential impacts on contamination conditions and the remediation/validation timetable.

Asbestos waste cannot be re-used or recycled.

10.15 Hours of Operation

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

10.16 Community Consultation and Complaints

The remediation contractor should provide details for managing community consultation and complaints within their Construction Plans.

11 CONCLUSION

Investigations at the site by JKE have identified asbestos in fill that represents a potential risk to human receptors during site development/excavation works and future site use.

The remediation strategy includes a combination of excavation and off-site disposal of fill where required to achieve the development levels, and cap and containment of the fill that remains in-situ. A visual marker layer will be installed over the remaining contaminated fill prior to the reinstatement of these areas with clean capping materials. The areas where fill remains will be managed under a LTEMP.

Prior to commencement of remediation, a data gap investigation must occur in accordance with Section 4 of this RAP. The outcome of that investigation must be considered in the context of the remediation and an updated RAP or RWP must be prepared to outline any additional requirements relating to site remediation and validation.

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 LTEMP. The LTEMP 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.

11.1 Regulatory Requirements

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

Table 11-1: Regulatory Requirement

Guideline / Legislation / Policy	Applicability
SEPP	JKE has assessed that the remediation falls within Category 2. This should be confirmed by the client's expert planner. Prior notice of Category 2 remediation work is to be provided to council at least 30 days prior to commencement in accordance with Clause 4.13 of SEPP (note that SEPP is referenced here as it is our understanding that the Resilience and Hazards SEPP has not yet been published). Under Clause 4.14 of SEPP, 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 SEPP.
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.

Guideline / Legislation / Policy	Applicability
	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.
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 (Class B) asbestos removal works or handling. Reference is to be made to the 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. The need to notify will be largely dependent on the asbestos air monitoring results during the remediation.

12 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 lower ground level 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

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

Title: **SITE LOCATION PLAN**

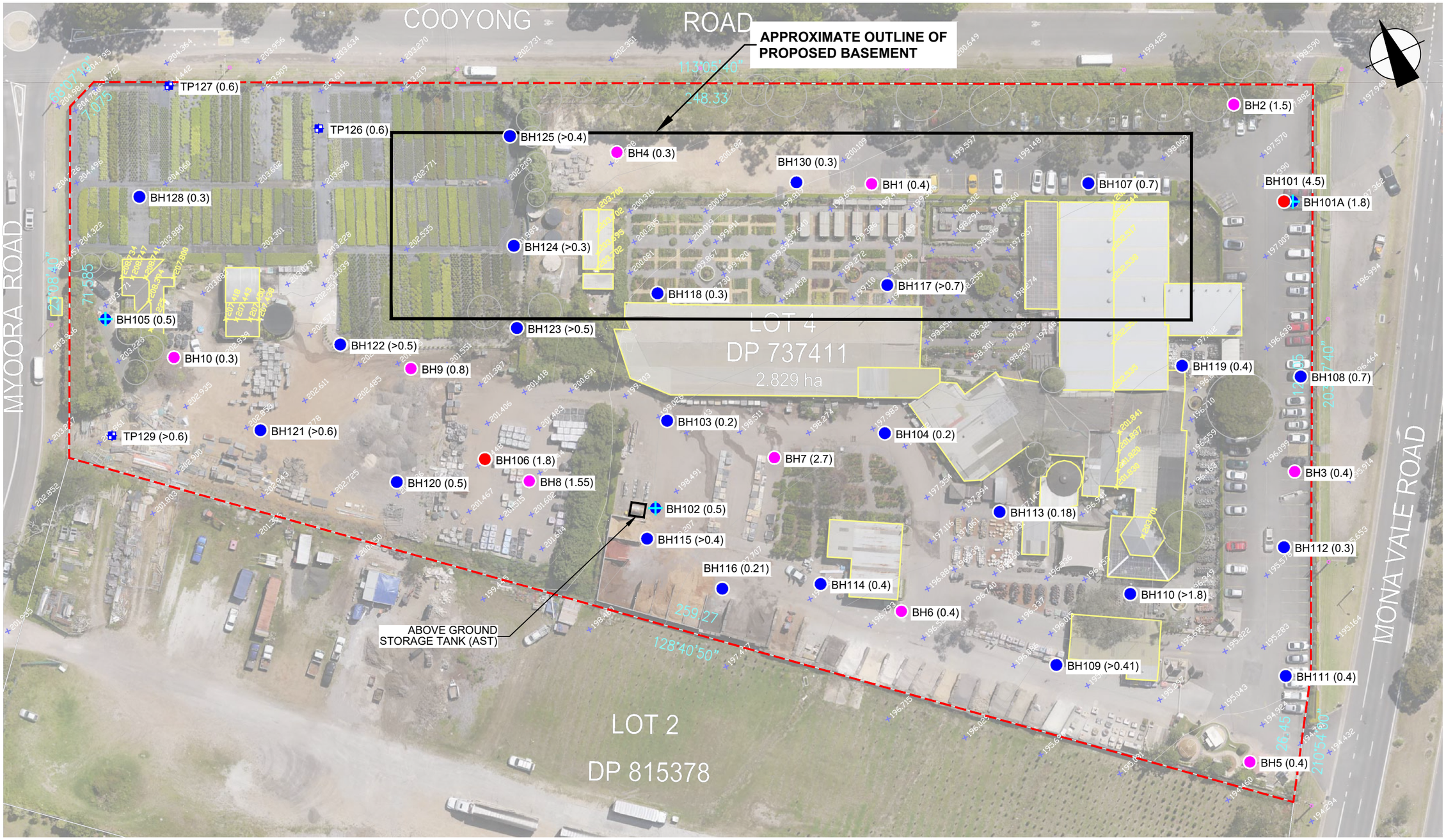
Location: 277 MONA VALE ROAD, TERREY HILLS, NSW

Project No: E34278PH

Figure No: 1

JKEnvironments

PLOT DATE: 25/10/2021 1:24:06 PM DWG FILE: S:\5 EIS\5C EIS JOBS\34000'S\E34278PH TERREY HILLS\CAD\E34278PH.DWG



LEGEND

APPROXIMATE SITE BOUNDARY	
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2021)
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2022)
BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2022)
TP(Fill Depth)	TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2022)
BH(Fill Depth)	BOREHOLE AND HAZARDOUS GROUND GAS WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2022)

0 8 16 24 32 40
SCALE 1:800 @A3 METRES

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

Title: **SAMPLE LOCATION PLAN**

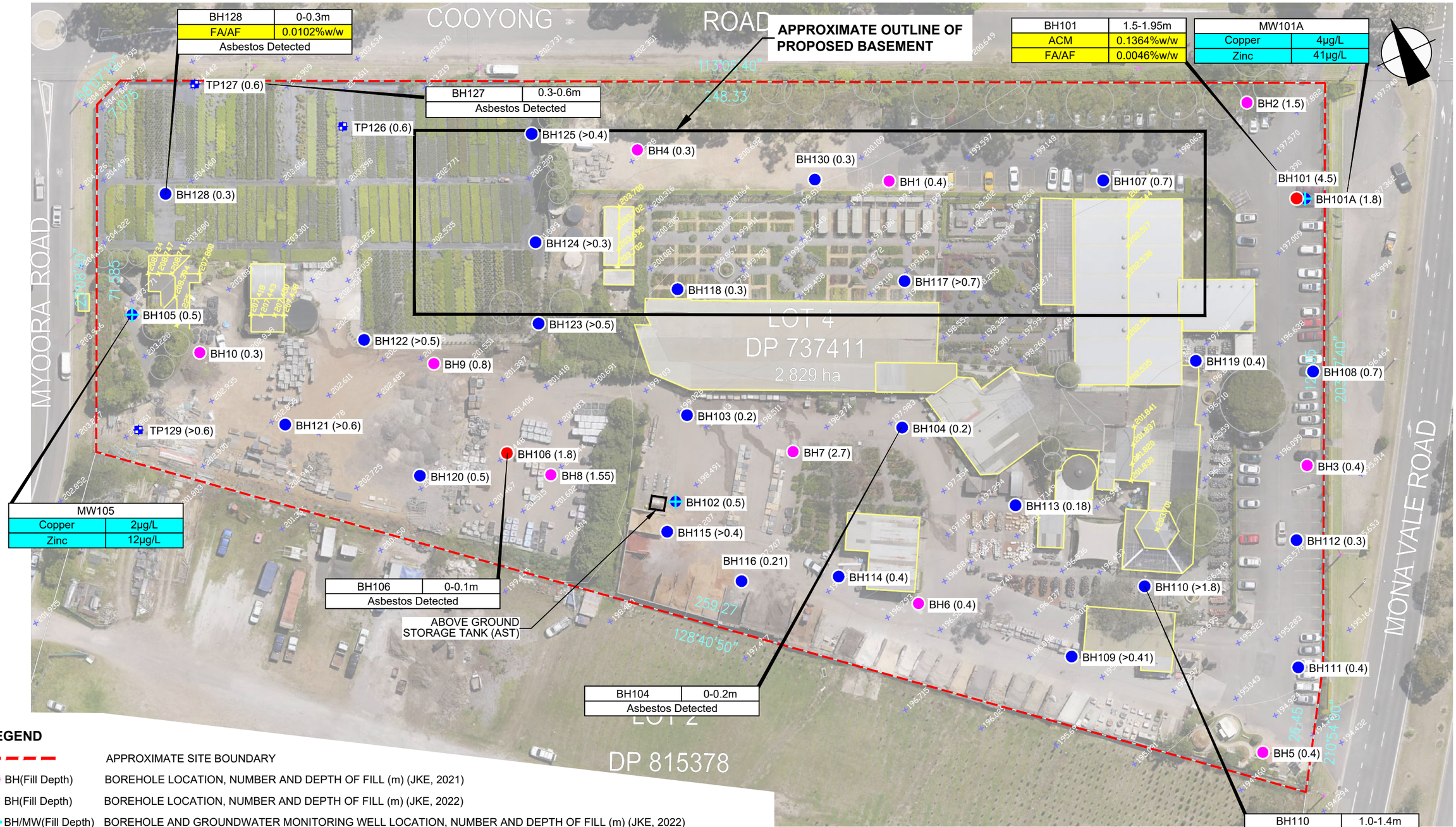
Location: 277 MONA VALE ROAD, TERREY HILLS, NSW

Project No: E34278PH

Figure No: 2

JKEnvironments

PLOT DATE: 25/01/2022 3:48:17 PM DWG FILE: S:\5 EIS\5C EIS JOBS\34000'S\E34278PH TERREY HILLS\CAD\E34278PH.DWG



LEGEND

APPROXIMATE SITE BOUNDARY	
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2021)
BH(Fill Depth)	BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2022)
BH/MW(Fill Depth)	BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2022)
TP(Fill Depth)	TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2022)
BH(Fill Depth)	BOREHOLE AND HAZARDOUS GROUND GAS WELL LOCATION, NUMBER AND DEPTH OF FILL (m) (JKE, 2022)

SAMPLE ID	DEPTH (metres)
CHEMICAL	CONCENTRATION

SOIL/SURFACE SAMPLE EXCEEDANCE

SAMPLE ID	-
CHEMICAL	CONCENTRATION (µg/L)

GROUNDWATER SAMPLE EXCEEDANCE

SOIL/SURFACE CONTAMINATION ABOVE SAC FOR HUMAN HEALTH RISK

GROUNDWATER CONTAMINATION ABOVE SAC

0 8 16 24 32 40

SCALE 1:800 @A3 METRES

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

Title: **SAC EXCEEDANCE PLAN**

Location: 277 MONA VALE ROAD, TERREY HILLS, NSW

Project No: E34278PH

Figure No: 3

JKEnvironments

PLOT DATE: 25/01/2022 3:48:29 PM DWG FILE: S:\5 EIS\5C EIS JOBS\34000'S\E34278PH TERREY HILLS\CAD\E34278PH.DWG

Appendix B: Proposed Development Plans

FLOWER POWER GARDEN CENTRE TERRY HILLS
277 MONA VALE ROAD TERREY HILLS NSW

DA - DRAWING LIST	
SHEET N°	SHEET NAME
DA000	COVER SHEET
DA01	RENDERED VIEWS
DA10	EXISTING CONDITIONS PLAN
DA010	SITE ANALYSIS PLAN
DA11	DEMOLITION PLAN
DA12	SITE ANALYSIS PLAN
DA015	EXISTING CONDITIONS PLAN
DA17	SHADOW DIAGRAMS
DA100	BASEMENT PLAN
DA101	BASEMENT PLAN - 1 OF 2
DA102	BASEMENT PLAN - 2 OF 2
DA110	OVERALL GROUND FL PLAN
DA111	GROUND FL PLAN - 1 OF 4
DA112	GROUND FL PLAN - 2 OF 4
DA113	GROUND FL PLAN - 3 OF 4
DA114	GROUND FL PLAN - 4 OF 4
DA115	GROUND FL PLAN - PARKING
DA120	ROOF PLAN
DA150	ELEVATION
DA151	ELEVATION
DA160	SECTIONS
DA161	SECTIONS
DA162	SECTIONS

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1	INFORMATION ISSUE	02/12/21	CSG
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COVER SHEET

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WEB: www.lefflersimes.com.au BRISBANE L5 U39 131 LEICHHARDT ST, SPRING HILL, QLD 4000 T:+61 7 31235544

SCALE 1:100

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932
DATE: 02/12/21
DRAWN: RGG
DWG NO. DA000
REV. 2

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SCALE NTS

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932
DATE: 13/01/22
DRAWN: TJT/CSG
DWG NO. DA01
REV. 1

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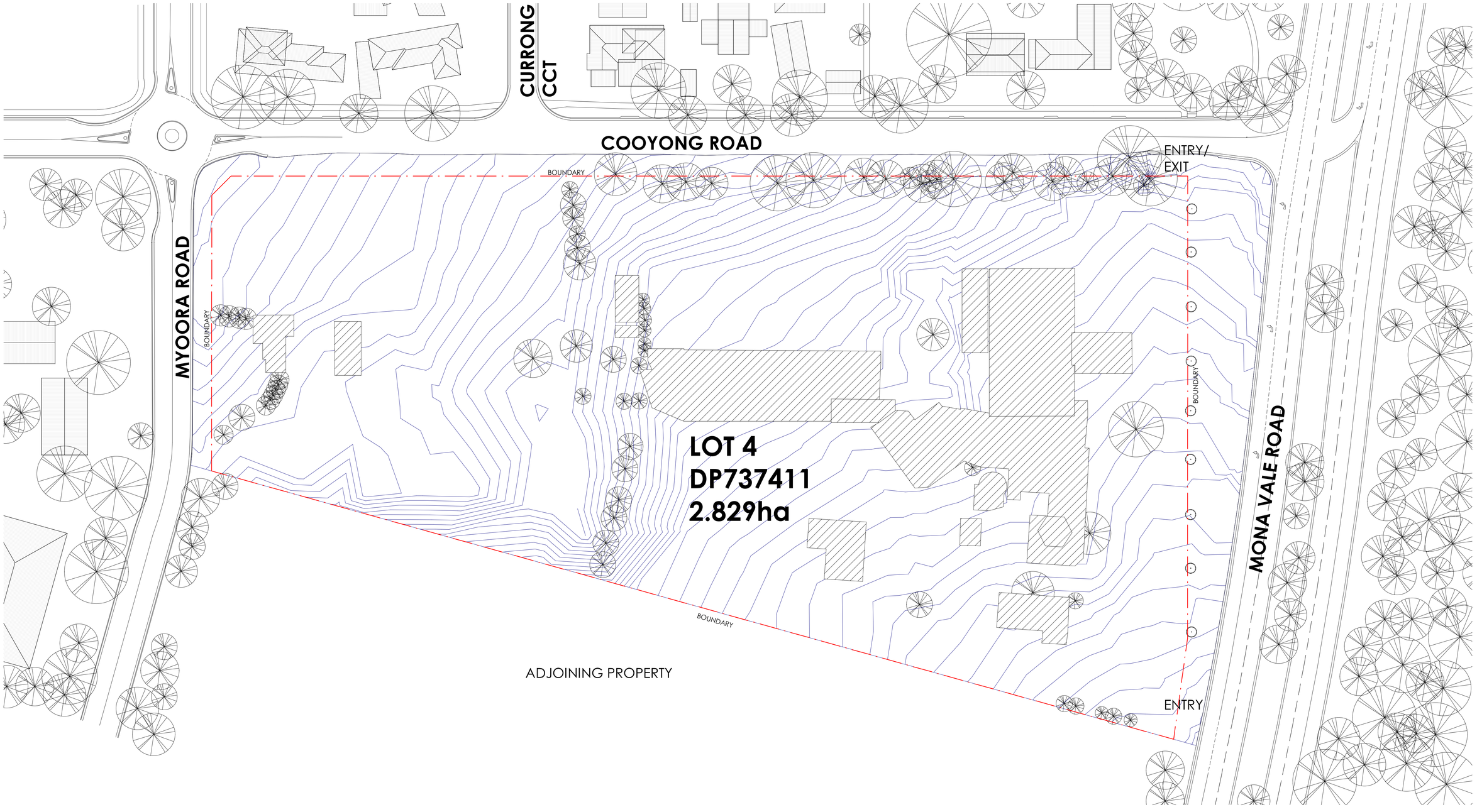

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EXISTING CONDITIONS PLAN

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SCALE 1:500

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932
DATE: 14/12/21
DRAWN: TJT/CSG
DWG NO. DA10
REV. 1

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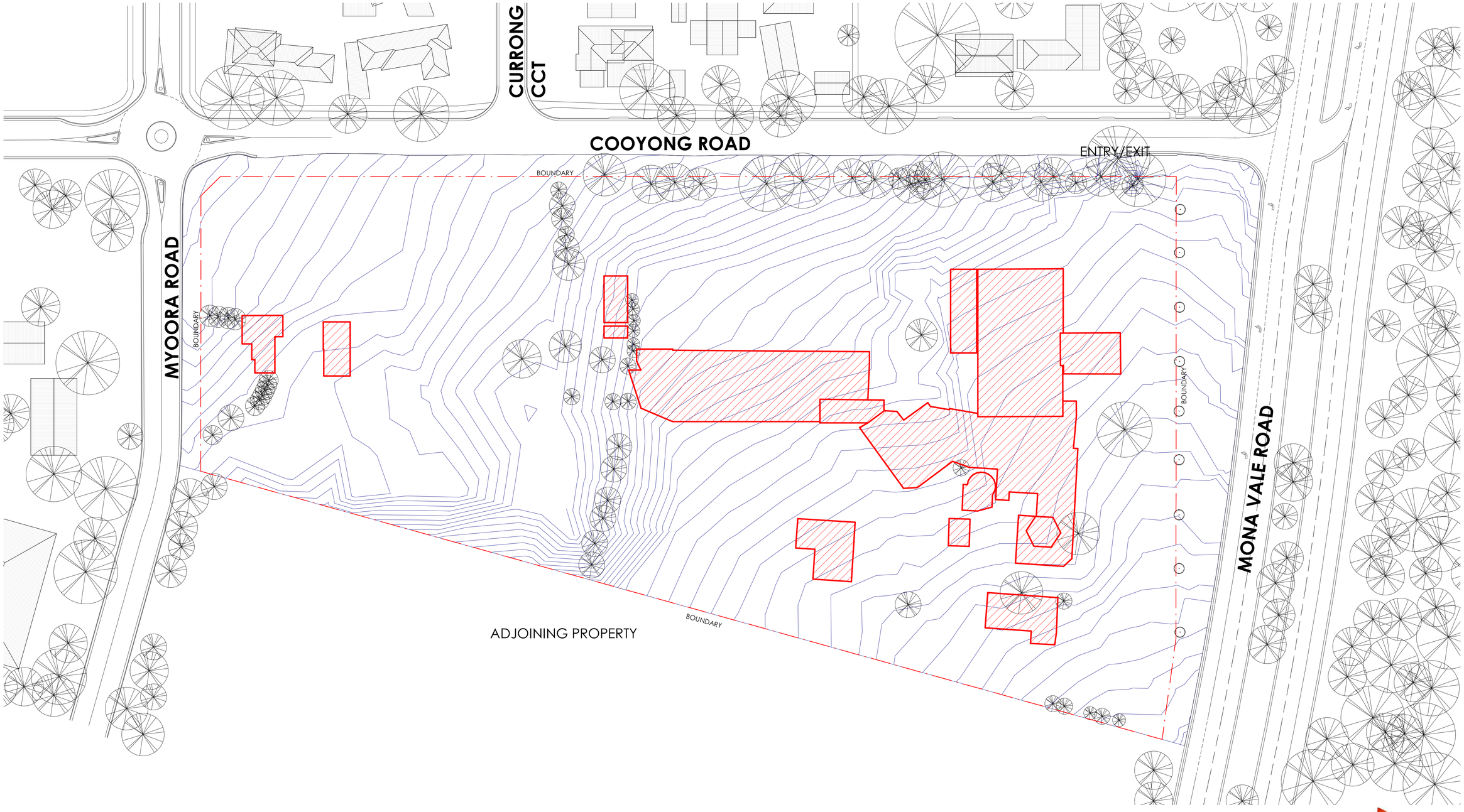

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DEMOLITION PLAN

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0 10 20 30 40 50 SCALE 1:500

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932 DWG NO. REV.
DATE: 14/12/21 DA11 1
DRAWN: TJT/CSG

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CURRONG CCT

COOYONG ROAD

SUMMER N-EAST COOLING WINDS

WINTER N-WEST COLD WINDS

MYOORA ROAD

BOUNDARY

ENTRY/EXIT

ENTRY/EXIT

A B C D E F G H J K L M N P Q R S T U V X Y

1 2 3 4 5 6

3500 9100 8300 9100 4500

3500 8000 8100 8100

8100 8100 8100 8100 8100

LOT 4
DP737411
2.829ha

BOUNDARY

MONA VALE ROAD

ADJOINING PROPERTY

BOUNDARY

ENTRY

WINTER S-WEST STORMS

SITE ANALYSIS LEGEND

- GARDEN CENTRE
- LOADING FOR NURSERY
- STORAGE AREA
- LANDSCAPE ZONE
- LANDSCAPE SHOP
- LANDSCAPE BINS
- NURSERY
- POTS ZONE
- CAFE
- KIDS PLAYGROUND
- TENANCY SPACES
- TENANCY LOADING AREA
- STAFF ZONE
- AMENITIES
- PARKING
- SERVICE VEHICLE ACCESS WAY
- VEHICULAR ACCESS WAY
- PEDESTRIAN ACCESS WAY
- PEDESTRIAN FLOW
- SUN PATH - SUMMER
- SUN PATH - WINTER
- PREVAILING WINDS

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PRELIMINARY ISSUE

SITE ANALYSIS PLAN

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SCALE 1:500 (0 10 20 30 40 50)

FLOWER POWER GARDEN CENTRE TERREY HILLS

JOB NO: 4932 DWG NO. REV.
DATE: 14/12/21 DA10 1

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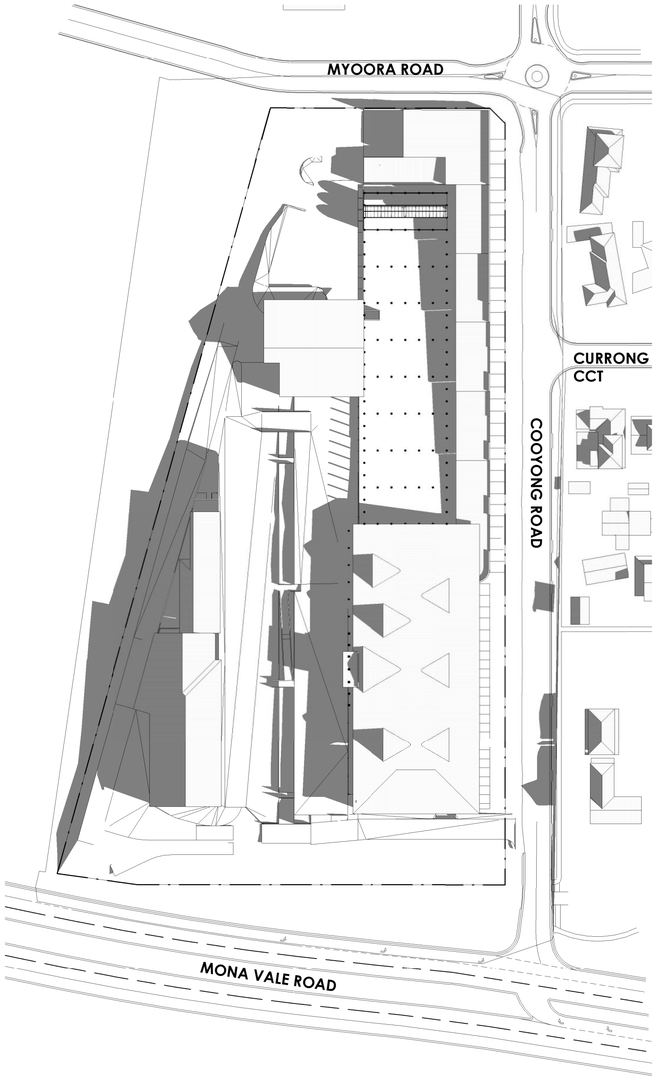
JUNE 22nd - 9am



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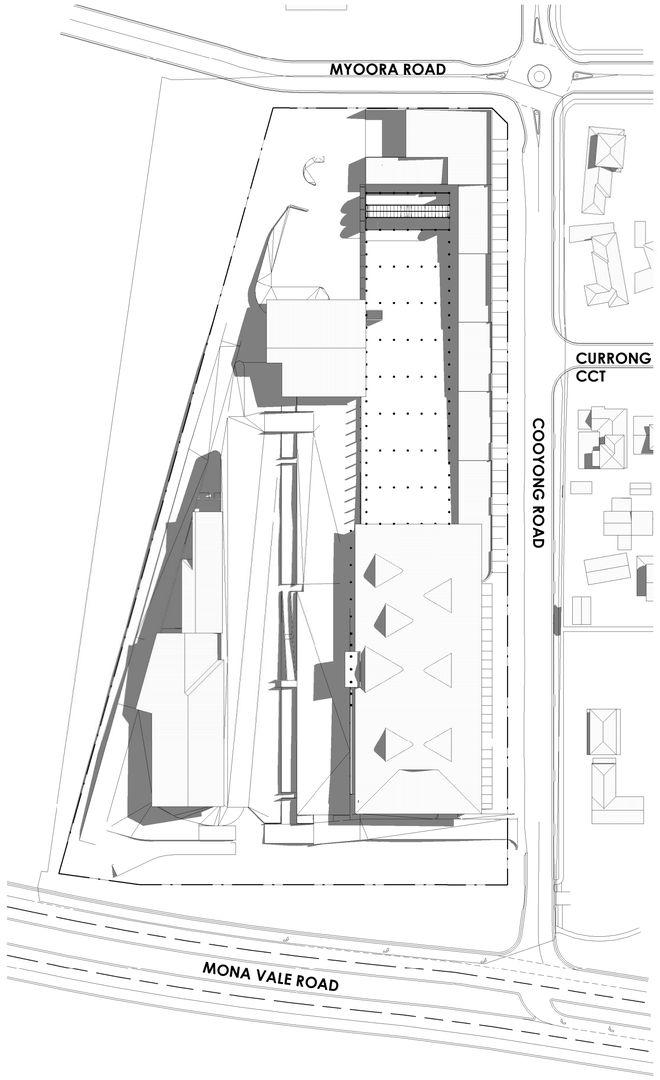
JUNE 22nd - 12pm



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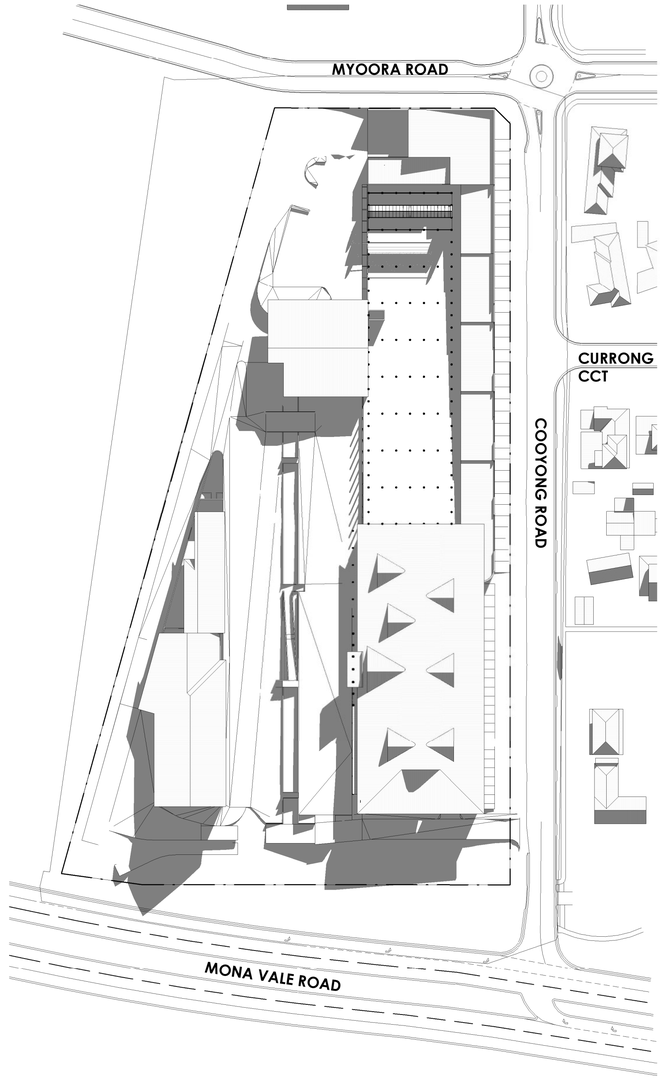
JUNE 22nd - 3pm



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PRELIMINARY ISSUE

SHADOW DIAGRAMS

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SCALE 1:1000

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932 DWG NO. REV.
DATE: 16/12/21 DA17 1
DRAWN: TJT/CSG

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4	INFORMATION ISSUE	13/12/21	CSG
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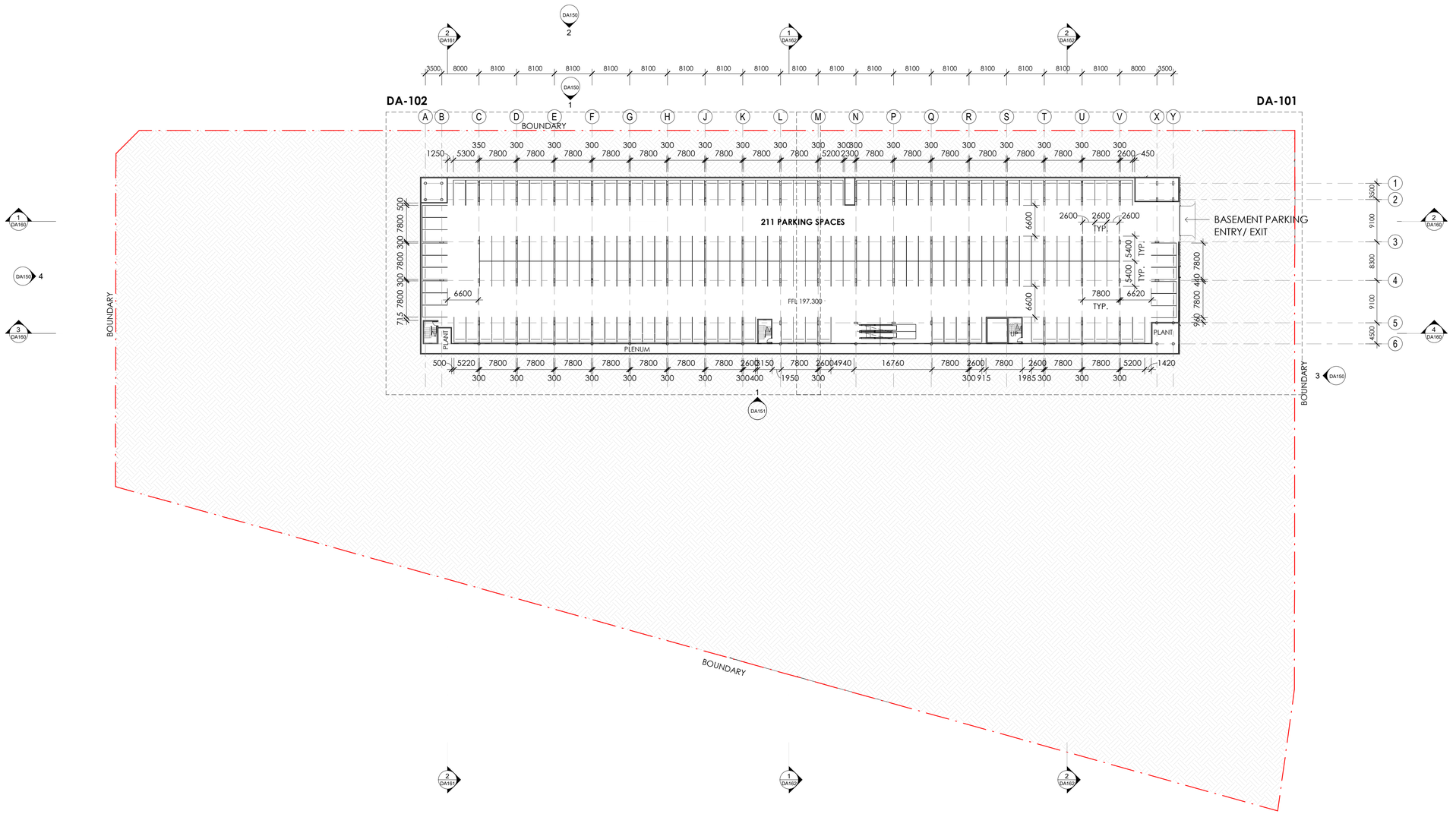

KEY	LOCATION	AREA
A) 1.	PLANT	465 m^2
2.	BASEMENT PARKING	5570 m^2
	TOTAL =	**6035 m^2**

PARKING	NO.
BASEMENT PARKING	211
GF PARKING	178
GF DISABLED	6
TOTAL =	**395**

PRELIMINARY ISSUE

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BASEMENT PLAN

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SCALE 1:500

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932 DATE: 10/11/21 DRAWN: RGG
DWG NO. DA100 REV. 5

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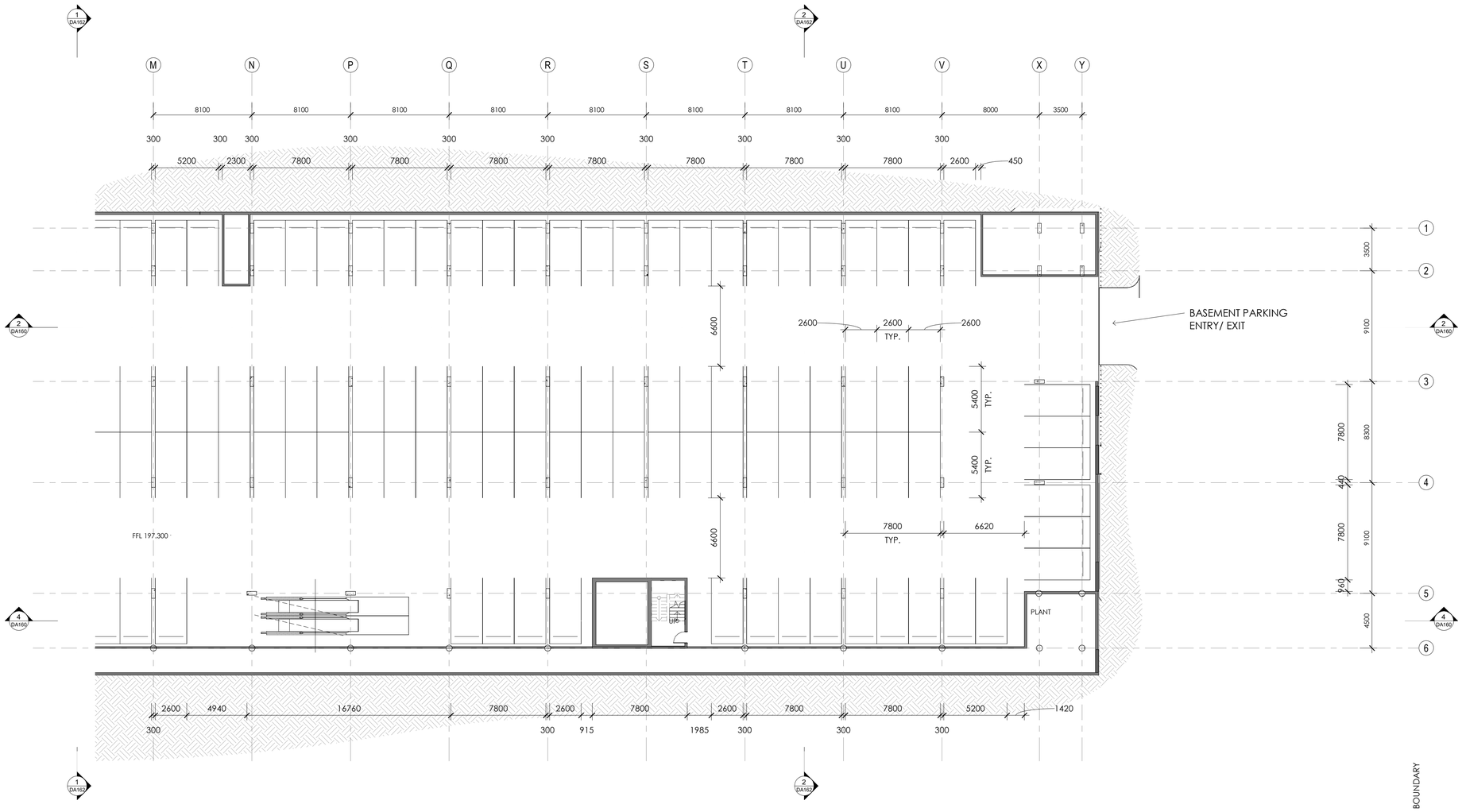

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BASEMENT PLAN - 1 OF 2

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SCALE 1:200

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932
DATE: 13/01/22
DRAWN: TJT/CSG
DWG NO. DA101
REV. 1

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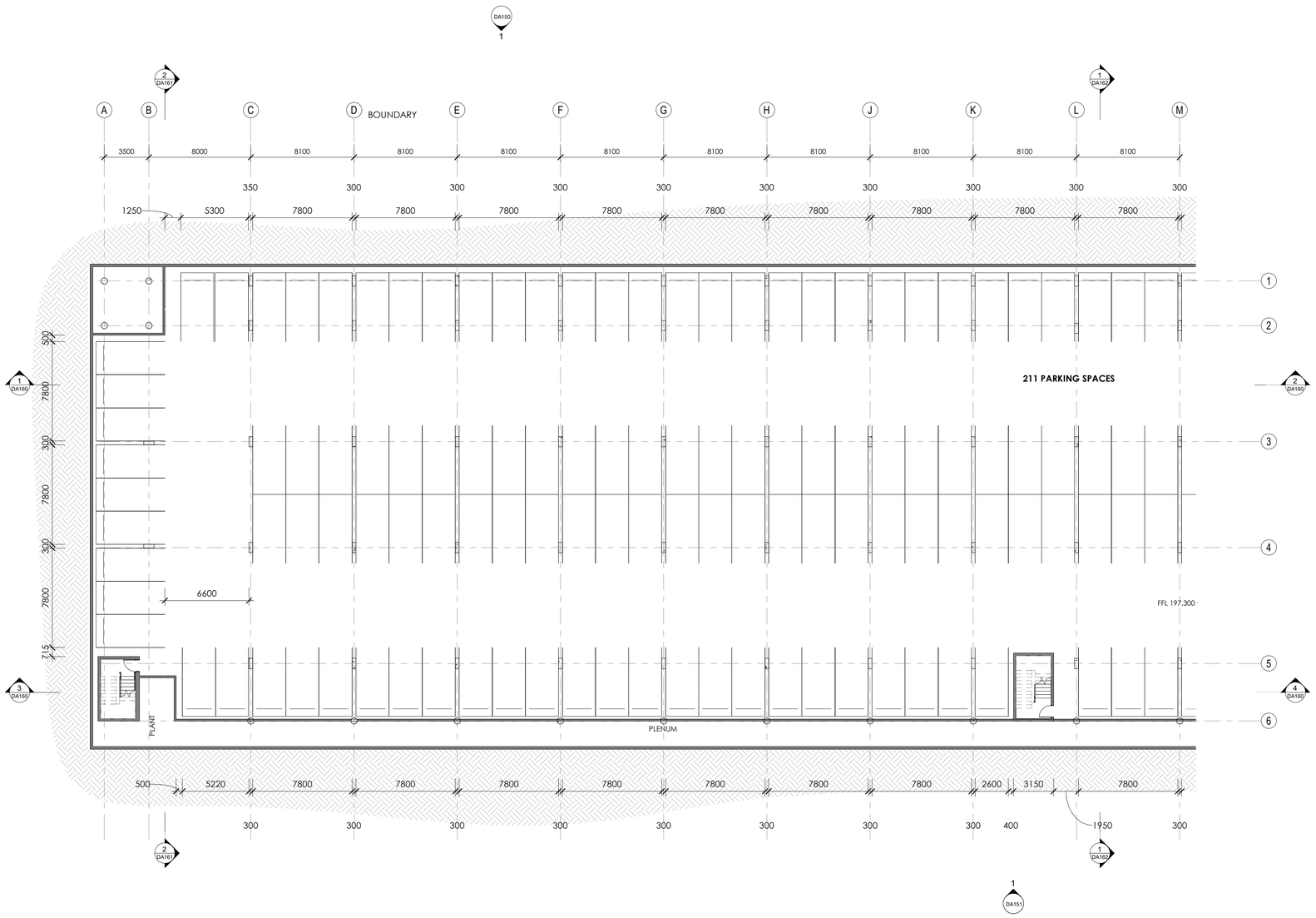

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BASEMENT PLAN - 2 OF 2

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BRISBANE L5 U39 131 LEICHHARDT ST, SPRING HILL, QLD 4000 T:+61 7 31235544

0 4 8 12 16 20 SCALE 1:200

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932
DATE: 13/01/22
DRAWN: TJT/CSG
DWG NO. DA102
REV. 1

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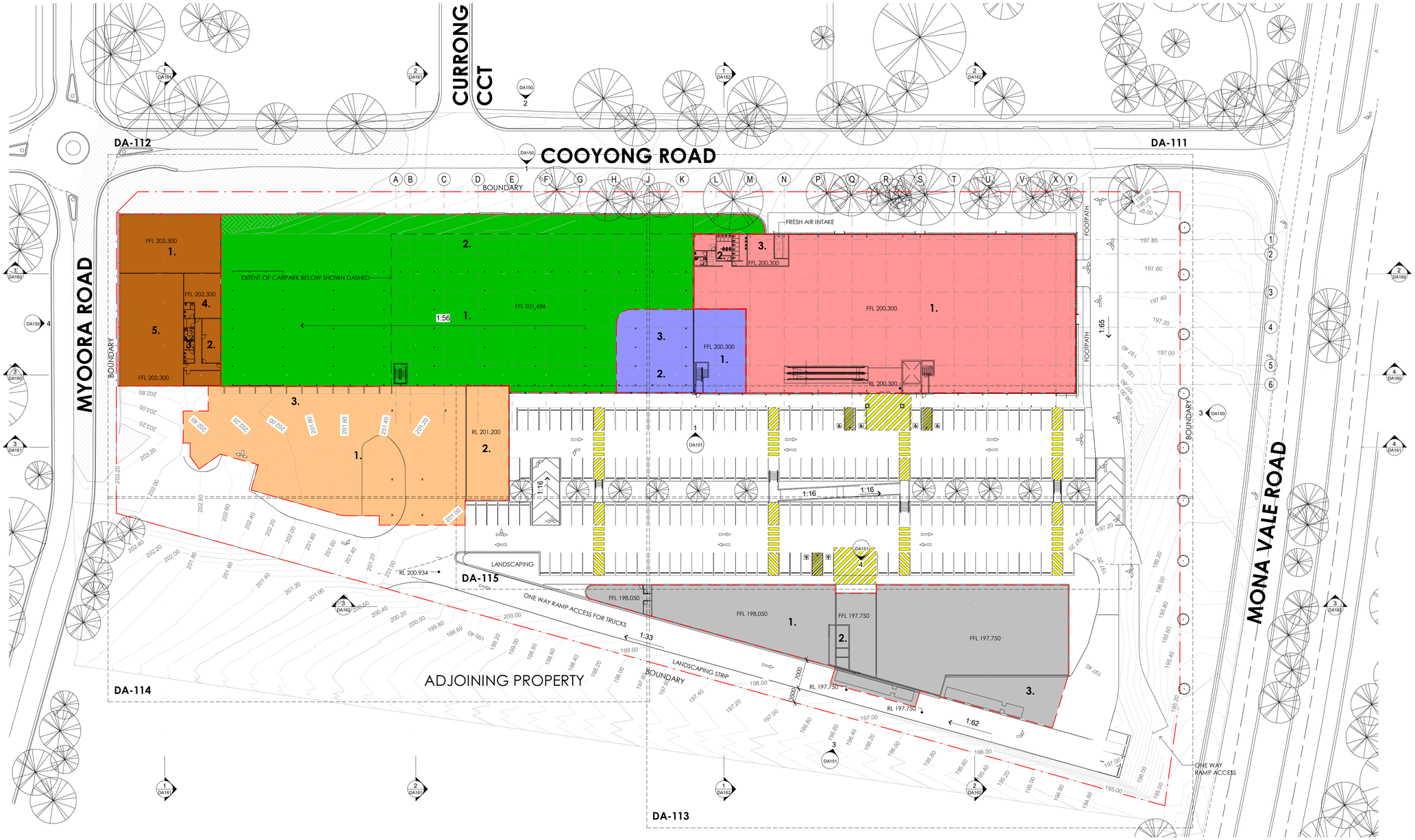
3	INFORMATION ISSUE	02/12/21	CSG
4	INFORMATION ISSUE	13/12/21	CSG
5	INFORMATION ISSUE	19/01/22	CSG



KEY

- A) GARDEN CENTRE
- B) CAFE/ PLAYGROUND
- C) NURSERY
- D) LOADING/ STORE
- E) LANDSCAPE ZONE
- F) TENANCY SHOPS/ LOADING

KEY	LOCATION	AREA
A) 1.	GARDEN CENTRE	2947 m²
2.	AMENITIES	59 m²
3.	STORAGE	91 m²
	TOTAL =	**3097 m²**
B) 1.	CAFÉ INDOOR	234 m²
2.	CAFÉ OUTSIDE	162 m²
3.	KIDS PLAYGROUND	197 m²
	TOTAL =	593 m²
C) 1.	OPEN NURSERY	**3088 m²**
2.	POTS ZONE	861 m²
	TOTAL =	**3949 m²**
D) 1.	STORAGE	335 m²
2.	STAFF ZONE	110 m²
3.	AMENITIES	35 m²
4.	PLANT STORAGE	82 m²
5.	LOADING DOCK	410 m²
	TOTAL =	**972 m²**
E) 1.	LANDSCAPE ZONE	1275 m²
2.	LANDSCAPE SHOP	280 m²
3.	LANDSCAPE BINS	473 m²
	TOTAL =	**2028 m²**
F) 1.	TENANCY SPACES	1823 m²
2.	TENANCY LOADING AREA	46 m²
3.	AMENITIES	305 m²
	TOTAL =	**2174 m²**

KEY	LOCATION	AREA
A) 1.	PLANT	465 m²
2.	BASEMENT PARKING	5570 m²
	TOTAL =	**6035 m²**

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PRELIMINARY ISSUE

OVERALL GROUND FL PLAN

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SCALE 1:500

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932
DATE: 10/11/21
DRAWN: RGG
DWG NO. DA110
REV. 5

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Member Australian Institute of Architects

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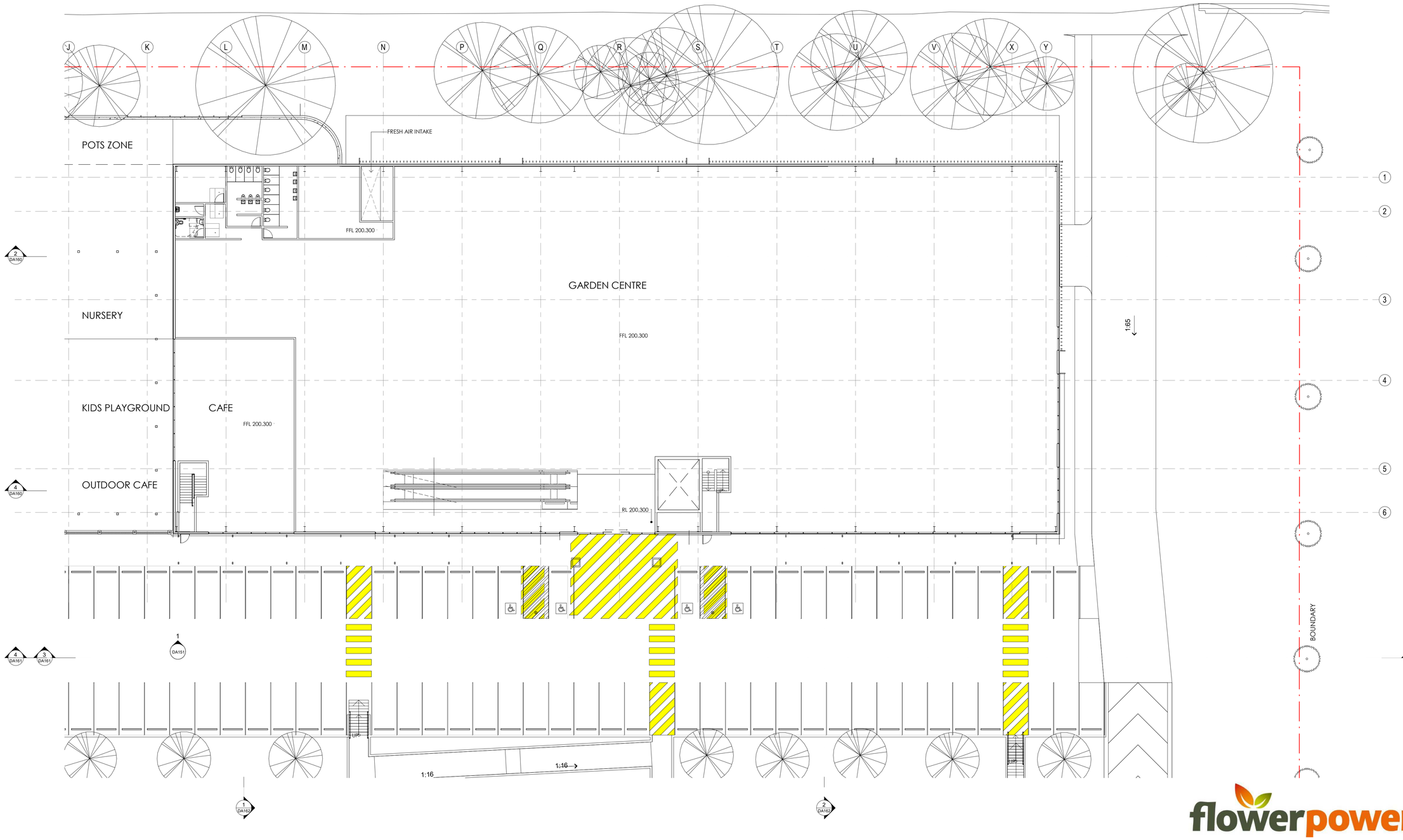

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GROUND FL PLAN - 1 OF 4

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SCALE 1:200

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932 DWG NO. REV.
DATE: 13/01/22 DA111 1
DRAWN: TJT/CSG

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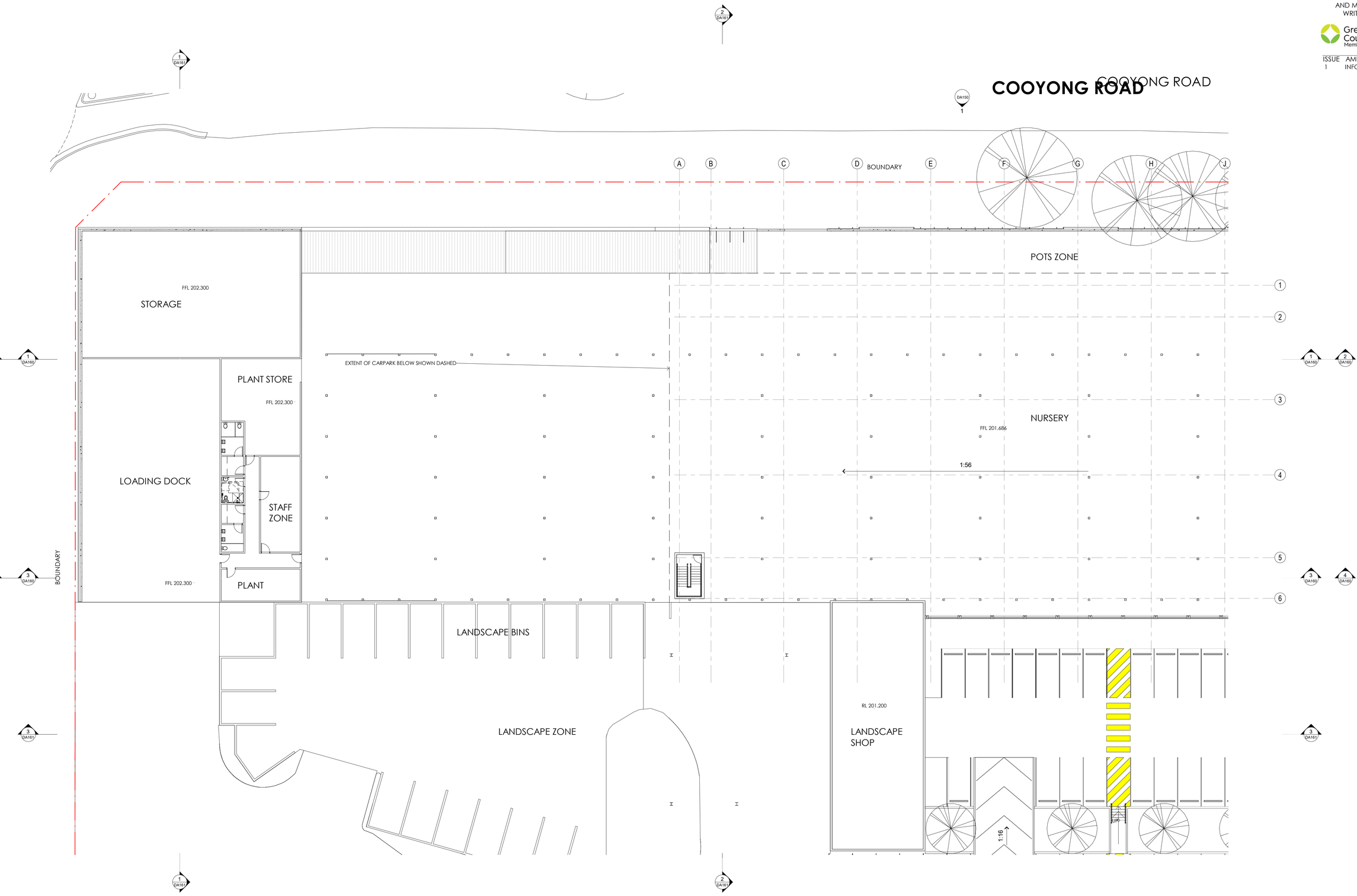

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GROUND FL PLAN - 2 OF 4

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SCALE 1:200

0 4 8 12 16 20

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932 DWG NO. REV.
DATE: 13/01/22 DA112 1
DRAWN: TJT/CSG

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Green Building Council Australia Member

Member Australian Institute of Architects

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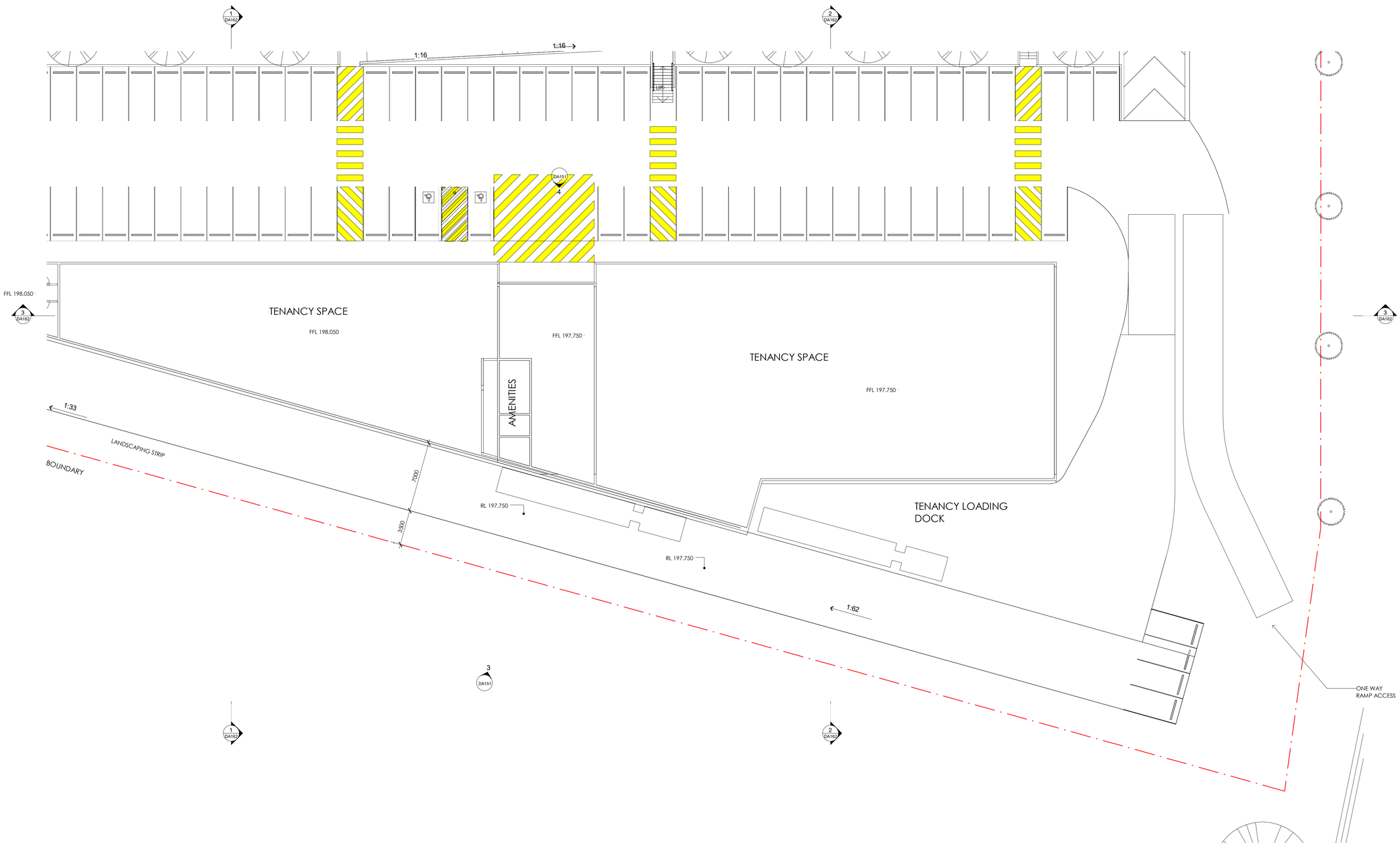

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GROUND FL PLAN - 3 OF 4

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BRISBANE L5 U39 131 LEICHHARDT ST, SPRING HILL, QLD 4000 T:+61 7 31235544

SCALE 1:200
0 4 8 12 16 20

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932
DATE: 13/01/22
DRAWN: TJT/CSG
DWG NO. DA113
REV. 1

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Green Building Council Australia Member

Member Australian Institute of Architects

ISSUE	AMENDMENT	DATE	CHK'D
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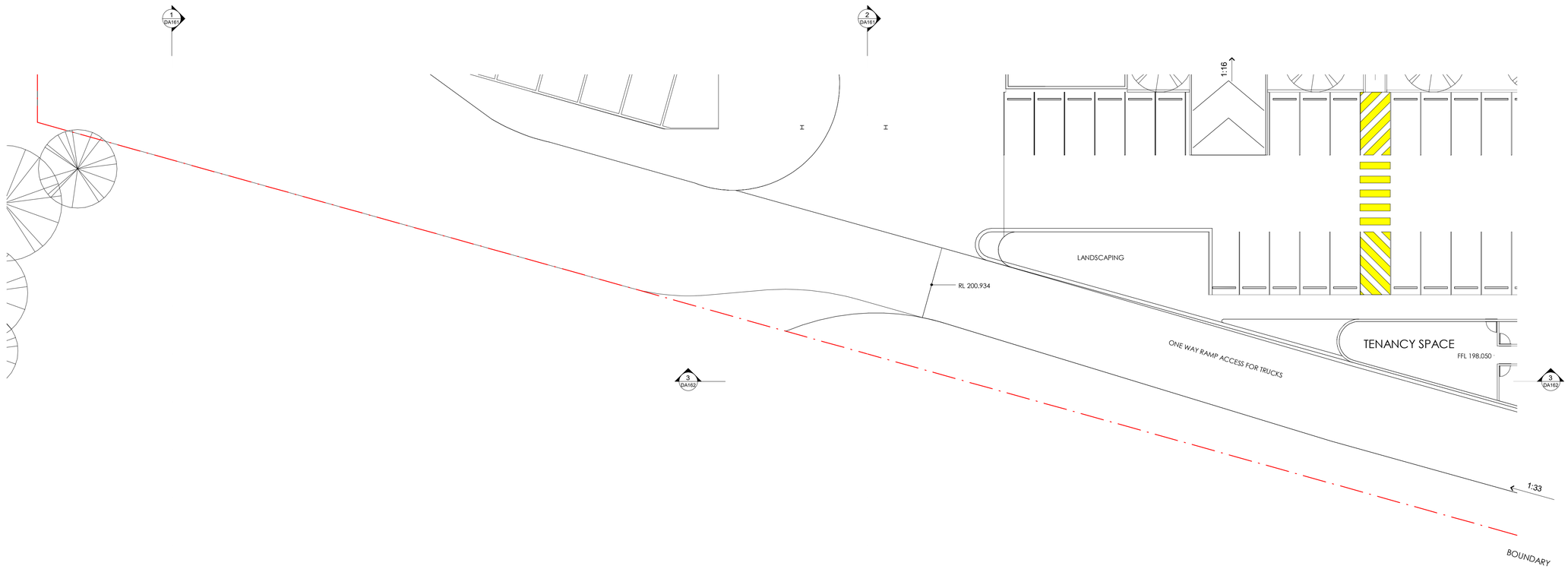

ADJOINING PROPERTY

1 DA161

2 DA161

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GROUND FL PLAN - 4 OF 4

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SCALE 1:200

0 4 8 12 16 20

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932 DWG NO. REV.
DATE: 13/01/22 DA114 1
DRAWN: TJT/CSG

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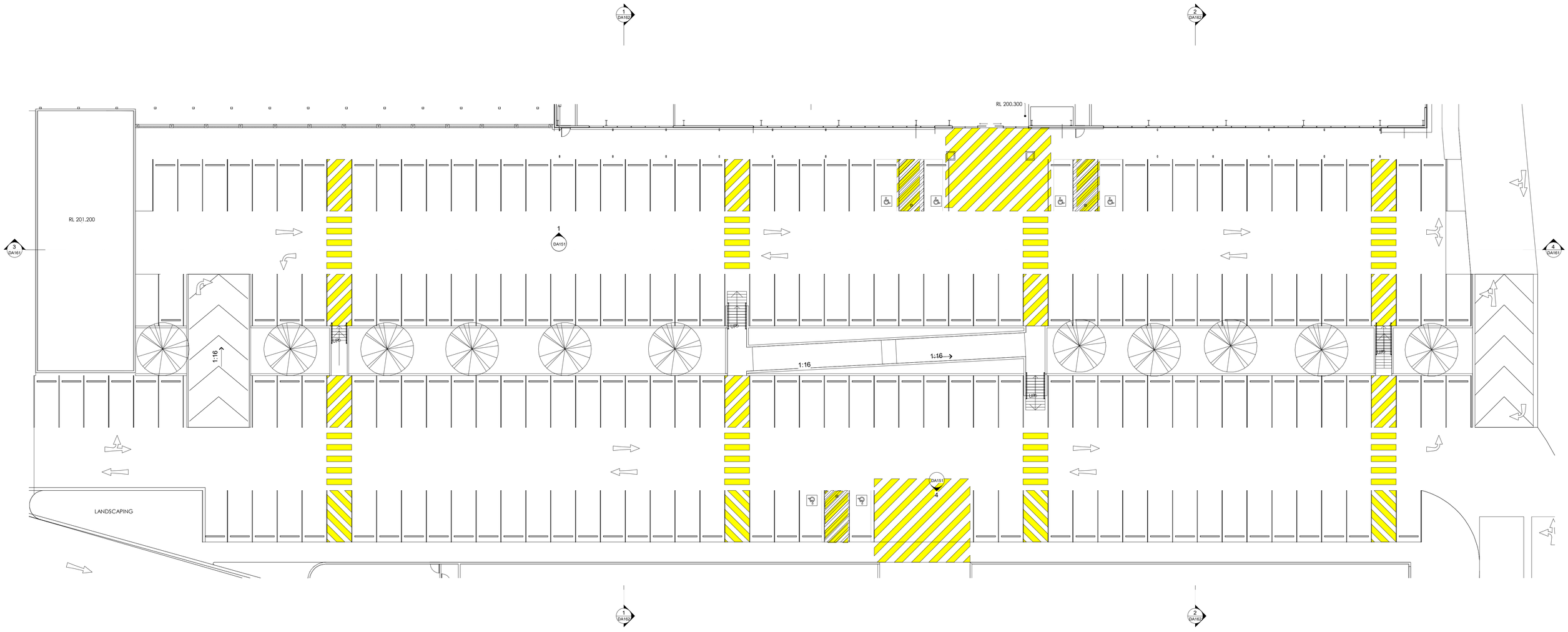

flowerpower

GROUND FL PLAN - PARKING

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SCALE 1:200
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FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932
DATE: 13/01/22
DRAWN: TJT/CSG
DWG NO. DA115
REV. 1

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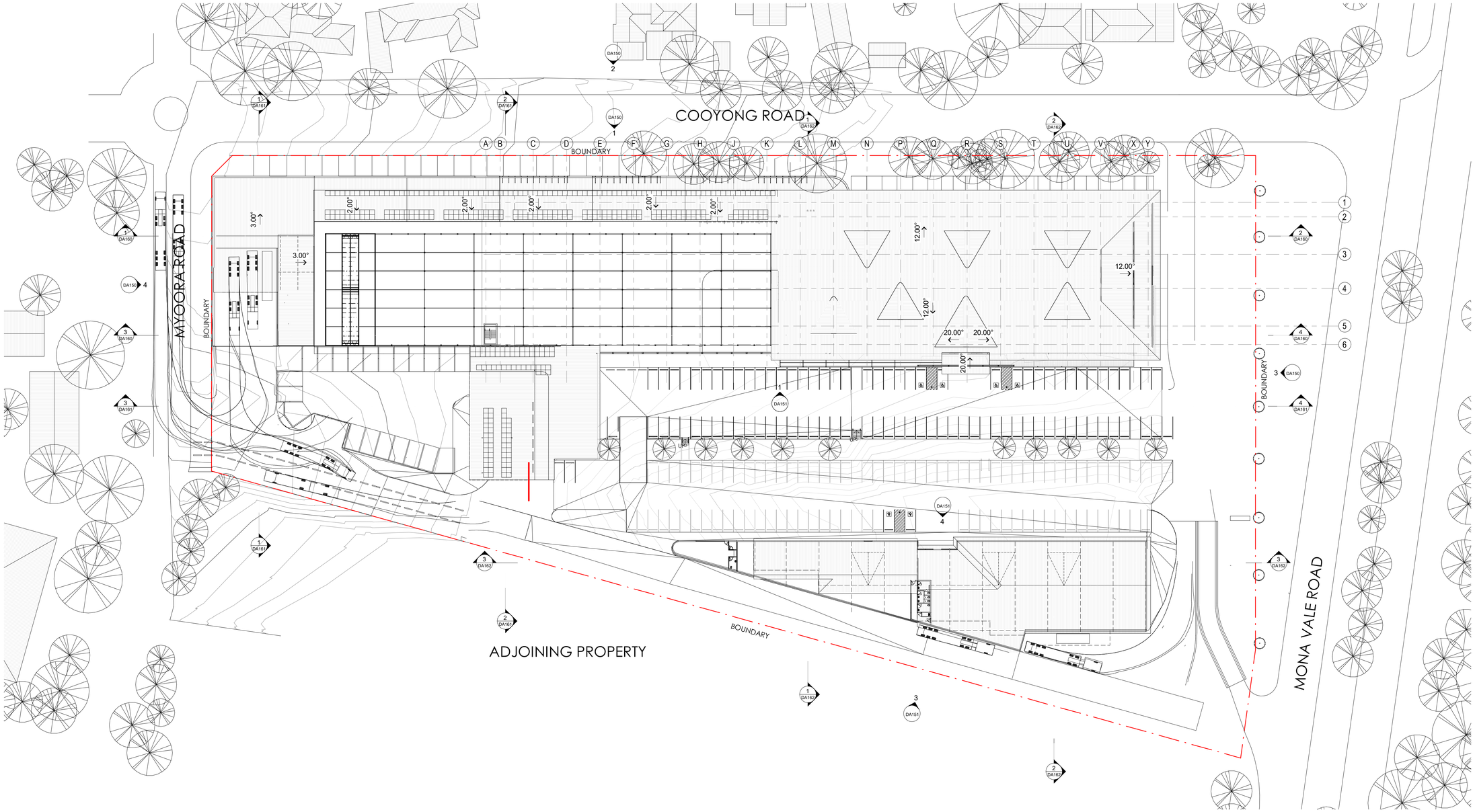

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ROOF PLAN

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SCALE 1:100

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277 MONA VALE RD, TERREY HILLS NSW

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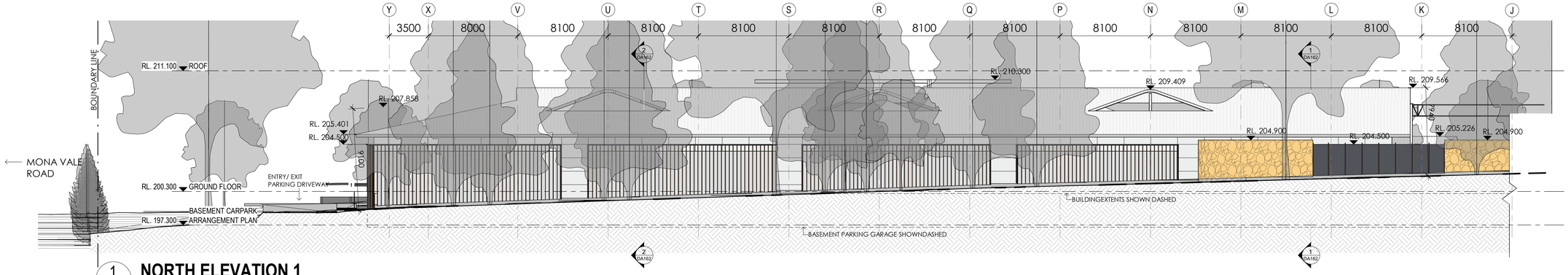

1 DA100 **NORTH ELEVATION 1**
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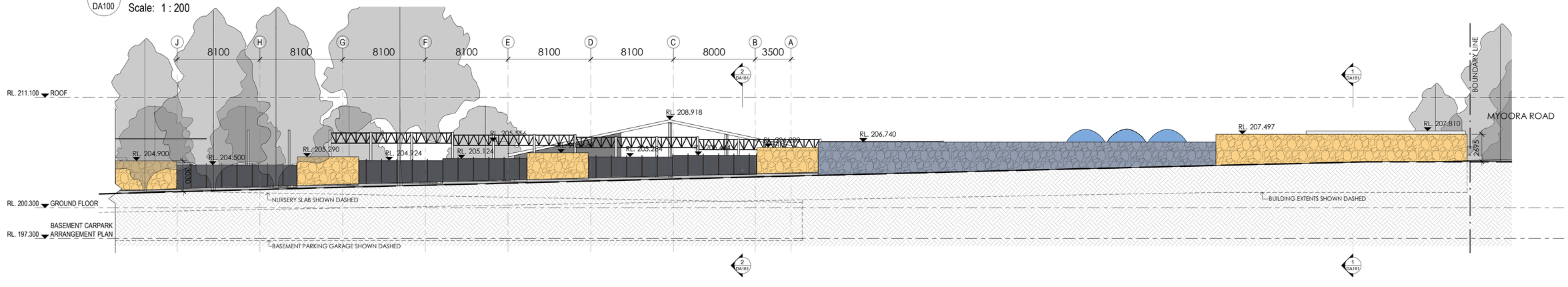

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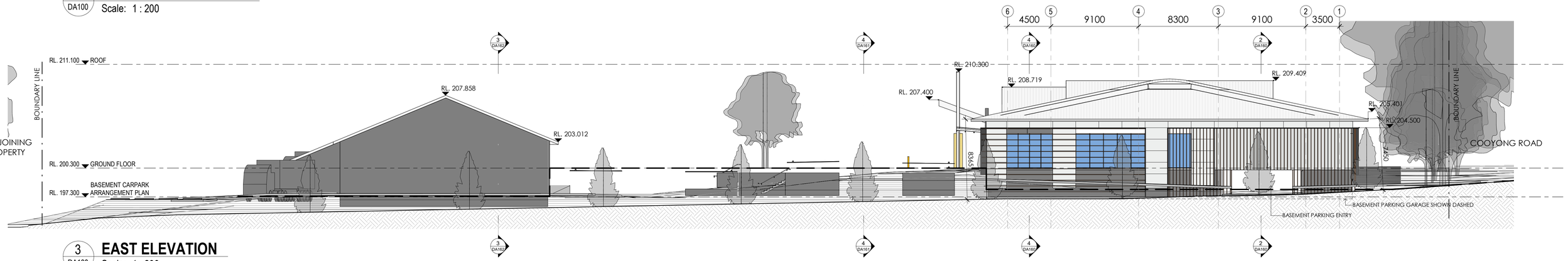

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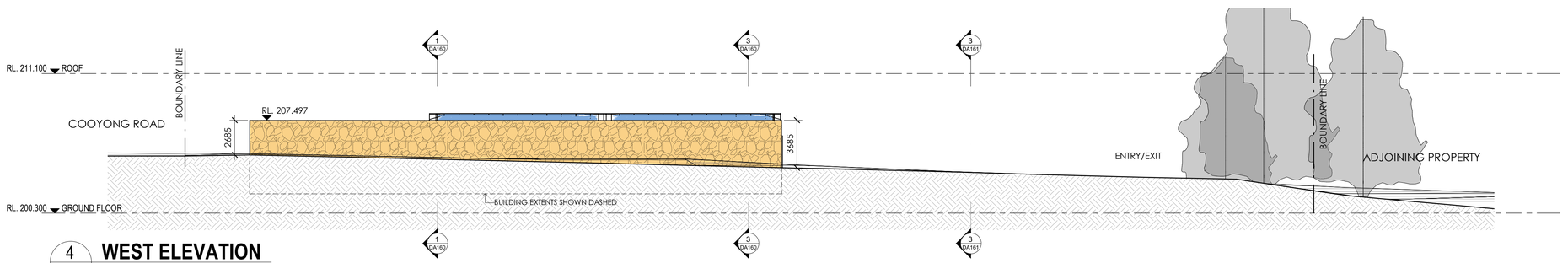

4 DA100 **WEST ELEVATION**
Scale: 1 : 200

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ELEVATION

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SCALE 1:200

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277 MONA VALE RD, TERREY HILLS NSW

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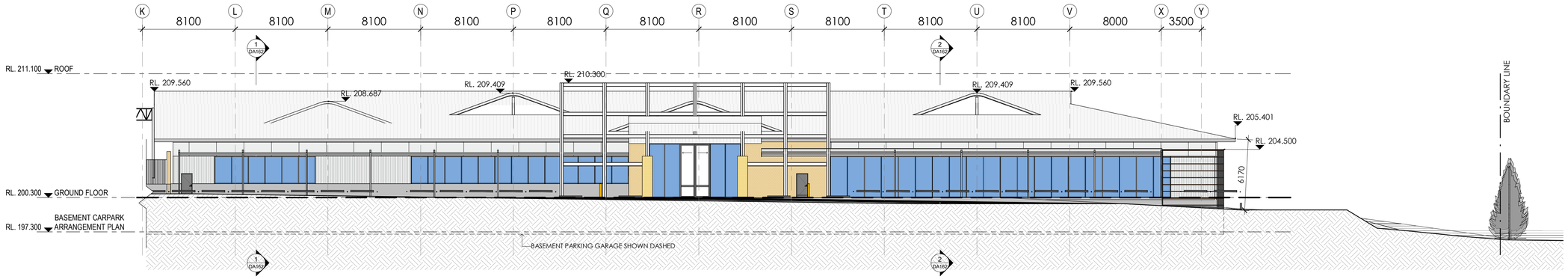
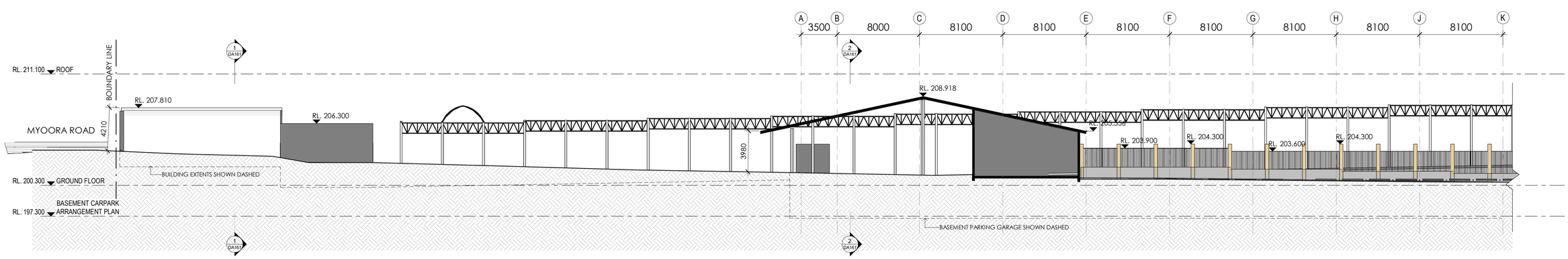


1 DA100 MAIN BUILDING SOUTH ELEVATION 2

Scale: 1 : 200



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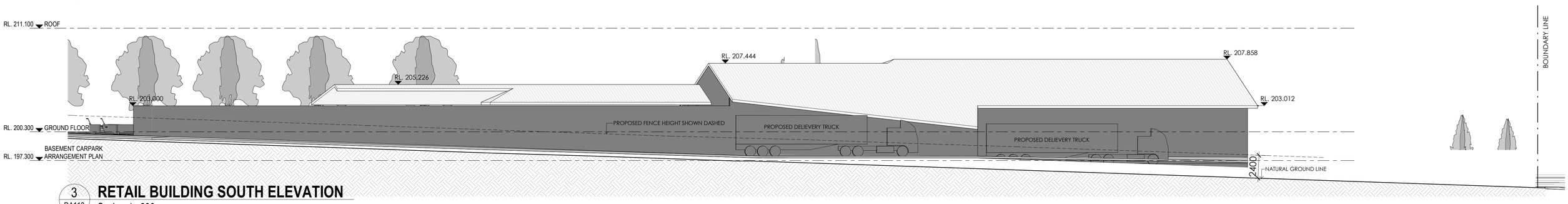

3 DA110 RETAIL BUILDING SOUTH ELEVATION

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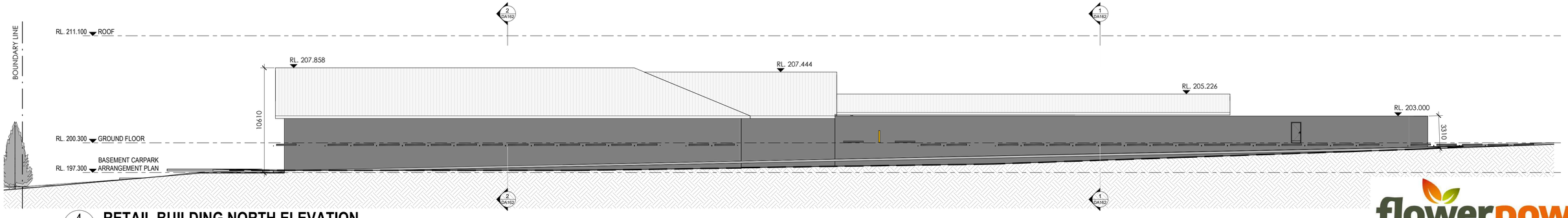

4 DA110 RETAIL BUILDING NORTH ELEVATION

Scale: 1 : 200

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SCALE 1:200 (0 4 8 12 16 20)

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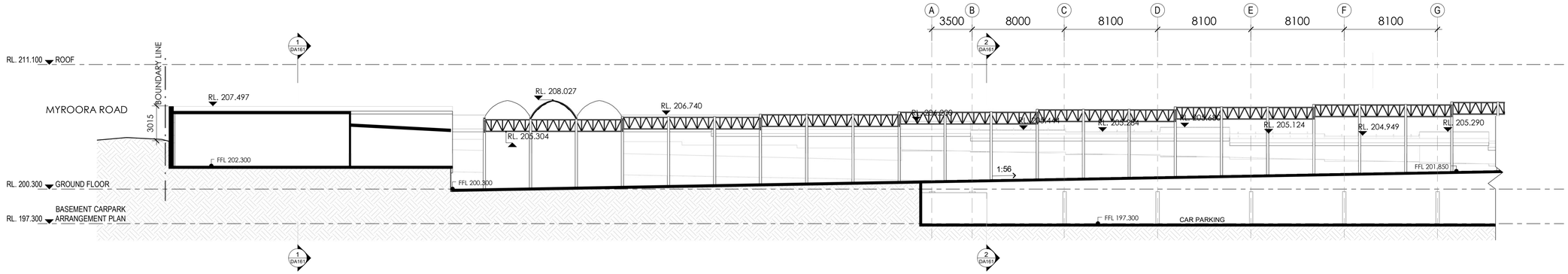

1 DA100 BUILDING SECTION 1

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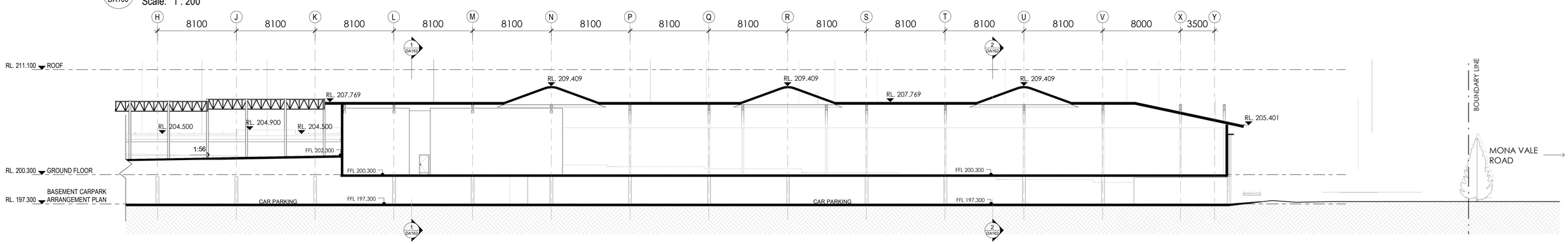

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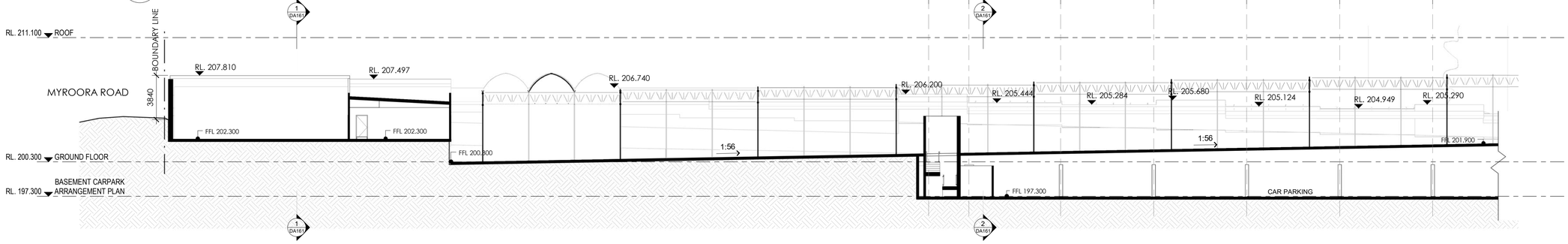

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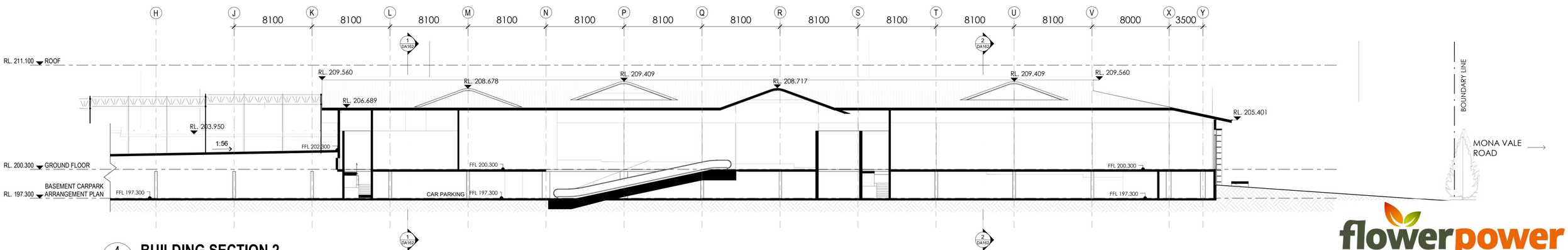

4 DA100 BUILDING SECTION 2

Scale: 1 : 200

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SCALE 1:200

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932 DWG NO. REV.
DATE: 10/11/21 DA160 3
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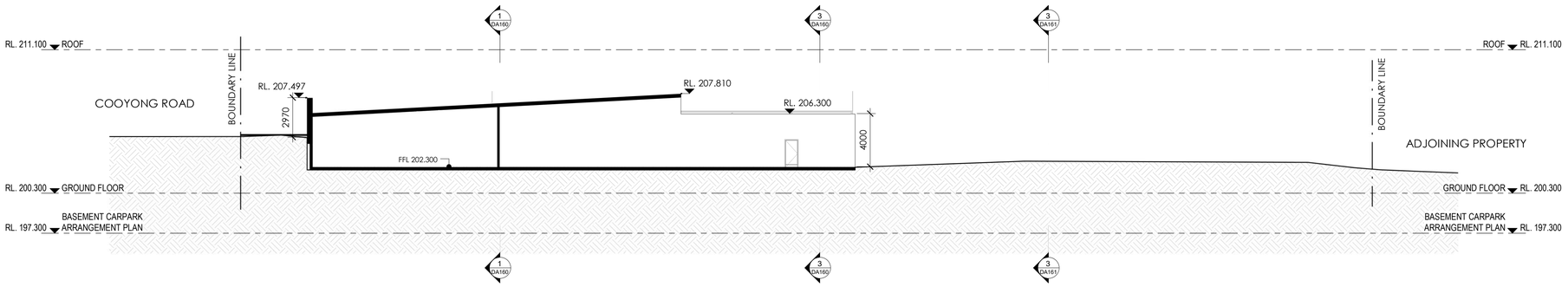
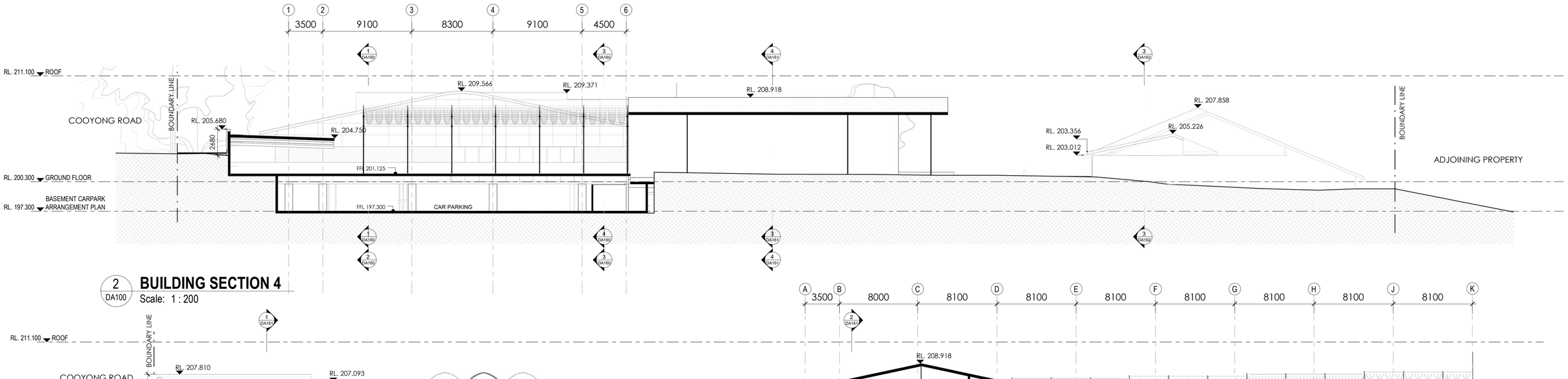


1 DA110 BUILDING SECTION 3

Scale: 1 : 200



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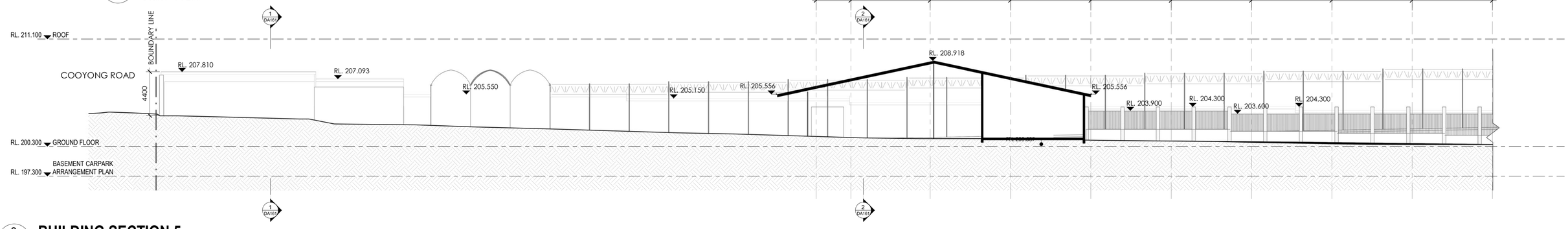
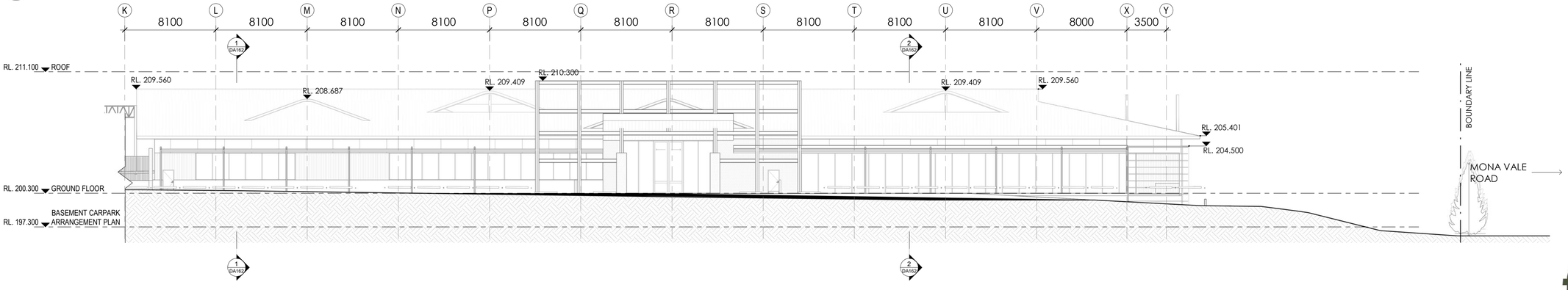
Scale: 1 : 200



3 DA110 BUILDING SECTION 5

Scale: 1 : 200



4 DA110 BUILDING SECTION 5

Scale: 1 : 200

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SCALE 1:200 (0 4 8 12 16 20)

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932 DWG NO. REV.
DATE: 09/12/21 DA161 2
DRAWN: TJT/CSG

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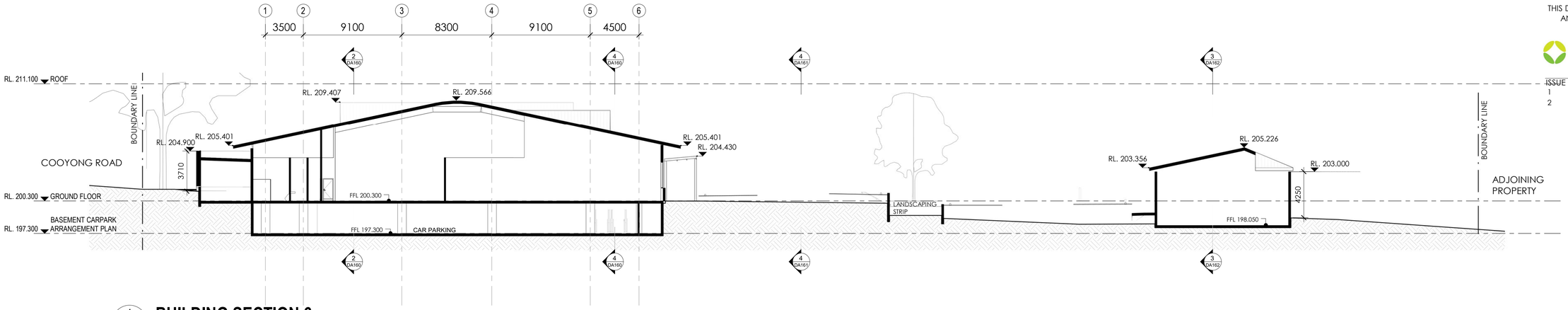
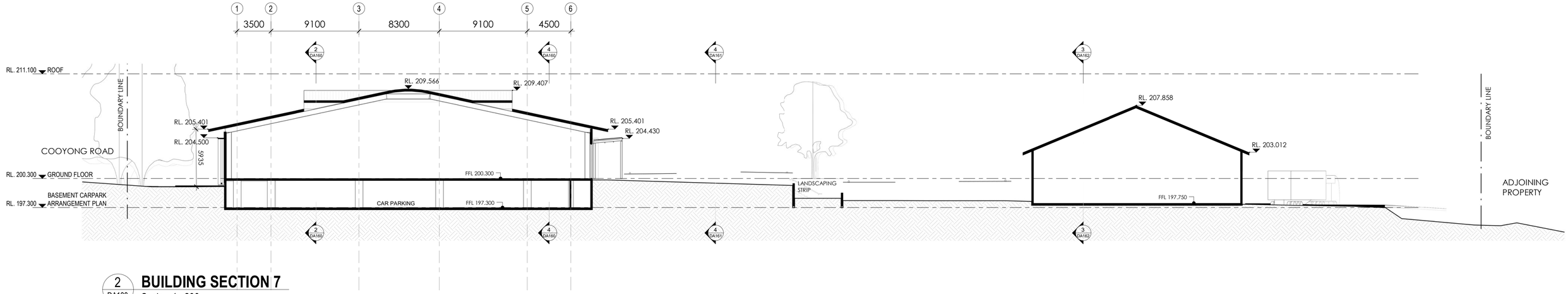
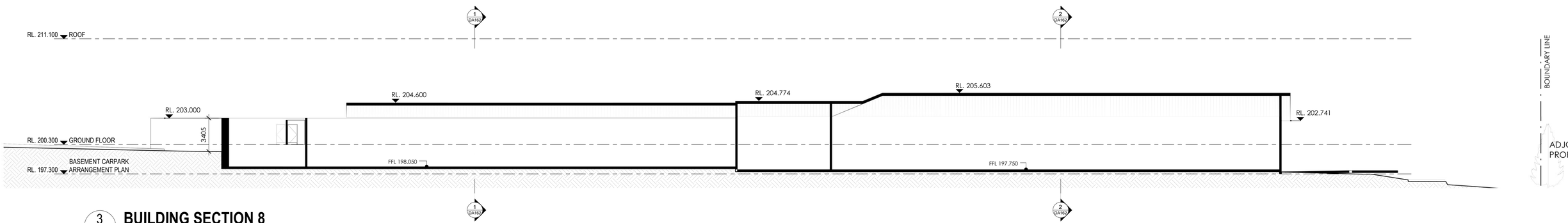


1 DA100 **BUILDING SECTION 6**
Scale: 1 : 200



2 DA100 **BUILDING SECTION 7**
Scale: 1 : 200



3 DA110 **BUILDING SECTION 8**
Scale: 1 : 200

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SCALE 1:100

FLOWER POWER GARDEN CENTRE TERREY HILLS
277 MONA VALE RD, TERREY HILLS NSW

JOB NO: 4932 DWG NO. REV.
DATE: 09/12/21 DA162 2
DRAWN: TJT/CSG

LEFFLER SIMES ARCHITECTS

Appendix C: PSI/DSI Summary Data Tables

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

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

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 refered 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**																				
BH1	0.1-0.2	F: silty sand	<4	<0.4	**19**	**45**	**12**	<0.1	**45**	**53**	**0.52**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH1	0.1-0.2	Lab duplicate	<4	<0.4	**13**	**39**	**9**	<0.1	**41**	**38**	**0.82**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH1	0.6-0.7	Gravelly sand	**11**	<0.4	**58**	**1**	**4**	<0.1	**3**	**2**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH2	0.6-0.7	F: gravelly sand	**8**	<0.4	**22**	**13**	**40**	<0.1	**11**	**540**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH3	0.1-0.2	F: gravelly sand	<4	<0.4	**87**	**27**	**10**	<0.1	**91**	**65**	**0.1**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH4	0.1-0.2	F: silty sand	**18**	<0.4	**9**	**2**	**6**	<0.1	**2**	**9**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH5	0.2-0.3	F: silty sand	<4	<0.4	**13**	**3**	**8**	<0.1	**2**	**37**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH5	0.7-0.8	Silty sand	<4	<0.4	**17**	**2**	**3**	<0.1	**1**	**7**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH6	0.2-0.3	F: silty sand	<4	<0.4	**16**	**1**	**3**	<0.1	**2**	**3**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH7	0.6-0.7	F: gravelly sand	**9**	<0.4	**36**	**12**	**20**	<0.1	**17**	**57**	**9**	**1.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH7	1.5-1.6	F: gravelly sand	**6**	<0.4	**21**	**8**	**8**	<0.1	**8**	**34**	**1.8**	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH7	2.4-2.5	F: silty clay	**17**	**0.6**	**58**	**19**	**28**	<0.1	**23**	**99**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH8	0.6-0.7	F: silty sand	**4**	<0.4	**12**	**5**	**15**	<0.1	**4**	**19**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH8	1.6-1.7	silty sand	<4	<0.4	**18**	<1	**3**	<0.1	<1	**3**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH9	0.1-0.2	F: gravelly sand	**15**	<0.4	**49**	**6**	**6**	<0.1	**12**	**15**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH10	0.1-0.2	F: gravelly sand	<4	<0.4	**9**	**7**	**16**	<0.1	**4**	**30**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH1Dup	-	Soil dup	<4	<0.4	**15**	**43**	**11**	<0.1	**47**	**43**	**0.79**	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			17	17	17	17	17	17	17	17	17	17	11	11	11	11	11	11	11	11	11	10
Maximum Value			18	0.6	87	45	40	<PQL	91	540	9	1.1	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Not Detected

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**

JKEnvironments

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**								
BH1	0.1-0.2	F: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.1
BH1	0.1-0.2	Lab duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.1
BH1	0.6-0.7	Gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.6
BH2	0.6-0.7	F: gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH3	0.1-0.2	F: gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH4	0.1-0.2	F: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH5	0.2-0.3	F: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH5	0.7-0.8	Silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH6	0.2-0.3	F: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH7	0.6-0.7	F: gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.3
BH7	1.5-1.6	F: gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH7	2.4-2.5	F: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH8	0.6-0.7	F: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0.4
BH8	1.6-1.7	silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH9	0.1-0.2	F: gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH10	0.1-0.2	F: gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH1Dup	-	Soil dup	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	-
Total Number of Samples					17	17	17	17	17	17	17	16
Maximum Value					<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	0.6

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
BH1	0.1-0.2	F: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH1	0.1-0.2	Lab duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH1	0.6-0.7	Gravelly sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH2	0.6-0.7	F: gravelly sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH3	0.1-0.2	F: gravelly sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH4	0.1-0.2	F: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH5	0.2-0.3	F: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH5	0.7-0.8	Silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH6	0.2-0.3	F: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH7	0.6-0.7	F: gravelly sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH7	1.5-1.6	F: gravelly sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH7	2.4-2.5	F: silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH8	0.6-0.7	F: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH8	1.6-1.7	silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH9	0.1-0.2	F: gravelly sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH10	0.1-0.2	F: gravelly sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH1Dup	-	Soil dup	0m to <1m	Sand	260	NL	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 napthalene	>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**				
BH1	0.1-0.2	Coarse	<25	<50	**330**	**440**
BH1	0.1-0.2	Coarse	<25	<50	**320**	**500**
BH1	0.6-0.7	Coarse	<25	<50	<100	<100
BH2	0.6-0.7	Coarse	<25	<50	<100	<100
BH3	0.1-0.2	Coarse	<25	<50	<100	<100
BH4	0.1-0.2	Coarse	<25	<50	<100	<100
BH5	0.2-0.3	Coarse	<25	<50	<100	<100
BH5	0.7-0.8	Coarse	<25	<50	<100	<100
BH6	0.2-0.3	Coarse	<25	<50	<100	<100
BH7	0.6-0.7	Coarse	<25	<50	**110**	<100
BH7	1.5-1.6	Coarse	<25	<50	**150**	<100
BH7	2.4-2.5	Coarse	<25	<50	**120**	<100
BH8	0.6-0.7	Coarse	<25	<50	<100	<100
BH8	1.6-1.7	Coarse	<25	<50	<100	<100
BH9	0.1-0.2	Coarse	<25	<50	<100	<100
BH10	0.1-0.2	Coarse	<25	<50	<100	<100
BH1Dup	-	Coarse	<25	<50	**290**	**380**
Total Number of Samples			17	17	17	17
Maximum Value			<PQL	<PQL	330	500

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 napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
BH1	0.1-0.2	Coarse	700	1000	3500	10000
BH1	0.1-0.2	Coarse	700	1000	3500	10000
BH1	0.6-0.7	Coarse	700	1000	3500	10000
BH2	0.6-0.7	Coarse	700	1000	3500	10000
BH3	0.1-0.2	Coarse	700	1000	3500	10000
BH4	0.1-0.2	Coarse	700	1000	3500	10000
BH5	0.2-0.3	Coarse	700	1000	3500	10000
BH5	0.7-0.8	Coarse	700	1000	3500	10000
BH6	0.2-0.3	Coarse	700	1000	3500	10000
BH7	0.6-0.7	Coarse	700	1000	3500	10000
BH7	1.5-1.6	Coarse	700	1000	3500	10000
BH7	2.4-2.5	Coarse	700	1000	3500	10000
BH8	0.6-0.7	Coarse	700	1000	3500	10000
BH8	1.6-1.7	Coarse	700	1000	3500	10000
BH9	0.1-0.2	Coarse	700	1000	3500	10000
BH10	0.1-0.2	Coarse	700	1000	3500	10000
BH1Dup	-	Coarse	700	1000	3500	10000

TABLE S4
SOIL LABORATORY RESULTS COMPARED T0 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**										
BH1	0.1-0.2	<25	<50	**330**	**440**	<0.2	<0.5	<1	<3	<1	**0.1**
BH1	0.1-0.2	<25	<50	**320**	**500**	<0.2	<0.5	<1	<3	<1	**0.1**
BH1	0.6-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0.6**
BH2	0.6-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH3	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH4	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH5	0.2-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH5	0.7-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH6	0.2-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH7	0.6-0.7	<25	<50	**110**	<100	<0.2	<0.5	<1	<3	<1	**0.3**
BH7	1.5-1.6	<25	<50	**150**	<100	<0.2	<0.5	<1	<3	<1	0
BH7	2.4-2.5	<25	<50	**120**	<100	<0.2	<0.5	<1	<3	<1	0
BH8	0.6-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0.4**
BH8	1.6-1.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH9	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH10	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH1Dup	-	<25	<50	**290**	**380**	<0.2	<0.5	<1	<3	<1	-
TB-S1	-	NA	NA	NA	NA	<0.2	<0.5	<1	<3	<1	-

TABLE S5
ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS
HIL-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 refeference	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 Estimatio n %(w/w)
SAC			**No**					**0.05**			**0.001**			**0.001**											**0.05**	**0.001**
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	276408	BH1	0.1-0.2	661.59	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
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	276408	BH2	0.6-0.7	445.94	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
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	276408	BH3	0.1-0.2	871.34	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
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	276408	BH4	0.1-0.2	604.26	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
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	276408	BH5	0.2-0.3	570.25	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
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	276408	BH6	0.2-0.3	520.91	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
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	276408	BH7	0.6-0.7	549.38	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
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	276408	BH8	0.6-0.7	531.56	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
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	276408	BH9	0.1-0.2	638.01	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
NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	276408	BH10	0.1-0.2	669.95	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
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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																	
							AGED HEAVY METALS-EILs						EILs		ESLs							
				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)	$>C_{16}$-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	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	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																			
BH1	0.1-0.2	F: silty sand	Coarse	NA	NA	NA	<4	**19**	**45**	**12**	**45**	**53**	<1	<0.1	<25	<50	**330**	**440**	<0.2	<0.5	<1	<3	**0.08**
BH1	0.1-0.2	Lab duplicate	Coarse	NA	NA	NA	<4	**13**	**39**	**9**	**41**	**38**	<1	<0.1	<25	<50	**320**	**500**	<0.2	<0.5	<1	<3	**0.1**
BH1	0.6-0.7	Gravelly sand	Coarse	NA	NA	NA	**11**	**58**	**1**	**4**	**3**	**2**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH2	0.6-0.7	F: gravelly sand	Coarse	**8.4**	**6.1**	**11**	**8**	**22**	**13**	**40**	**11**	**540**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH3	0.1-0.2	F: gravelly sand	Coarse	**8.9**	**22**	**7**	<4	**87**	**27**	**10**	**91**	**65**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH4	0.1-0.2	F: silty sand	Coarse	NA	NA	NA	**18**	**9**	**2**	**6**	**2**	**9**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH5	0.2-0.3	F: silty sand	Coarse	NA	NA	NA	<4	**13**	**3**	**8**	**2**	**37**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH5	0.7-0.8	Silty sand	Coarse	NA	NA	NA	<4	**17**	**2**	**3**	**1**	**7**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH6	0.2-0.3	F: silty sand	Coarse	NA	NA	NA	<4	**16**	**1**	**3**	**2**	**3**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH7	0.6-0.7	F: gravelly sand	Coarse	NA	NA	NA	**9**	**36**	**12**	**20**	**17**	**57**	<1	<0.1	<25	<50	**110**	<100	<0.2	<0.5	<1	<3	**0.75**
BH7	1.5-1.6	F: gravelly sand	Coarse	NA	NA	NA	**6**	**21**	**8**	**8**	**8**	**34**	<1	NA	<25	<50	**150**	<100	<0.2	<0.5	<1	<3	**0.2**
BH8	0.6-0.7	F: silty sand	Coarse	NA	NA	NA	**4**	**12**	**5**	**15**	**4**	**19**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH8	1.6-1.7	silty sand	Coarse	NA	NA	NA	<4	**18**	<1	**3**	<1	**3**	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH9	0.1-0.2	F: gravelly sand	Coarse	NA	NA	NA	**15**	**49**	**6**	**6**	**12**	**15**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH10	0.1-0.2	F: gravelly sand	Coarse	NA	NA	NA	<4	**9**	**7**	**16**	**4**	**30**	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH1Dup	-	Soil dup	Coarse	NA	NA	NA	<4	**15**	**43**	**11**	**47**	**43**	<1	NA	<25	<50	**290**	**380**	<0.2	<0.5	<1	<3	**0.1**
Total Number of Samples				2	2	2	16	16	16	16	16	16	16	11	16	16	16	16	16	16	16	16	16
Maximum Value				8.9	22	11	18	87	45	40	91	540	<PQL	<PQL	<PQL	<PQL	330	500	<PQL	<PQL	<PQL	<PQL	0.75

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)	$>C_{16}$-C_{34} (F3)	$>C_{34}$-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
BH1	0.1-0.2	F: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH1	0.1-0.2	Lab duplicate	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH1	0.6-0.7	Gravelly sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH2	0.6-0.7	F: gravelly sand	Coarse	8.4	6.1	11	160	670	310	2000	300	740	370	640	215	170	1700	3300	75	135	165	180	72
BH3	0.1-0.2	F: gravelly sand	Coarse	8.9	22	7	160	670	350	2000	600	1600	370	640	215	170	1700	3300	75	135	165	180	72
BH4	0.1-0.2	F: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH5	0.2-0.3	F: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH5	0.7-0.8	Silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH6	0.2-0.3	F: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH7	0.6-0.7	F: gravelly sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH7	1.5-1.6	F: gravelly sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH8	0.6-0.7	F: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH8	1.6-1.7	silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH9	0.1-0.2	F: gravelly sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH10	0.1-0.2	F: gravelly sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH1Dup	-	Soil dup	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72

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	F: silty sand	<4	<0.4	**19**	**45**	**12**	<0.1	**45**	**53**	**0.52**	**0.08**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	**100**	**350**	**450**	<0.2	<0.5	<1	<3	Not Detected
BH1	0.1-0.2	Lab duplicate	<4	<0.4	**13**	**39**	**9**	<0.1	**41**	**38**	**0.82**	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**360**	**360**	<0.2	<0.5	<1	<3	NA
BH1	0.6-0.7	Gravelly sand	**11**	<0.4	**58**	**1**	**4**	<0.1	**3**	**2**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH2	0.6-0.7	F: gravelly sand	**8**	<0.4	**22**	**13**	**40**	<0.1	**11**	**540**	<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
BH3	0.1-0.2	F: gravelly sand	<4	<0.4	**87**	**27**	**10**	<0.1	**91**	**65**	**0.1**	<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	F: silty sand	**18**	<0.4	**9**	**2**	**6**	<0.1	**2**	**9**	<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
BH5	0.2-0.3	F: silty sand	<4	<0.4	**13**	**3**	**8**	<0.1	**2**	**37**	<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
BH5	0.7-0.8	Silty sand	<4	<0.4	**17**	**2**	**3**	<0.1	**1**	**7**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH6	0.2-0.3	F: silty sand	<4	<0.4	**16**	**1**	**3**	<0.1	**2**	**3**	<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
BH7	0.6-0.7	F: gravelly sand	**9**	<0.4	**36**	**12**	**20**	<0.1	**17**	**57**	**9**	**0.75**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH7	1.5-1.6	F: gravelly sand	**6**	<0.4	**21**	**8**	**8**	<0.1	**8**	**34**	**1.8**	**0.2**	NA	NA	NA	NA	NA	<25	<50	<100	**130**	**130**	<0.2	<0.5	<1	<3	NA
BH7	2.4-2.5	F: silty clay	**17**	**0.6**	**58**	**19**	**28**	<0.1	**23**	**99**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH8	0.6-0.7	F: silty sand	**4**	<0.4	**12**	**5**	**15**	<0.1	**4**	**19**	<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
BH8	1.6-1.7	silty sand	<4	<0.4	**18**	<1	**3**	<0.1	<1	**3**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH9	0.1-0.2	F: gravelly sand	**15**	<0.4	**49**	**6**	**6**	<0.1	**12**	**15**	<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
BH10	0.1-0.2	F: gravelly sand	<4	<0.4	**9**	**7**	**16**	<0.1	**4**	**30**	<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
BH1Dup	-	Soil dup	<4	<0.4	**15**	**43**	**11**	<0.1	**47**	**43**	**0.79**	**0.1**	NA	NA	NA	NA	NA	<25	<50	<100	**300**	**300**	<0.2	<0.5	<1	<3	NA
TB-S1	-	Soil trip blank	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2	<0.5	<1	<3	NA
Total Number of Samples			17	17	17	17	17	17	17	17	17	17	11	11	11	11	11	17	17	17	17	17	18	18	18	18	10
Maximum Value			18	0.6	87	45	40	<PQL	91	540	9	0.75	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	100	360	450	<PQL	<PQL	<PQL	<PQL	Not Detected

Concentration above the CT1 — **VALUE**
Concentration above SCC1 — **VALUE**
Concentration above the SCC2 — **VALUE**
Concentration above PQL — **Bold**

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TABLE S8
SOIL QA/QC SUMMARY

			TRH C6 - C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene	Naphthalene	Acenaphthylene	Acenaph-thene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,j+k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthra-cene	Benzo(g,h,i)perylene	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
	PQL Envirolab SYD		*25*	*50*	*100*	*100*	*0.2*	*0.5*	*1*	*2*	*1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.05*	*0.1*	*0.1*	*0.1*	*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*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*4.0*	*0.4*	*1.0*	*1.0*	*1.0*	*0.1*	*1.0*	*1.0*
Intra laboratory duplicate	BH1	0.1-0.2	<25	<50	330	440	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.2	<0.1	<0.2	0.08	<0.1	<0.1	0.1	<4	<0.4	19	45	12	<0.1	45	53
	BH1Dup	-	<25	<50	290	380	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.1	0.3	0.1	<0.1	<0.1	0.1	<4	<0.4	15	43	11	<0.1	47	43
	MEAN		nc	nc	310	410	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0.1	0.125	0.075	0.2	0.09	nc	nc	0.1	nc	nc	17	44	11.5	nc	46	48
	RPD %		nc	nc	13%	15%	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0%	120%	67%	100%	22%	nc	nc	0%	nc	nc	24%	5%	9%	nc	4%	21%
Field Blank	TB-S1 12/08/21	-	NA	NA	NA	NA	<0.2	<0.5	<1	<2	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Result outside of QA/QC acceptance criteria

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

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

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 refered 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.

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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	Phenoxy acid herbicides	Carbamates	Synthetic pyrethroids	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	0.5 to 2	0.5	0.t to 2	100
Site Assessment Criteria (SAC)			3000	900	3600	240000	1500	730	6000	400000	4000	40	80	2000	2500	45	530	3600	50	2000	7	PQL	<PQL	<PQL	Detected/Not Detected
Sample Reference	**Sample Depth**	**Sample Description**																							
BH101	0.07-0.2	Fill: silty gravelly sand	<4	<0.4	**19**	**56**	**5**	<0.1	**66**	**37**	**1.1**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH101	0.07-0.2	Lab duplicate	<4	<0.4	**18**	**52**	**4**	<0.1	**62**	**37**	**0.3**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	NA
BH101	0.5-0.95	Fill: sandy clay	<4	<0.4	**39**	**15**	**6**	<0.1	**47**	**31**	**36**	**3.4**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH101	1.5-1.95	Fill: sandy clay	<4	<0.4	**31**	**12**	**17**	<0.1	**24**	**33**	**2.3**	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
BH101	2.5-2.8	Fill: sandy clay	<4	<0.4	**26**	**11**	**12**	<0.1	**23**	**38**	**3.4**	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH101	3.0-3.4	Fill: sandy clay	**7**	<0.4	**40**	**15**	**28**	**0.1**	**17**	**56**	**0.72**	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH102	0-0.2	Fill: gravelly silty sand	<4	<0.4	**14**	**14**	**14**	<0.1	**9**	**69**	**31**	**4.2**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH102	0.5-0.7	Gravelly sandy clay	**6**	<0.4	**30**	**9**	**8**	<0.1	**5**	**26**	**1.8**	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH103	0-0.1	Fill: silty clayey sand	<4	<0.4	**21**	**7**	**6**	<0.1	**15**	**55**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH104	0-0.2	Fill: gravelly silty sand	<4	<0.4	**12**	**44**	**25**	<0.1	**20**	**77**	**61**	**8.2**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Detected
BH104	0.2-0.5	Silty clayey sand	<4	<0.4	**25**	**<1**	**3**	<0.1	**<1**	**1**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH105	0-0.1	Fill: silty gravelly sand	<4	<0.4	**6**	**43**	**3**	<0.1	**66**	**28**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH105	0-0.1	Lab duplicate	<4	<0.4	**6**	**45**	**3**	<0.1	**65**	**29**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	NA
BH105	0.1-0.5	Fill: silty sand	<4	<0.4	**10**	**2**	**4**	<0.1	**5**	**7**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH106	0-0.1	Fill: silty gravelly sand	<4	<0.4	**11**	**24**	**18**	<0.1	**11**	**60**	**5.7**	**1**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Detected
BH106	0.5-0.95	Fill: silty sand	<4	<0.4	**3**	**1**	**10**	<0.1	**<1**	**6**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH106	1.8-2.0	Gravelly silty sand	**7**	<0.4	**42**	**<1**	**3**	<0.1	**<1**	**<1**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH107	0.1-0.2	Fill: gravelly silty sand	<4	<0.4	**27**	**<1**	**6**	<0.1	**2**	**3**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH107	0.7-1.0	Silty sand	<4	<0.4	**39**	**<1**	**5**	<0.1	**<1**	**<1**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH108	0.1-0.2	Fill: silty sand	<4	<0.4	**20**	**3**	**8**	<0.1	**8**	**81**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH108	0.4-0.5	Fill: silty sandy clay	**4**	<0.4	**22**	**3**	**15**	<0.1	**4**	**42**	**0.2**	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH108	0.7-1.0	Silty sand	<4	<0.4	**16**	**<1**	**4**	<0.1	**2**	**16**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH109	0.2-0.41	Fill: silty clay	<4	<0.4	**28**	**21**	**6**	<0.1	**43**	**25**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH109	0.2-0.41	Lab duplicate	<4	<0.4	**29**	**19**	**6**	<0.1	**52**	**29**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	NA
BH110	0.09-0.4	Fill: silty clayey sand	<4	<0.4	**65**	**33**	**7**	<0.1	**78**	**47**	**0.1**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH110	1.0-1.4	Fill: silty sandy clay	<4	<0.4	**28**	**15**	**64**	<0.1	**27**	**67**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
BH111	0.05-0.4	Fill: silty clayey gravel	<4	<0.4	**49**	**47**	**9**	<0.1	**84**	**49**	**0.1**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH111	0.4-0.6	silty clayey sand	<4	<0.4	**14**	**2**	**8**	<0.1	**10**	**19**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH112	0.08-0.3	Fill: silty gravelly sand	<4	<0.4	**51**	**16**	**6**	<0.1	**64**	**29**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH113	0.18-0.5	silty sandy clay	<4	<0.4	**14**	**4**	**4**	<0.1	**4**	**9**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<PQL	<PQL	<PQL	Not Detected
BH113	0.18-0.5	Lab duplicate	<4	<0.4	**14**	**3**	**5**	<0.1	**4**	**11**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	NA
BH114	0.23-0.4	Fill: silty clayey sand	<4	<0.4	**17**	**<1**	**3**	<0.1	**2**	**3**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH114	0.4-0.7	silty clayey sand	**4**	<0.4	**31**	**13**	**10**	<0.1	**23**	**47**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH115	0.16-0.4	Fill: silty gravelly sand	**7**	<0.4	**40**	**2**	**6**	<0.1	**9**	**13**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH116	0.21-0.55	gravelly sandy clay	**5**	<0.4	**50**	**<1**	**4**	<0.1	**10**	**1**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH117	0.12-0.3	Fill: gravelly silty sand	**10**	<0.4	**22**	**5**	**8**	<0.1	**20**	**18**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<PQL	<PQL	<PQL	Not Detected
BH117	0.3-0.7	Fill: silty gravelly sand	**22**	<0.4	**62**	**<1**	**7**	<0.1	**6**	**3**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH118	0.1-0.3	Fill: silty sand	**4**	<0.4	**9**	**4**	**6**	<0.1	**6**	**30**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH118	0.3-0.7	Silty clayey sand	**7**	<0.4	**25**	**1**	**3**	<0.1	**4**	**5**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH119	0.1-0.4	Fill: silty sand	**13**	<0.4	**21**	**1**	**9**	<0.1	**3**	**11**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH119	0.1-0.4	Lab duplicate	**13**	<0.4	**19**	**2**	**9**	<0.1	**3**	**13**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	NA
BH120	0-0.2	Fill: silty clayey sand	**5**	<0.4	**26**	**26**	**19**	<0.1	**24**	**61**	**3.1**	**0.7**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH120	0.2-0.5	Fill: silty sand	**10**	<0.4	**46**	**7**	**10**	<0.1	**12**	**17**	**1.1**	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH120	0.5-0.6	silty clay	<4	<0.4	**33**	**<1**	**5**	<0.1	**4**	**2**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH121	0-0.4	Fill: silty clayey sand	**9**	<0.4	**25**	**11**	**9**	<0.1	**11**	**24**	**0.5**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH122	0-0.4	Fill: silty clayey sand	**7**	<0.4	**25**	**16**	**15**	<0.1	**14**	**46**	**0.89**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH123	0-0.5	Fill: silty clayey sand	**5**	<0.4	**28**	**36**	**10**	<0.1	**27**	**35**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH124	0-0.3	Fill: silty clayey sand	<4	<0.4	**12**	**46**	**29**	<0.1	**14**	**35**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH124	0-0.3	Lab duplicate	<4	<0.4	**8**	**28**	**9**	<0.1	**16**	**25**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	NA
BH125	0-0.4	Fill: silty sand	<4	<0.4	**60**	**18**	**7**	<0.1	**47**	**51**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
TP126	0-0.5	Fill: silty sand	<4	<0.4	**22**	**17**	**11**	<0.1	**27**	**40**	**5.4**	**1**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<PQL	<PQL	<PQL	Not Detected
TP126	0.6-0.7	silty sand	**5**	<0.4	**17**	**<1**	**3**	<0.1	**2**	**2**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP127	0-0.1	Fill: silty sand	<4	<0.4	**21**	**49**	**39**	<0.1	**21**	**51**	**72**	**10**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
TP127	0.1-0.3	Fill: silty clayey sand	**9**	<0.4	**39**	**10**	**13**	<0.1	**13**	**22**	**2**	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
TP127	0.3-0.6	Fill: silty sand	**13**	<0.4	**51**	**34**	**21**	<0.1	**23**	**38**	**0.57**	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Detected
TP127	0.6-0.7	silty sand	**6**	<0.4	**15**	**<1**	**3**	<0.1	**3**	**3**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH128	0-0.3	Fill: silty sand	<4	**1**	**12**	**16**	**49**	**0.2**	**8**	**120**	**4.6**	**0.6**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Detected
BH128	0.3-0.45	silty clayey sand	<4	<0.4	**7**	**1**	**7**	<0.1	**3**	**6**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP129	0-0.2	Fill: silty sand	<4	<0.4	**15**	**22**	**16**	<0.1	**14**	**61**	**13**	**2**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
TP129	0-0.2	Lab duplicate	<4	<0.4	**21**	**41**	**18**	<0.1	**21**	**72**	**18**	**2.6**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	NA
TP129	0.2-0.6	Fill: silty clayey sand	**6**	<0.4	**34**	**5**	**8**	<0.1	**8**	**29**	**1.1**	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH130	0-0.3	Fill: silty clayey sand	**18**	<0.4	**48**	**<1**	**8**	<0.1	**2**	**6**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	Not Detected
BH130	0.3-0.5	silty sand	**8**	<0.4	**46**	**<1**	**4**	<0.1	**3**	**<1**	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDup101	-	Duplicate	<4	<0.4	**7**	**58**	**3**	<0.1	**96**	**35**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	NA
SDup102	-	Duplicate	<4	<0.4	**23**	**2**	**5**	<0.1	**6**	**6**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	NA
SDup103	-	Duplicate	**5**	<0.4	**26**	**18**	**15**	<0.1	**35**	**45**	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	NA
SDup104	-	Duplicate	**7**	<0.4	**28**	**16**	**13**	<0.1	**16**	**39**	**0.4**	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA	NA	NA	NA
BH12	0-0.3	Triplicate	<4	<0.4	**19**	**29**	**11**	<0.1	**18**	**34**	**NA**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP129	0-0.2	Triplicate	<4	<0.4	**17**	**27**	**21**	<0.1	**14**	**57**	**NA**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			69	69	69	69	69	69	69	69	67	67	41	41	41	41	41	41	41	41	41	3	3	3	44
Maximum Value			22	1	65	58	64	0.2	96	120	72	10	<PQL	<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**								
BH101	0.07-0.2	Fill: silty gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	1
BH101	0.07-0.2	Lab duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	1
BH101	0.5-0.95	Fill: sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	1
BH101	1.5-1.95	Fill: sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH101	2.5-2.8	Fill: sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH101	3.0-3.4	Fill: sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH102	0-0.2	Fill: gravelly silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH102	0.5-0.7	Gravelly sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH103	0-0.1	Fill: silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH104	0-0.2	Fill: gravelly silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH104	0.2-0.5	Silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH105	0-0.1	Fill: silty gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH105	0-0.1	Lab duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH105	0.1-0.5	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH106	0-0.1	Fill: silty gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH106	0.5-0.95	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH106	1.8-2.0	Gravelly silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH107	0.1-0.2	Fill: gravelly silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	1
BH107	0.7-1.0	Silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	1
BH108	0.1-0.2	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH108	0.4-0.5	Fill: silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH108	0.7-1.0	Silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH109	0.2-0.41	Fill: silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH109	0.2-0.41	Lab duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH110	0.09-0.4	Fill: silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH110	1.0-1.4	Fill: silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH111	0.05-0.4	Fill: silty clayey gravel	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH111	0.4-0.6	silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH112	0.08-0.3	Fill: silty gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH113	0.18-0.5	silty sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH113	0.18-0.5	Lab duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH114	0.23-0.4	Fill: silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH114	0.4-0.7	silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH115	0.16-0.4	Fill: silty gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH116	0.21-0.55	gravelly sandy clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH117	0.12-0.3	Fill: gravelly silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH117	0.3-0.7	Fill: silty gravelly sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH118	0.1-0.3	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH118	0.3-0.7	Silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH119	0.1-0.4	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH119	0.1-0.4	Lab duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH120	0-0.2	Fill: silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH120	0.2-0.5	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH120	0.5-0.6	silty clay	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH121	0-0.4	Fill: silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH122	0-0.4	Fill: silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH123	0-0.5	Fill: silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH124	0-0.3	Fill: silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH124	0-0.3	Lab duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH125	0-0.4	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP126	0-0.5	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP126	0.6-0.7	silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP127	0-0.1	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP127	0.1-0.3	Fill: silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP127	0.3-0.6	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP127	0.6-0.7	silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH128	0-0.3	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH128	0.3-0.45	silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP129	0-0.2	Fill: silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP129	0-0.2	Lab duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP129	0.2-0.6	Fill: silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH130	0-0.3	Fill: silty clayey sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH130	0.3-0.5	silty sand	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
SDup101	-	Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
SDup102	-	Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<3	<1	0
SDup103	-	Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
SDup104	-	Duplicate	0m to <1m	Sand	<25	<50	<0.2	<0.5	<1	<1	<1	0
Total Number of Samples					67	67	67	67	67	67	67	67
Maximum Value					<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	1

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
BH101	0.07-0.2	Fill: silty gravelly sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH101	0.07-0.2	Lab duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH101	0.5-0.95	Fill: sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH101	1.5-1.95	Fill: sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH101	2.5-2.8	Fill: sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH101	3.0-3.4	Fill: sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH102	0-0.2	Fill: gravelly silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH102	0.5-0.7	Gravelly sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH103	0-0.1	Fill: silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH104	0-0.2	Fill: gravelly silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH104	0.2-0.5	Silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH105	0-0.1	Fill: silty gravelly sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH105	0-0.1	Lab duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH105	0.1-0.5	Fill: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH106	0-0.1	Fill: silty gravelly sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH106	0.5-0.95	Fill: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH106	1.8-2.0	Gravelly silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH107	0.1-0.2	Fill: gravelly silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH107	0.7-1.0	Silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH108	0.1-0.2	Fill: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH108	0.4-0.5	Fill: silty sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH108	0.7-1.0	Silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH109	0.2-0.41	Fill: silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH109	0.2-0.41	Lab duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH110	0.09-0.4	Fill: silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH110	1.0-1.4	Fill: silty sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH111	0.05-0.4	Fill: silty clayey gravel	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH111	0.4-0.6	silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH112	0.08-0.3	Fill: silty gravelly sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH113	0.18-0.5	silty sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH113	0.18-0.5	Lab duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH114	0.23-0.4	Fill: silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH114	0.4-0.7	silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH115	0.16-0.4	Fill: silty gravelly sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH116	0.21-0.55	gravelly sandy clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH117	0.12-0.3	Fill: gravelly silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH117	0.3-0.7	Fill: silty gravelly sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH118	0.1-0.3	Fill: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH118	0.3-0.7	Silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH119	0.1-0.4	Fill: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH119	0.1-0.4	Lab duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH120	0-0.2	Fill: silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH120	0.2-0.5	Fill: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH120	0.5-0.6	silty clay	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH121	0-0.4	Fill: silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH122	0-0.4	Fill: silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH123	0-0.5	Fill: silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH124	0-0.3	Fill: silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH124	0-0.3	Lab duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH125	0-0.4	Fill: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
TP126	0-0.5	Fill: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
TP126	0.6-0.7	silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
TP127	0-0.1	Fill: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
TP127	0.1-0.3	Fill: silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
TP127	0.3-0.6	Fill: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
TP127	0.6-0.7	silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH128	0-0.3	Fill: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH128	0.3-0.45	silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
TP129	0-0.2	Fill: silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
TP129	0-0.2	Lab duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
TP129	0.2-0.6	Fill: silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH130	0-0.3	Fill: silty clayey sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
BH130	0.3-0.5	silty sand	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
SDup101	-	Duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
SDup102	-	Duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
SDup103	-	Duplicate	0m to <1m	Sand	260	NL	3	NL	NL	230	NL
SDup104	-	Duplicate	0m to <1m	Sand	260	NL	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 napthalene	>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**				
BH101	0.07-0.2	Coarse	<25	<50	**180**	**260**
BH101	0.07-0.2	Coarse	<25	<50	**200**	**300**
BH101	0.5-0.95	Coarse	<25	<50	<100	<100
BH101	1.5-1.95	Coarse	<25	<50	<100	<100
BH101	2.5-2.8	Coarse	<25	<50	<100	<100
BH101	3.0-3.4	Coarse	<25	<50	<100	<100
BH102	0-0.2	Coarse	<25	<50	**310**	**310**
BH102	0.5-0.7	Fine	<25	<50	<100	<100
BH103	0-0.1	Coarse	<25	<50	<100	<100
BH104	0-0.2	Coarse	<25	<50	**260**	**220**
BH104	0.2-0.5	Coarse	<25	<50	<100	<100
BH105	0-0.1	Coarse	<25	<50	<100	<100
BH105	0-0.1	Coarse	<25	<50	<100	<100
BH105	0.1-0.5	Coarse	<25	<50	<100	<100
BH106	0-0.1	Coarse	<25	<50	<100	**110**
BH106	0.5-0.95	Coarse	<25	<50	<100	<100
BH106	1.8-2.0	Coarse	<25	<50	<100	<100
BH107	0.1-0.2	Coarse	<25	<50	<100	<100
BH107	0.7-1.0	Coarse	<25	<50	<100	<100
BH108	0.1-0.2	Coarse	<25	<50	<100	<100
BH108	0.4-0.5	Coarse	<25	<50	<100	<100
BH108	0.7-1.0	Coarse	<25	<50	<100	<100
BH109	0.2-0.41	Coarse	<25	<50	<100	<100
BH109	0.2-0.41	Coarse	<25	<50	<100	**200**
BH110	0.09-0.4	Coarse	<25	<50	<100	<100
BH110	1.0-1.4	Coarse	<25	<50	<100	<100
BH111	0.05-0.4	Coarse	<25	<50	<100	<100
BH111	0.4-0.6	Coarse	<25	<50	<100	<100
BH112	0.08-0.3	Coarse	<25	<50	<100	<100
BH113	0.18-0.5	Coarse	<25	<50	<100	<100
BH113	0.18-0.5	Coarse	<25	<50	<100	<100
BH114	0.23-0.4	Coarse	<25	<50	<100	<100
BH114	0.4-0.7	Coarse	<25	<50	<100	<100
BH115	0.16-0.4	Coarse	<25	<50	<100	<100
BH116	0.21-0.55	Coarse	<25	<50	<100	<100
BH117	0.12-0.3	Coarse	<25	<50	<100	<100
BH117	0.3-0.7	Coarse	<25	<50	<100	<100
BH118	0.1-0.3	Coarse	<25	<50	<100	<100
BH118	0.3-0.7	Coarse	<25	<50	<100	<100
BH119	0.1-0.4	Coarse	<25	<50	<100	<100
BH119	0.1-0.4	Coarse	<25	<50	<100	<100
BH120	0-0.2	Coarse	<25	<50	<100	<100
BH120	0.2-0.5	Coarse	<25	<50	<100	<100
BH120	0.5-0.6	Fine	<25	<50	<100	<100
BH121	0-0.4	Coarse	<25	<50	<100	<100
BH122	0-0.4	Coarse	<25	<50	<100	<100
BH123	0-0.5	Coarse	<25	<50	<100	<100
BH124	0-0.3	Coarse	<25	<50	<100	<100
BH124	0-0.3	Coarse	<25	<50	<100	<100
BH125	0-0.4	Coarse	<25	<50	<100	<100
TP126	0-0.5	Coarse	<25	<50	<100	<100
TP126	0.6-0.7	Coarse	<25	<50	<100	<100
TP127	0-0.1	Coarse	<25	<50	**560**	**470**
TP127	0.1-0.3	Coarse	<25	<50	<100	<100
TP127	0.3-0.6	Coarse	<25	<50	<100	<100
TP127	0.6-0.7	Coarse	<25	<50	<100	<100
BH128	0-0.3	Coarse	<25	<50	<100	<100
BH128	0.3-0.45	Coarse	<25	<50	<100	<100
TP129	0-0.2	Coarse	<25	<50	**140**	**100**
TP129	0-0.2	Coarse	<25	<50	**190**	**140**
TP129	0.2-0.6	Coarse	<25	<50	<100	<100
BH130	0-0.3	Coarse	<25	<50	<100	<100
BH130	0.3-0.5	Coarse	<25	<50	<100	<100
SDup101	-	Coarse	<25	<50	<100	<100
SDup102	-	Coarse	<25	<50	<100	<100
SDup103	-	Coarse	<25	<50	<50	<100
SDup104	-	Coarse	<25	<50	<50	<100
Total Number of Samples			67	67	67	67
Maximum Value			<PQL	<PQL	560	470

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 napthalene	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)
BH101	0.07-0.2	Coarse	700	1000	3500	10000
BH101	0.07-0.2	Coarse	700	1000	3500	10000
BH101	0.5-0.95	Coarse	700	1000	3500	10000
BH101	1.5-1.95	Coarse	700	1000	3500	10000
BH101	2.5-2.8	Coarse	700	1000	3500	10000
BH101	3.0-3.4	Coarse	700	1000	3500	10000
BH102	0-0.2	Coarse	700	1000	3500	10000
BH102	0.5-0.7	Fine	800	1000	5000	10000
BH103	0-0.1	Coarse	700	1000	3500	10000
BH104	0-0.2	Coarse	700	1000	3500	10000
BH104	0.2-0.5	Coarse	700	1000	3500	10000
BH105	0-0.1	Coarse	700	1000	3500	10000
BH105	0-0.1	Coarse	700	1000	3500	10000
BH105	0.1-0.5	Coarse	700	1000	3500	10000
BH106	0-0.1	Coarse	700	1000	3500	10000
BH106	0.5-0.95	Coarse	700	1000	3500	10000
BH106	1.8-2.0	Coarse	700	1000	3500	10000
BH107	0.1-0.2	Coarse	700	1000	3500	10000
BH107	0.7-1.0	Coarse	700	1000	3500	10000
BH108	0.1-0.2	Coarse	700	1000	3500	10000
BH108	0.4-0.5	Coarse	700	1000	3500	10000
BH108	0.7-1.0	Coarse	700	1000	3500	10000
BH109	0.2-0.41	Coarse	700	1000	3500	10000
BH109	0.2-0.41	Coarse	700	1000	3500	10000
BH110	0.09-0.4	Coarse	700	1000	3500	10000
BH110	1.0-1.4	Coarse	700	1000	3500	10000
BH111	0.05-0.4	Coarse	700	1000	3500	10000
BH111	0.4-0.6	Coarse	700	1000	3500	10000
BH112	0.08-0.3	Coarse	700	1000	3500	10000
BH113	0.18-0.5	Coarse	700	1000	3500	10000
BH113	0.18-0.5	Coarse	700	1000	3500	10000
BH114	0.23-0.4	Coarse	700	1000	3500	10000
BH114	0.4-0.7	Coarse	700	1000	3500	10000
BH115	0.16-0.4	Coarse	700	1000	3500	10000
BH116	0.21-0.55	Coarse	700	1000	3500	10000
BH117	0.12-0.3	Coarse	700	1000	3500	10000
BH117	0.3-0.7	Coarse	700	1000	3500	10000
BH118	0.1-0.3	Coarse	700	1000	3500	10000
BH118	0.3-0.7	Coarse	700	1000	3500	10000
BH119	0.1-0.4	Coarse	700	1000	3500	10000
BH119	0.1-0.4	Coarse	700	1000	3500	10000
BH120	0-0.2	Coarse	700	1000	3500	10000
BH120	0.2-0.5	Coarse	700	1000	3500	10000
BH120	0.5-0.6	Fine	800	1000	5000	10000
BH121	0-0.4	Coarse	700	1000	3500	10000
BH122	0-0.4	Coarse	700	1000	3500	10000
BH123	0-0.5	Coarse	700	1000	3500	10000
BH124	0-0.3	Coarse	700	1000	3500	10000
BH124	0-0.3	Coarse	700	1000	3500	10000
BH125	0-0.4	Coarse	700	1000	3500	10000
TP126	0-0.5	Coarse	700	1000	3500	10000
TP126	0.6-0.7	Coarse	700	1000	3500	10000
TP127	0-0.1	Coarse	700	1000	3500	10000
TP127	0.1-0.3	Coarse	700	1000	3500	10000
TP127	0.3-0.6	Coarse	700	1000	3500	10000
TP127	0.6-0.7	Coarse	700	1000	3500	10000
BH128	0-0.3	Coarse	700	1000	3500	10000
BH128	0.3-0.45	Coarse	700	1000	3500	10000
TP129	0-0.2	Coarse	700	1000	3500	10000
TP129	0-0.2	Coarse	700	1000	3500	10000
TP129	0.2-0.6	Coarse	700	1000	3500	10000
BH130	0-0.3	Coarse	700	1000	3500	10000
BH130	0.3-0.5	Coarse	700	1000	3500	10000
SDup101	-	Coarse	700	1000	3500	10000
SDup102	-	Coarse	700	1000	3500	10000
SDup103	-	Coarse	700	1000	3500	10000
SDup104	-	Coarse	700	1000	3500	10000

TABLE S4
SOIL LABORATORY RESULTS COMPARED T0 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**										
BH101	0.07-0.2	<25	<50	**180**	**260**	<0.2	<0.5	<1	<3	<1	**1**
BH101	0.07-0.2	<25	<50	**200**	**300**	<0.2	<0.5	<1	<3	<1	**1**
BH101	0.5-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**1**
BH101	1.5-1.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH101	2.5-2.8	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH101	3.0-3.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH102	0-0.2	<25	<50	**310**	**310**	<0.2	<0.5	<1	<3	<1	**0**
BH102	0.5-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH103	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH104	0-0.2	<25	<50	**260**	**220**	<0.2	<0.5	<1	<3	<1	**0**
BH104	0.2-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH105	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH105	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH105	0.1-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH106	0-0.1	<25	<50	<100	**110**	<0.2	<0.5	<1	<3	<1	**0**
BH106	0.5-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH106	1.8-2.0	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH107	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**1**
BH107	0.7-1.0	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**1**
BH108	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH108	0.4-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH108	0.7-1.0	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH109	0.2-0.41	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH109	0.2-0.41	<25	<50	<100	**200**	<0.2	<0.5	<1	<3	<1	**0**
BH110	0.09-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH110	1.0-1.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH111	0.05-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH111	0.4-0.6	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH112	0.08-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH113	0.18-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH113	0.18-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH114	0.23-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH114	0.4-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH115	0.16-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH116	0.21-0.55	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH117	0.12-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH117	0.3-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH118	0.1-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH118	0.3-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH119	0.1-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH119	0.1-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH120	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH120	0.2-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH120	0.5-0.6	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH121	0-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH122	0-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH123	0-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH124	0-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH124	0-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH125	0-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
TP126	0-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
TP126	0.6-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
TP127	0-0.1	<25	<50	**560**	**470**	<0.2	<0.5	<1	<3	<1	**0**
TP127	0.1-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
TP127	0.3-0.6	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
TP127	0.6-0.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH128	0-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH128	0.3-0.45	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
TP129	0-0.2	<25	<50	**140**	**100**	<0.2	<0.5	<1	<3	<1	**0**
TP129	0-0.2	<25	<50	**190**	**140**	<0.2	<0.5	<1	<3	<1	**0**
TP129	0.2-0.6	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH130	0-0.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
BH130	0.3-0.5	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
SDup101	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
SDup102	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	**0**
SDup103	-	<25	<50	<50	<100	<0.2	<0.5	<1	<1	<1	**0**
SDup104	-	<25	<50	<50	<100	<0.2	<0.5	<1	<1	<1	**0**
Total Number of Samples		67	67	67	67	67	67	67	67	67	67
Maximum Value		<PQL	<PQL	560	470	<PQL	<PQL	<PQL	<PQL	<PQL	1

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**

TABLE S5
ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS
HIL-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 refeference	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**											**0.05**	**0.001**
30/12/2021	BH101	0-0.05	No	10	11,230	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH101	0.07-0.2	1178.41	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
30/12/2021	BH101	0.07-0.5	No	10	9,050	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH101	0.5-0.95	973.52	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
30/12/2021	BH1101	2-3.5	No	10	7,250	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH101	1.5-1.95	703.05	Chrysotile asbestos detected: Amosite asbestos detected: Organic fibres detected	No asbestos detected	1.4104	See Above	0.9593	0.0323	0.1364	0.0046
30/12/2021	BH102	0-0.5	No	10	9,240	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH101	2.5-2.8	781.59	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
30/12/2021	BH104	0-0.2	No	5	4,760	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH102	0-0.2	801.51	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
30/12/2021	BH105	0-0.1	No	10	9,650	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH102	0.5-0.7	1079.08	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
30/12/2021	BH106	0-0.1	No	10	7,490	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH103	0-0.1	790.2	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
30/12/2021	BH106	0.1-1.5	No	10	13,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH104	0-0.2	976	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	Chrysotile	–	0.0026	<0.01	<0.001
30/12/2021	BH107	0.1-0.5	No	10	8,600	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH105	0-0.1	1073.75	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
30/12/2021	BH108	0.1-1.4	No	10	7,130	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH105	0.1-0.5	830.99	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
1/12/2021	BH110	0.09-0.8	No	5	3,520	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH106	0-0.1	878.71	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	Chrysotile	–	0.0014	<0.01	<0.001
1/12/2021	BH112	0.08-0.3	No	5	4,810	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH106	0.5-0.95	831.15	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
1/12/2021	BH115	0.16-0.4	No	5	2,680	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH107	0.1-0.2	795.23	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
1/12/2021	BH117	0.12-0.3	No	5	2,860	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH108	0.1-0.2	921.94	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
1/12/2021	BH118	0.1-0.3	No	5	2,150	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH108	0.4-0.5	799.68	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
1/12/2021	BH119	0.1-0.4	No	5	2,480	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH109	0.2-0.41	762.2	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
1/12/2021	BH120	0-0.2	No	5	3,450	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH110	0.09-0.4	829.27	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
2/12/2021	BH120	0.2-0.5	No	5	2,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH110	1.0-1.4	907.06	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	Chrysotile	–	0.0083	<0.01	<0.001
2/12/2021	BH121	0-0.6	No	5	4,150	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH111	0.05-0.4	1033.48	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
2/12/2021	BH122	0-0.5	No	5	4,220	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH112	0.08-0.3	843.76	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
2/12/2021	BH123	0-0.5	No	5	3,980	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH113	0.18-0.5	906.69	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
2/12/2021	BH124	0-0.3	No	5	5,320	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH114	0.23-0.4	486.65	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
2/12/2021	BH125	0-0.4	No	5	2,650	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH114	0.4-0.7	855.8	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
2/12/2021	BH126	0-0.5	No	10	11,240	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH115	0.16-0.4	938.9	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
2/12/2021	BH127	0-0.1	No	10	10,850	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH116	0.21-0.55	1062.43	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
2/12/2021	BH127	0.1-0.3	No	10	11,620	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH117	0.12-0.3	938.18	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
2/12/2021	BH127	0.3-0.6	No	10	8,300	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH117	0.3-0.7	1130.04	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
2/12/2021	BH129	0-0.2	No	10	10,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH118	0.1-0.3	734.28	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
2/12/2021	BH129	0.2-0.6	No	10	9,650	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH119	0.1-0.4	828.1	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
2/12/2021	BH130	0-0.3	No	5	5,300	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	284547	BH120	0-0.2	922.4	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
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	284547	BH120	0.2-0.5	472.61	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
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	284547	BH121	0-0.4	1116.96	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
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	284547	BH122	0-0.4	893.66	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
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	284547	BH123	0-0.5	947.54	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
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	284547	BH124	0-0.3	870.68	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
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	284547	BH125	0-0.4	767.28	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
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	284547	TP126	0-0.5	741.56	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
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--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	284547	BH128	0-0.3	744.82	Chrysotile asbestos detected: Organic fibres detected	No asbestos detected	0.1023	Chrysotile:Amosite:Crocidolite	–	0.0762	<0.01	0.0102
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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																			
							AGED HEAVY METALS-EILs						EILs		ESLs								
				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)	>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	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	NSL
Sample Reference	**Sample Depth**	**Sample Description**	**Soil Texture**																				
BH101	0.07-0.2	Fill: silty gravelly sand	Coarse	9.1	22	5	<4	19	56	5	66	37	<1	<0.1	<25	<50	180	260	<0.2	<0.5	<1	<3	0.1
BH101	0.07-0.2	Lab duplicate	Coarse	9.1	22	5	<4	18	52	4	62	37	<1	<0.1	<25	<50	200	300	<0.2	<0.5	<1	<3	0.08
BH101	0.5-0.95	Fill: sandy clay	Coarse	NA	NA	NA	<4	39	15	6	47	31	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	2.3
BH101	1.5-1.95	Fill: sandy clay	Coarse	NA	NA	NA	<4	31	12	17	24	33	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.1
BH101	2.5-2.8	Fill: sandy clay	Coarse	NA	NA	NA	<4	26	11	12	23	38	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.2
BH101	3.0-3.4	Fill: sandy clay	Coarse	NA	NA	NA	7	40	15	28	17	56	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.07
BH102	0-0.2	Fill: gravelly silty sand	Coarse	NA	NA	NA	<4	14	14	14	9	69	<1	<0.1	<25	<50	310	310	<0.2	<0.5	<1	<3	3.1
BH102	0.5-0.7	Gravelly sandy clay	Fine	NA	NA	NA	6	30	9	8	5	26	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.2
BH103	0-0.1	Fill: silty clayey sand	Coarse	NA	NA	NA	<4	21	7	6	15	55	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH104	0-0.2	Fill: gravelly silty sand	Coarse	NA	NA	NA	<4	12	44	25	20	77	<1	<0.1	<25	<50	260	220	<0.2	<0.5	<1	<3	5.6
BH104	0.2-0.5	Silty clayey sand	Coarse	NA	NA	NA	<4	25	<1	3	<1	1	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH105	0-0.1	Fill: silty gravelly sand	Coarse	8.6	13	8	<4	6	43	3	66	28	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH105	0-0.1	Lab duplicate	Coarse	8.6	13	8	<4	6	45	3	65	29	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH105	0.1-0.5	Fill: silty sand	Coarse	NA	NA	NA	<4	10	2	4	5	7	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH106	0-0.1	Fill: silty gravelly sand	Coarse	NA	NA	NA	<4	11	24	18	11	60	<1	<0.1	<25	<50	<100	110	<0.2	<0.5	<1	<3	0.72
BH106	0.5-0.95	Fill: silty sand	Coarse	NA	NA	NA	<4	3	1	10	<1	6	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH106	1.8-2.0	Gravelly silty sand	Coarse	NA	NA	NA	7	42	<1	3	<1	<1	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH107	0.1-0.2	Fill: gravelly silty sand	Coarse	NA	NA	NA	<4	27	<1	6	2	3	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH107	0.7-1.0	Silty sand	Coarse	NA	NA	NA	<4	39	<1	5	<1	<1	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH108	0.1-0.2	Fill: silty sand	Coarse	NA	NA	NA	<4	20	3	8	8	81	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH108	0.4-0.5	Fill: silty sandy clay	Coarse	NA	NA	NA	4	22	3	15	4	42	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH108	0.7-1.0	Silty sand	Coarse	NA	NA	NA	<4	16	<1	4	2	16	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH109	0.2-0.41	Fill: silty clay	Coarse	NA	NA	NA	<4	28	21	6	43	25	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH109	0.2-0.41	Lab duplicate	Coarse	NA	NA	NA	<4	29	19	6	52	29	<1	<0.1	<25	<50	<100	200	<0.2	<0.5	<1	<3	<0.05
BH110	0.09-0.4	Fill: silty clayey sand	Coarse	8.1	23	5	<4	65	33	7	78	47	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH110	1.0-1.4	Fill: silty sandy clay	Coarse	NA	NA	NA	<4	28	15	64	27	67	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH111	0.05-0.4	Fill: silty clayey gravel	Coarse	8.8	16	6	<4	49	47	9	84	49	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH111	0.4-0.6	silty clayey sand	Coarse	NA	NA	NA	<4	14	2	8	10	19	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH112	0.08-0.3	Fill: silty gravelly sand	Coarse	8.5	12	7	<4	51	16	6	64	29	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH113	0.18-0.5	silty sandy clay	Coarse	NA	NA	NA	<4	14	4	4	4	9	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH113	0.18-0.5	Lab duplicate	Coarse	NA	NA	NA	<4	14	3	5	4	11	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH114	0.23-0.4	Fill: silty clayey sand	Coarse	NA	NA	NA	<4	17	<1	3	2	3	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH114	0.4-0.7	silty clayey sand	Coarse	NA	NA	NA	4	31	13	10	23	47	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH115	0.16-0.4	Fill: silty gravelly sand	Coarse	NA	NA	NA	7	40	2	6	9	13	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH116	0.21-0.55	gravelly sandy clay	Coarse	NA	NA	NA	5	50	<1	4	10	1	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH117	0.12-0.3	Fill: gravelly silty sand	Coarse	NA	NA	NA	10	22	5	8	20	18	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH117	0.3-0.7	Fill: silty gravelly sand	Coarse	NA	NA	NA	22	62	<1	7	6	3	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH118	0.1-0.3	Fill: silty sand	Coarse	NA	NA	NA	4	9	4	6	6	30	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH118	0.3-0.7	Silty clayey sand	Coarse	NA	NA	NA	7	25	1	3	4	5	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH119	0.1-0.4	Fill: silty sand	Coarse	NA	NA	NA	13	21	1	9	3	11	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH119	0.1-0.4	Lab duplicate	Coarse	NA	NA	NA	13	19	2	9	3	13	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH120	0-0.2	Fill: silty clayey sand	Coarse	NA	NA	NA	5	26	26	19	24	61	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.5
BH120	0.2-0.5	Fill: silty sand	Coarse	NA	NA	NA	10	46	7	10	12	17	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.2
BH120	0.5-0.6	silty clay	Fine	NA	NA	NA	<4	33	<1	5	4	2	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH121	0-0.4	Fill: silty clayey sand	Coarse	NA	NA	NA	9	25	11	9	11	24	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.1
BH122	0-0.4	Fill: silty clayey sand	Coarse	NA	NA	NA	7	25	16	15	14	46	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.1
BH123	0-0.5	Fill: silty clayey sand	Coarse	NA	NA	NA	5	28	36	10	27	35	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH124	0-0.3	Fill: silty clayey sand	Coarse	NA	NA	NA	<4	12	46	29	14	35	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH124	0-0.3	Lab duplicate	Coarse	NA	NA	NA	<4	8	28	9	16	25	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH125	0-0.4	Fill: silty sand	Coarse	NA	NA	NA	<4	60	18	7	47	51	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
TP126	0-0.5	Fill: silty sand	Coarse	NA	NA	NA	<4	22	17	11	27	40	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.68
TP126	0.6-0.7	silty sand	Coarse	NA	NA	NA	5	17	<1	3	2	2	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
TP127	0-0.1	Fill: silty sand	Coarse	NA	NA	NA	<4	21	49	39	21	51	<1	<0.1	<25	<50	560	470	<0.2	<0.5	<1	<3	7.4
TP127	0.1-0.3	Fill: silty clayey sand	Coarse	NA	NA	NA	9	39	10	13	13	22	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.1
TP127	0.3-0.6	Fill: silty sand	Coarse	NA	NA	NA	13	51	34	21	23	38	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.1
TP127	0.6-0.7	silty sand	Coarse	NA	NA	NA	6	15	<1	3	3	3	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH128	0-0.3	Fill: silty sand	Coarse	NA	NA	NA	<4	12	16	49	8	120	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.4
BH128	0.3-0.45	silty clayey sand	Coarse	NA	NA	NA	<4	7	1	7	3	6	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
TP129	0-0.2	Fill: silty sand	Coarse	NA	NA	NA	<4	15	22	16	14	61	<1	<0.1	<25	<50	140	100	<0.2	<0.5	<1	<3	1.4
TP129	0-0.2	Lab duplicate	Coarse	NA	NA	NA	<4	21	41	18	21	72	<1	<0.1	<25	<50	190	140	<0.2	<0.5	<1	<3	1.8
TP129	0.2-0.6	Fill: silty clayey sand	Coarse	NA	NA	NA	6	34	5	8	8	29	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.1
BH130	0-0.3	Fill: silty clayey sand	Coarse	NA	NA	NA	18	48	<1	8	2	6	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
BH130	0.3-0.5	silty sand	Coarse	NA	NA	NA	8	46	<1	4	3	<1	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
SDup101	-	Duplicate	Coarse	8.6	13	8	<4	7	58	3	96	35	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
SDup102	-	Duplicate	Coarse	NA	NA	NA	<4	23	2	5	6	6	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05
SDup103	-	Duplicate	Coarse	NA	NA	NA	5	26	18	15	35	45	<1	<0.1	<25	<50	<50	<100	<0.2	<0.5	<1	<1	<0.05
SDup104	-	Duplicate	Coarse	NA	NA	NA	7	28	16	13	16	39	<1	<0.1	<25	<50	<50	<100	<0.2	<0.5	<1	<1	0.09
BH12	0-0.3	Triplicate	Coarse	NA	NA	NA	<4	19	29	11	18	34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP129	0-0.2	Triplicate	Coarse	NA	NA	NA	<4	17	27	21	14	57	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples				8	8	8	69	69	69	69	69	69	67	41	67	67	67	67	67	67	67	67	67
Maximum Value				9.1	23	8	22	65	58	64	96	120	<PQL	<PQL	<PQL	<PQL	560	470	<PQL	<PQL	<PQL	<PQL	7.4

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)	>C_{16}-C_{34} (F3)	>C_{34}-C_{40} (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P
BH101	0.07-0.2	Fill: silty gravelly sand	Coarse	9.1	22	5	160	540	350	2000	600	1600	370	640	215	170	1700	3300	75	135	165	180	72
BH101	0.07-0.2	Lab duplicate	Coarse	9.1	22	5	160	540	350	2000	600	1600	370	640	215	170	1700	3300	75	135	165	180	72
BH101	0.5-0.95	Fill: sandy clay	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH101	1.5-1.95	Fill: sandy clay	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH101	2.5-2.8	Fill: sandy clay	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH101	3.0-3.4	Fill: sandy clay	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH102	0-0.2	Fill: gravelly silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH102	0.5-0.7	Gravelly sandy clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
BH103	0-0.1	Fill: silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH104	0-0.2	Fill: gravelly silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH104	0.2-0.5	Silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH105	0-0.1	Fill: silty gravelly sand	Coarse	8.6	13	8	160	670	330	2000	460	1200	370	640	215	170	1700	3300	75	135	165	180	72
BH105	0-0.1	Lab duplicate	Coarse	8.6	13	8	160	670	330	2000	460	1200	370	640	215	170	1700	3300	75	135	165	180	72
BH105	0.1-0.5	Fill: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH106	0-0.1	Fill: silty gravelly sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH106	0.5-0.95	Fill: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH106	1.8-2.0	Gravelly silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH107	0.1-0.2	Fill: gravelly silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH107	0.7-1.0	Silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH108	0.1-0.2	Fill: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH108	0.4-0.5	Fill: silty sandy clay	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH108	0.7-1.0	Silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH109	0.2-0.41	Fill: silty clay	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH109	0.2-0.41	Lab duplicate	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH110	0.09-0.4	Fill: silty clayey sand	Coarse	8.1	23	5	160	540	350	2000	600	1600	370	640	215	170	1700	3300	75	135	165	180	72
BH110	1.0-1.4	Fill: silty sandy clay	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH111	0.05-0.4	Fill: silty clayey gravel	Coarse	8.8	16	6	160	670	330	2000	460	1200	370	640	215	170	1700	3300	75	135	165	180	72
BH111	0.4-0.6	silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH112	0.08-0.3	Fill: silty gravelly sand	Coarse	8.5	12	7	160	670	330	2000	460	1200	370	640	215	170	1700	3300	75	135	165	180	72
BH113	0.18-0.5	silty sandy clay	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH113	0.18-0.5	Lab duplicate	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH114	0.23-0.4	Fill: silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH114	0.4-0.7	silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH115	0.16-0.4	Fill: silty gravelly sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH116	0.21-0.55	gravelly sandy clay	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH117	0.12-0.3	Fill: gravelly silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH117	0.3-0.7	Fill: silty gravelly sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH118	0.1-0.3	Fill: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH118	0.3-0.7	Silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH119	0.1-0.4	Fill: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH119	0.1-0.4	Lab duplicate	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH120	0-0.2	Fill: silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH120	0.2-0.5	Fill: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH120	0.5-0.6	silty clay	Fine	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	2500	6600	95	135	185	95	72
BH121	0-0.4	Fill: silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH122	0-0.4	Fill: silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH123	0-0.5	Fill: silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH124	0-0.3	Fill: silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH124	0-0.3	Lab duplicate	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH125	0-0.4	Fill: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
TP126	0-0.5	Fill: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
TP126	0.6-0.7	silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
TP127	0-0.1	Fill: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
TP127	0.1-0.3	Fill: silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
TP127	0.3-0.6	Fill: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
TP127	0.6-0.7	silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH128	0-0.3	Fill: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH128	0.3-0.45	silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
TP129	0-0.2	Fill: silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
TP129	0-0.2	Lab duplicate	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
TP129	0.2-0.6	Fill: silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
BH130	0-0.3	Fill: silty clayey sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH130	0.3-0.5	silty sand	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	--	215	170	1700	3300	75	135	165	180	72
SDup101	-	Duplicate	Coarse	8.6	13	8	160	670	330	2000	460	1200	370	640	215	170	1700	3300	75	135	165	180	72
SDup102	-	Duplicate	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
SDup103	-	Duplicate	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
SDup104	-	Duplicate	Coarse	NA	NA	NA	160	320	110	2000	60	230	370	640	215	170	1700	3300	75	135	165	180	72
BH12	0-0.3	Triplicate	Coarse	NA	NA	NA	160	320	110	2000	60	230	--	--	--	--	--	--	--	--	--	--	--
TP129	0-0.2	Triplicate	Coarse	NA	NA	NA	160	320	110	2000	60	230	--	--	--	--	--	--	--	--	--	--	--

JKEnvironments

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	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	Total PCBs	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**																									
BH101	0.07-0.2	Fill: silty gravelly sand	<4	<0.4	**19**	**56**	**5**	<0.1	**66**	**37**	**1.1**	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**190**	**190**	<0.2	<0.5	<1	<3	Not Detected
BH101	0.07-0.2	Lab duplicate	<4	<0.4	**18**	**52**	**4**	<0.1	**62**	**37**	**0.3**	**0.08**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**210**	**210**	<0.2	<0.5	<1	<3	NA
BH101	0.5-0.95	Fill: sandy clay	<4	<0.4	**39**	**15**	**6**	<0.1	**47**	**31**	**36**	**2.3**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH101	1.5-1.95	Fill: sandy clay	<4	<0.4	**31**	**12**	**17**	<0.1	**24**	**33**	**2.3**	**0.1**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Detected
BH101	2.5-2.8	Fill: sandy clay	<4	<0.4	**26**	**11**	**12**	<0.1	**23**	**38**	**3.4**	**0.2**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH101	3.0-3.4	Fill: sandy clay	**7**	<0.4	**40**	**15**	**28**	**0.1**	**17**	**56**	**0.72**	**0.07**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH102	0-0.2	Fill: gravelly silty sand	<4	<0.4	**14**	**14**	**14**	<0.1	**9**	**69**	**31**	**3.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	**140**	**250**	**390**	<0.2	<0.5	<1	<3	Not Detected
BH102	0.5-0.7	Gravelly sandy clay	**6**	<0.4	**30**	**9**	**8**	<0.1	**5**	**26**	**1.8**	**0.2**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH103	0-0.1	Fill: silty clayey sand	<4	<0.4	**21**	**7**	**6**	<0.1	**15**	**55**	<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
BH104	0-0.2	Fill: gravelly silty sand	<4	<0.4	**12**	**44**	**25**	<0.1	**20**	**77**	**61**	**5.6**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	**140**	**190**	**330**	<0.2	<0.5	<1	<3	Detected
BH104	0.2-0.5	Silty clayey sand	<4	<0.4	**25**	<1	**3**	<0.1	<1	**1**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH105	0-0.1	Fill: silty gravelly sand	<4	<0.4	**6**	**43**	**3**	<0.1	**66**	**28**	<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
BH105	0-0.1	Lab duplicate	<4	<0.4	**6**	**45**	**3**	<0.1	**65**	**29**	<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
BH105	0.1-0.5	Fill: silty sand	<4	<0.4	**10**	**2**	**4**	<0.1	**5**	**7**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH106	0-0.1	Fill: silty gravelly sand	<4	<0.4	**11**	**24**	**18**	<0.1	**11**	**60**	**5.7**	**0.72**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Detected
BH106	0.5-0.95	Fill: silty sand	<4	<0.4	**3**	**1**	**10**	<0.1	<1	**6**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH106	1.8-2.0	Gravelly silty sand	**7**	<0.4	**42**	<1	**3**	<0.1	<1	<1	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH107	0.1-0.2	Fill: gravelly silty sand	<4	<0.4	**27**	<1	**6**	<0.1	**2**	**3**	<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
BH107	0.7-1.0	Silty sand	<4	<0.4	**39**	<1	**5**	<0.1	<1	<1	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH108	0.1-0.2	Fill: silty sand	<4	<0.4	**20**	**3**	**8**	<0.1	**8**	**81**	<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
BH108	0.4-0.5	Fill: silty sandy clay	**4**	<0.4	**22**	**3**	**15**	<0.1	**4**	**42**	**0.2**	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH108	0.7-1.0	Silty sand	<4	<0.4	**16**	<1	**4**	<0.1	**2**	**16**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH109	0.2-0.41	Fill: silty clay	<4	<0.4	**28**	**21**	**6**	<0.1	**43**	**25**	<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
BH109	0.2-0.41	Lab duplicate	<4	<0.4	**29**	**19**	**6**	<0.1	**52**	**29**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**120**	**120**	<0.2	<0.5	<1	<3	NA
BH110	0.09-0.4	Fill: silty clayey sand	<4	<0.4	**65**	**33**	**7**	<0.1	**78**	**47**	**0.1**	<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
BH110	1.0-1.4	Fill: silty sandy clay	<4	<0.4	**28**	**15**	**64**	<0.1	**27**	**67**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Detected
BH111	0.05-0.4	Fill: silty clayey gravel	<4	<0.4	**49**	**47**	**9**	<0.1	**84**	**49**	**0.1**	<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
BH111	0.4-0.6	silty clayey sand	<4	<0.4	**14**	**2**	**8**	<0.1	**10**	**19**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH112	0.08-0.3	Fill: silty gravelly sand	<4	<0.4	**51**	**16**	**6**	<0.1	**64**	**29**	<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
BH113	0.18-0.5	silty sandy clay	<4	<0.4	**14**	**4**	**4**	<0.1	**4**	**9**	<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
BH113	0.18-0.5	Lab duplicate	<4	<0.4	**14**	**3**	**5**	<0.1	**4**	**11**	<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
BH114	0.23-0.4	Fill: silty clayey sand	<4	<0.4	**17**	<1	**3**	<0.1	**2**	**3**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH114	0.4-0.7	silty clayey sand	**4**	<0.4	**31**	**13**	**10**	<0.1	**23**	**47**	<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
BH115	0.16-0.4	Fill: silty gravelly sand	**7**	<0.4	**40**	**2**	**6**	<0.1	**9**	**13**	<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
BH116	0.21-0.55	gravelly sandy clay	**5**	<0.4	**50**	<1	**4**	<0.1	**10**	**1**	<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
BH117	0.12-0.3	Fill: gravelly silty sand	**10**	<0.4	**22**	**5**	**8**	<0.1	**20**	**18**	<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
BH117	0.3-0.7	Fill: silty gravelly sand	**22**	<0.4	**62**	<1	**7**	<0.1	**6**	**3**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH118	0.1-0.3	Fill: silty sand	**4**	<0.4	**9**	**4**	**6**	<0.1	**6**	**30**	<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
BH118	0.3-0.7	Silty clayey sand	**7**	<0.4	**25**	**1**	**3**	<0.1	**4**	**5**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH119	0.1-0.4	Fill: silty sand	**13**	<0.4	**21**	**1**	**9**	<0.1	**3**	**11**	<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
BH119	0.1-0.4	Lab duplicate	**13**	<0.4	**19**	**2**	**9**	<0.1	**3**	**13**	<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
BH120	0-0.2	Fill: silty clayey sand	**5**	<0.4	**26**	**26**	**19**	<0.1	**24**	**61**	**3.1**	**0.5**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH120	0.2-0.5	Fill: silty sand	**10**	<0.4	**46**	**7**	**10**	<0.1	**12**	**17**	**1.1**	**0.2**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH120	0.5-0.6	silty clay	<4	<0.4	**33**	<1	**5**	<0.1	**4**	**2**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH121	0-0.4	Fill: silty clayey sand	**9**	<0.4	**25**	**11**	**9**	<0.1	**11**	**24**	**0.5**	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH122	0-0.4	Fill: silty clayey sand	**7**	<0.4	**25**	**16**	**15**	<0.1	**14**	**46**	**0.89**	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH123	0-0.5	Fill: silty clayey sand	**5**	<0.4	**28**	**36**	**10**	<0.1	**27**	**35**	<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
BH124	0-0.3	Fill: silty clayey sand	<4	<0.4	**12**	**46**	**29**	<0.1	**14**	**35**	<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
BH124	0-0.3	Lab duplicate	<4	<0.4	**8**	**28**	**9**	<0.1	**16**	**25**	<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
BH125	0-0.4	Fill: silty sand	<4	<0.4	**60**	**18**	**7**	<0.1	**47**	**51**	<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
TP126	0-0.5	Fill: silty sand	<4	<0.4	**22**	**17**	**11**	<0.1	**27**	**40**	**5.4**	**0.68**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
TP126	0.6-0.7	silty sand	**5**	<0.4	**17**	<1	**3**	<0.1	**2**	**2**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP127	0-0.1	Fill: silty sand	<4	<0.4	**21**	**49**	**39**	<0.1	**21**	**51**	**72**	**7.4**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	**310**	**420**	**730**	<0.2	<0.5	<1	<3	Not Detected
TP127	0.1-0.3	Fill: silty clayey sand	**9**	<0.4	**39**	**10**	**13**	<0.1	**13**	**22**	**2**	**0.1**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
TP127	0.3-0.6	Fill: silty sand	**13**	<0.4	**51**	**34**	**21**	<0.1	**23**	**38**	**0.57**	**0.1**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Detected
TP127	0.6-0.7	silty sand	**6**	<0.4	**15**	<1	**3**	<0.1	**3**	**3**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH128	0-0.3	Fill: silty sand	<4	**1**	**12**	**16**	**49**	**0.2**	**8**	**120**	**4.6**	**0.4**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Detected
BH128	0.3-0.45	silty clayey sand	<4	<0.4	**7**	**1**	**7**	<0.1	**3**	**6**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP129	0-0.2	Fill: silty sand	<4	<0.4	**15**	**22**	**16**	<0.1	**14**	**61**	**13**	**1.4**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**110**	**110**	<0.2	<0.5	<1	<3	Not Detected
TP129	0-0.2	Lab duplicate	<4	<0.4	**21**	**41**	**18**	<0.1	**21**	**72**	**18**	**1.8**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	**150**	**150**	<0.2	<0.5	<1	<3	NA
TP129	0.2-0.6	Fill: silty clayey sand	**6**	<0.4	**34**	**5**	**8**	<0.1	**8**	**29**	**1.1**	**0.1**	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH130	0-0.3	Fill: silty clayey sand	**18**	<0.4	**48**	<1	**8**	<0.1	**2**	**6**	<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
BH130	0.3-0.5	silty sand	**8**	<0.4	**46**	<1	**4**	<0.1	**3**	<1	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
SDup101	-	Duplicate	<4	<0.4	**7**	**58**	**3**	<0.1	**96**	**35**	<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
SDup102	-	Duplicate	<4	<0.4	**23**	**2**	**5**	<0.1	**6**	**6**	<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
SDup103	-	Duplicate	**5**	<0.4	**26**	**18**	**15**	<0.1	**35**	**45**	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
SDup104	-	Duplicate	**7**	<0.4	**28**	**16**	**13**	<0.1	**16**	**39**	**0.4**	**0.09**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	NA
BH12	0-0.3	Triplicate	<4	<0.4	**19**	**29**	**11**	<0.1	**18**	**34**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP129	0-0.2	Triplicate	<4	<0.4	**17**	**27**	**21**	<0.1	**14**	**57**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			69	69	69	69	69	69	69	69	67	67	41	41	41	41	41	67	67	67	67	67	67	67	67	67	44
Maximum Value			22	1	65	58	64	0.2	96	120	72	7.4	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	310	420	730	<PQL	<PQL	<PQL	<PQL	Detected

Concentration above the CT1 — VALUE
Concentration above SCC1 — VALUE
Concentration above the SCC2 — VALUE
Concentration above PQL — **Bold**

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

			Nickel	B(a)P
PQL - Envirolab Services			0.02	0.001
TCLP1 - General Solid Waste			2	0.04
TCLP2 - Restricted Solid Waste			8	0.16
TCLP3 - Hazardous Waste			>8	>0.16
Sample Reference	**Sample Depth**	**Sample Description**		
BH101	0.07-0.2	Fill: silty gravelly sand	**0.1**	NA
BH101	0.07-0.2	Lab duplicate	**0.1**	NA
BH101	0.5-0.95	Fill: sandy clay	**0.05**	<0.001
BH101	0.5-0.95	Lab duplicate	**0.04**	<0.001
BH102	0-0.2	Fill: gravelly silty sand	NA	<0.001
BH104	0-0.2	Fill: gravelly silty sand	NA	<0.001
BH105	0-0.1	Fill: silty gravelly sand	**0.07**	NA
BH109	0.2-0.41	Fill: silty clay	**0.2**	NA
BH110	0.09-0.4	Fill: silty clayey sand	**0.09**	NA
BH111	0.05-0.4	Fill: silty clayey gravel	**0.4**	NA
BH112	0.08-0.3	Fill: silty gravelly sand	**0.2**	NA
BH125	0-0.4	Fill: silty sand	<0.02	NA
TP127	0-0.1	Fill: silty sand	NA	<0.001
TP129	0-0.2	Fill: silty sand	NA	<0.001
Total Number of samples			10	6
Maximum Value			0.4	<PQL

General Solid Waste	**VALUE**
Restricted Solid Waste	**VALUE**
Hazardous Waste	**VALUE**
Concentration above PQL	**Bold**

TABLE S9
SOIL QA/QC SUMMARY

			TRH C6 - C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene	Naphthalene	Acenaphthylene	Acenaph-thene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,j+k)fluoranthen	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthra-cen	Benzo(g,h,i)perylene
PQL Envirolab SYD			25	50	100	100	0.2	0.5	1	2	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.05	0.1	0.1	0.1
PQL Envirolab VIC			25	50	100	100	0.2	0.5	1.0	2.0	1.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
Intra	BH105	0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
laboratory	SDup101	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra	BH107	0.1-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
laboratory	SDup102	-	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH110	0.09-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
laboratory	SDup103	-	<25	<50	<50	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.05	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0.075	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	67%	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH122	0-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	0.2	0.2	0.2	0.1	<0.2	0.1	<0.1	<0.1	<0.1
laboratory	SDup104	-	<25	<50	<50	<100	<0.2	<0.5	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	<0.1	<0.1	<0.2	0.09	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0.075	nc	0.2	0.2	0.125	0.075	nc	0.095	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	67%	nc	0%	0%	120%	67%	nc	11%	nc	nc	nc
Trip	TS		-	-	-	-	97%	96%	95%	96%	96%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	30/11/21																									
Field	TB-S1	-	NA	NA	NA	NA	<0.2	<0.5	<1	<2	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Blank	30/11/21																									
Field	TB-S2	-	NA	NA	NA	NA	<0.2	<0.5	<1	<2	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Blank	2/12/21																									
Field	FR-HA1	µg/L	280	<50	1400	<100	<1	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
Rinsate	1/12/21																									
Field	FR-HA2	µg/L	280	<50	1200	<100	<1	<1	<1	<2	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2	<1	<1	<1	<1
Rinsate	2/12/21																									

			HCB	alpha- BHC	gamma- BHC	beta- BHC	Heptachlor	delta- BHC	Aldrin	Heptachlor Epoxide	Gamma- Chlordane	alpha- chlordane	Endosulfan I	pp- DDE	Dieldrin	Endrin	pp- DDD	Endosulfan II	pp- DDT	Endrin Aldehyde	Endosulfan Sulphate	Methoxychlor
PQL Envirolab SYD			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PQL Envirolab VIC			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Intra	BH105	0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDup101	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Intra	BH107	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDup102	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH110	0.09-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDup103	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Inter	BH122	0-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
laboratory	SDup104	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc
Trip	TS		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	30/11/21																					
Field	TB-S1	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Blank	30/11/21																					
Field	TB-S2	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Blank	2/12/21																					
Field	FR-HA1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rinsate	1/12/21																					
Field	FR-HA2	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Rinsate	2/12/21																					

			Azinphos-methyl (Guthi	Bromophos-ethyl	Chlorpyriphos	Chlorpyriphos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenitrothion	Malathion	Parathion	Ronnel	Total PCBS	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
PQL Envirolab SYD			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4	0.4	1	1	1	0.1	1	1
PQL Envirolab VIC			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4.0	0.4	1.0	1.0	1.0	0.1	1.0	1.0
Intra	BH105	0-0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	6	43	3	<0.1	66	28
laboratory	SDup101	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	7	58	3	<0.1	96	35
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	6.5	50.5	3	nc	81	31.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	15%	30%	0%	nc	37%	22%
Intra	BH107	0.1-0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	27	<1	6	<0.1	2	3
laboratory	SDup102	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	23	2	5	<0.1	6	6
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	25	1.25	5.5	nc	4	4.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	16%	120%	18%	nc	100%	67%
Inter	BH110	0.09-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<4	<0.4	65	33	7	<0.1	78	47
laboratory	SDup103	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	5	<0.4	26	18	15	<0.1	35	45
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	3.5	nc	45.5	25.5	11	nc	56.5	46
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	86%	nc	86%	59%	73%	nc	76%	4%
Inter	BH122	0-0.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	7	<0.4	25	16	15	<0.1	14	46
laboratory	SDup104	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	7	<0.4	28	16	13	<0.1	16	39
duplicate	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	7	nc	26.5	16	14	nc	15	42.5
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0%	nc	11%	0%	14%	nc	13%	16%
Trip	TS		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Spike	30/11/21																						
Field	TB-S1	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Blank	30/11/21																						
Field	TB-S2	-	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Blank	2/12/21																						
Field	FR-HA1	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.01	0.8	<0.03	<0.0005	<0.02	<0.02
Rinsate	1/12/21																						
Field	FR-HA2	µg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.05	<0.01	<0.01	0.8	<0.03	<0.0005	<0.02	<0.02
Rinsate	2/12/21																						

Result outside of QA/QC acceptance criteria

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ADWG: AustralianDrinking Water Guidelines
ANZG Australian and New Zealand Guidelines
B(a)P: Benzo(a)pyrene
CRC: Cooperative Research Centre
ESLs: Ecological Screening Levels
GIL: Groundwater Investigation Levels
HILs: Health Investigation Levels
HSLs: Health Screening Levels
HSL-SSA: Health Screening Level-SiteSpecific Assessment
NA: Not Analysed
NC: Not Calculated
NEPM: National Environmental Protection Measure
NHMRC: National Health and Medical Research Council
NL: Not Limiting
NSL: No Set Limit
OCP: Organochlorine Pesticides
OPP: Organophosphorus Pesticides
PAHs: Polycyclic Aromatic Hydrocarbons
ppm: Parts per million
PCBs: Polychlorinated Biphenyls
PCE: Perchloroethylene (Tetrachloroethylene or Tetrachloroethene)
PQL: Practical Quantitation Limit
RS: Rinsate Sample
RSL: Regional Screening Levels
SAC: Site Assessment Criteria
SSA: Site Specific Assessment
SSHSLs Site Specific Health Screening Levels
TB: Trip Blank
TCA: 1,1,1 Trichloroethane (methyl chloroform)
TCE: Trichloroethylene (Trichloroethene)
TS: Trip Spike
TRH: Total Recoverable Hydrocarbons
UCL: Upper Level Confidence Limit on Mean Value
USEPA United States Environmental Protection Agency
VOCC: Volatile Organic Chlorinated Compounds
WHO: World Health Organisation

TABLE G1
SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO ECOLOGICAL GILs SAC
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	ANZG 2018 Fresh Waters	SAMPLES							
			MW101A	MW101A	MW102	MW105	WDup1 (dup)	WDup1	WDUP2	WDUP2 (dup)
Inorganic Compounds and Parameters										
pH		6.5 - 8.5	5.8	NA	4.6	4.4	NA	NA	NA	NA
Electrical Conductivity (µS/cm)	1	NSL	**460**	NA	**300**	**520**	NA	NA	NA	NA
Turbidity (NTU)		NSL	NA	NA	NA	NA	NA	NA	NA	NA
Metals and Metalloids										
Arsenic (As III)	1	24	<1	<1	<1	<1	<1	[NT]	<1	<1
Cadmium	0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	[NT]	<0.1	<0.1
Chromium (SAC for Cr III adopted)	1	3.3	<1	<1	<1	**1**	<1	[NT]	<1	<1
Copper	1	1.4	**4**	**4**	**1**	**2**	<1	[NT]	**2**	**2**
Lead	1	3.4	<1	<1	<1	<1	<1	[NT]	<1	<1
Total Mercury (inorganic)	0.05	0.06	<0.05	[NT]	<0.05	<0.05	<0.05	<0.05	<0.05	[NT]
Nickel	1	11	**5**	**5**	**1**	**3**	**5**	[NT]	**1**	**1**
Zinc	1	8	**41**	**41**	**6**	**12**	**27**	[NT]	**11**	**11**
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)										
Benzene	1	950	<1	<1	<1	<1	<1	NA	<1	NA
Toluene	1	180	<1	<1	<1	<1	<1	NA	<1	NA
Ethylbenzene	1	80	<1	<1	<1	<1	<1	NA	<1	NA
m+p-xylene	2	75	<2	<2	<2	<2	<2	NA	<2	NA
o-xylene	1	350	<1	<1	<1	<1	<1	NA	<1	NA
Total xylenes	2	NSL	<2	<2	<2	<2	<2	NA	<2	NA
Polycyclic Aromatic Hydrocarbons (PAHs)										
Naphthalene	0.2	16	<0.2	NA	<0.2	<0.2	<0.2	NA	<0.1	NA
Acenaphthylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Acenaphthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Fluorene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Phenanthrene	0.1	0.6	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Anthracene	0.1	0.01	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Fluoranthene	0.1	1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Benzo(a)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Chrysene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	NA	<0.2	<0.2	<0.2	NA	<0.2	NA
Benzo(a)pyrene	0.1	0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Benzo(g,h,i)perylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA

Concentration above the SAC	**VALUE**
Concentration above the PQL	**Bold**
GIL >PQL	Red

TABLE G2
SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO HUMAN CONTACT GILs
All results in µg/L unless stated otherwise.

	PQL Envirolab Services	Recreational (10 x NHMRC ADWG)	SAMPLES							
			MW101A	MW101A	MW102	MW105	WDup1 (dup)	WDup1	WDUP2	WDUP2 (dup)
Inorganic Compounds and Parameters										
pH		NSL	5.8	NA	4.6	4.4	NA	NA	NA	NA
Electrical Conductivity (µS/cm)	1	NSL	**460**	NA	**300**	**520**	NA	NA	NA	NA
Turbidity (NTU)		NSL	NA	NA	NA	NA	NA	NA	NA	NA
Metals and Metalloids										
Arsenic (As III)	1	100	<1	<1	<1	<1	<1	[NT]	<1	<1
Cadmium	0.1	20	<0.1	<0.1	<0.1	<0.1	<0.1	[NT]	<0.1	<0.1
Chromium (total)	1	500	<1	<1	<1	**1**	<1	[NT]	<1	<1
Copper	1	20000	**4**	**4**	**1**	**2**	<1	[NT]	**2**	**2**
Lead	1	100	<1	<1	<1	<1	<1	[NT]	<1	<1
Total Mercury (inorganic)	0.05	10	<0.05	[NT]	<0.05	<0.05	<0.05	<0.05	<0.05	[NT]
Nickel	1	200	**5**	**5**	**1**	**3**	**5**	[NT]	**1**	**1**
Zinc	1	30000	**41**	**41**	**6**	**12**	**27**	[NT]	**11**	**11**
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)										
Benzene	1	10	<1	<1	<1	<1	<1	NA	<1	NA
Toluene	1	8000	<1	<1	<1	<1	<1	NA	<1	NA
Ethylbenzene	1	3000	<1	<1	<1	<1	<1	NA	<1	NA
m+p-xylene	2	NSL	<2	<2	<2	<2	<2	NA	<2	NA
o-xylene	1	NSL	<1	<1	<1	<1	<1	NA	<1	NA
Total xylenes	2	6000	<2	<2	<2	<2	<2	NA	<2	NA
Polycyclic Aromatic Hydrocarbons (PAHs)										
Naphthalene	0.2	NSL	<0.2	NA	<0.2	<0.2	<0.2	NA	<0.1	NA
Acenaphthylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Acenaphthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Fluorene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Phenanthrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Fluoranthene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Benzo(a)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Chrysene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	NA	<0.2	<0.2	<0.2	NA	<0.2	NA
Benzo(a)pyrene	0.1	0.1	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA
Benzo(g,h,i)perylene	0.1	NSL	<0.1	NA	<0.1	<0.1	<0.1	NA	<0.1	NA

Concentration above the SAC — **VALUE**
Concentration above the PQL — **Bold**
GIL >PQL — Red

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TABLE G3

GROUNDWATER LABORATORY RESULTS COMPARED TO SITE SPECIFIC HSLs - RISK ASSESSMENT

All results in µg/L unless stated otherwise.

	PQL Envirolab Services	NHMRC ADWG 2011	WHO 2008	USEPA RSL Tapwater 2017	SAMPLES					
					MW101A	MW101A	MW102	MW105	WDup1	WDUP2
Total Recoverable Hydrocarbons (TRH)										
C_6-C_9 Aliphatics (assessed using F1)	10	-	15000	-	<10	<10	<10	<10	<10	<10
>C_9-C_{14} Aliphatics (assessed using F2)	50	-	100	-	**85**	NA	<50	<50	**79**	<50
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)										
Benzene	1	1	-	-	<1	<1	<1	<1	<1	<1
Toluene	1	800	-	-	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	300	-	-	<1	<1	<1	<1	<1	<1
Total xylenes	2	600	-	-	<2	<2	<2	<2	<2	<2
Polycyclic Aromatic Hydrocarbons (PAHs)										
Naphthalene	1	-	-	6.1	<1	<1	<1	<1	<1	<1

Concentration above the SAC **VALUE**
Concentration above the PQL **Bold**
GIL >PQL Red

TABLE G4
GROUNDWATER QA/QC SUMMARY

		TRH C6 - C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene	Naphthalene	Acenaphthylene	Acenaph-thene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,j+k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthra-cene	Benzo(g,h,i)perylene	Arsenic	Cadmium	Chromium VI	Copper	Lead	Mercury	Nickel	Zinc
	PQL Envirolab SYD	*10*	*50*	*100*	*100*	*1*	*1*	*1*	*2*	*1*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*1*	*0.1*	*1*	*1*	*1*	*0.05*	*1*	*1*
	PQL Envirolab VIC	*10*	*50*	*100*	*100*	*1.0*	*1.0*	*1.0*	*2.0*	*1.0*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.1*	*0.2*	*0.1*	*0.1*	*0.1*	*0.1*	*1*	*0.1*	*1*	*1*	*1*	*0.05*	*1*	*1*
Intra	MW101A	<10	85	<100	<100	<1	<1	<1	<2	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	4	<1	<0.05	5	41
laboratory	WDup1	<10	79	<100	<100	<1	<1	<1	<2	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	<1	<1	<0.05	5	27
duplicate	MEAN	nc	82	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	2.25	nc	nc	5	34
	RPD %	nc	7%	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	156%	nc	nc	0%	41%
Inter	MW102	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	1	<1	<0.05	1	6
laboratory	WDUP2	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	<0.1	<1	2	<1	<0.05	1	11
duplicate	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	1.5	nc	nc	1	8.5
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	67%	nc	nc	0%	59%
Trip	TS-W	-	-	-	-	120%	110%	111%	110%	110%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Spike	8/12/2021																																
Field	TB-W	NA	NA	NA	NA	<1	<1	<1	<2	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Blank	8/12/2021																																

Result outside of QA/QC acceptance criteria Value

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ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

CS	Characteristic Situation
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
GSV	Gas Screening Value
H_2S	Hydrogen Sulfide
LEL	Lower Explosive Limit
O_2	Oxygen
>>>	Measured LEL greater than 100%

Flow rates

- If the flow rate measured in the field was zero this has been adjusted to 0.1 L/hr (the minimum measurable flow rate of the instrument). The adjustment is indicated by a green font.
- If the measured flow rate was a negative value this has been converted to a positive value to account for potential flow rates. The adjustment is indicated by a green font.

GSV and CS Values

GSV and CS value calculated using the Modified Wilson Card Classification detailed in the *Assessment and Management* of *Hazardous Ground Gases, NSW EPA 2019* . Table 7 of the guidelines suggests the following adjustments:

- If methane >1% and/or carbon dioxide > 5% for CS1 then CS increased to 2 (adjustment indicated by blue italic font);
- If borehole flow rate > 70L/hr for CS2 then CS increased to 3 (adjustment indicated by blue italic font).

Gas Protection Values

Gas Protection Values derived from Table 8 of the *Assessment and Management of Hazardous Ground Gases, NSW EPA 2019.*

- For large commercial developments if Gas protection value equals 1 and methane concentration >20% then increase to CS3 (adjustment indicated by blue italic font).

GSV, CS and Gas Protection values for the entire Site

These values are calculated using the maximum values ecountered at the site and are not borehole specific.

JKEnvironments

TABLE SG1
SUMMARY OF FIELD GAS MEASUREMENTS

Site Use: **Large Commercial (eg warehouses)**		Peak HGG (Hazardous Ground Gas) Measurements							Standing Water Level (SWL)	Atmospheric pressure	Calculated Methane Gas Screening Value (GSV)	Calculated Carbon Dioxide Gas Screening Value (GSV)	Methane Characteristic Gas Situtation (CS)	Carbon Dioxide Characteristic Gas Situtation (CS)	Maximum CS value	Gas Protection Guidance Value
		CH_4 (max)	CO_2 (max)	O_2 (min)	CH_4 LEL (max)	H_2S (max)	CO (max)	Flow (max)								
Well Reference	**Sampling Round & Date**	% v/v	% v/v	% v/v	%LEL	ppm	ppm	L/hr	m	mBar	-	-	-	-	-	-
MW101	8/12/2021	1.3	14.2	20.3	31.4	0	0	1.2	2.72	995	0.02	0.17	*2*	2	2	1
MW106	8/12/2021	0	6.8	17.9	0	0	0	1.2	1.7	993	0.00	0.08	1	2	2	1
Total Number of Measurements		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Minimum Value		0	6.8	17.9	0	0	0	1.2	1.7	993	0	0.0816	1	2	2	1
Maximum Value		1.3	14.2	20.3	31.4	0	0	1.2	2.72	995	0.0	0.2	2	2	2	1
						GSV, CS and Gas Protection values for the entire Site					0.02	0.17	1	2	2	1

Residential not recomended without high level intervention and management
Level 3 Risk Assessment
Consider evacuation and social risks

Level 3 RA

Appendix D: Waste Tracking Template

Imported Materials Register

Supplier	Date	Docket/Invoice #	Product Type	Quantity (specify m3 or tonnes)	Area where Material was Placed

Exported (Waste) Materials Register

Load	Date	Material Type / Classification	Site Area where Waste was Generated	Waste Classification Report Reference	Disposal Facility	Tipping Receipt/Docket Number	Tracking Number (where relevant)	Tonnage

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