



Remedial Action Plan

Project
792-794 Botany Road and 33-37 Henry Kendall Crescent,
Mascot, NSW

Prepared for
New South Wales Land and Housing Corporation
(ABN 24 960 729 253)

Date
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Executive Summary

Alliance Geotechnical Pty Ltd (Alliance) was engaged by New South Wales Land and Housing Corporation (operating as Homes NSW, herein referred to as 'HNSW' or 'the client') to prepare a remedial action plan (RAP) for 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW (refer **Figure 1**, with the 'site' boundaries outlined in **Figure 2**).

At the commencement of the project, Alliance had the following project appreciation:

- The site is owned by the client;
- The site is occupied and being used for residential purposes, with five residential flat buildings and associated pavements and communal open space areas;
- The site is proposed for redevelopment, including the demolition of the five existing residential buildings and all associated structures onsite, and construction of a residential flat building between 3-storey and 8-storey, pavements, with on-grade car parking to the ground floor, and communal open space to the first floor over the on grade ground floor parking, (refer to copy of proposed development plans in **Appendix D**);
- In the context of NEPC (2013a), this is considered to be a land use scenario¹ comprising a combination of:
 - Residential with accessible soil, including garden with home grown produce contributing less than 10% fruit and vegetable intake (excluding home grown poultry and/or eggs), and includes children's day care centres, preschools and primary schools;
 - Residential with minimal opportunities for soil access including dwellings with fully and permanently paved yard space such as high rise buildings and flats; and
- Subject to final landscaping plans for the proposed redevelopment scheme, consideration may need to be given to the less conservative 'Public open space' land use scenario for communal areas (as set out in Section 3.2.3 of NEPC (2013f));
- The proposed development is a state significant development (SSD 72393459);
- The proposed land use scenario assumes a reticulated potable water supply will be available at the site;
- A preliminary site investigation (PSI) of the site (including a portion of land immediately beyond the northeast boundary of the site in this DSI, noted as comprising an ambulance station) was reported in Alliance (2023);
- A detailed site investigation (DSI) of the site was reported in Alliance (2024a). It was identified in the DSI that:
 - A detected concentration of benzo(a)pyrene in soils within AEC01 may be present an unacceptable human health exposure risk.
 - Fragments of ACM in surface soils onsite may present an unacceptable human health exposure risk; and

¹ Adopted from Section 2.2 of NEPC (2013a) and Section 3 of NEPC (2013f)

- There are data gaps associated with building and hardstand areas that need to be addressed after demolition, including areas not reasonably accessible to assess the likely extent of benzo(a)pyrene and asbestos in soils in order to draw conclusions regarding site suitability for the proposed land use scenario.
- Louise Walkden of Ramboll has been engaged to provide NSW EPA accredited site auditor services for the project.
- This RAP is required to assist the client to address:
 - development consent decision making processes set out in State Environmental Planning Policy (SEPP) Resilience and Hazards 2021² and relevant sections of the Planning Secretary's Environmental Assessment Requirements (SEARs) issued on the 24 July 2024 namely condition 17 (contamination and remediation);
- The client's preference at the completion of the remedial works set out in the RAP, is to not have a:
 - a covenant registered on the land title;
 - a notation on a planning certificate for the site; and
 - an environmental management plan (EMP) for the site.
- The objective of this project was to prepare a remedial action plan (RAP) for the site that contains:
 - a remediation objective for the site to facilitate making the site suitable for the proposed land use scenario;
 - a methodology for supplementary contamination assessment (SCA) works to address the identified data gaps;
 - a remediation and validation strategy that addresses the identified potential unacceptable land contamination risks at the site; and
 - a conceptual remediation and validation strategy to address plausible unacceptable land contamination risks that could reasonably be identified during SCA works.

It was not within the objective of this project to include provision for interim site management before remediation, on the understanding that a separate interim management plan (IMP) will be prepared for the suspected asbestos in surface soils.

The following scope of works was undertaken address the project objectives:

- A desktop review of previous reports;
- A data gap analysis; and
- Data assessment and reporting.

The nominated scope of works was primarily undertaken with reference to relevant sections of NEPC (2013), NSW EPA (2020a), NSW EPA (2020b), and WA DOH (2009), as well as other references presented in Section 18.

² 'SEPP55 – Remediation of Land' was repealed on 1 March 2022

The remediation objective is to remediate identified land contamination exposure risks to levels that do not present an unacceptable human health or ecological exposure risk, based on the proposed land use scenario for the site.

The preliminary inferred extent of remedial works required to address the remedial objective, is set out in the table below.

ID	AEC	Contamination Risk	Indicative Volume	Assumptions
AEC01	Fill soils identified at BH04 and BH10	Benzo(a)pyrene TEQ	-	Data gaps, inappropriate to assume a volume currently
AEC01	Fill soils identified at SV01	Potential bonded asbestos	-	Data gaps, inappropriate to assume a volume currently

It is noted that these inferred extents are based on a limited set of data. One or more of the extents may be subject to change, as a result of:

- Latent subsurface conditions;
- Temporal or seasonal fluctuations (particularly water content in dams / creeks / streams / ponds); and
- Supplementary contamination assessment works (as proposed in Section 8.3 of this RAP).

It is also noted that the results of the supplementary assessment should inform the indicative volume data gaps above, and/or may require a change to the preferred management / remediation strategy, or even potentially remove the need for management / remediation.

Should the inferred strategy or need for management / remediation change based on supplementary assessment works, this would be presented in an addendum to this RAP with addendum endorsement from the Site Auditor obtained before proceeding.

Based on the current understanding of the inferred extent of remedial works required, the proposed land use scenario for the site, and the client's preferred remedial outcomes for the site, the preferred remedial options for the site are presented in the table below.

Contamination Risk	Preferred Remedial Option and Method
Bonded ACM in surface soils <0.1m below surface	Works will be undertaken in a manner that avoids further damage or burial of the ACM by the process. Systematic inspection of surface and hand picking visible of ACM fragments. Rake surface soils in one direction, to a depth of 0.1m below ground level, using an excavator fitted with a tooth bucket. Systematic inspection of raked surface and hand picking of visible ACM fragments. Rake surface soils in a direction 90° perpendicular to the first raking direction, to a depth of 0.1m below ground level, using an excavator fitted with a tooth bucket. Systematic inspection of raked surface and hand picking of visible ACM fragments, until validation sampling meets assessment criteria. ACM fragments will be disposed to a suitably licensed waste receiving facility, with a waste classification. This method (as opposed to hand raking) is proposed, to accommodate the physical properties of surface soils and presence of anthropogenic materials in the surface soils. Validate raked area in accordance with Section 13.
PAH in soils	Excavate soils until validation sampling meets assessment criteria, and dispose to suitably licensed waste receiving facility, with a waste classification. Validate residual excavations in accordance with Section 13.

Based on the assessment undertaken by Alliance of site history information, fieldwork observations and data, and laboratory analytical data, in the context of the proposed land use scenario and objectives of this project, Alliance considers that the remediation objective can be achieved and the site made suitable for the proposed land use scenario, subject to the:

- Implementation of the interim site management plan to be prepared separately;
- Implementation of the strategies, methodologies, plans and procedures set out in this remediation action plan, if required, following the completion of the SCA proposed in **Section 8**; and
- Preparation of a site remediation and validation report (if required).

In the event that the proposed development scheme changes from that which was considered during preparation of this RAP, then the SCA and remedial strategies including the relevance of adopted land use scenarios must be reviewed, which may result in addendums to the RAP being required. The addendums will be reviewed by the appointed NSW EPA site auditor for the purpose of obtaining endorsement, before implementation of the addendum.

Specific assumptions that apply to the adopted land use scenario, are presented in **Section 6** of this report.

This report must be read in conjunction with the **Important Information About This Report** statements at the front of this report.

TABLE OF CONTENTS

1	Introduction	1
1.1	Background	1
1.2	Objectives	2
1.3	Scope of Work	3
1.4	Client Summary Information	3
2	Site Identification	4
2.1	Site Details	4
2.2	Site Layout	4
3	Site Environmental Setting	6
3.1	Geology	6
3.2	Site Topography and Elevation	6
3.3	Acid Sulfate Soils	7
3.3.1	Alliance (2024)	7
3.4	Hydrogeology and Hydrology	9
4	Previous Contamination Assessments and Results	11
4.1	Alliance (2023)	11
4.2	STS Geotechnics (2024)	14
4.3	Alliance (2024a)	16
4.4	Alliance (2024b)	18
4.5	Alliance (2024c)	19
5	Results and Site Characterisation	20
6	Conceptual Site Model	21
6.1	Preamble	21
6.2	Land Use	21
6.2.1	Adopted Land use Scenario	21
6.2.2	Assumptions for Adopted Land Use Scenario	21
6.3	Sources of Contamination	22
6.4	Receptors	23
6.4.1	Identified Receptors	23
6.4.2	Assumptions for Identified Receptors	23
6.5	Exposure Pathways	24
6.5.1	Human Health	24
6.5.2	Management Limits for Petroleum Hydrocarbons	25
6.5.3	Hazardous Ground Gases	25
6.5.4	Aesthetics	25

6.5.5	Terrestrial Ecosystems	25
6.5.6	Groundwater	25
6.6	Source, Pathway and Receptor Links	26
7	Data Gap Analysis and Uncertainty	33
8	Supplementary Contamination Assessment (SCA)	34
8.1	Preamble	34
8.2	Objectives	34
8.3	SCA Data Quality Objectives	34
8.3.1	SCA - Step 1: State the problem	34
8.3.2	SCA - Step 2: Identify the decision / goal of the study	34
8.3.3	SCA - Step 3: Identify the information inputs	35
8.3.4	SCA - Step 4: Define the boundaries of the study	35
8.3.5	SCA - Step 5: Develop the analytical approach	36
8.3.6	SCA Step 6: Performance and Acceptance Criteria	38
8.3.7	SCA Step 7: Develop the plan for obtaining data	39
8.4	SCA - Data Assessment and Reporting	45
9	Remediation Objectives and Criteria	47
10	Remediation Extent and Options	48
10.1	Inferred Extent	48
10.2	Options Assessment	48
10.2.1	Preamble	48
10.2.2	Remedial Options Selection and Assessment	49
11	Remedial Options	51
12	Remedial Strategy	53
12.1	Schedule of Remediation	53
12.2	Notifications and Approvals	53
12.3	Structural Stability	54
12.4	Demolition Works	54
12.5	Remedial Works	55
12.6	Unexpected Finds, Unsuccessful Remedial Strategies and Contingency Plans	55
12.7	Material Importation and Backfilling of Remedial Excavations	56
13	Site Validation Data Quality Objectives (DQO)	58
13.1	Step 1: State the problem	58
13.2	Step 2: Identify the decision / goal of the study	58
13.3	Step 3: Identify the information inputs	58
13.4	Step 4: Define the boundaries of the study	59

13.5	Step 5: Develop the analytical approach	60
13.5.1	Field Duplicates and Triplicates	60
13.5.2	Trip Spikes and Trip Blanks	60
13.5.3	Equipment Rinsate Blanks	61
13.5.4	Analytical Laboratory Quality Assurance and Quality Control	61
13.5.5	Data Quality Indicators	61
13.5.6	If / Then Statements	63
13.6	Step 6: Performance and Acceptance Criteria	63
13.6.1	If / The Decisions	63
13.7	Step 7: Develop the plan for obtaining data	64
13.7.1	Validation Sampling Point Densities and Locations	64
13.7.2	Sampling Methods	66
13.7.3	Decontamination	67
13.7.4	Headspace Screening	67
13.7.5	Sample Identification, Handling, Storage and Transport	68
13.7.6	Selection of Laboratory	68
13.7.7	Scheduling of Laboratory Analysis	68
13.7.8	Analytical Methods, Limits of Reporting and Holding Times	69
14	Site Remediation and Validation Report	71
15	Environmental Management Plan (Post Remediation)	72
16	Site Management Plan	73
16.1	Register of Contacts	73
16.2	Emergency Preparedness and Response	73
16.3	Community Relations	73
16.4	Signage, Security and Hours of Operations	74
16.5	Workplace Health and Safety	74
16.5.1	Safe Work Method Statements	74
16.5.2	Personal Protective Equipment (PPE)	74
16.5.3	Occupational Hygiene	75
16.5.4	Decontamination	75
16.6	Asbestos Removal Control Plan (ARCP)	75
16.7	Traffic Management	76
16.8	Soil and Stormwater Management	76
16.8.1	Site Access and Egress	76
16.8.2	Stockpiles	77
16.8.3	Groundwater and Excavation Pump Out	77
16.8.4	Site Rehabilitation	77

16.9	Waste Management.....	78
16.10	Dust Control.....	78
16.11	Odour Control	79
16.12	Airborne Asbestos Monitoring	79
16.13	Noise and Vibration Control.....	80
16.14	Site Incident Contingency Plan.....	80
17	Conclusions.....	82
18	References.....	83

FIGURES

Figure 1	Site Locality Plan
Figure 2	Site Layout Plan
Figure 3	Previous Sampling Points
Figure 4	Criteria Exceedance Locations
Figure 5	Revised Areas of Environmental Concern
Figure 6	Supplementary Contamination Assessment – Soil Sampling Point Layout Plan

APPENDICES

APPENDIX A	Previous Contamination Assessment Logs and Field Records
APPENDIX B	Previous Contamination and Material Assessment Laboratory Summary Tables
APPENDIX C	Site Survey Plan
APPENDIX D	Proposed Development Plans

1 Introduction

1.1 Background

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- The site is proposed for redevelopment, including the demolition of the five existing residential buildings and all associated structures onsite, and construction of a residential flat building between 3-storey and 8-storey, pavements, with on-grade car parking to the ground floor, and communal open space to the first floor over the on grade ground floor parking, (refer to copy of proposed development plans in **Appendix D**);
- In the context of NEPC (2013a), this is considered to be a land use scenario³ comprising a combination of:
 - Residential with accessible soil, including garden with home grown produce contributing less than 10% fruit and vegetable intake (excluding home grown poultry and/or eggs), and includes children's day care centres, preschools and primary schools;
 - Residential with minimal opportunities for soil access including dwellings with fully and permanently paved yard space such as high rise buildings and flats; and
- Subject to final landscaping plans for the proposed redevelopment scheme, consideration may need to be given to the less conservative 'Public open space' land use scenario for communal areas (as set out in Section 3.2.3 of NEPC (2013f));
- The proposed development is a state significant development (SSD 72393459);
- The proposed land use scenario assumes a reticulated potable water supply will be available at the site;
- A preliminary site investigation (PSI) of the site (including a portion of land immediately beyond the northeast boundary of the site in this DSI, noted as comprising an ambulance station) was reported in Alliance (2023);
- A detailed site investigation (DSI) of the site was reported in Alliance (2024a). It was identified in the DSI that:

³ Adopted from Section 2.2 of NEPC (2013a) and Section 3 of NEPC (2013f)

- A detected concentration of benzo(a)pyrene in soils within AEC01 may be present an unacceptable human health exposure risk.
 - Fragments of ACM in surface soils onsite may present an unacceptable human health exposure risk; and
 - There are data gaps associated with building and hardstand areas that need to be addressed after demolition, including areas not reasonably accessible to assess the likely extent of benzo(a)pyrene and asbestos in soils in order to draw conclusions regarding site suitability for the proposed land use scenario.
- Louise Walkden of Ramboll has been engaged to provide NSW EPA accredited site auditor services for the project.
- This RAP is required to assist the client to address:
 - development consent decision making processes set out in State Environmental Planning Policy (SEPP) Resilience and Hazards 2021⁴ and relevant sections of the Planning Secretary's Environmental Assessment Requirements (SEARs) issued on the 24 July 2024 namely condition 17 (contamination and remediation);
- The client's preference at the completion of the remedial works set out in the RAP, is to not have a:
 - a covenant registered on the land title;
 - a notation on a planning certificate for the site; and
 - an environmental management plan (EMP) for the site.

1.2 Objectives

The objective of this project was to prepare a remedial action plan (RAP) for the site that contains:

- a remediation objective for the site to facilitate making the site suitable for the proposed land use scenario;
- a methodology for supplementary contamination assessment (SCA) works to address the identified data gaps;
- a remediation and validation strategy that addresses the identified potential unacceptable land contamination risks at the site; and
- a conceptual remediation and validation strategy to address plausible unacceptable land contamination risks that could reasonably be identified during SCA works.

It was not within the objective of this project to include provision for interim site management before remediation, on the understanding that a separate interim management plan (IMP) will be prepared for the suspected asbestos in surface soils.

⁴ 'SEPP55 – Remediation of Land' was repealed on 1 March 2022

1.3 Scope of Work

The following scope of works was undertaken to address the project objectives:

- A desktop review of previous reports;
- A data gap analysis; and
- Data assessment and reporting.

The nominated scope of works was primarily undertaken with reference to relevant sections of NEPC (2013), NSW EPA (2020a), NSW EPA (2020b), and WA DOH (2009), as well as other references presented in **Section 18**.

1.4 Client Summary Information

This report has been prepared by Alliance Geotechnical Pty Ltd on behalf of NSW Land and Housing Corporation (Homes NSW) for a State Significant Development Application (SSD-72393459) for construction of a residential flat building ranging in height between three and eight storeys with a total of 126 social and affordable housing apartments at 792-794 Botany Road and 33-37 Henry Kendal Crescent, Mascot.

The purpose of this report is to address with the objectives provided within **Section 1.2** and to facilitate the client addressing the Secretary's Environmental Assessment Requirements (SEARs) for the project issued on 24 July 2024 namely conditions 13 (acid sulfate soils) and 17 (contamination and remediation):

The Site

The site is located at 792-794 Botany Road and 33-37 Henry Kendal Crescent, Mascot and is located within Bayside Local Government Area (LGA).

The site has an area of 4,904 square metres (sqm) and has three street frontages; Henry Kendall Crescent to the west, Coward Street to the south and Botany Road to the east.

The site comprises 25 social housing dwellings within five two storey brick buildings including three walkup apartments buildings and two town house style buildings which were constructed in the 1960s. There are number of mature street trees located along Botany Road, Coward Street and Henry Kendall Crescent. Refer to **Figure 2** for the layout of the site.

The site is located opposite Mascot Memorial Park on Coward Street, a large public park which provides a range of passive and active recreation, including children's playground, formal gardens, and tennis courts.

The site is accessible by public transport (buses and trains) with bus services that run along Botany Road. Mascot train station is also located within 850m of the site.

Proposed development

The proposed development comprises demolition of existing buildings and construction of a residential flat buildings ranging in height between three and eight storeys to accommodate 126 social and affordable housing apartments, a communal room and on grade car parking including tree removal, associated landscaping and public domain works.

Refer to final proposed development plans within **Appendix F**.

2 Site Identification

2.1 Site Details

Site identification details are presented in **Table 2.1**.

Table 2.1 Site Identification Details

Cadastral Identification	Lot A, B, C, D and E in Deposited Plan (DP) 36472
Geographic Coordinates (Google Earth)	33°55'30" S and 151°11'43" E
Site Area	Approximately 4,904m ²
Local Government Authority	Bayside Council
Current Zoning	R4 – High Density Residential

2.2 Site Layout

The layout of the site is present in **Figure 2**. The layout plan includes locations of:

- Site access points; and
- Current buildings and structures.

A copy of a detail and level survey of the site is presented in **Appendix C**

The following site surfaces were observed during the walkover:

- Concrete driveways that appeared to be in good condition;
- Brick driveways and car parking areas within some properties (33 and 35 Henry Kendall Crescent, Mascot NSW) that appeared to be in good condition;
- Concrete walkways, that appeared to be in good condition; and
- Unsealed areas vegetated with grass, unsealed soil, and established shrubs and trees.

The following buildings were observed during the walkover:

- Five two-storey brick and tiled roofed residential dwellings, located across the site;
- Three 4.0m x 2.5m brick and concrete structures, used as laundry rooms across the site;
- Three metal sheds;
- Five metal sheds on concrete slabs used for storage; and
- Two rabbit hutches, along the western boundary of Lot E.

There was no visual evidence of surface staining observed on the site.

There was no olfactory evidence detected of significant or widespread odours at the site.

There was no visual evidence observed to suggest widespread or significant phytotoxic impact in the form of plant stress and/or dieback in vegetation present on the site. Similar observations were made of vegetation on land immediately beyond the site boundaries.

3 Site Environmental Setting

3.1 Geology

The Department of Mineral Resources Geological Survey of NSW Sydney 1:100,000 Geological Series Sheet 9130 (Edition 1) 1983, indicated that the site is likely to be underlain by medium to fine grained 'marine' sand with podsols.

Observations made of the soils encountered during previous intrusive investigation works on site, were recorded on field logs. A copy of those logs is presented in **Appendix A**.

A summary of those observations, in the context of subsurface conditions at the site, is presented in **Table 3.1**.

Table 3.1 Site Specific Geology

Unit	Description	Depth (m bgl)
Fill	Silty SAND, fine to medium grained, grey / brown / dark brown / dark grey with rootlets, dry / moist	0.0-0.4
Fill	Clayey SAND, fine to coarse grained, dark brown with gravel of sandstone, plastic, moist (BH07 only)	0.0-0.2
Fill	SAND, fine to medium grained, brown / grey / dark grey / pale brown with trace silt, trace clay, gravel of sandstone, twig, concrete, ceramic tile and glass fragments, moist / wet	0.2-1.0
Fill	Clayey SAND, fine to medium grained, brown with gravel and cobbles of sandstone, moist	0.4-0.6
Fill	Gravelly SAND, fine to coarse grained, dark grey with gravel of sandstone, twig / tree rootlet, moist	0.4-0.7
Fill	Sandy CLAY, low to medium plasticity, grey mottled brown / orange with gravel and cobbles of sandstone, brick fragment, most (SV01 only)	0.5-0.6
Natural	SAND, fine to coarse grained, grey / pale grey, trace clay, wet	0.2-1.0
Natural	SAND, fine to medium grained, grey / pale grey / dark grey, moist / wet	0.6-4.5
Natural	Clayey SAND, fine to coarse grained, grey / dark grey, wet	0.7-1.5
Natural	SAND, fine to medium grained, grey / dark grey with mottled brown with trace silt/clay, wet	0.7-1.5
Natural	SAND, fine to medium grained, brown / grey trace silt, wet	1.5-3.0

3.2 Site Topography and Elevation

A detail and level survey plan of the site indicated that:

- The topography of the site is generally flat with a slight southwest facing slope; and
- The surface of the site was located at an elevation of approximately 8.76m Australian Height Datum (AHD) in the northeast and 8.02m AHD in the southwest.).

3.3 Acid Sulfate Soils

A review of <https://www.environment.nsw.gov.au/eSpade2Webapp> indicated that the site is located in an area mapped as:

- L4: low probability >3m below ground surface.

Assessment of acid sulfate soils was reported in STS Geotechnics (2024) and Alliance (2024a), however were based on a proposed development of at least one level of basement. Alliance note that based on the amended development plans, bulk excavations below 3m for the proposed development are unlikely.

A summary of the findings of STS Geotechnics (2024) is presented within **Section 4.2**.

A summary of the findings of Alliance (2024a) is presented in **Section 3.3.1**.

3.3.1 Alliance (2024)

3.3.1.1 Fieldwork

Alliance made the following observations of the soils assessed:

- Unripe muds (soft, sticky and can be squeezed between fingers, blue grey or dark greenish grey mud with a high water content), were not encountered;
- Estuarine silty sands or sands (mid to dark grey) or bottom sediments (dark grey to black for example monosulfidic black oozes) were not encountered;
- Peat or peaty soils were not encountered;
- Coffee rock horizons were not encountered;
- A sulfurous smell for example hydrogen sulfide or 'rotten egg' gas, was not encountered;
- Jarositic horizons or substantial iron oxide mottling in the surface encrustations or in any material excavated and left exposed, were not encountered;
- Presence of corroded mollusc shells were not encountered;
- Dead, dying or stunted vegetation was not encountered;
- Scalding or bare low-lying areas were not encountered; and
- Corrosion of concrete or steel structures was not encountered.

Alliance did encounter waterlogged soils during drilling, and an organic odour within BH01. Adopting a weight of evidence approach, the observations made suggest the likelihood for PASS for AASS requiring management to be present on the site, is low.

3.3.1.2 Field pH

On the basis that:

- The pHF analytical results were greater than the preliminary 'actual acid sulfate soils' screening criterion of $\text{pH} \leq 4$; and
- Jarosite was not observed in the soils assessed,

actual acid sulfate soils (AASS) are unlikely to be present in the soils assessed.

3.3.1.3 Field pHFox

The pH delta between pHF and pHFox results was often greater one pH unit, however on the basis that:

- pHFox analytical results were not below 3;
- Reaction rates were predominately no to moderate reacting ratings with only one noted as strong and none as extreme;

potential acid sulfate soils (PASS) are unlikely to be present in the soils assessed.

3.3.1.4 Chromium Reducible Sulfur

A selection of the soil samples based on field screening results, spatial / lithological representativeness, and professional judgement, were subjected to chromium reducible sulfur (CRS) laboratory analysis.

For the purpose of deriving action criteria, Alliance (2024a) reviewed:

- Observations of the soils encountered and reported in the borehole logs, and their textures in the context of Table 5.1 of Sullivan et al (2018a) and Appendix D in Sullivan et al (2018b); and
- Information regarding the extent of proposed soil disturbance of greater than 1000 tonne based on Table 5.4 of Sullivan et al (2018b).

The CRS laboratory analytical results were compared with the adopted action criteria.

The sulfur trail (% sulfur) and (mol H⁺/t) acid trail analytical results, using the CRS method, were greater than the relevant action criteria in Table 5.4 of Sullivan et al (2018), in three of the twelve samples analysed (BH09-0.4-0.5, BH10-3.4-3.5 and BH10-3.9-4.0). When considered in the context of the screening results, this indicated that potential acid sulfate soils (PASS) may be present on site at those sampling points.

3.3.1.5 Site Specific Risk Assessment

Guidance in Section 1.3 of Sullivan et al (2018a) and Section 1.4 of Sullivan et al (2018b) advises that naturally occurring acidic soils:

- Are not uncommon;
- Are not necessarily acid sulfate soils;
- Are not considered an environmental hazard;
- Are usually part of an acidophilic ecosystems whose health depends on maintaining an acidic environment;
- Do not require management to change their acidity; and
- If limed, can lead to unnaturally alkaline environments, and can result in ecological damage to acidophilic organisms that relied on the acid nature of these ecosystems.

Therefore, distinction needs to be made between acid soils and acid sulfate soils.

Guidance in Section 1.3 of Sullivan et al (2018b) advises that in order for soils to be considered sulfidic (in the context of ASS material), essentially the soil material needs to contain greater than or equal to 0.01% reduced inorganic sulfur (RIS) by mass.

The percentage of RIS (by mass) detected in the soil samples analysed where the relevant action criteria were exceeded (reported as chromium reducible sulfur (s-SCr)) was less than 0.01%.

This combined with a weight of evidence approach based on the available data indicated that the soils assessed are naturally occurring acidic soils, and not acid sulfate soils that require management.

Further assessment and management of acid sulfate soils, in the context of this project (and condition 13 of the SEARs) was considered not warranted.

3.4 Hydrogeology and Hydrology

A review of readily available online maps indicated that surface water bodies located on or near the site included:

- Lachlan Swamp / Mill Pond, located approximately 1.4km to the south and approximately 1.8km to the east; and
- Alexandria Canal located approximately 1.2km to the northwest and approximately 1.7km to the west.

Based on:

- The location of the identified surface water bodies, their regional flow direction, and site surface topography; and
- Review of preliminary groundwater elevation data in Table 4.3 of STS Geotechnics (2024), indicating standing water levels on site to be 1.5m below ground level (6.8m AHD) in the southeast and 1.5m below ground level (6.5m AHD) in the northwest, the inferred groundwater flow direction at the site is considered likely to be towards the northwest.

Based on site surface topography and site elevation, the inferred surface water flow direction at the site is considered to be uncertain. Surface water is considered likely to infiltrate into site soils (where soil permeability allows) and/or follow localised anthropogenic drainage lines into subsurface drainage pipes.

A search of <https://www.environment.nsw.gov.au/eSpade2WebApp> was undertaken by Alliance, however no hydrogeological landscape information was available for the locality of the site.

Alliance undertook a review of the temporary restriction of water take in the Botany Sands groundwater source at <https://water.dpie.nsw.gov.au/our-work/allocations-availability/temporary-water-restrictions/current/botany-sands-groundwater-source>. The review indicated that the site is located within 'Area 2' and groundwater extraction for domestic purposes⁵ is prohibited on site.

A search of <https://realtimedata.watarnsw.com.au/water.stm> indicated that:

- There were twenty-eight registered groundwater features located within a 500m radius of the site; and
- Authorised uses of these groundwater features wells included:
 - Domestic;

⁵ Includes drinking, cooking, watering household gardens, washing cars and clothes, filling swimming pools and providing drinking water for animals.

- Dewatering;
- Groundwater remediation;
- Monitoring; and
- Recreational.

Information presented in records obtained for these registered groundwater monitoring wells, indicated that:

- Boreholes were drilled to depths of between 0.9m and 20.5m below ground level;
- The geology encountered during drilling (using rotary methods) included clayey silty SAND, SAND, sandy CLAY, Silty SAND, CLAY;
- Rock was encountered in one borehole (GW047525) at a depth of 19.2m and was comprised of SANDSTONE;
- Depth to standing water level was logged in three boreholes (GW075024, GW104988 and GW113311) and ranged between 0.760m to 4.000m;
- Eight groundwater features (GW013515, GW024068, GW027749, GW027750, GW072901, GW073521, GW075024 and GW104988) were located in an inferred upgradient location from the site;
- Eighteen groundwater features were located in an inferred cross-gradient location from the site;
- Two groundwater features (GW024244 and GW047525) were located in an inferred downgradient location from the site;
- Groundwater features (GW112403-405) were located approximately 125m to the north of the site at an inferred down-gradient location. The groundwater feature's (GW112403-405) authorised use is remediation;
- Groundwater feature (GW107976) was located approximately 125m to the north of the site at an inferred down-gradient location. The groundwater feature's (GW107976) authorised use is dewatering;
- Groundwater feature (GW113311) was located approximately 115m to the north of the site at an inferred down-gradient location. The groundwater feature's (GW113311) authorised use is monitoring;
- Groundwater feature (GW024244) was located approximately 370m to the northeast of the site at an inferred down gradient location. The groundwater feature's (GW024244) authorised use is domestic; and
- Groundwater feature (GW047525) was located approximately 200m to the northeast of the site at an inferred down-gradient location. The groundwater feature's (GW047525) authorised use is recreation.

Further consideration of the groundwater remediation, dewatering and monitoring that has occurred approximately 115m to 125m to the north of the site (inferred to relate to a former service station) is not warranted based on their position in an inferred down gradient location to the site.

4 Previous Contamination Assessments and Results

A copy of:

- Alliance 2023, 'Preliminary Site Investigation, 776 & 792-794 Botany Road & 33-37 Henry Kendall Crescent, Mascot NSW' dated 18 May 2023, ref: 16364-ER-4-1 Rev 0;
- STS Geotechnics 2024, 'Geotechnical Investigation & Acid Sulfate Soil Assessment for Homes NSW, 776, 792-794 Botany Road & 33-37 Henry Kendall Crescent, Mascot (BGWHL)' dated 29 April 2024, ref: 24/0856;
- Alliance 2024a, 'Detailed Site Investigation, 792-794 Botany Road & 33-37 Henry Kendall Crescent, Mascot NSW' dated 10 October 2024, ref: 17716.3-ER-1-1 Rev 2;
- Alliance 2024b, 'Preliminary Waste Classification Report, 792-794 Botany Road and 33-37 Henry Kendall Crescent, Mascot NSW' dated 13 August 2024, ref: 17716.3-ER-2-1; and
- Alliance 2024c, 'Hazardous Building Materials Action Plan, 792-794 Botany Road & 33-37 Henry Kendall Crescent, Mascot NSW' dated 6 September 2024, ref: 17716.3-ER-3-1.

was provided to Alliance for review.

4.1 Alliance (2023)

The objectives of Alliance (2023) were to:

- Assess the potential for land contamination to be present at the site as a result of current and previous land use activities; and
- Provide recommendations for further investigations, and management or remediation of land contamination (if warranted).

The scope of work undertaken to address the Alliance (2023) project objectives included:

- A desktop review of site history;
- A site walkover limited to readily accessible portions of the site boundary; and
- Assessment of data and reporting.

The nominated scope of works for Alliance (2023) was undertaken with reference to relevant sections of NEPC (2013), NSW EPA (2020b), HEPA (2020) and WA DOH (2009).

A number of areas of environmental concern (AEC) and contaminants of potential concern (COPC) associated with potential land contaminating activities undertaken at the site, have been identified as part of the project.

The AEC, land contaminating activity and COPC are presented in **Table 4.1**.

Table 4.1 Alliance (2023) AEC and COPC

ID	AEC	Land Contaminating Activity (Source)	COPC
AEC01	Site footprint (~4,904m ²)	Uncontrolled filling Uncontrolled demolition Use of hazardous building materials Historic termite treatment.	Petroleum hydrocarbons, polycyclic aromatic hydrocarbons, pesticides, polychlorinated biphenyl, metals, asbestos.
AEC02	NSW Ambulance Station (~890m ²)	Potential storage of licensable quantities of Schedule 11 hazardous chemicals (dangerous goods) on a portion of the site (Lot 1 in DP 36486) Potential underground storage of petroleum hydrocarbons Use of hazardous building materials Historic termite treatment.	Petroleum hydrocarbons, polycyclic aromatic hydrocarbons, pesticides, polychlorinated biphenyl, metals, asbestos.
AEC03	Residential Building 01 (~200m ²)	Use of hazardous building materials Historic termite treatment.	Pesticides, polychlorinated biphenyl, metals and asbestos.
AEC04	Residential Building 02 (~200m ²)	Use of hazardous building materials Historic termite treatment.	Pesticides, polychlorinated biphenyl, metals and asbestos.
AEC05	Residential Building 03 (~200m ²)	Use of hazardous building materials Historic termite treatment.	Pesticides, polychlorinated biphenyl, metals and asbestos.
AEC06	Residential Building 04 (~200m ²)	Use of hazardous building materials Historic termite treatment.	Pesticides, polychlorinated biphenyl, metals and asbestos.
AEC07	Residential Building 05 (~200m ²)	Use of hazardous building materials Historic termite treatment.	Pesticides, polychlorinated biphenyl, metals and asbestos.
AEC08	Historic scattered small buildings/sheds and potential tents in the southeast portion of the site, observed in (Alliance 2023) aerial photography from 1943 and removed by 1951 presented in Section 5.2 of Alliance (2023) (~1,540m ²).	Uncontrolled demolition Use of hazardous building materials Historic termite treatment.	Pesticides, polychlorinated biphenyl, metals and asbestos.
AEC09	Historic building in the southeast portion of the site, observed in aerial photography from 1951 and removed by 1961 presented in Section 5.2 of Alliance (2023) (~150m ²).	Uncontrolled demolition Use of hazardous building materials Historic termite treatment.	Pesticides, polychlorinated biphenyl, metals and asbestos.

Table 4.1 Alliance (2023) AEC and COPC

ID	AEC	Land Contaminating Activity (Source)	COPC
AEC10	Historic scattered small sheds and/or wastes stored in the southwest portion of the site, observed in aerial photography from 1951 and removed by 1961 presented in Section 5.2 of Alliance 2023 (~1,170m ²).	Uncontrolled demolition Use of hazardous building materials Historic termite treatment Waste storage	Petroleum hydrocarbons, polycyclic aromatic hydrocarbons, pesticides, polychlorinated biphenyl, metals, asbestos.
AEC11	Former service station, located approximately 125m to the north of the site.	Underground storage of petroleum hydrocarbons	Petroleum hydrocarbons, BTEX, polycyclic aromatic hydrocarbons, lead
AEC12	Landfill reported on the NSW EPA online list of NSW contaminated sites as being under assessment, located approximately 300m to the north of the site.	Deposition of wastes	Hazardous ground gas: Methane, carbon dioxide, hydrogen sulphide Groundwater: Petroleum and chlorinated hydrocarbons, BTEX, polycyclic aromatic hydrocarbons, metals, PFAS, pesticides, polychlorinated biphenyls.
AEC13	Abandoned underground storage tank and bowser	Storage and handling of petroleum	Petroleum hydrocarbons, MTBE, polycyclic aromatic hydrocarbons, lead

Based on the assessment undertaken by Alliance of site history information and observations made of the site during the kerbside site visit, Alliance (2023) made the following conclusions:

- There is a potential for unacceptable land contamination to be present at the site as a result of current and previous land use activities;
- There is a site walkover related data gap associated with the areas of environmental concern (AEC) and associated contaminants of potential concern (COPC) identified for the site. The data gap has arisen as a result of a client-imposed constraint which limited site walkover observations to be made only from the site boundary; and
- There is a data gap related to offsite land use activities associated with a former service station and landfill.

The following recommendations were reported by Alliance (2023):

- A detailed site investigation (DSI) should be undertaken to address identified potentially unacceptable human health, groundwater and ecological risks in the PSI. The DSI should include:
 - A site walkover inside the site boundary; and
 - A Government Information (Public Access) Act 2009 search of NSW EPA and local Council records, for land contamination information associated with the former service station and former landfill, to facilitate addressing the data gap identified in the conclusions of this report and to facilitate refinement of the AEC and COPC for the site, prior to undertaking DSI related intrusive investigations; and

- The DSI and associated walkover should be undertaken by a suitably experienced environmental consultant.

Alliance notes that given the updated hydrogeological model for the site presented in **Section 3.4**, the former service station identified as AEC11, and the former landfill identified as AEC12, were considered to be in down or cross gradient locations of the site, and further assessment of those AECs in the context of this RAP, was considered not warranted.

Alliance notes that the project boundary reported in Alliance (2023) included Lot 1 in DP36486, where the NSW Ambulance Station facility is located) That portion of land is not within the site boundary of this RAP, as set out within **Figure 2** of this report. On that basis, the following AECs reported in Alliance (2023) were noted to be off site:

- AEC02 – NSW Ambulance station is located adjacent the northeast boundary of the site.
- AEC13 – The abandoned underground storage tank and bowser is located along the adjacent northeast boundary of the site.

On the basis that these AEC were located immediately adjacent to the site boundary, further assessment of them in the context of this RAP, was considered warranted and discussed within the DSI in **Section 4.3**.

4.2 STS Geotechnics (2024)

The purpose of STS Geotechnics (2024) was to provide information on various geotechnical matters, including groundwater consideration and acid sulfate soil assessment.

The work undertaken to address the project objectives included:

- Drilling of five (5) boreholes numbered BH1 to BH5;
- Undertaking standard penetration tests;
- Collecting of surface elevation data from each borehole;
- Collection of soil and core samples for laboratory analysis;
- Installation of two groundwater monitoring wells; and
- Data interpretation and reporting.

A summary of the observations in STS Geotechnics (2024), in the context of subsurface conditions at the site, is presented in **Table 4.2.1**.

Table 4.2.1 STS Geotechnics (2024) Sub Surface Geology

Unit	Description	Depth (m bgs)
Topsoil	Silty sand, dark brown, fine to medium grained, with rootlets.	0.0-0.5
Residual	Silty SAND / Clayey SAND, fine to medium grained, grey / brown / yellow / orange with black organic silt sand layer. Sulfurous odour in BH1 and BH5.	0.2-6.0
Residual	Silty SAND / Clayey SAND, fine to medium grained, grey / brown / yellow / orange.	4.5-21.5
Residual	Sand CLAY / Silty CLAY, low to high plasticity, grey / brown.	19.5-31.5
Rock	SANDSTONE, grey / brown, weathered	28.5-35.0

A summary of the observations in STS Geotechnics (2024), in the context of groundwater conditions at the site during drilling works is presented in **Table 4.2.2**.

Table 4.2.2 STS Geotechnics (2024) Sub Surface Geology

Borehole ID	Recorded Date	Depth to groundwater (mBGL)	RL (mAHD)
BH1	03/04/2024	1.8	6.2
BH2	09/04/2024	1.2	7.0
BH3	10/04/2024	1.2	7.0
BH4	05/04/2024	1.7	6.8
BH5	18/03/2024	1.8	6.7

A summary of the observations in STS Geotechnics (2024), in the context of groundwater conditions at the site at the time of undertaking monitoring works, following the installation of groundwater monitoring wells is presented in **Table 4.2.3**.

Table 4.2.3 STS Geotechnics (2024) Sub Surface Geology

Borehole ID	Recorded Date	Standing Water Level (mBGL)	RL (mAHD)
BH1	22/04/2024	1.5	6.5
BH5	22/04/2024	1.5	6.8

An acid sulfate soils assessment was presented in STS Geotechnics (2024), which included:

- Undertaking a desktop review of available geomorphic mapping and aerial photography;
- Collecting field observation records;
- Collecting six samples from BH4 at depths of 0.5 m, 1.5m, 3.0m, 4.5m, 6.0m, and 7.5m, below ground level; and
- Analysing each sample for suspension peroxide oxidation combined acidity and sulfur (SPOCAS).

It was concluded in STS Geotechnics (2024) that

- The S(POS) concentration for sample BH4 (1.5m) exceeded the action criteria of 0.03%, and both the TPA and TSA concentrations for samples BH4 (3.0m) and BH4 (4.5m) exceeded the action criteria of 18m/T indicative of the presence of acid sulfate soils; and
- An acid sulfate management plan would be required.

Alliance made the following observations of the information presented in in STS Geotechnics (2024), considered relevant to this RAP:

- The works were completed for a different redevelopment scheme (including a double basement), which is not consistent with the design considered in this RAP (on grade structures and parking, no basement);
- Standing water levels were identified to be approximately 1.5m bgl within groundwater wells installed on site;
- Topsoil (suspected by Alliance to be fill material) was reported at the borehole locations to depths of up to 0.5m bgl; and
- There were data gaps in the acid sulfate soils assessment, which were addressed in Alliance (2024a), as discussed further in **Section 4.3** of this RAP.

4.3 Alliance (2024a)

Alliance notes the redevelopment scheme considered in Alliance (2024a), which included construction of basement parking, is different to the one considered in this RAP (construction of basement parking is excluded).

The objectives of this project were to:

- Assess the potential for land contamination to be present in the areas of environmental concern (AEC) identified for the site in Alliance (2023), taking into consideration the site walkover data gap reported in Alliance (2023);
- Assess whether identified potential land contamination would present an unacceptable human health or ecological exposure risk, based on the proposed land use scenario;
- Assess whether the site is suitable, in the context of land contamination, for the proposed land use scenario; and
- Provide recommendations for further investigations, and management or remediation of land contamination (if warranted).

The following scope of works was undertaken address the project objectives:

- A desktop review of previous reports;
- Preparation of a sampling and analysis quality plan;
- Intrusive investigations on site;
- Laboratory analysis; and
- Assessment of data and reporting.

The nominated scope of works was primarily undertaken with reference to relevant sections of HEPA (2020), NEPC (2013), NSW EPA (2020a), NSW EPA (2020b), and WA DOH (2009).

A number of areas of environmental concern (AEC) and contaminants of potential concern (COPC) associated with potential land contaminating activities undertaken at the site, have been identified as part of this project.

The AEC, land contaminating activity and COPC are presented in the table below. The locations of the identified AEC are presented in **Table 4.3**.

Table 4.3 Alliance (2024a) AEC and COPC

ID	AEC	Land Contaminating Activity (Source)	COPC
AEC01	Site footprint outside of basement (~1,440m ² and nominally 0.5m thick)	Uncontrolled filling Uncontrolled demolition Use of hazardous building materials Historic termite treatment Potential council depot activities	Petroleum hydrocarbons, polycyclic aromatic hydrocarbons, pesticides, polychlorinated biphenyl, metals, asbestos
AEC02	Residential Building 01 (~45m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos
AEC03	Residential Building 02 (~15m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos
AEC04	Residential Building 05 (~20m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos
AEC05	Historic scattered small buildings/sheds and potential tents in the southeast portion of the site, observed from 1943 and removed by 1951 (~300m ²)	Uncontrolled demolition Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos
AEC06	Historic building in the southeast portion of the site, observed from 1951 and removed by 1961 (~25m ²)	Uncontrolled demolition Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos
AEC07	Historic scattered small sheds and/or wastes stored in the southwest portion of the site, observed from 1951 and removed by 1961 (~200m ²)	Uncontrolled demolition Use of hazardous building materials Historic termite treatment Waste storage	Petroleum hydrocarbons, polycyclic aromatic hydrocarbons, pesticides, polychlorinated biphenyl, metals, asbestos
AEC08	Offsite – Potential UST adjacent northeast boundary of site	Underground storage and handling of petroleum	Petroleum hydrocarbons, MTBE, polycyclic aromatic hydrocarbons, lead, PFAS
AEC09	Site footprint (~4,904m ²)	Acid sulfate soils	Sulfidic ores

Based on the assessment undertaken by Alliance (2024a) of site history information, fieldwork observations and data, and laboratory analytical data, in the context of the proposed land use scenario and objectives of the project, Alliance (2024a) made the following conclusions:

- There is a potential for land contamination to be present on the site;
- Detected concentrations of benzo(a)pyrene in soils within AEC01 may present an unacceptable human health exposure risk. Further assessment would be required to draw a conclusion on that risk;

- The fragments of ACM in surface soil onsite may present an unacceptable human health exposure risk;
- There are data gaps that need to be addressed in order to draw conclusions regarding site suitability for the proposed land use scenarios;
- The site could be made suitable for the following land use scenarios:
 - Residential with accessible soil, including garden with home grown produce contributing less than 10% fruit and vegetable intake (excluding home grown poultry and/or eggs), and includes children's day care centres, preschools and primary schools;
 - Residential with minimal opportunities for soil access including dwellings with fully and permanently paved yard space such as high rise buildings and flats; andsubject to the undertaking of a supplementary contamination assessment (SCA), and management / remediation of identified unacceptable human health exposure risks;
- In the event the proposed development scheme changes from that which was considered during that assessment, then the data and relevance of adopted land use scenarios must be re-assessed, which may result in a difference outcome;

Based on those conclusions, Alliance made the following recommendations:

- An interim asbestos assessment and management plan (IAMP) should be prepared in order to outline mitigation measures to be implemented onsite to adequately assess and manage the identified likely asbestos in surface soil risks, prior to further assessment, management or remediation of the site;
- A remedial action plan (RAP) should be prepared to address identified unacceptable human health exposure risks identified within AEC01. The RAP should include a methodology for:
 - Addressing data gaps requiring a SCA;
 - Supplementary assessment of identified potential land contamination risks in AEC01;
 - Conceptual remedial strategies to address additional unacceptable land contamination risks identified during SCA works; and
 - Validation of management / remedial works (if required).
- A hazardous building materials survey of those structures should be undertaken, and a clearance certificate obtained following hazardous building materials removal, prior to demolition of the structures.
- Groundwater abstraction on the site should not be undertaken, without prior assessment by a suitably experienced environmental consultant and relevant approvals being obtained from WaterNSW and NSW Department of Planning and Environment;
- Further assessment, management or remedial planning works for the site, should be undertaken by a suitably experienced environmental consultant; and
- Hazardous building material surveys and clearance certificates should be prepared by a suitably experienced hazardous materials consultant and/or occupational hygienist.

4.4 Alliance (2024b)

The objective of this project was to provide a preliminary waste classification assessment of the materials across the site.

The following scope of work was undertaken to address the project objectives:

- Preparation of a sampling and analysis quality plan;
- Intrusive investigations on site;
- Laboratory analysis; and
- Assessment of data and reporting.

Based on an assessment of desktop review data, fieldwork observations and laboratory analytical data, the report considered that the material assessed would preliminarily classify as General Solid Waste (Non-Putrescible).

Alliance notes that, on the basis ACM in surface soils was identified during that investigation, that preliminary waste classification is considered no longer valid.

4.5 Alliance (2024c)

The objective of this project was to prepare a hazardous building materials action plan (HBMAP) for the site that contained:

- A methodology to undertake a HBMS at the site, for the purpose of assessing the type, location, quantity and condition of hazardous building materials in the reasonably accessible areas of each structure on site; and
- A strategy to address the removal of identified hazardous building materials during demolition of each building structure at the site.

It was not within the objectives of this project to address interim management of hazardous building materials between the survey being undertaken, and their subsequent removal.

The following scope of works was undertaken to address the project objectives:

- Data assessment and reporting.

The nominated scope of works was primarily undertaken with reference to the relevant sections of ANZECC (1997), AS 4874-2000, AS/NZS 4361.1:2017, AS/NZS 4361.2:2017, HB 40.1-2001, NSW EPA (1997), NSW EPA (2004), NSW EPA (2014), SafeWork NSW (2022a) and SafeWork NSW (2022b).

Alliance considered that:

- The type, location, quantity and condition of hazardous building materials in the reasonably accessible areas of each structure on site can be assessed; and
- The identified hazardous building materials removal during demolition of each structure at the site,

can be achieved by implementation of the strategies, methodologies, plans and procedures set out in that plan.

5 Results and Site Characterisation

The results of the previous assessments (refer **Section 4**) have been reviewed. Characterisation of site contamination risks, in a tabular and plan format, is discussed below.

A plan showing the location of sampling points at the site, from Alliance (2024a) and (2024b) is presented in **Figure 3**.

Sample descriptions of the media assessed on the site, including soil, are presented in copies of logs presented in **Appendix A** for Alliance (2024a), Alliance (2024b) and STS Geotechnics (2024).

A copy of tabulated results from previous contamination and waste classification assessments that include:

- sample identification numbers and sampling depths;
- adopted contamination assessment criteria;
- highlighted results that exceeded those adopted criteria,

is presented in **Appendix B** for Alliance (2024a) and Alliance (2024b).

A plan showing the locations and vertical extent of soil contaminant concentrations that exceeded the adopted contamination assessment criteria, or where visual contamination (ACM) was identified is presented in **Figure 4**.

Alliance notes that the aforementioned plans, descriptions, tables and inferred lateral/vertical extent of soil concentration exceedances of criteria do not include data which may be obtained during the supplementary contamination assessment works proposed **Section 8**.

6 Conceptual Site Model

The conceptual site model takes into consideration the results of previous investigations reported in **Section 4** and the data gaps present in **Section 7**.

6.1 Preamble

A conceptual site model (CSM) is a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM is constructed from the information obtained during the preliminary site investigation (PSI) and detailed site investigation (DSI).

The pre-remediation CSM identifies complete (or potentially complete) pathways between the known source(s) and the receptors. In that scenario, management or remediation is needed to break the source-pathway-receptor linkage.

6.2 Land Use

6.2.1 Adopted Land use Scenario

For the purpose of this project, Alliance understands that the proposed land use scenario for the site includes:

- Residential with accessible soil, including garden with home grown produce contributing less than 10% fruit and vegetable intake (excluding poultry), and includes children's day care centres, preschools and primary schools;
- Residential with minimal opportunities for soil access including dwellings with fully and permanently paved yard space such as high-rise buildings and flats; and

Subject to final landscaping plans for the proposed redevelopment scheme, consideration may need to be given to the less conservative 'Public open space' land use scenario for communal areas (as set out in Section 3.2.3 of NEPC (2013f).

6.2.2 Assumptions for Adopted Land Use Scenario

Section 3 of NEPC (2013i) advises that the residential with accessible soil land use scenario includes a variety of building densities, ranging from separate low-density dwellings to high-density unit blocks. The residential land use scenario considered in this investigation is low-density residential, including a sizeable garden (referring to the presence of sufficiently large areas of soil in a garden that may be accessible on a daily basis by young children and adults).

This land use scenario assumes typical residential properties, consisting of single storey dwellings supported by ground-level slabs or multistorey dwellings where living areas are on the ground floor and there is accessible soil in the front and backyard areas.

These residences may have private gardens, consisting of lawns, garden beds and small vegetable gardens and areas of fruit trees, but no poultry.

Section 3 of NEPC (2013i) advises that the residential with minimal access to soil land use scenario includes high-density residential, not including a private garden. This land use scenario assumes typical residential unit blocks, consisting of multistorey buildings where living areas are on the ground floor (constructed on a ground level slab or above subsurface structures including basement car parks or storage areas).

Occupants of the buildings would have access to yard spaces that are largely covered by permanent paving, with some small areas of landscaping or lawns. Opportunities for direct access to soil by residents of these buildings are therefore minimal but there may be some potential for residents to inhale, ingest or come into direct dermal contact with dust (particulates) derived from the soil on the site.

The scenario does not include landscaped/playground (including sandpit) areas used for recreation within a high-density development. These are considered a 'public open space' land use scenario.

6.3 Sources of Contamination

A number of potential land contaminating activities have been identified for the site, based on the results of previous contamination assessments. These include:

- Uncontrolled filling;
- Uncontrolled demolition;
- Termite treatment of current and former structures;
- Potential former council depot usage; and
- Use of hazardous building materials.

Since the preparation of Alliance (2024a), a new set of development plans have been prepared (refer to **Appendix D**). Alliance reviewed these plans, and the development scheme has been altered substantially, and no longer includes a basement within the footprint of the subject site. Given this change in design, this precludes the opportunity to rely on basement excavation and offsite disposal, to remove previously identified plausible potential contamination sources (without prior assessment) in the basement footprint.

Alliance considers that assessment of the previously proposed basement footprint, to be a data gap, resulting in an increase in size to AEC01 and each building and structure footprint within the previously assessed basement footprint of the site, now being a potential source of contamination (specifically termite treatment and use of hazardous building materials).

Table J1 in Appendix J of AS 4482.1-2005⁶, Table B1 in Appendix B of WA DWER (2021) and Table B1 and Table B2 in Appendix B of HEPA (2020) provides guidance on chemicals associated with land uses activities. That guidance provides a basis for deciding on contaminants of potential concern (COPC) for each relevant land use activity. Information on COPC adopted for this project is presented in **Section 6.6** of this report.

⁶ Alliance understands this standard has been withdrawn, however, guidance on the Aged Standards Review process at <https://www.standards.org.au/standards-development/aged-standards>, indicates that it is still possible for a withdrawn standard to be used within an industry or reference by a government if chosen to do so. On the basis that this standard is referenced in NEPC (2013b), it is considered reasonable to still refer to it, within the context of this project.

6.4 Receptors

6.4.1 Identified Receptors

Based on the adopted land use scenario in **Section 6.2**, and the findings of Alliance (2024a) receptors at the site may include residents, intrusive maintenance workers and terrestrial ecosystems (noting that aquatic ecosystems as a groundwater value was considered in Alliance (2024a) as not a relevant receptor).

6.4.2 Assumptions for Identified Receptors

For residential with accessible soil, this project considers the preliminary assessment of potential risks at sites where children are likely to be the most sensitive human receptors, including childcare centres, kindergartens, preschools and primary schools and their integral playgrounds. The scenario is designed to represent a typical residential land use. The scenario also considers circumstances where less exposure to soil would be likely (for example, older people, or without fruit and vegetable gardens).

The occupants of the dwellings include adults, children and infants, who spend the majority of their time on the residential properties and use the outdoor areas of the residences on a frequent basis, for activities such as gardening or recreation.

It is noted that for people within sensitive sub-populations; for example, the immunosuppressed, those with pre-existing illness, or those with pica behaviour, the scenario may not be sufficiently protective of health and a site-specific risk assessment (or criteria) or management strategies may be required.

The human receptors at a residential with minimal access to soils site, would typically include adults, children and infants who spend the majority of their time indoors within the residential properties, with some limited use of communal outdoor areas on site. The residents that are considered to be most susceptible to health risks associated with soil contaminants are the residents of ground floor units, due to the greatest potential for outdoor soil to be tracked indoors and vapour intrusion occurring with residences immediately overlying contaminated soil.

Intrusive maintenance workers are assumed to be adult workers who carry out work in shallow trenches (maximum depth of 1m). The work may include work related to telephone, electricity, gas, water and sewer. It is also assumed that the workers will follow industry accepted procedures in relation to health and safety. The assumptions do not extend to work in deep trenches (such as deep sewers), on the basis that deep trench work would usually require confined space health and safety procedures to be followed, including the use of personal protective equipment.

In the context of petroleum hydrocarbons, exposure⁷ may occur through:

- Inhalation of volatiles from contaminants at any depth (soil and groundwater);
- Direct contact (dust inhalation, ingestion and dermal contact) for contaminated soils from surface to 2m below ground surface (i.e. trench walls for surface to 1m, trench floor 1 to 2m below ground surface); and

⁷ Section 2.1.4 of Friebe, E & Nadebaum, P 2011

- Direct contact (ingestion) for contaminated groundwater in the trench.

Potential acute exposure risks or explosion hazards associated with very high concentrations of vapours are not considered in this scenario.

6.5 Exposure Pathways

6.5.1 Human Health

6.5.1.1 Dermal Contact / Ingestion / Dust Inhalation

It was reported in Alliance (2024a), that

- a concentration of benzo(a)pyrene TEQ (12mg/kg) was detected in sample BH04/0.5-0.6, where an adopted criterion for benzo(a)pyrene TEQ in that investigation was 3mg/kg; and
- a concentration of benzo(a)pyrene TEQ (3.4mg/kg) was detected in sample BH10, however this sampling point was located within a proposed basement footprint in the development plans that the DSI based on, and so wasn't considered an unacceptable exposure risk in the context of human health.

Based on the revised proposed development plans (which do not include a basement), the proposed land use scenario is likely to include unsealed and open space areas, where a pathway between identified receptors and direct contact, ingestion and dust inhalation contaminant sources, may be complete. Therefore, further assessment of these pathways is still considered warranted within all AECs presented in **Figure 5**.

Based on information in Alliance (2024a), further assessment of dermal contact, dust inhalation and ingestion risk to human health was considered warranted, including for benzo(a)pyrene TEQ.

6.5.1.2 Vapour Intrusion / Inhalation

Based on information in Alliance (2024a), further assessment of vapour intrusion / inhalation risks was considered not warranted. Based on the revised proposed development plans, Alliance considers the outcome of the previous assessment of this pathway to have not changed.

6.5.1.3 Asbestos Inhalation

Site history information and observations reported in Alliance (2024), indicated a potential for ACM, FA and/or AF to be present in soils at the site, including asbestos containing materials being identified at sampling point SV01.

The proposed land use scenario is likely to include unsealed and open space areas, where a pathway between identified receptors and asbestos in soils, may be complete.

Based on information in Alliance (2024a), further assessment of asbestos exposure risk was considered warranted, after demolition and removal of hardstand material overlying the site soils.

Based on the revised proposed development plans, the proposed land use scenario is likely to include unsealed and open space areas, where a pathway between identified receptors and asbestos in soils, may be complete. Therefore, further assessment of this pathway is still considered warranted within all AECs presented in **Figure 5**.

6.5.2 Management Limits for Petroleum Hydrocarbons

Site history information and walkover observations reported in Alliance (2024a), indicated a potential for management limit policy considerations to be associated with relevant identified areas of environmental concern (AEC) within the existing data gaps at the site, in the context of the proposed future land use scenarios. On that basis, further assessment of petroleum hydrocarbons in soils in the context of those policy considerations, was considered warranted.

Based on the revised proposed development plans, assessment this pathway is still considered warranted, specifically within AEC01, AEC05, AEC06 and AEC07 presented in **Figure 5**.

6.5.3 Hazardous Ground Gases

Based on information in Alliance (2024a), Alliance considers that further assessment of hazardous ground gases in the context of this project, is considered not warranted.

Based on the revised proposed development plans, Alliance considers the outcome of the previous assessment of this pathway to have not changed.

6.5.4 Aesthetics

Based on information in Alliance (2024a), further assessment of aesthetic risks is considered warranted within relevant areas of environmental concern (AEC) within the existing data gaps at the site, in the context of the proposed land use scenarios. On this basis, further assessment of aesthetic risk was considered warranted.

Based on the revised proposed development plans, further assessment of aesthetics risk related to uncontrolled filling is still considered warranted within AEC01, AEC05, AEC06 and AEC07 presented in **Figure 5**.

6.5.5 Terrestrial Ecosystems

Based on information in Alliance (2024a), further assessment / management / remediation of terrestrial ecosystem exposure risks was considered not warranted.

Based on the revised proposed development plans, Alliance consider it likely that there will be some retention of existing flora species and open space areas to the site, where an ecological exposure pathway may be complete. On that basis, further assessment of terrestrial ecosystems is considered warranted where existing flora species and open space areas are to be retained.

6.5.6 Groundwater

Based on information in Alliance (2024), Alliance considers that further assessment of:

- Ecosystem protection;
- Aquaculture and human consumers of food;
- Agricultural water (irrigation and stock water);
- Recreation and aesthetics;
- Drinking water; and
- Industrial water.

as groundwater values, is not warranted.

Based on the revised proposed development plans, Alliance does not consider the outcome of the previous assessment of these groundwater values to have not changed.

6.6 Source, Pathway and Receptor Links

Based on:

- The identified sources of contamination associated with the locations of where potential land contaminating activities have been undertaken at the site (areas of environmental concern or AEC);
- The identified contaminants of potential concern (COPC) associated with those land contaminating activities;
- The receptors identified for the site, based on the proposed land use scenario; and
- The exposure pathways between the identified sources and receptors that have been assessed as being potentially or actually complete,

a conceptual site model (CSM) that identifies plausible source-pathway-receptor linkages for the site, is presented within **Table 6.6**. The areas of environmental concern, have been updated based on updated plans provided by the client, highlighting the removal of the basement. If the plans are amended, further reassessment in the context of the objectives of this project will be required.

The locations of the AECs are presented in **Figure 5**.

Table 6.6 Source, Pathway and Receptor Links

ID	AEC	Land Contaminating Activity (Source)	COPC	Exposure Pathway	Receptor
AEC01	Site footprint (~4,904m ² and nominally up to 1m thick)	Uncontrolled filling Uncontrolled demolition Use of hazardous building materials Historic termite treatment Potential council depot activities	Petroleum hydrocarbons, polycyclic aromatic hydrocarbons, pesticides, polychlorinated biphenyl, metals, asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Management limits Aesthetics Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems
AEC02	Residential Building 01 (~210m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems
AEC03	Residential Building 02 (~210m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems

Table 6.6 Source, Pathway and Receptor Links

ID	AEC	Land Contaminating Activity (Source)	COPC	Exposure Pathway	Receptor
AEC04	Residential Building 05 (~210m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems
AEC05	Historic scattered small buildings/sheds and potential tents in the southeast portion of the site, observed from 1943 and removed by 1951 (~1,650m ²)	Uncontrolled demolition Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Aesthetics Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems
AEC06	Historic building in the southeast portion of the site, observed from 1951 and removed by 1961 (~150m ²)	Uncontrolled demolition Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Aesthetics Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems

Table 6.6 Source, Pathway and Receptor Links

ID	AEC	Land Contaminating Activity (Source)	COPC	Exposure Pathway	Receptor
AEC07	Historic scattered small sheds and/or wastes stored in the southwest portion of the site, observed from 1951 and removed by 1961 (~1,170m ²)	Uncontrolled demolition Use of hazardous building materials Historic termite treatment Waste storage	Petroleum hydrocarbons, polycyclic aromatic hydrocarbons, pesticides, polychlorinated biphenyl, metals, asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Management limits Aesthetics Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems
AEC10	Residential Building 03 (~210m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems
AEC11	Residential Building 04 (~210m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems

Table 6.6 Source, Pathway and Receptor Links

ID	AEC	Land Contaminating Activity (Source)	COPC	Exposure Pathway	Receptor
AEC12	Shed structures (<25m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems
AEC13	Shed 01 (<10m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems
AEC14	Shed 02 (<10m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems

Table 6.6 Source, Pathway and Receptor Links

ID	AEC	Land Contaminating Activity (Source)	COPC	Exposure Pathway	Receptor
AEC15	Shed 03 (<10m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems
AEC16	Shed 04 (<10m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems
AEC17	Shed 05 (<10m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems

Table 6.6 Source, Pathway and Receptor Links

ID	AEC	Land Contaminating Activity (Source)	COPC	Exposure Pathway	Receptor
AEC18	Outbuilding 01 (<10m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems
AEC19	Outbuilding 02 (<10m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems
AEC20	Outbuilding 03 (<10m ²)	Use of hazardous building materials Historic termite treatment	Pesticides, polychlorinated biphenyl, metals and asbestos	Dermal contact Soil Ingestion Dust inhalation Inhalation (asbestos) Ecosystem uptake	Residents with accessible soil Residents with limited access to soil Intrusive maintenance workers Terrestrial Ecosystems

7 Data Gap Analysis and Uncertainty

Based on a desktop review of previous reports referred to in **Section 4** and the development of the conceptual site model (CSM) presented in **Section 6.6**, Alliance has assessed that the following data gaps, in the context of site contamination characterisation and management, are present and need to be addressed prior to management or remediation:

- Asbestos in soils assessment in accordance with guidance in NEPC (2013b) and WA DOH (2009) was not carried out due to soil sampling methods constrained by site accessibility;
- AEC02, AEC03, AEC04, AEC06, AEC10 to AEC20 have not yet been intrusively assessed, due to site access constraints; and
- Assessment of terrestrial ecosystem exposure risks have not yet been intrusively assessed.

Provision for addressing these data gaps is presented in **Section 8** of this RAP.

Figure 5 shows the areas of environmental concern and **Figure 6** shows the locations of proposed supplementary contamination assessment sampling points (as set out in **Section 8.3**).

8 Supplementary Contamination Assessment (SCA)

8.1 Preamble

Supplementary contamination assessment (SCA) works will be undertaken after demolition, to address the data gaps identified in **Section 7** of this RAP. It is noted that all demolition works will be required, before the proposed SCA works are undertaken, and that the outcome of the demolition works may require the scope of the SCA to be amended (such as if demolition is not carried out in accordance with relevant standards and published guidance).

8.2 Objectives

The objectives of the SCA are to:

- Assess the potential for land contamination to be present in the areas of environmental concern (AEC) which contain data gaps due to existing buildings, structures and inaccessible areas;
- Assess whether identified potential land contamination in those data gap AECs, would present an unacceptable human health or ecological exposure risk, based on the proposed land use scenario;
- Assess whether the site is suitable, in the context of land contamination, for the proposed land use scenario;
- Provide recommendations for further investigations, and management or remediation of land contamination (if warranted).

The work required to address these objectives, will be undertaken in the context of the proposed land use scenario adopted for the site.

8.3 SCA Data Quality Objectives

The data quality objectives (DQO) and associated sampling and analysis quality plan (SAQP) for the SCA are presented in the following sub sections.

8.3.1 SCA - Step 1: State the problem

The reason the SCA works are being undertaken, is set out in **Section 8.1** of this report.

The objective of these SCA works is set out in **Section 8.2** of this report.

The project team and technical support experts identified for the project include the Alliance project director, Alliance project manager, Alliance field staff and Alliance's subcontractors.

The design and undertaking of these SCA works will be constrained by the client's financial and time budgets.

The regulatory authorities associated with these SCA works include NSW EPA, the local planning authority, NSW Department of Planning and Environment, and SafeWork NSW.

8.3.2 SCA - Step 2: Identify the decision / goal of the study

The decisions that need to be made during these SCA work, to address the project objectives, include:

- Is the data collected for the SCA works, suitable for assessing land contamination exposure risks?
- Do the detected concentrations of contaminants of potential concern identified in the CSM, present an unacceptable exposure risk to the receptors identified in the CSM, based on the proposed land use scenario?
- Is the data collected suitable for assessing the likely extent of contamination requiring remediation?
- Is the site suitable, in the context of land contamination, for the proposed land use scenario?

8.3.3 SCA - Step 3: Identify the information inputs

The information inputs required to make the decisions for the project set out in **Section 8.3.2**, include:

- Data obtained during the site history review and site walkover;
- Field and laboratory analytical data from previous contamination assessments at site;
- Identification of sample media that needs to be collected, as set out in **Section 8.3.7.2**;
- Parameters that will be measured in each relevant sample, as set out in **Section 8.3.7.7**;
- The analytical methods required for each identified COPC, so that assessment can be made relative to adopted site criteria. These are set out in **Section 13.7** of this report; and
- The site criteria for the media of concern. These criteria are set out in **Table 13.3** and will be adopted based on the proposed land use scenario⁸, identified receptors, and site specific soil conditions (where relevant).

8.3.4 SCA - Step 4: Define the boundaries of the study

The spatial extent of the project will be limited to:

- The boundaries of the site as set out in **Section 2**; and
- Physical constraints or infrastructure on site or on land adjacent to the site, that prevents safe and reasonable access for project team members and/or typical and readily available equipment used for projects of this nature.

The scale of the decisions required (as set out in **Section 8.3.2**) will be based on the boundaries of the site set out in **Section 2**.

The extents of SCA works will be limited to the distribution of contamination assessed in the CSM in **Section 6.6** (associated with the data gaps identified in **Section 7**), which are likely to be:

- The inferred vertical extent of the relevant, nominated AECs likely to be:
 - to the base of fill material in the relevant AECs; and

⁸ The land use scenarios in Section 2.2 of NEPC (2013a) will be considered when adopting human health assessment criteria. The land use scenarios in Section 2.5 of NEPC (2013a) will be considered when adopting ecological assessment criteria.

- to ~0.5m depth, below ground level (below building and structural footprints).
- The inferred lateral boundaries of each identified AEC.

The time and budget constraints of the SCA works will be as per those set out in the contract (and any subsequent variations to that contract) between the client and Alliance.

The temporal boundaries of the SCA works will include:

- Availability of project team members (including subcontractors and subconsultants) to collect and assess relevant project data;
- The availability of site access to undertake fieldwork; and
- Meteorological conditions including heat, cold, wind and rain, which may constrain undertaking of fieldwork, or may affect the quality of the data being collected.

8.3.5 SCA - Step 5: Develop the analytical approach

8.3.5.1 Field Duplicates and Triplicates

Field duplicates and triplicates will be collected and assessed in accordance with the procedures set out in **Section 13.5**.

8.3.5.2 Trip Spikes and Trip Blanks

Trip spikes and trip blanks used and assessed in accordance with the procedures set out in **Section 13.5**.

8.3.5.3 Equipment Rinsate Blanks

Equipment rinsate blanks will be collected and assessed in accordance with the procedures set out in **Section 13.5**.

8.3.5.4 Field Blanks

Field blanks will be collected and assessed in accordance with the procedures set out in **Section 13.5**.

8.3.5.5 Analytical Laboratory Quality Assurance and Quality Control

The primary analytical laboratory will:

- be NATA accredited for the methods used; and
- use a quality assurance and quality control (QA/QC) program that will typically include analysis of method blanks, matrix spikes, surrogate spikes, laboratory control samples and laboratory duplicates.

The primary analytical laboratory will report on whether the analytical results of the QA/QC program are within the criteria set out in the laboratory's adopted data quality objectives.

8.3.5.6 Data Quality Indicators

A set of data quality indicators (DQI) will be adopted for assessing the completeness, comparability, representativeness, precision and bias (accuracy) of data collected during fieldwork, the analytical data produced by the laboratory. Each of these DQI are set out in **Table 8.3.5.6**.

Table 8.3.5.6 Data Quality Indicators and Target Criteria

Completeness			
<i>Field Considerations</i>	<i>Target Criteria</i>	<i>Laboratory Considerations</i>	<i>Target Criteria</i>
Experienced sampling team used	Yes	Complete sample receipt advice and chain of custody attached	Yes
Sampling devices and equipment set out in sampling plan were used (refer Section 8.3.7.2).	Yes	Critical samples identified in sampling plan, analysed	Yes
Critical locations in sampling plan, sampled (refer Section 8.3.7.2).	Yes	Analysis undertaken addresses COPC in sampling plan (refer Section 8.3.7.7)	Yes
Critical samples in sampling plan, collected (refer Section 8.3.7.2).	Yes	Analytical methods reported in laboratory documentation and appropriate limit of reporting used	Yes
Completed field and calibration logs attached	Yes	Sample holding times met (refer Section 8.3.7.8)	Yes
Completed chain of custody attached	Yes		

Comparability			
<i>Field Considerations</i>	<i>Target Criteria</i>	<i>Laboratory Considerations</i>	<i>Target Criteria</i>
Same sampling team used for all work.	Yes	Same laboratory used for all analysis (refer Section 8.3.7.6).	Yes
Weather conditions suitable for sampling.	Yes	Comparable methods if different laboratories used (refer Section 8.3.7.8).	Yes
Same sample types collected and preserved in same way (refer Section 8.3.7.2).	Yes	Comparable limits of reporting if different laboratories used.	Yes
Relevant samples stored in insulated containers and chilled (refer Section 8.3.7.5).	Yes	Comparable units of measure if different laboratories have been used (refer Section 8.3.7.8).	Yes

Representativeness			
<i>Field Considerations</i>	<i>Target Criteria</i>	<i>Laboratory Considerations</i>	<i>Target Criteria</i>
Media identified in sampling plan, sampled (refer Section 8.3.7.2).	Yes	Samples identified in sampling plan, analysed.	Yes
Samples required by sampling plan, collected (refer Section 8.3.7.2).	Yes		

Precision			
<i>Field Considerations</i>	<i>Target Criteria</i>	<i>Laboratory Considerations</i>	<i>Target Criteria</i>
Minimum 5% duplicates and triplicates collected and analysed (refer Section 8.3.5).	Yes	All laboratory duplicate RPDs within laboratory acceptance criteria (refer Section 8.3.5).	Yes

Table 8.3.5.6 Data Quality Indicators and Target Criteria

RPD unlimited where detected concentrations are <10 times the limit of reporting.	Yes		
RPD within 50% where detected concentrations are 10-20 times the limit of reporting.	Yes		
RPD within 30% where detected concentrations are >20 times the limit of reporting.	Yes		

Bias (Accuracy)

<i>Field Considerations</i>	<i>Target Criteria</i>	<i>Laboratory Considerations</i>	<i>Target Criteria</i>
Trip blank analyte results less than limit of reporting (refer Section 8.3.5).	Yes	Laboratory method blank results within laboratory acceptance limits (refer Section 8.3.5).	Yes
Trip spike analyte results less between 60% and 140% (refer Section 8.3.5).	Yes	Laboratory control sample results within laboratory acceptance limits (refer Section 8.3.5).	Yes
Rinsate blank analyte results less than limit of reporting (refer Section 8.3.5).	Yes	Laboratory spike sample results within laboratory acceptance limits.	Yes

8.3.5.7 If / Then Statements

If the SCA field and laboratory analytical dataset meets the DQI target assessment criteria, then the data may be considered adequately complete, comparable, representative, precise and unbiased, for the purpose of addressing the decisions / goals of this project as set out in **Section 8.3.2**.

If the SCA field and laboratory analytical dataset does not meet the DQI target assessment criteria, then additional data may need to be collected to address gaps identified in the data.

If the SCA field and laboratory analytical results are within the adopted land contamination assessment criteria (refer **Section 13.3**), then it may be assessed that identified land contamination at the site does not present an unacceptable human health and/or ecological exposure risk.

If the SCA field and laboratory analytical results are outside adopted land contamination assessment criteria (refer **Section 13.3**), then it may be assessed that identified land contamination at the site presents an unacceptable human health and/or ecological exposure risk, or that supplementary site specific qualitative / quantitative risk assessment may be required.

If the statistical assessment of the relevant previous contamination assessment and SCA data indicate that the arithmetic average concentration of a specified contaminant, is unlikely to exceed an adopted screening criterion, then it may be assessed that the identified land contamination does not present an unacceptable human health and/or ecological exposure risk.

8.3.6 SCA Step 6: Performance and Acceptance Criteria

8.3.6.1 If / Then Decisions

There are two types of decision error:

- Sampling errors – these occur when the sampling program does not adequately detect variability of a contaminant from point to point across a site. That is, the samples collected are not representative of site conditions (e.g. an appropriate number of representative samples have not been collected from each stratum, to account for estimated variability in that contaminant); and
- Measurement errors - these occur during sample collection, preparation, analysis and reduction of data.

During land contamination assessment, these errors can result in either:

- a Type I error, where land contamination human health and/or ecological exposure risks are considered to be acceptable, when they are not acceptable; or
- a Type II error, where land contamination human health and/or ecological exposure risks are considered to be unacceptable, when they are acceptable.

For decision rules to be sound, they should be designed to mitigate risk of decision errors occurring. The risk of decision error on this project will be mitigated by:

- Ensuring fieldwork is undertaken by suitably experienced field staff and sub-contractors, with reference to the DQO adopted for this project;
- Ensuring laboratory analysis is undertaken by NATA accredited laboratories; and
- Ensuring assessment of field and laboratory analytical data is undertaken by suitably experienced environmental consultants and/or outsourcing assessment to technical experts (if warranted).

8.3.7 SCA Step 7: Develop the plan for obtaining data

8.3.7.1 Sampling Point Densities and Locations

Section 5.1 in NSW EPA (2022) provides guidance regarding probabilistic sampling and judgement sampling.

A probabilistic sampling design uses random selection that when properly applied, results in unbiased and independent data. For an optimal design, using probabilistic sampling, an accurate CSM is required, including a clear definition of the population to be sampled. Systematic grid based sampling is a probabilistic method.

A judgemental sampling design requires decisions on where and/or when to collect samples, and relies on good site histories and/or site features being clear and distinct. The method can be efficient for assessing areas of worse case impacts and can be useful where site history is inadequate, or the features of concern are obscured or not discernible. Targeted sampling is a judgemental method. Section 6.2.1 in NEPC (2013b) advises that judgemental sampling and the selection of samples (number, location, timing, etc) should be based on knowledge of the site and professional judgement. In these instances, sampling would be expected to be localised to known or potentially contaminated areas identified from knowledge of the site either from the site history or an earlier phase of land contamination assessment. Judgemental sampling can be used to investigate sub-surface contamination issues in site assessment.

Stratified sampling comprises a combination of systematic and judgemental sampling, for sites with different uses, features and complex contaminant distributions, where a site is divided into various non-overlapping sub areas, according to geological and geographical features. Each sub area can then be treated as an individual decision area with different sampling patterns and sampling densities applied. For example, on area might require targeted sampling while a neighbouring one might need systematic sampling.

A stratified sampling strategy requires reliable prior knowledge of the site. NEPC (2013b) notes that stratified sampling can provide

- potential for achieving greater precision in estimates of the mean and variance where the measurement of interest is strongly correlated with the variable used to define the strata; and
- calculation of reliable estimates for subgroups of special interest.

Table 2 in NSW EPA (2022) provides guidance on minimum sampling point densities required for characterising a site, based on detecting circular hot spots, by using a systematic sampling pattern.

The scope of this project has included collection of data that provides an understanding of:

- site history;
- the locations of potentially contaminated areas;
- the identified COPC;
- laydown mechanisms for COPC in each AEC;
- the likely lateral and vertical extent of potential contamination in each AEC; and
- constraints on site which may restrict the use of certain sampling techniques.

On that basis, it is considered reasonable to adopt a mixture of both systematic and judgemental sampling patterns, using the sampling point densities set out in **Table 8.3.7.1** and presented in **Figure 6**.

Sampling point densities for AEC01, AEC05, AEC06 and AEC07 are based on addressing relevant sampling point density guidance set out in NSW EPA (2022), taking into consideration amendments to AECs based on removal of the basement footprint (from the proposed redevelopment scheme) and addressing the asbestos in soils data gap.

Sampling point densities for AECs within current building / hardstand footprints are to target footprints of structures following demolition and removal of hardstand areas. A visual assessment of the ground surface will be undertaken following demolition of the structures and removal of hardstand, with reference to **Section 8.3.7.2.1**. The requirement for field screening for asbestos and sampling of fill for the purpose of analysis, as detailed in **Table 8.3.7.7**, will consider field observations, noting that field screening may be unnecessary in areas where minimal fill is encountered or the fill is consistent with material encountered at adjacent sampling points within the same AEC.

Table 8.3.7.1 Sampling Point Densities and Locations

ID	AEC	Sampling Point ID	Method	Target Depth (m bgl)
AEC01	Site footprint (~4,904m ²)	TP01-TP13 TP21	Test Pit	1.3m, 0.3m into natural, or practical refusal
AEC02	Residential Building 01 (~210m ²)	TP14-TP17	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC03	Residential Building 02 (~210m ²)	TP18-TP21	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC04	Residential Building 05 (~210m ²)	TP22-TP25	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC05	Historic scattered small buildings/sheds and potential tents in the southeast portion of the site, observed from 1943 and removed by 1951 (~1,650m ²)	TP05, TP10, TP11, TP12, TP26, TP40, TP41, TP42, TP43	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC06	Historic building in the southeast portion of the site, observed from 1951 and removed by 1961 (~150m ²)	TP10, TP18, TP26	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC07	Historic scattered small sheds and/or wastes stored in the southwest portion of the site, observed from 1951 and removed by 1961 (~1,170m ²)	TP06, TP08, TP09, TP12, TP13 TP27, TP28, TP29,	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC10	Residential Building 03 (~210m ²)	TP33-TP36	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC11	Residential Building 04 (~210m ²)	TP29-TP32	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC12	Shed structures (<25m ²)	TP42	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC13	Shed 01 (<10m ²)	TP26	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC14	Shed 02 (<10m ²)	TP37	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC15	Shed 03 (<10m ²)	TP38	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC16	Shed 04 (<10m ²)	TP39	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC17	Shed 05 (<10m ²)	TP41	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC18	Outbuilding 01 (<10m ²)	TP40	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC19	Outbuilding 02 (<10m ²)	TP43	Test Pit	0.8m, 0.3m into natural, or practical refusal
AEC20	Outbuilding 03 (<10m ²)	TP44	Test Pit	0.8m, 0.3m into natural, or practical refusal

Table 8.3.7.1 Sampling Point Densities and Locations

ID	AEC	Sampling Point ID	Method	Target Depth (m bgl)
ABC ⁹	Inferred natural soils	TP01, TP11	Test Pit	1.3m, 0.3m into natural, or practical refusal

8.3.7.2 Sampling Methods

8.3.7.2.1 Site Walkover

A grid-based walkover of the site and each former building and structure footprint (including a 2m radius surrounding footprints) will be undertaken using north-south and east-west transects following demolition and removal of hardstand surfaces. Each transect will be set out on a nominal 1m – 2m spacing. The walkover will be undertaken to make a visual assessment of evidence indicating a potential for visible asbestos to be present in surface soils (nominally top 10cm) along with determining in proposed SCA sampling locations within **Figure 6** are still considered relevant and appropriate post demolition. Locations where evidence of visual asbestos or demolition materials beyond building/ structure footprints is observed will be recorded. A record will be kept of areas subjected to the walkover where constraints are present that prevent a reasonable visual assessment of the surface (e.g. vegetation, hardstand or stored materials).

8.3.7.2.2 Soils

Soil samples will be collected from each relevant sampling point, at the surface at 0.0-0.1m or 0.0-0.15m, unless there is evidence of a thin surficial layer of contamination. Samples will then be collected at regular intervals thereafter (typically at depth intervals of no more than 0.5m), or where there is a change in lithology, or where there is visual/olfactory evidence of potential contamination. Samples will also typically be collected beneath the point where fill meets the underlying natural soil.

Samples requiring asbestos gravimetric screening for asbestos containing material (ACM) and fibrous asbestos (FA) will be 10L in volume, and will be collected and screened with reference to Table 5 in WA DOH (2009), including but not limited to, separate samples for each stratum of fill material encountered during in-situ soil sampling.

Samples requiring asbestos fines (AF) and fibrous asbestos (FA) analysis, will be collected as separate samples to the aforementioned 10L bulk samples.

Samples will be submitted to a NATA accredited laboratory for analysis.

8.3.7.3 Decontamination

Non-disposable sampling equipment will be decontaminated using the procedures set out in **Section 13.7** of this report.

⁹ Ambient background concentration

8.3.7.4 Headspace Screening

Collected relevant soil samples will be subjected to headspace screening for ionisable volatile organic compounds, using the procedures set out in Section 13.7 of this report.

8.3.7.5 Sample Identification, Handling, Storage and Transport

Soil samples will be identified, handled, stored and transported using the procedures set out in **Section 13.7** of this report.

8.3.7.6 Selection of Laboratory

The analytical laboratories used for this project will reputable industry recognised environmental laboratories, that are NATA accredited for the analytical methods used.

8.3.7.7 Scheduling of Laboratory Analysis

Collected samples will be scheduled for laboratory analysis based on:

- The COPC identified for the AEC the sample was collected from;
- Observations made of the sample when collected (including staining, odour, presence of anthropogenic materials, and presence of potential asbestos containing materials);
- The results of sample headspace screening (if applicable); and
- The need for specific qualitative or quantitative data to inform assessment of risk associated with other laboratory analytical data (e.g. pH, cation exchange capacity, clay content, organic carbon content).

The laboratory analytical schedule (including upper limiting sample quantities) adopted for this project, is set out in **Table 8.3.7.7**.

Table 8.3.7.7 Schedule of Laboratory Analysis

ID	AEC	Sampling Point ID	TRH/BTEX	PAH	OCP	PCB	Metals (8)	Asbestos (0.001%)	Asbestos ID	Hardness	pH	CEC and clay content
AEC01	Site footprint (~4,904m ²)	TP01-TP13	8	8	8	8	8	13	1	-	-	-
AEC02	Residential Building 01 (~210m ²)	TP14-TP17	-	-	4	4	4	4	-	-	-	-
AEC03	Residential Building 02 (~210m ²)	TP18-TP21	-	-	4	4	4	4	-	-	-	-
AEC04	Residential Building 05 (~210m ²)	TP22-TP25	-	-	4	4	4	4	-	-	-	-
AEC05	Historic scattered small buildings / sheds and potential tents in the southeast portion of the site, observed from 1943 and removed by 1951 (~1,650m ²)	TP05, TP10 ¹⁰ , TP11, TP26, TP40, TP41, TP42, TP43	6	6	6	6	6	6	-	-	-	-
AEC06	Historic building in the southeast portion of the site, observed from 1951 and removed by 1961 (~150m ²)	TP10, TP18, TP26	Included within AEC03 and AEC05 Analysis									
AEC07	Historic scattered small sheds and/or wastes stored in the southwest portion of the site, observed from 1951 and removed by 1961 (~1,170m ²)	TP06, TP08, TP09, TP12, TP13 TP27, TP28, TP29,	TP27 and TP28 asbestos only, remaining sampling points analysis included within AEC01 and AEC11					2	-	-	-	-
AEC10	Residential Building 03 (~210m ²)	TP33-TP36	-	-	4	4	4	4	-	-	-	-
AEC11	Residential Building 04 (~210m ²)	TP29-TP32	-	-	4	4	4	4	-	-	-	-
AEC12	Shed structures (<25m ²)	TP42	Included within AEC05						-	-	-	-
AEC13	Shed 01(<10m ²)	TP26	Included within AEC05									
AEC14	Shed 02(<10m ²)	TP37	-	-	1	1	1	1	-	-	-	-
AEC15	Shed 03 (<10m ²)	TP38	-	-	1	1	1	1	-	-	-	-

Table 8.3.7.7 Schedule of Laboratory Analysis

ID	AEC	Sampling Point ID	TRH/BTEX	PAH	OCP	PCB	Metals (8)	Asbestos (0.001%)	Asbestos ID	Hardness	pH	CEC and clay content
AEC16	Shed 04 (<10m ²)	TP39	-	-	1	1	1	1	-	-	-	-
AEC17	Shed 05 (<10m ²)	TP41	Included within AEC05									
AEC18	Outbuilding 01 (<10m ²)	TP40	Included within AEC05									
AEC19	Outbuilding 02 (<10m ²)	TP43	Included within AEC05									
AEC20	Outbuilding 03 (<10m ²)	TP44	-	-	1	1	1	1	-	-	-	-
ABC ¹¹	Inferred natural soils	TP01, TP11					2				2	2

8.3.7.8 Analytical Methods, Limits of Reporting and Holding Times

The analytical methods, limits of reporting and sample holding times adopted for this project, are set out in **Table 13.7.8**.

8.4 SCA - Data Assessment and Reporting

The findings of the supplementary contamination assessment will be presented as an addendum to this RAP. The RAP addendum report will include:

- An executive summary;
- The scope of work undertaken;
- Site identification details;
- Information on supplementary contamination assessment works undertaken;
- Field and laboratory analytical data;
- Field and laboratory data QA/QC assessment;
- Supplementary site contamination assessment and characterisation;
- Information on revised inferred unacceptable contamination extents (if any);
- Information on revised inferred remediation extents (if any);
- Information on the revised remedial strategy (if any);

¹⁰ Analysis for TP05 and TP10 included within AEC01

¹¹ Ambient background concentration

- Information on revised validation strategy (if any);
- Information on revised site monitoring requirements (if any); and
- Conclusions and recommendations.

Endorsement of the SCA report will be obtained from the Site Auditor.

9 Remediation Objectives and Criteria

CRC CARE (2019c) defines a remediation objective as a site specific objective that relates solely to the reduction or control of unacceptable risks associated with one or more pollutant linkage.

The remediation objective is to remediate identified land contamination exposure risks to levels that do not present an unacceptable human health or ecological exposure risk, based on the proposed land use scenario for the site, which comprises:

- Residential with accessible soil, including garden with home grown produce contributing less than 10% fruit and vegetable intake (excluding poultry), and includes children's day care centres, preschools and primary schools;
- Residential with minimal opportunities for soil access including dwellings with fully and permanently paved yard space such as high-rise buildings and flats; and

Subject to final landscaping plans for the proposed redevelopment scheme, consideration may need to be given to the less conservative 'Public open space' land use scenario for communal areas (as set out in Section 3.2.3 of NEPC (2013f).

It is noted that the client's preferred outcome at the completion of remedial works, is to not have:

- a covenant registered on the land title;
- a notation on a planning certificate for the site; and
- an environmental management plan (EMP) for the site.

It is acknowledged that Section 2.1.2 of NEPC (2013a) advises that:

- investigation and screening levels are not clean up levels or response levels nor are they desirable soil or water quality criteria; and
- the use of investigation and screening levels as default remediation criteria may result in unnecessary remediation and increased development costs, unnecessary disturbance to the site and local environment, and potential waste of landfill space.

However, in practice, the investigation and screening levels in NEPC (2013a) are often used as clean up / remediation targets, because the assumptions on which those levels are based, can have general applicability for protection of certain land uses and there may not be a reason for varying from them.

The remediation assessment criteria that have been adopted for this project, and the basis/source of those criteria, are set out in **Table 13.3** of this RAP.

10 Remediation Extent and Options

10.1 Inferred Extent

It was reported in Alliance (2024a) that there may be unacceptable human health risks identified for the site, however there are data gaps before drawing conclusions on that risk. However, the fill containing asbestos, and Benzo(a)pyrene has been discussed here.

This may be subject to change, as a result of the supplementary contamination assessment works (as set out in **Section 8.3** of this RAP).

The inferred extent of identified remediation at the site are set out in **Table 10.1**.

Table 10.1 Inferred Extent of Remediation

ID	Remediation Area	Contamination Risk	Indicative Volume (Insitu)	Assumptions
AEC01	Fill soils identified at BH04 and BH10	Benzo(a)pyrene TEQ	-	Data gaps, inappropriate to assume a volume currently
AEC01	Fill soils identified at SV01	Potential bonded asbestos	-	Data gaps, inappropriate to assume a volume currently

It is noted that these inferred extents are based on a limited set of data. One or more of the extents may be subject to change, as a result of:

- Latent subsurface conditions;
- Temporal or seasonal fluctuations (particularly rainfall); and
- Supplementary contamination assessment works (as set out in **Section 8.3** of this RAP).

It is also noted that the results of the supplementary assessment should inform the indicative volume data gaps above, and/or may require a change to the preferred management / remediation strategy, or even potentially remove the need for management / remediation.

Should the inferred strategy or need for management / remediation change based on supplementary assessment works, this would be presented in an addendum to this RAP with addendum endorsement from the Site Auditor obtained before proceeding.

10.2 Options Assessment

10.2.1 Preamble

When assessing management of contamination, the preferred hierarchy¹² of options for site clean-up and/or management should be considered, which includes:

- on-site treatment of the contamination so that it is destroyed or the associated risk is reduced to an acceptable level; and
- off-site treatment of excavated soil so that the contamination is destroyed or the associated risk is reduced to an acceptable level, after which the soil is returned to the site; or

if the above are not practicable;

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

Section 4.10 of SEPP (2021) states that a consenting authority cannot refuse development for category 1 remediation work unless the authority is satisfied that there would be a more significant risk to human health or some other aspect of the environment from carrying out of the work, than there would be from use of the concerned land (in the absence of any work) for any purpose for which it may be lawfully used.

10.2.2 Remedial Options Selection and Assessment

With the exception of potentially localised cement sheeting fragments (conservatively assumed to be asbestos containing materials) and benzo(a)pyrene TEQ in fill soils, evidence of widespread contamination has not been identified at the site and as such, the need for, and extent of, management or remediation at the site is unknown. Information in Alliance (2024a) and **Section 7** indicates there are data gaps that need to be addressed, prior to drawing conclusions regarding the likely nature and extent of remediation. On that basis, it is not considered appropriate to undertake an assessment of remedial options, for the purpose of selecting a preferred option. Should findings of the SCA indicate a need for remediation, then conceptual remedial options based on plausible land contamination risks for this site, are provided within **Table 11.1**.

Preliminary conceptual remedial options, based on consideration of:

- the likely nature of unacceptable exposure risk on the site;
- the objectives of the Waste Avoidance and Resource Recovery (WARR) Act 2001 (NSW);
- NSW EPA's draft position for management of asbestos contaminated sites.
(<https://www.epa.nsw.gov.au/your-environment/contaminated-land/other-contamination-issues/managing-asbestos-in-and-on-land/position-statement-wa-management-of-asbestos-sites/draft-position-statement>);
- The client's preference with respect to having an EMP, a covenant on title and notation on a planning certificate for the site; and

¹² NEPC 2013, 'National Environment Protection (Assessment of Site Contamination) Measure 1999, Site Contamination Policy Framework, Section 6' dated May 2013

- Alliance's professional judgement and experience on comparable land

are presented in **Section 11**.

11 Remedial Options

Based on the following:

- current understanding of the proposed land use scenario for the site;
- the client's preferred remedial outcomes for the site;
- the proposed development scheme (refer **Appendix D**);
- the extent of remediation (if required) being based on the findings of the supplementary contamination assessment; and
- the commentary presented in **Section 10.2**;

the conceptual remedial options for the site are presented in **Table 11.1**.

It is noted that the preferred remedial options are based on a qualitative assessment of a limited set of data. One or more of the preferred options may be subject to change, as a result of:

- Latent subsurface conditions, including unexpected finds;
- Temporal or seasonal fluctuations (particularly water content in dams / creeks / streams / ponds); and
- Supplementary contamination assessment works (as proposed in **Section 8.3** of this RAP).

Should the inferred strategy or need for management / remediation change based on supplementary assessment works, this would be presented in an addendum to this RAP with addendum endorsement from the Site Auditor obtained before proceeding.

If unacceptable soil contamination is found during the SCA, the conceptual remedial options (set out in **Table 11.1**) may be implemented.

Table 11.1 Conceptual remedial options

Contamination Risk	Conceptual Remedial Option
TRH, BTEX, PAH, OC pesticides, PCB and metals in soils	Excavate soils until validation sampling meets assessment criteria, and dispose to suitably licensed waste receiving facility, with a waste classification. Validate residual excavations in accordance with Section 13 .
Asbestos fines in surface and fill soils	Excavate soils until validation sampling meets assessment criteria, and dispose to suitably licensed waste receiving facility, with a waste classification. Validate residual excavations in accordance with Section 13 .
Bonded ACM in surface soils <0.1m below surface	Works will be undertaken in a manner that avoids further damage or burial of the ACM by the process. Systematic inspection of surface and hand picking visible of ACM fragments. Rake surface soils in one direction, to a depth of 0.1m below ground level, using an excavator fitted with a tooth bucket. Systematic inspection of raked surface and hand picking of visible ACM fragments. Rake surface soils in a direction 90° perpendicular to the first raking direction, to a depth of 0.1m below ground level, using an excavator fitted with a tooth bucket.

Contamination Risk	Conceptual Remedial Option
	Systematic inspection of raked surface and hand picking of visible ACM fragments, until validation sampling meets assessment criteria. ACM fragments will be disposed to a suitably licensed waste receiving facility, with a waste classification. This method (as opposed to hand raking) is proposed, to accommodate the physical properties of surface soils and presence of anthropogenic materials in the surface soils. Validate raked area in accordance with Section 13.
Bonded ACM in fill soils >0.1m below surface	Works will be undertaken in a manner that avoids further damage or burial of the ACM by the process. Establish a treatment pad area. Staged excavation of fill soils and spreading across treatment pad to a thickness no greater than 0.1m. Systematic inspection of surface of spread material and picking of visible ACM fragments. Rake spread soils in one direction, using an excavator fitted with a tooth bucket. Systematic inspection of raked surface and picking of visible ACM fragments. Rake spread soils in a direction 90° perpendicular to the first raking direction, using an excavator fitted with a tooth bucket. Systematic inspection of raked surface and hand picking of visible ACM fragments, until validation sampling meets assessment criteria. Reinstatement of treated soils >0.1m below finished surface. ACM fragments will be disposed to a suitably licensed waste receiving facility, with a waste classification. This method (as opposed to hand raking) is proposed, to accommodate the physical properties of soils and presence of anthropogenic materials in the surface soils. Validate residual excavations in accordance with Section 13.

12 Remedial Strategy

Alliance notes that if unacceptable exposure risks are found during the SCA, the following remedial strategy will be implemented.

12.1 Schedule of Remediation

The extent of remedial works is currently not defined and requires completion of the SCA detailed in **Section 8**, to inform a remediation schedule (if warranted). Based on previous experience on comparable sites, remedial works would not be likely to take more than three to six months to complete. Timeframes would be refined following appointment of a remediation contractor.

12.2 Notifications and Approvals

A notification of intent to undertake remedial works will be submitted to the relevant planning authority, 30 days prior to the date those remedial works (excluding any supplementary contamination assessment works where proposed) are intended to commence.

Alliance understands that remedial works classified as Category 2 under State Environmental Planning Policy (SEPP) Hazards and Resilience (2021), do not require development consent. However, in the event that the proposed remedial works trigger the Category 1 criteria in the SEPP, including but not limited to issues related to:

- designated development under the Environmental Planning and Assessment Regulation;
- critical habitat under the Threatened Species Conservation Act;
- the works having a significant effect on a critical habitat, or threatened species, populations or ecological communities;
- the works being located in areas of environmental significance;
- requiring consent under another SEPP or a regional environmental plan (REP); or
- remediation work being carried out or to be carried out on any land in a manner that does not comply with a policy made under the contaminated land planning guidelines by the council for any local government area in which the land is situated (or if the land is within the unincorporated area, the Minister),

then development consent for the remedial works may be required.

It is anticipated that remediation works that may plausibly be required on the site would be classified as Category 2. Advice on this matter will be sought from a suitably experienced planner, with a decision made on the Category 2 classification by the relevant planning consent authority.

The following information will be provided to the relevant planning authority, with the notice of intent to undertake remedial works:

- a copy of previous contamination assessment reports;
- a copy of this RAP;
- the contact details of the party responsible for ensuring remedial works comply with relevant regulatory requirements; and

- the contact details of the remediation contractor.

Occupants of properties adjoining the site and located immediately across the road from the site, will be provided with a notification of intent to undertake remedial works on the site, in accordance with **Section 16.3** of this RAP.

Development consent or a construction certificate will be obtained (if required) from the relevant planning authority for demolition, excavation and/or shoring works.

Demolition works (if required) will be undertaken by a contractor holding an appropriate SafeWork NSW demolition licence. That licence will hold a chemical endorsement, in the event that demolition works include an underground and/or aboveground storage tank.

Approvals will be obtained (if required) from NSW Roads and Maritime Services (RMS) for works being undertaken adjacent to (or on) RMS identified assets.

While considered unlikely in the context of this project:

- a water access licence will be obtained (if required) from Water NSW, in the event remediation works requires water to be taken at specified times, rates and circumstances from specified areas or locations; and
- a water supply work and use approval will be obtained (if required) from Water NSW, in the event remediation works requires construction and use of a specific water supply at a specified location. Water supply works may include pumps, bores, spear points and wells.

Asbestos removal works (if required) will be notified to SafeWork NSW by the remediation contractor. The asbestos removal works will be undertaken by a contractor that will hold a:

- Class A licence for removal of friable asbestos / asbestos fines; and
- Class B licence for removal of bonded asbestos.

If SCA works only identify bonded asbestos, then a Class B Contractor will be required. If friable asbestos or asbestos fines are identified, then a Class A Contractor will be required.

Within 30 days of completion of all remediation and validation works, a notice of completion of the remedial works will be submitted to the relevant planning authority.

12.3 Structural Stability

The stability of structures (including, but not necessarily limited to footings, walls, buildings and roads), which may be impacted by the proposed remedial works) will be assessed by a suitably experienced structural consultant before commencing remedial works. Recommendations made by the structural consultant will be incorporated by the remediation contractor, into the execution of all relevant site works.

12.4 Demolition Works

A hazardous materials survey (if required), will be prepared prior to demolition of structures (if required). The survey will identify the location, nature and extent of all hazardous materials (including asbestos, lead, PCB and synthetic mineral fibres) in those structures, and be carried out in accordance with the strategies set out within Alliance (2024c) discussed in **Section 4.5**.

Identified hazardous materials will be treated (where appropriate), removed from site, and a clearance certificate obtained from a licensed asbestos assessor and/or competent person, prior to commencing demolition of the structures. The clearance certificate will be prepared with reference to guidance provided in Appendix D of SafeWork NSW (2022).

The remediation contractor will retain records of the transport and disposal of demolition wastes (including hazardous materials), removed from the site.

12.5 Remedial Works

The preferred remedial options (and associated methodologies) to be adopted for each of the identified AEC or potential contamination risks, are presented in **Section 11** of this RAP, and any addenda prepared for this RAP.

Remedial works will be undertaken by the remediation contractor with guidance provided by the appointed environmental consultant. The environmental consultant will assist the remediation contractor in setting out the inferred extents of remediation required, based on refined remedial extents set out in the supplementary contamination assessment report referred to in **Section 10**, and any subsequent addenda prepared for this RAP. The environmental consultant will provide guidance to the remediation contractor on:

- where to extend remedial works beyond the inferred extent (if observations indicate a need for 'chasing out' additional contamination); and
- when to stop remedial works, to allow validation works to be undertaken.

The remediation contractor will be responsible for:

- Coordinating right of way access through third party properties (as required) with the site owner and owners/tenants of third party properties;
- Site establishment, including stabilising of site access entry/exit points;
- Provision of worker amenities on site;
- Establishment of sediment and erosion controls;
- Establishing soil treatment areas, which may require localised minor earthworks to create cleared and 'flat' treatment pads;
- Mixing treated material back into onsite soils;
- Disposal of wastes to appropriately licensed facilities; and
- Retaining records of the transport and disposal of all wastes generated during remedial works.

12.6 Unexpected Finds, Unsuccessful Remedial Strategies and Contingency Plans

There is a degree of uncertainty inherent in site assessment and remediation works. Based on the site history information made available to Alliance prior to preparing this RAP, it is considered the scenarios identified in **Table 12.6** could occur during remedial works.

Contingency plans and protocols to be implemented, should those scenarios arise, are also presented in **Table 12.6**.

Table 12.6 Unexpected Finds, Unsuccessful Remedial Strategies and Contingency Plans

Unexpected Find Scenario / Unsuccessful Remedial Strategy	Contingency Plan
Change to proposed development design	Cease remedial works. Assess the change to proposed development design, and note any deviations from the original plan. Assess the potential that these deviations may impact the remedial works/outcome, and if they are likely to adversely impact the remedial works/outcome, undertake the following: ○ Prepare revisions to the remedial design documents (if required); and ○ Prepare an addendum to the remediation and/or validation strategy in the RAP (if required). ○ Obtain addendum endorsement from the Site Auditor before proceeding. If the deviations are not likely to impact the remedial works/outcome, continue with remedial works as per this RAP.
Asbestos containing materials encountered beyond the inferred extent of remediation.	Cease remedial works. Consider undertaking intrusive soil investigations into and around the potential asbestos identified beyond the inferred remedial extent, and assess whether the asbestos is bonded and/or friable. Assess whether the asbestos encountered still presents an unacceptable human health exposure risk. Submit notification to SafeWork NSW for asbestos removal works (if not already addressed in an existing notification). Prepare an addendum to the remediation and/or validation strategy in the RAP. Obtain addendum endorsement from the Site Auditor before proceeding. Remediate the unexpected contamination. Undertake validation of the remedial works.
Unexpected buried contamination or underground structures encountered during remedial works (e.g. buried waste, underground storage tank, underground sump/pit).	Cease remedial works. Consider undertaking intrusive soil investigations into and around the unexpected find, to assess the potential nature and extent of the contamination / structure. Consider undertaking groundwater assessment works, if the potential nature and extent of the contamination / structures suggest a risk to groundwater. Assess whether the contamination encountered presents an unacceptable exposure risk to identified receptors. Prepare an addendum to the remediation and/or validation strategy in the RAP (if required), pending the outcomes of the soil and/or groundwater assessment works. Obtain addendum endorsement from the Site Auditor before proceeding. Remediate the unexpected contamination. Undertake validation of the remedial works.

12.7 Material Importation and Backfilling of Remedial Excavations

Should backfilling of remedial excavations be required, then backfill material being imported onto site will be lawful and will be limited to:

- Virgin excavated natural material (VENM);
- Excavated natural material (ENM); and
- Other materials that:
 - have been certified as compliant with a NSW EPA issued resource recovery exemption and the placement on the site is within the constraints of the resource recovery exemption; and
 - do not present an unacceptable human health or ecological exposure risk, in the context of the proposed land use scenario.

Material proposed for importing will be compatible with existing soil characteristics for site drainage purposes. Nominating engineering properties (compaction, density, moisture content) is not within the scope of this RAP and will be specified by others.

Certification of VENM, ENM or other approved resource recovery material, will be reviewed by the environmental consultant before the remediation contractor commences importing the material.

The remediation contractor will be responsible for:

- Inspecting every load of imported material for consistency with the material described in the relevant certification, including that the material is free of anthropogenic materials, odours or staining.
- Maintaining a record of inspection of each load; and
- Maintaining detailed records of all material imported to site, including details of the supplier/s, source of the material, quantity of the material, importing vehicle registration numbers, and dates/times the material is received on site, and placement location of imported material.

Evidence from the remediation contractor demonstrating that the above has been undertaken, will be included in the validation report.

If materials are found to not conform with site requirements, those will be rejected for return to source site or disposed off-site with a waste classification to a suitably license facility.

13 Site Validation Data Quality Objectives (DQO)

Appendix B in NEPC (2013b) provides guidance on the data quality objective (DQO) process, which is a seven step iterative planning approach that can be used to define the type, quantity and quality of data needed to inform decisions relating to land contamination risks at the site.

13.1 Step 1: State the problem

The reason the project is being undertaken, is set out in **Section 1.1** of this report.

The objective of this project is set out in **Section 1.2** of this report.

The project team and technical support experts identified for the project include the Alliance project director, Alliance project manager, Alliance field staff and Alliance's subcontractors.

The design and undertaking of this project will be constrained by the client's financial and time budgets.

The regulatory authorities associated with this project include NSW EPA, the local planning authority, the Department of Planning and Environment and SafeWork NSW.

13.2 Step 2: Identify the decision / goal of the study

The decisions that need to be made during this project, to address the project objectives, include:

- Is the data collected for the project, suitable for assessing land contamination exposure risks?
- Do the detected concentrations of contaminants of potential concern identified in the CSM, present an unacceptable exposure risk to the receptors identified in the CSM, based on the proposed land use scenario?
- Has the remediation objective been achieved?
- Is the site suitable, in the context of land contamination, for the proposed land use scenario?

13.3 Step 3: Identify the information inputs

The information inputs required to make the decisions for the project set out in **Section 13.2**, include:

- Data obtained during the site history review, site walkover and remediation works observations;
- Records produced by the remediation contractor and other relevant 3rd parties, during the undertaking of remediation works;
- Identification of sample media that needs to be collected, as set out in **Section 13.7**;
- Parameters that will be measured in each relevant sample, as set out in **Section 13.7**;
- The analytical methods required for each identified COPC, so that assessment can be made relative to adopted site criteria. These are set out in **Section 13.7** of this report; and

- The site criteria for the media of concern. These criteria are set out in **Table 13.3** and will be adopted based on the proposed land use scenario¹³, identified receptors, and site specific soil conditions (where relevant).

Table 13.3 Adopted Remediation Assessment Screening Criteria

Exposure Pathway	Land Use Scenario ¹⁴	Criteria Reference
Human health dermal contact / ingestion / dust inhalation	HIL A - Residential with accessible soil	Table 1A(1) in NEPC (2013a)
	HIL B - Residential with minimal opportunities for soil access	Table B4 in Friebe, E & Nadebaum P (2011)
Human health (asbestos)	Residential A Residential B	Table 7 in NEPC (2013a) ¹⁵
Human health (aesthetics)	All	Characteristics and processes in Section 3.6.2 and 3.6.3 in NEPC (2013a)
Ecological	Urban residential / public open space	Table 1B(1) in NEPC (2013a) Table 1B(2) in NEPC (2013a) Table 1B(3) in NEPC (2013a) Table 1B(4) in NEPC (2013a) Table 1B(5) in NEPC (2013a) Table 1B(6) in NEPC (2013a)
Management Limits (petroleum hydrocarbons)	Residential, parkland and public open space	Table 1B(7) in NEPC (2013a)

13.4 Step 4: Define the boundaries of the study

The spatial extent of the project will be limited to:

- The boundaries of the site as set out in **Section 2**; and
- Physical constraints or infrastructure on site or on land adjacent to the site, that prevents safe and reasonable access for project team members and/or typical and readily available equipment used for projects of this nature.

The scale of the decisions required (as set out in **Section 13.2**) will be based on the boundaries of the site set out in **Section 2**.

The vertical and lateral extents of validation works will be limited to the extents of remediation works undertaken on relevant AECs identified in the CSM (refer **Section 6.6**), which are likely to be:

¹³ The land use scenarios in Section 2.2 of NEPC (2013a) will be considered when adopting human health assessment criteria. The land use scenarios in Section 2.5 of NEPC (2013a) will be considered when adopting ecological assessment criteria.

¹⁴ Consideration will be given to soil type, soil texture, soil depth

¹⁵ A depth of up to 10cm below ground level is adopted to define 'surface soil'.

- The inferred vertical extent of the relevant, nominated AECs likely to be:
 - to the base of fill material in the relevant AECs; and
 - to ~0.5m depth, below ground level (below building and structural footprints).
- The inferred lateral boundaries of each identified AEC.

The time and budget constraints of this project will be as per those set out in the contract (and any subsequent variations to that contract) between the client and Alliance.

The temporal boundaries of the project will include:

- Availability of project team members (including subcontractors and subconsultants) to collect and assess relevant project data;
- The availability of site access to undertake fieldwork; and
- Meteorological conditions including heat, cold, wind and rain, which may constrain undertaking of fieldwork, or may affect the quality of the data being collected.

13.5 Step 5: Develop the analytical approach

13.5.1 Field Duplicates and Triplicates

A minimum of one set of field duplicates and triplicates will be collected for each set of 20 samples collected (an equivalent of 5%), excluding asbestos samples.

Field duplicate and triplicate samples will be collected by splitting one bulk sample across three separate sample containers. Soil samples will not be homogenised, particularly where volatile or semi volatile COPC are being considered.

Analysis of the duplicate samples and triplicate samples will be scheduled based on at least one of the analytes that the relevant parent sample is being analysed for.

The relative percent difference (RPD) of the detected concentrations in the parent and duplicate, and the parent and triplicate, will be calculated, and the result compared to the relevant data quality indicator (DQI), as set out in **Section 13.5.5**.

13.5.2 Trip Spikes and Trip Blanks

One trip spike and one trip blank will be used for each day of sampling¹⁶.

A minimum of one trip spike and one trip blank will be scheduled for BTEX analysis, during the project, provided the sample preservation, handling, transport and storage procedures used are the same for each day of sampling undertaken.

¹⁶ When samples are being collected on that day, that will be analysed for BTEX and/or TRH C₆-C₁₀.

13.5.3 Equipment Rinsate Blanks

One rinsate blank will be used for each day of sampling¹⁷.

A minimum of one rinsate blank will be scheduled for analysis for at least one of the COPC, during the project, provided sample collection and equipment decontamination procedures are the same for each day of sampling.

Analysis of the rinsate blank will be based on at least one of the analytes that the parent sample is being analysed for (excluding asbestos).

13.5.4 Analytical Laboratory Quality Assurance and Quality Control

The primary analytical laboratory will:

- be NATA accredited for the methods used; and
- use a quality assurance and quality control (QA/QC) program that will typically include analysis of method blanks, matrix spikes, surrogate spikes, laboratory control samples and laboratory duplicates.

The primary analytical laboratory will report on whether the analytical results of the QA/QC program are within the criteria set out in the laboratory's adopted data quality objectives.

13.5.5 Data Quality Indicators

A set of data quality indicators (DQI) will be adopted for assessing the completeness, comparability, representativeness, precision and bias (accuracy) of data collected during fieldwork, the analytical data produced by the laboratory. Each of these DQI, and associated target criteria are set out in **Table 13.5.5**.

¹⁷ Only where non-disposable sampling equipment is being used on that day.

Table 13.5.5. Data Quality Indicators and Target Criteria

Completeness			
<i>Field Considerations</i>	<i>Target Criteria</i>	<i>Laboratory Considerations</i>	<i>Target Criteria</i>
Experienced sampling team used	Yes	Complete sample receipt advice and chain of custody attached	Yes
Sampling devices and equipment set out in sampling plan were used (refer Section 13.7).	Yes	Critical samples identified in sampling plan, analysed	Yes
Critical locations in sampling plan, sampled (refer Section 13.7).	Yes	Analysis undertaken addresses COPC in sampling plan (refer Section 13.7)	Yes
Critical samples in sampling plan, collected (refer Section 13.7).	Yes	Analytical methods reported in laboratory documentation and appropriate limit of reporting used	Yes
Completed field and calibration logs attached	Yes	Sample holding times met (refer Section 13.7)	Yes
Completed chain of custody attached	Yes		
Comparability			
<i>Field Considerations</i>	<i>Target Criteria</i>	<i>Laboratory Considerations</i>	<i>Target Criteria</i>
Same sampling team used for all work.	Yes	Same laboratory used for all analysis (refer Section 13.7).	Yes
Weather conditions suitable for sampling.	Yes	Comparable methods if different laboratories used (refer Section 13.7).	Yes
Same sample types collected and preserved in same way (refer Section 13.7).	Yes	Comparable limits of reporting if different laboratories used.	Yes
Relevant samples stored in insulated containers and chilled (refer Section 13.7).	Yes	Comparable units of measure if different laboratories have been used (refer Section 13.7).	Yes
Representativeness			
<i>Field Considerations</i>	<i>Target Criteria</i>	<i>Laboratory Considerations</i>	<i>Target Criteria</i>
Media identified in sampling plan, sampled (refer Section 13.7).	Yes	Samples identified in sampling plan, analysed.	Yes
Samples required by sampling plan, collected (refer Section 13.7).	Yes		
Precision			
<i>Field Considerations</i>	<i>Target Criteria</i>	<i>Laboratory Considerations</i>	<i>Target Criteria</i>
Minimum 5% duplicates and triplicates collected and analysed (refer Section 13.5).	Yes	All laboratory duplicate RPDs within laboratory acceptance criteria (refer Section 13.5).	Yes

Table 13.5.5. Data Quality Indicators and Target Criteria

RPD unlimited where detected concentrations are <10 times the limit of reporting.	Yes		
RPD within 50% where detected concentrations are 10-20 times the limit of reporting.	Yes		
RPD within 30% where detected concentrations are >20 times the limit of reporting.	Yes		

Bias (Accuracy)

<i>Field Considerations</i>	<i>Target Criteria</i>	<i>Laboratory Considerations</i>	<i>Target Criteria</i>
Trip blank analyte results less than limit of reporting (refer Section 13.5).	Yes	Laboratory method blank results within laboratory acceptance limits (refer Section 13.5).	Yes
Trip spike analyte results less between 60% and 140% (refer Section 13.5).	Yes	Laboratory control sample results within laboratory acceptance limits (refer Section 13.5).	Yes
Rinsate blank analyte results less than limit of reporting (refer Section 13.5).	Yes	Laboratory spike sample results within laboratory acceptance limits.	Yes

13.5.6 If / Then Statements

If the field and laboratory analytical dataset meets the DQI target assessment criteria, then the data may be considered adequately complete, comparable, representative, precise and unbiased, for the purpose of addressing the decisions / goals of this project as set out in **Section 13.2**.

If the field and laboratory analytical dataset does not meet the DQI target assessment criteria, then additional data may need to be collected to address gaps identified in the data.

If the field and laboratory analytical results are within the adopted land contamination assessment criteria (refer **Section 13.3**), then it may be assessed that the remediation objective has been achieved, and that the site does not present an unacceptable human health and/or ecological exposure risk, based on the adopted land use scenario.

If the field and laboratory analytical results are outside adopted land contamination assessment criteria (refer **Section 13.3**), then it may be assessed that the remediation objective has not been achieved and that identified land contamination at the site presents an unacceptable human health and/or ecological exposure risk, and that further contamination management / remediation work is required.

13.6 Step 6: Performance and Acceptance Criteria**13.6.1 If / The Decisions**

There are two types of decision error:

- Sampling errors – these occur when the sampling program does not adequately detect variability of a contaminant from point to point across a site. That is, the samples collected are not representative of site conditions (e.g. an appropriate number of representative samples have not been collected from each stratum to account for estimated variability in that contaminant); and
- Measurement errors - these occur during sample collection, preparation, analysis and reduction of data.

During land contamination assessment, these errors can result in either:

- a Type I error, where land contamination human health and/or ecological exposure risks are considered to be acceptable, when they are not acceptable; or
- a Type II error, where land contamination human health and/or ecological exposure risks are considered to be unacceptable, when they are acceptable.

For decision rules to be sound, they should be designed to mitigate risk of decision errors occurring. The risk of decision error on this project will be mitigated by:

- Ensuring fieldwork is undertaken by suitably experienced field staff and sub-contractors, with reference to the DQO adopted for this project;
- Ensuring laboratory analysis is undertaken by NATA accredited laboratories; and
- Ensuring assessment of field and laboratory analytical data is undertaken by suitably experienced environmental consultants and/or outsourcing assessment to technical experts (if warranted).

13.7 Step 7: Develop the plan for obtaining data

13.7.1 Validation Sampling Point Densities and Locations

Section 5.5 in NSW EPA (2022) provides guidance regarding validation sampling.

The scope of this project has included collection of data that provides an understanding of:

- site history;
- the locations of potentially contaminated areas;
- the identified COPC;
- laydown mechanisms for COPC in each AEC;
- the likely lateral and vertical extent of potential contamination in each AEC; and
- constraints on site which may restrict the use of certain sampling techniques.

On that basis, it is considered reasonable to adopt a mixture of systematic and judgemental sampling patterns using the sampling point densities set out in **Table 13.7.1**.

Table 13.7.1 Validation Sampling Point Densities and Locations

ID	Contamination Risk	Preferred Validation Strategy
-	Friable Asbestos (FA/AF)	A visual assessment of the residual remediation area and photographic record. Visual validation of excavation base and walls, and collection of:

Table 13.7.1 Validation Sampling Point Densities and Locations

ID	Contamination Risk	Preferred Validation Strategy
		- one sample per 5m x 5m (25 m²) of excavation base, minimum of two; and - one sample per five lineal metres of excavation wall, if greater than 0.1 m for each relevant stratum, or per vertical metre of excavation depth, whichever is greater. Laboratory analysis of all samples for asbestos (0.001% w/w). Clearance certificate from an LAA.
-	Surface soils (top 10cm) with asbestos containing materials	Works will be undertaken in a manner that avoids further damage or burial of the ACM by the process. A visual assessment of each phase of raking works. A visual assessment of the residual footprint following removal and photographic record. Clearance certificate from a licensed asbestos assessor (LAA) or competent person. If visual evidence of construction or demolition waste is observed in surface soils that have been remediated for visible asbestos, validation will include collection of one 10L sample per 5m x 5m (25 m²) of area remediated for bonded ACM field screening.
-	Bonded Asbestos (ACM) deeper than surface soils (below 10cm)	A visual assessment of the residual remediation excavation footprint and photographic record. A visual inspection of each batch of treated material. Collect one representative 10L sample per spread or per 70m³ of treated material for bonded ACM field screening Visual validation of excavation base and walls if exposed natural material, otherwise collect: - one 10L sample per 5m x 5m of excavation base; and - one 10L sample per ten lineal metres of excavation wall, for each relevant stratum, or per vertical metre of excavation depth, whichever is greater, minimum four. for bonded ACM field screening. Clearance certificate from a licensed asbestos assessor (LAA) or competent person.
	Chemical Contaminants	A visual assessment of the residual remediation area and photographic record. Visual validation of excavation base and walls, and collection of - one sample per 5 m x 5 m (25 m²) of excavation base, minimum of two; and - one sample per five lineal metres of excavation wall, if greater than 0.1 m for each relevant stratum, or per vertical metre of excavation depth, whichever is greater. Laboratory analysis of all samples for COPC
Imported VENM for backfilling	Site specific	VENM to be validated using the procedures set out in https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/virgin-excavated-natural-material Visual assessment (by a suitably experienced person) of materials upon delivery to site to assess consistency with the material in the supply documentation, confirm free of anthropogenic indicators of contamination (based on professional judgement using criteria set out in Table 13.3 for aesthetics risk) and are consistent with material description provided in the reviewed certification report.

Table 13.7.1 Validation Sampling Point Densities and Locations

ID	Contamination Risk	Preferred Validation Strategy
Refer to Section 12.7 for non-conforming materials.		
Imported ENM for backfilling	Refer The excavated natural material 2014 Order and Exemption and asbestos	Quantity dependent – refer to The excavated natural material (ENM) resource recovery exemption. Gravimetric assessment of samples for bonded asbestos. Laboratory analysis of all samples as per Order and Exemption, and asbestos (0.001% w/w). Visual assessment (by a suitably experienced person) of materials upon delivery to site to assess consistency with the material in the supply documentation, confirm free of anthropogenic indicators of contamination (based on professional judgement using criteria set out in Table 13.3 for aesthetics risk) and are consistent with material description provided in the reviewed certification report. Refer to Section 12.7 for non-conforming materials.
Imported Other for backfilling	Refer relevant Order and Exemption and asbestos	Quantity dependent – refer to the relevant resource recovery exemption. Gravimetric assessment of samples for bonded asbestos. Laboratory analysis of all samples as per Order and Exemption, and asbestos (0.001% w/w). Visual assessment (by a suitably experienced person) of materials upon delivery to site to assess consistency with the material in the supply documentation, confirm free of anthropogenic indicators of contamination (based on professional judgement using criteria set out in Table 13.3 for aesthetic risk) and are consistent with material description provided in the reviewed certification report. Refer to Section 12.7 for non-conforming materials.
Imported landscaping / topsoil material including recycled materials	TRH, PAH, asbestos, OCP and metals (8)	Product supply documentation to be provided to the environmental consultant prior to import, including supplier certification required to assess imported landscaping materials are consistent with the relevant requirements of AS4419 (2003) and NSW EPA 2024 'Contaminated Mulch Management Plan' dated March 2024, ref: EPA2024P4500. Sampling to be undertaken with reference to Table 2, Table 3 and Table 4 of NSW EPA (2022). Gravimetric assessment of samples for bonded asbestos. Laboratory analysis of all samples, including asbestos (0.001% w/w). Visual assessment (by a suitably experienced person) of materials upon delivery to site to assess consistency with the material in the supply documentation and confirm free of anthropogenic indicators of contamination (based on professional judgement using criteria set out in Table 13.3 for aesthetic risk). Refer to Section 12.7 for non-conforming materials.

In the event unacceptable contamination risks are identified in those AECs being subjected to supplementary contamination assessment works and they are remediated, then conceptual validation strategies to address the COPCs being potentially being remediated in those AECs, are presented in **Table 13.7.1**.

13.7.2 Sampling Methods

13.7.2.1 Soils

Soil samples will be collected from each relevant sampling point, at the surface at 0.0-0.1m or 0.0-0.15m, unless there is evidence of a thin surficial layer of contamination. Samples will then be collected at regular intervals thereafter (typically at depth intervals of no more than 0.5m), or where there is a change in lithology, or where there is visual/olfactory evidence of potential contamination. Samples will also typically be collected beneath the point where fill meets the underlying natural soil.

Samples collected from excavation bases and footprints, will typically be collected across a depth of 0.0-0.1m below the surface.

Samples collected from excavation walls will typically be collected across a profile 0.1 to 0.2m in thickness and will target suspect material based on visual and/or olfactory observations.

Samples requiring asbestos gravimetric screening will be 10L in volume, with sampling considering each 1m interval (or part thereof), and/or targeting suspect asbestos material or construction debris and screened with reference to Table 5 in WA DOH (2009).

Samples requiring calculation of asbestos fines (AF) and fibrous asbestos (FA), with sampling targeting suspect asbestos material or construction debris, and collected as separate samples to the 10L bulk samples.

If olfactory or visual observations of remedial works, or headspace analysis of screening samples, indicate a potential for contamination to be present, then consideration will be given to collection of additional validation samples / data.

The location of collected validation sampling data will be recorded on a site plan.

Samples will be submitted to a NATA accredited laboratory for analysis.

13.7.3 Decontamination

Non-disposable sampling equipment will be decontaminated between sampling points to mitigate potential for cross contamination of samples. Decontamination will include the following procedure:

- Washing off the non-disposable sampling equipment with a solution of potable water and phosphate free detergent (e.g. Decon 90), noting that Decon 90 will not be used on equipment used for collection of samples that will be analysed for PFAS compounds;
- Rinsing the washed equipment with distilled or de-ionised water; and
- Air drying of the rinsed equipment.

13.7.4 Headspace Screening

When COPC identified for the site include volatiles (e.g. BTEX, TRH or VOC), collected soil samples will be subjected to headspace screening for ionisable volatile organic compounds, using a calibrated photo-ionisation detector (PID) fitted with a 10.6eV lamp. A sub sample from each collected sample will be placed in a zip lock bag, sealed, and shaken. Each zip lock bag will then be pierced with the tip of a PID, and the results recorded on the relevant sampling point borehole or test pit log.

13.7.5 Sample Identification, Handling, Storage and Transport

Soil samples will be identified using the relevant Alliance project number, the sampling point identification number and the sampling depth interval (e.g. BH01/0.0-0.2 or TP05/0.5-0.7), and date the sample was collected.

Samples will be placed in laboratory prepared containers (containing preservatives as appropriate), bulk sample bags and zip lock bags. Soil and water samples will be stored in insulated containers with ice.

Samples will be transported to the relevant analytical laboratory by Alliance or a third party courier, using chain of custody (COC) documentation.

13.7.6 Selection of Laboratory

The analytical laboratories used for this project will be reputable industry recognised environmental laboratories, that are NATA accredited for the analytical methods used.

13.7.7 Scheduling of Laboratory Analysis

Collected samples will be scheduled for laboratory analysis based on:

- The COPC identified for the AEC the sample was collected from;
- Observations made of the sample when collected (including staining, odour, presence of anthropogenic materials, and presence of potential asbestos containing materials);
- The results of sample headspace screening (if applicable); and
- The need for specific qualitative or quantitative data to inform assessment of risk associated with other laboratory analytical data (e.g. pH, cation exchange capacity, clay content, organic carbon content).

The laboratory analytical schedule adopted for this project for the conceptual remedial works, is set out in **Table 13.7.7.1**.

Table 13.7.7.1 Schedule of Laboratory Analysis for Validation of Remediation

ID	AEC	Analytes
-	Excavations impacted with friable asbestos / asbestos fines	All samples for asbestos (0.001% w/w)
-	Excavations impacted with chemical contaminant/s	TRH/BTEX, PAH, OCP, PCB, Metals (8).
-	Virgin excavated natural material	All samples for relevant contaminants of concern, based on guidance presented in https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/virgin-excavated-natural-material
-	Excavated natural material	All samples for the chemicals and attributes in Table 4 of the excavated natural material Order 2014, ACM 10L field screening, and asbestos (0.001%w/w).
-	Other imported material	All samples for the relevant chemicals and attributes in the relevant resource recovery order and asbestos (ACM 10L field screening and 0.001% w/w laboratory analysis).
-	Mulch	All samples for the requirements of the Mulch Order 2016, and asbestos (ACM 10L field screening and 0.001% w/w laboratory analysis).
-	Imported landscaping material	Relevant samples by supplier as per AS4419 (2003). Validation samples by environmental consultant for OCP, metals (8) and asbestos (ACM 10L field screening, and AF 0.001% w/w laboratory analysis)

13.7.8 Analytical Methods, Limits of Reporting and Holding Times

The analytical methods, limits of reporting and sample holding times adopted for this project, are set out in **Table 13.7.8**.

Table 13.7.8 Analytical Methods, Limits of Reporting and Holding Times

Analyte	Method	Limit of Reporting (mg/kg)	Limit of Reporting (µg/L)	Limit of Reporting (ug/m ³)	Holding Time
BTEX and TRH C ₆ -C ₁₀	USEPA 5030, 8260B and 8020	0.2-0.5	1-2 and 50		14 days
TRH C ₁₀ -C ₄₀	USEPA 8015B & C	20-100	50-500		14 days
PAH	USEPA 8270	0.1-0.2	0.5-10		14 days
PCB	USEPA 8270	0.2	-		14 days
OCP	USEPA 8081	0.2	-		14 days
Metals	USEPA 6010, 6020	0.4-5	0.0002-0.001		6 months
Metals (Hg and Cr ^{vi})	USEPA 8015B & C	0.05-2	0.1-5		6 months (28 days)
Asbestos ID	AS4926	Absence / presence	-		No limit
Asbestos (WA DOH)	Inhouse	0.001% w/w	-		No limit
pH	APHA 4500 pH	-	0.1 pH unit	-	24 hours (up to 7 days allowed)
Clay content	AS 1289.3.6.3	1%	-	-	No limit
Cation exchange capacity	Rayment & Lyons 15B1-B3	0.05 meq/100g	-	-	28 days

14 Site Remediation and Validation Report

At the completion of remedial works, a site remediation and validation report will be prepared with reference to the relevant sections of NSW EPA (2020b) The site remediation and validation report will include:

- An executive summary;
- The scope of reporting work undertaken;
- Site identification details;
- A summary of geology and hydrogeology;
- A summary of site condition and the surrounding environment;
- Information on supplementary contamination assessment works undertaken (if any);
- A pre-remediation conceptual site model;
- Summary of the remedial action plan;
- Remediation and validation activities undertaken;
- Information on waste management;
- Information on the remedial works undertaken;
- Information on imported material;
- An assessment of field and laboratory quality assurance / quality control data;
- Validation results and discussion;
- A post remediation conceptual site model; and
- Conclusions and recommendations.

15 Environmental Management Plan (Post Remediation)

Alliance notes that the SEARs for the project require a long term environmental management plan be provided. On the basis that preferred conceptual remedial options do not involve managing any residual contamination on site, an environmental management plan is considered not required. However, should the SCA works involve a change in remedial strategy that warrants the need for an EMP, then the validation of the site as suitable for the proposed land use will be contingent upon the implementation of an environmental management plan (EMP) to manage residual risks posed by contaminated material to future site users. Should an EMP be required, then it will be prepared with reference to the relevant sections of NSW EPA (2020b), and include the following:

- The purpose of the EMP, including the reason for it and time period of the EMP;
- How the plan will be made legally enforceable (subject to opinion of the local consent authority);
- Whether the environmental management plan is active or passive;
- Parties responsible for implementation and review/maintenance of the plan and their tasks;
- Where the plan will be recorded;
- Background site identification (including street number, street name and suburb, lot and Deposited Plan number, co-ordinates, locality map, site survey plan), site owner, local government area, consent authority and site zoning (current and future);
- Site history as it relates to the existing site contamination which requires management;
- Current / future site use and layout (relevant to the environmental management plan);
- A description of existing / residual contamination;
- Management activities associated with the EMP, including procedures, responsibilities, monitoring requirements, reporting requirements, communication protocol and contingency plans;
- Inspection, maintenance, environmental sampling, analysis and reporting requirements (if applicable);
- Monitoring and review procedures for the EMP; and
- Communication and stakeholder notification arrangements and procedures.

A draft of the of the EMP will be submitted to the appointed NSW EPA Site Auditor for review and endorsement.

16 Site Management Plan

16.1 Register of Contacts

A register of contact details of stakeholders considered relevant to the project, is presented in **Table 16.1**.

Table 16.1 Register of Contacts

Role	Person	Stakeholder	Contact
Emergency Services	-	Police / Fire Ambulance	000
Site Owner	-	NSW Land and Housing Corporation	-
Project Owner	Andrew McConnell	NSW Land and Housing Corporation	0477 709 761
Planning Authority	-	Bayside Council	1300 581 299
WHS Regulatory Authority	-	SafeWork NSW	131 050
Environmental Regulatory Authority	-	NSW EPA	131 500
Remediation Contractor	To be confirmed	To be confirmed	To be confirmed
Environmental Consultant	Sam Willis	Alliance Geotechnical	0472 784 385
Licensed Asbestos Assessor	Shambhu Shrestha	Alliance Geotechnical	0451 799 671
NSW EPA Accredited Site Auditor	Louise Walkden	Ramboll	0433 982 855

16.2 Emergency Preparedness and Response

An emergency assembly point will be established at an appropriate location, and this location communicated to workers and visitors during the site induction process. In the event an emergency situation arises, workers and visitors will assemble at this location (if safe to do so) and await further instructions from the site supervisor, project manager or emergency services.

Spill control kits and fire extinguishers will be located at appropriate locations at the site.

Contact details to be used in the event of an emergency, are presented in **Table 16.1**.

16.3 Community Relations

Occupants of properties adjoining the site and located immediately across the road from the site, will be provided with a notification of intent to undertake remedial works on the site, a minimum of two business days before commencing those remedial works.

A register will be maintained on site, for the recording of remedial works related communications from the community.

Communication received from community about the remedial works, will be directed to the project manager in the first instance. The project manager will arrange for the communication to be responded to, in accordance with arrangements agreed to between the remediation contractor and the principal.

16.4 Signage, Security and Hours of Operations

The hours of operation at the site will be limited to:

- Monday to Friday between 7:00am and 5:00pm, and Saturday between 8:00am and 1:00pm; or
- days and times set out in the relevant development consent conditions (if available), which will take precedent over the aforementioned days and times.

The 24-hour contact details of the remediation contractor will be put on a sign, and posted on the site boundary, adjacent to the site access point. The sign will be maintained by the remediation contractor until completion of remedial works.

Security of the site will be maintained for the duration of the remedial works, with appropriate boundary fencing/barricades and access point locks.

16.5 Workplace Health and Safety

16.5.1 Safe Work Method Statements

All parties intending to undertake tasks in the remediation area/s will prepare a safe work method statement (SWMS) that documents:

- The task/s to be undertaken;
- Hazards associated with undertaking those task/s;
- A risk assessment of each hazard, considering consequence and likelihood;
- Control measures to be implemented to mitigate identified risks; and
- A re-assessment of each hazard, assuming control measure implementation, and showing a demonstrable decrease to the risk.

16.5.2 Personal Protective Equipment (PPE)

The following personal protective equipment (PPE) will be worn (as a minimum) by all persons working on, or visiting, the remediation work area/s:

- Eye protection (e.g. safety glasses or goggles);
- Long sleeves and long pants;
- A high visibility vest (or clothing);
- Protective foot wear (e.g. safety boots);
- Hard hat; and
- Cut resistant gloves.

Additional PPE or respiratory protective equipment (RPE) may also be required, subject to the control measures set out in the SWMS for the task.

16.5.3 Occupational Hygiene

Atmospheric monitoring will be undertaken (subject to the findings of the risk assessment in the relevant SWMS), or as may be recommended by a suitably experienced occupational hygienist. Monitoring may include airborne fibre monitoring during asbestos remedial works, vapour monitoring during hydrocarbon remediation, or gas/explosion risk monitoring during landfill remediation.

Plant and equipment will be appropriately decontaminated before leaving a remedial works zone.

16.5.4 Decontamination

The following decontamination procedure will apply to all persons exiting the remediation work area/s:

- Cleaning of protective footwear, including removal of potentially contaminated material from the soles of the footwear; and
- Washing of hands (including prior to eating, drinking or smoking).

16.6 Asbestos Removal Control Plan (ARCP)

An asbestos removal control plan (ARCP) is a document that identifies the specific control measures that will be used to ensure workers and other people are not at unacceptable risk when asbestos removal work is being conducted. It is focused on the specific control measures necessary to minimise risk from exposure to asbestos.

An ARCP plan helps ensure the asbestos removal is well planned and carried out in a safe manner. An asbestos removal control plan is only required to be prepared for licensed asbestos removal work. However, one can be prepared to assist when planning asbestos removal work that does not require a licence.

Asbestos registers relevant to the asbestos to be removed and the area to be worked on, will be taken into account when preparing an ARCP.

The structure of the ARCP will address the specific requirements for each job, and will be prepared with reference to Appendix B in SafeWork NSW (2022).

For works involving the management and/or removal of asbestos, an asbestos removal control plan (ARCP) will be prepared before licensed asbestos removal work commences. The ARCP will include details of:

- how the asbestos removal will be undertaken, including the method, tools, equipment and PPE to be used; and
- the asbestos to be removed, including the location, type and condition of the asbestos.

Specifications and drawings relevant to the asbestos removal work, will be attached to the ARCP, to provide additional information about the asbestos.

Preparation of the ARCP will include, as far as is practicable, consultation with the client, the person with management or control of the site, workers, and workers' health and safety representatives.

For residential asbestos removal work, the person conducting a business or undertaking (PCBU) and the owner/occupier will also be consulted.

Once prepared, copies of the ARCP will be:

- given to the person who commissioned the licensed asbestos removal work
- kept at the workplace until the completion of the asbestos removal work; and
- readily accessible on site for the duration of the licensed asbestos removal work, to:
 - PCBUs at the workplace;
 - workers or their health and safety representatives; and
 - the occupants of the premises (if the work is carried out in residential premises).

The ARCP will also be made available for inspection under the Work Health and Safety Act.

If a notifiable incident occurs in connection with the asbestos removal work to which the ARCP relates, the licensed asbestos removalist will keep the plan for at least two years after the incident occurs.

16.7 Traffic Management

The remediation contractor will:

- ensure vehicles exit the site in a forward direction;
- arrange for receipt and dispatch of materials during approved remedial working hours (refer **Section 16.4**);
- securely cover all loads to prevent dust or odour emissions during transportation; and
- utilise suitable experienced and qualified traffic controllers (as required).

Traffic and haulage routes will be selected based on:

- compliance with traffic road rules;
- opportunities to mitigate noise, vibration, dust and odour impacts to properties/occupants adjacent to the site; and
- preference for state controlled roads (as opposed to local roads);

16.8 Soil and Stormwater Management

16.8.1 Site Access and Egress

A sediment and erosion control plan will be prepared by the remediation contractor, to suit the nature and staging of the remedial works. Control measures will be operated and maintained by the remediation contractor, until completion of the remedial works.

Vehicle and plant site access/egress will be managed to prevent soils being tracked onto roads and pathways external to the site (e.g. gravels, gabions, cattle grids). Soil will be broomed or washed off tyres/tracks prior to the vehicle or plant leaving the remediation work area. Broomed/washed soil will be managed onsite, depending on its likely contamination status.

Surface stormwater generated from (or travelling through) the remediation works area, will be managed using relevant measures set out in Landcom (2004).

In the event soils are tracked onto roads or pathways external to the site, these soils will be removed by sweeping and/or shovelling.

16.8.2 Stockpiles

Stockpiles of material generated during remedial works will be:

- generally constructed as low elongated mounds on level surfaces;
- placed away from stormwater pits, drainage lines and gutters;
- not located on footpaths or nature strips, unless approved by the local planning authority;
- stored in secure areas and covered if remaining on site for more than 24 hours; and
- kept damp if containing (or suspected of containing) asbestos.

16.8.3 Groundwater and Excavation Pump Out

Should excavations require water to be pumped out, the water will be sampled and analysed by a suitably experienced environmental consultant, for total suspended solids (TSS), pH, metals (8) and petroleum hydrocarbons.

If the laboratory analytical results are less than the relevant¹⁸ aquatic ecosystem groundwater investigation levels (GILs) set out in ANZECC (2000), then the excavation water may be discharged to the local stormwater system.

If the laboratory analytical results are greater than the relevant¹⁹ aquatic ecosystem groundwater investigation levels (GILs) set out in ANZECC (2000), then other options for the excavation water will be considered, including:

- assessment of proposed receiving waters, in the context of the contaminant concentrations found in the excavation water;
- removal and offsite disposal by a liquid waste contractor; or
- discharge to sewer under an approval obtained from the relevant sewerage infrastructure operator.

In the event the site requires dewatering, development consent from the relevant planning authority and/or approvals from the state water authority, will be obtained (if required).

16.8.4 Site Rehabilitation

¹⁸ Freshwater or marine, and adopted based on protection levels that consider aquatic ecosystem disturbance.

¹⁹ Freshwater or marine, and adopted based on protection levels that consider aquatic ecosystem disturbance.

Areas of the site that become exposed as a result of remedial works, will be stabilised progressively, as remedial works are completed. Stabilisation methods will be maintained until such time as they are no longer required (e.g. vegetation becomes established and self-sustaining, or site development work commences).

16.9 Waste Management

Wastes generated during remedial works will be removed from site for recycling / disposal, with reference to NSW EPA (2014) and the relevant provisions of the Protection of the Environment Operations Act 1997 and SafeWork NSW (2022).

The remediation contractor will maintain detailed records of each load of waste generated during remedial works, including:

- The location the waste was generated from;
- The classification of the waste;
- The date and time the waste was removed from the site;
- The vehicle registration number of the waste transport vehicle;
- Evidence of Integrated Waste Tracking Solution (IWTS) information (where applicable), including the waste transporter's licence details;
- The volume of each waste type removed from site;
- Weighbridge receipt docket from the waste receiving facility; and
- The number of the environment protection licence (EPL) authorising the receiving facility to accept that classification or waste.

16.10 Dust Control

The following control measures will be implemented to mitigate risk of dust emissions migrating beyond the boundary of the remediation work area/s:

- erection of dust screens around the perimeter of the site (e.g. fencing with shade cloth attached);
- securely covering all loads entering or exiting the site;
- use of water sprays across the site to suppress dust;
- covering stockpiles of contaminated soil remaining on site for more than 24 hours;
- keeping excavation surfaces moist;
- wetting down of placed fill material during spreading;
- sweeping of hardstand surfaces;
- minimising soil disturbance works during windy days; and
- retaining stabilised site access/egress points for vehicles.

16.11 Odour Control

Should odours be detected at the site boundary during remediation works, monitoring of those odours may be undertaken, using methods²⁰ suited to the odour type, based on recommendations from a suitably experienced odour consultant (if required). This may include:

- use of appropriate covering techniques such as plastic sheeting to cover excavation faces or stockpiles;
- use of fine mist sprays (which may incorporate deodorizing agents);
- use of hydrocarbon mitigating agents on impacted areas/materials; and
- adequate maintenance of equipment and machinery to minimise exhaust emissions.

16.12 Airborne Asbestos Monitoring

Airborne asbestos monitoring will be undertaken on site by a Licensed Asbestos Assessor (LAA) during friable asbestos removal or handling. Monitoring during bonded asbestos removal, will be undertaken, subject to advice provided by the occupational hygienist/competent person appointed to the project.

Monitoring will be used to validate controls put in place to mitigate potential asbestos exposure.

Portable battery operated air monitors will be placed in static positions approximately 1.5m above the ground surrounding the asbestos handling / removal area.

Analysis of monitors will be undertaken by a NATA-accredited laboratory. The results of analysis will be compared to the criteria presented in **Table 16.12** and the appropriate action applied.

²⁰ Methods could include instrumental, chemical analysis, electronic, sensory tests or olfactometry.

Table 16.12 Atmospheric Monitoring Action Criteria and Measures

Detected Concentration (fibres per millilitre)	Action
<0.01	Continue with established control measures
0.01 to 0.02	Review established control measures Investigate probable cause Establish additional control to mitigate further fibre release
>0.02	Stop works Notify the relevant regulatory authority that work has ceased Investigate probable cause Extend the works exclusion zone Establish additional control to mitigate further fibre release Do not re-commence work until detected concentrations are at or below 0.01 fibres per millilitre

16.13 Noise and Vibration Control

Plant and equipment being utilised for remedial works, will be fitted with noise attenuation devices (e.g. exhaust mufflers). Where possible, selection and use of reversing alarms will avoid standard tonal pulse alarms.

Vehicle access roads will be designed to mitigate the need for vehicles and mobile plant to reverse during travel (e.g. creation of turning circles in the immediate vicinity of remediation work area/s).

'Offensive noise', as defined under the Protection of the Environment Operations Act 1997, will not be emitted beyond the site boundary, during remedial works.

Vibrations generated during remedial works will be managed to mitigate risk of damage to structural assets and risk of amenity loss to adjacent land occupiers. Advice from geotechnical, structural or vibration consultants will be sought, if required.

16.14 Site Incident Contingency Plan

There are inherent risks of incidents to occur onsite that may affect the surrounding environment and community. Based on the site history information made available to Alliance for preparation of this RAP, it is considered plausible that incidents involving the surrounding environment and community, outlined in **Table 16.14**, could occur during site works. Contingency plans and protocols to be implemented, should those incidents occur, are presented in **Table 16.14**.

Table 16.14 Site Incident Contingency Plan

Site Incident	Contingency Plan
High levels of dust detected outside the boundary of the site as a result of site works	Stop works, notify relevant stakeholders. Assess the application and effectiveness of measures outlined in Section 16.10 . If measures are assessed to be inappropriate, consider additional measures, such as (but not limited to) postponing of works to account for poor weather conditions, or similar, and update the site management plan.

Table 16.14 Site Incident Contingency Plan

Site Incident	Contingency Plan
High levels of odours detected outside the boundary of the site as a result of site works	Stop works, notify relevant stakeholders. Assess the application and effectiveness of measures outlined in Section 16.11 . If measures are assessed to be inappropriate, consider additional measures, such as engaging a suitably experienced odour consultant, or similar, to assess and provide advice on odour management.
High levels of noise and/or vibration detected outside the boundary of the site as a result of site works	Stop works, notify all necessary stakeholders, and assess the applications and effectiveness of measures outlined in Section 16.13 . If measures are assessed to be inappropriate, consider additional measures, such as engaging a suitably experienced geotechnical, structural or vibration consultant, or similar, to assess and provide advice on noise / vibration management.
Asbestos detected above 0.02 fibres per millilitre in asbestos air monitors at site boundaries	Stop works, notify relevant stakeholders, and as per Table 16.12 : ○ Notify the relevant regulatory authority that work has ceased. ○ Investigate probable cause. ○ Extend the works exclusion zone. ○ Establish additional control to mitigate further fibre release. ○ Do not re-commence work until detected concentrations are at or below 0.01 fibres per millilitre.

17 Conclusions

Based on the assessment undertaken by Alliance of site history information, fieldwork observations and data, and laboratory analytical data, in the context of the proposed land use scenario and objectives of this project, Alliance considers that the remediation objective can be achieved and the site made suitable for the proposed land use scenario, subject to the:

- Implementation of the interim site management plan, to be prepared separately;
- Implementation of the strategies, methodologies, plans and procedures set out in this remediation action plan, if required, following the completion of the SCA proposed in **Section 8**; and
- Preparation of a site remediation and validation report (if required).

In the event that the proposed development scheme changes from that which was considered during preparation of this RAP, then the SCA and remedial strategies including the relevance of adopted land use scenarios must be reviewed, which may result in addendums to the RAP being required. The addendums will be reviewed by the appointed NSW EPA site auditor for the purpose of obtaining endorsement, before implementation of the addendum.

Specific assumptions that apply to the adopted land use scenario, are presented in **Section 6** of this report.

This report must be read in conjunction with the ***Important Information About This Report*** statements at the front of this report.

18 References

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National Environment Protection Council (NEPC) 2013c, 'Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soil', National Environment Protection (Assessment of Site Contamination) Measure (NEPM) as amended in May 2013.

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National Environment Protection Council (NEPC) 2013e, 'Schedule B(5a) Guideline on Ecological Risk Assessment', National Environment Protection (Assessment of Site Contamination) Measure (NEPM) as amended in May 2013.

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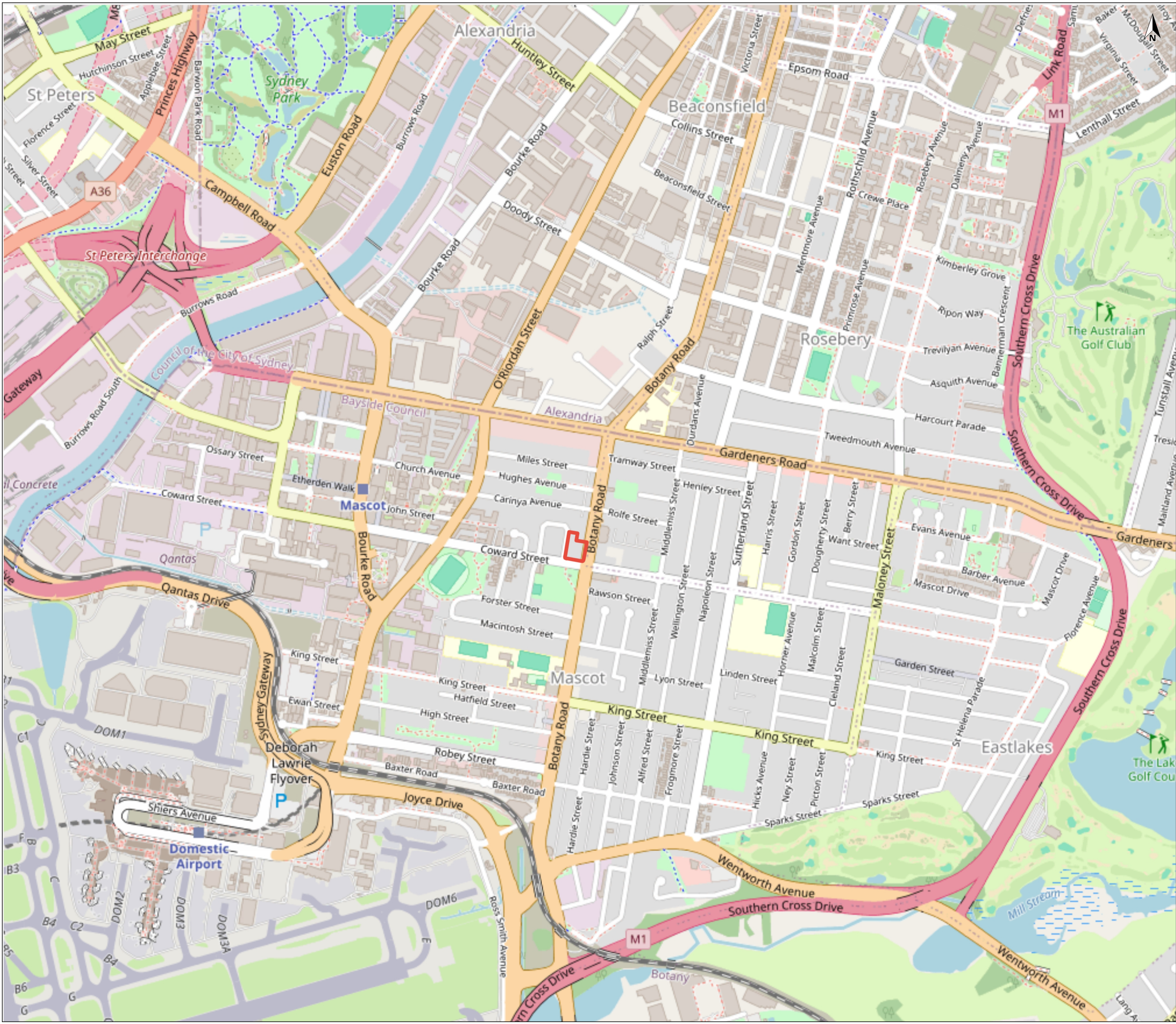
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FIGURES



Legend

Site Boundary

0 250 m 500 m
© OpenStreetMap contributors

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Produced by Datanest.earth

Title: Site Location Plan

Client:
New South Wales Land and
Housing Corporation

Size: A3

Project:
33 Henry Kendall
Crescent Mascot

Drawn: SI

Figure No.: 1

Date: 18-09-2024

Checked:
SW

Proj No: 17716.3

Scale:
1:12352

Version:
ER-1-2



Legend

- Site Boundary
- High-Density Residential Building

0 5 m 10 m
© Nearmap

alliance
Produced by **Datanest.earth**

Title: Site Layout Plan		
Client: New South Wales Land and Housing Corporation		Size: A3
Project: 33 Henry Kendall Crescent Mascot	Drawn: SI	Figure No.: 2
Date: 18-09-2024	Checked: SW	
Proj No: 17716.3	Scale: 1:462	Version: ER-1-2



Legend

- STS Monitoring Wells
- Soil Vapour Locations
- Borehole Locations
- Site Boundary

0 5 m 10 m
© Nearmap

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Produced by Datanest.earth

Title: Previous Sampling Points

Client: New South Wales Land and Housing Corporation		Size: A3
Project: 33 Henry Kendall Crescent Mascot	Drawn: SI	Figure No.: 3
Date: 18-09-2024	Checked: SW	
Proj No: 17716.3	Scale: 1:458	Version: ER-1-2



Legend

- STS Monitoring Wells
- Soil Vapour Locations
- Borehole Locations
- Site Boundary

0 5 m 10 m
© Nearmap

alliance

Produced by Datanest.earth

Title: Exceedances - Soils		
Client: New South Wales Land and Housing Corporation		Size: A3
Project: 33 Henry Kendall Crescent Mascot	Drawn: SI	Figure No.: 4
Date: 18-09-2024	Checked: SW	
Proj No: 17716.3	Scale: 1:441	Version: ER-1-2



Legend

🟩 AEC01 - Site Footprint

0 5 m 10 m
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Produced by **Datanest.earth**

Title: Revised Areas of Environmental Concern

Client:
New South Wales Land and
Housing Corporation

Size: A3

Project:
33 Henry Kendall
Crescent Mascot

Drawn: SI

Figure No.: 5

Date: 18-09-2024

Checked:
SW

Proj No: 17716.3

Scale: 1:445

Version:
ER-1-2



Legend
■ SCA Sampling Points

0 5 m 10 m
© Nearmap

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Produced by **Datanest.earth**

Title: SCA - Soil Sampling Point Layout Plan

Client: New South Wales Land and Housing Corporation	Size: A3
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Project: 33 Henry Kendall Crescent Mascot	Drawn: SI	Figure No.: 6
Date: 18-09-2024	Checked: SW	

Proj No: 17716.3	Scale: 1:436	Version: ER-1-2
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APPENDIX A – Previous Contamination Assessment Logs and Field Records

Borehole Log

Client: New South Wales Land and Housing Corporation					Started: 26/06/2024					
Project: Detailed Site Investigation - Housing Australia Future Fund Project					Finished: 27/06/2024					
Location: 792-794 Botany Rd and 33-37 Henry Kendal Crescent, Mascot NSW					Borehole Location: Borehole Size: 110mm					
Rig Type: Geoprobe			Hole Coordinates E, N			Driller: Michael		Logged: SI		
RL Surface: m			Contractor: Stratacore			Bearing: ---		Checked: SW		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition	Consistency/Density Index	Additional Observations
PT	GW @0.8m				-	FILL: Silty SAND, fine to medium grained, brown, with rootlet.	0.0-0.1 BH01 PID=1.4	M	-	FILL No ACM, staining, or odour.
				SP	SAND, fine to medium grained, grey/dark grey, trace silt and trace clay.	0.2-0.3 BH01 PID=1.1		-	NATURAL No ACM, staining, or odour.	
			0.5			0.4-0.5 BH01				
				SP	SAND, fine to medium grained, grey/dark grey mottled brown, trace silt and clay.		W	-		
			1.0			0.9-1.0 BH01				
			1.5	SP	SAND, fine to medium grained, brown, trace silt.	1.4-1.5 BH01 PID=1.2		-		
					Between 1.8-2.2m: grey band.			Organic odour at 1.8m.		
			2.0			1.9-2.0 BH01				
SFA			2.5			2.4-2.5 BH01				
			3.0	SP	SAND, fine to medium grained, dark grey.		-	Weak organic odour at 3.0m.		
			3.5			3.4-3.5 BH01				
			4.0			3.9-4.0 BH01				
			4.5			4.4-4.5 BH01				
Target depth. Borehole BH01 terminated at 4.5m										
			5.0							

Borehole Log

Client: New South Wales Land and Housing Corporation						Started: 26/06/2024				
Project: Detailed Site Investigation - Housing Australia Future Fund Project						Finished: 26/06/2024				
Location: 792-794 Botany Rd and 33-37 Henry Kendal Crescent, Mascot NSW						Borehole Size: 70mm				
Rig Type: HA		Hole Coordinates E, N				Driller: Chris		Logged: SI		
RL Surface: m		Contractor: Stratacore				Bearing: ---		Checked: SW		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition Consistency/Density Index	Additional Observations	
HA	GW @ 0.8m				-	FILL: Silty SAND, fine to medium grained, grey/brown.	0.0-0.1 BH02 DUP01/DUP01A PID=2.6	M	-	FILL No ACM, staining, or odour.
			0.5	-	FILL: Clayey SAND, fine to medium grained, brown, with gravel and cobbles of sandstone.	0.4-0.5 BH02 PID=2.7	-			
				SP	SAND, fine to medium grained, grey.	0.6-0.7 BH02 PID=2.7	-	NATURAL No ACM, staining, or odour.		
			1.0					W		
			1.5			Target depth. Borehole BH02 terminated at 1m				
			2.0							
			2.5							
			3.0							
			3.5							
			4.0							
			4.5							
			5.0							

Borehole Log

Client: New South Wales Land and Housing Corporation						Started: 26/06/2024				
Project: Detailed Site Investigation - Housing Australia Future Fund Project						Finished: 26/06/2024				
Location: 792-794 Botany Rd and 33-37 Henry Kendal Crescent, Mascot NSW						Borehole Location: Borehole Size: 110mm				
Rig Type: Geoprobe			Hole Coordinates E, N			Driller: Michael		Logged: SI		
RL Surface: m			Contractor: Stratacore			Bearing: ---		Checked: SW		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition	Consistency/Density Index	Additional Observations
PT	GW @0.6m		0.5		-	FILL: Silty SAND, fine to medium grained, grey/brown, with rootlets.	0.0-0.1 BH03 PID=1.4	D	-	FILL No ACM, staining, or odour.
					-	FILL: SAND, fine to medium grained, dark grey, trace gravel of sandstone.	0.3-0.4 BH03 PID=1.7	M	-	
					SP	SAND, fine to medium grained, grey/pale grey.	0.7-0.8 BH03 PID=1.8	W	-	NATURAL No ACM, staining, or odour.
					Target depth. Borehole BH03 terminated at 1.2m					
			1.5							
			2.0							
			2.5							
			3.0							
			3.5							
			4.0							
			4.5							
			5.0							

Borehole Log

Client: New South Wales Land and Housing Corporation						Started: 26/06/2024		
Project: Detailed Site Investigation - Housing Australia Future Fund Project						Finished: 26/06/2024		
Location: 792-794 Botany Rd and 33-37 Henry Kendal Crescent, Mascot NSW						Borehole Location: Borehole Size: 110mm		
Rig Type: Geoprobe			Hole Coordinates E, N			Driller: Michael		Logged: SI
RL Surface: m			Contractor: Stratacore			Bearing: ---		Checked: SW

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition Consistency/Density Index	Additional Observations
PT			0.5		-	FILL: Silty SAND, fine to medium grained, dark brown/grey, fragments of concrete, rootlets.	0.0-0.1 BH04 PID=1.0	M - W	FILL No ACM, staining, or odour.
			1.0		SP	SAND, fine to medium grained, pale grey.	0.5-0.6 BH04 PID=1.2 0.8-0.9 BH04 PID=1.0	W -	NATURAL No ACM, staining, or odour.
			1.5			Target depth. Borehole BH04 terminated at 1.2m			
			2.0						
			2.5						
			3.0						
			3.5						
			4.0						
			4.5						
			5.0						

Borehole Log

Client: New South Wales Land and Housing Corporation						Started: 26/06/2024				
Project: Detailed Site Investigation - Housing Australia Future Fund Project						Finished: 26/06/2024				
Location: 792-794 Botany Rd and 33-37 Henry Kendal Crescent, Mascot NSW						Borehole Location: Borehole Size: 110mm				
Rig Type: Geoprobe			Hole Coordinates E, N			Driller: Michael		Logged: SI		
RL Surface: m			Contractor: Stratacore			Bearing: ---		Checked: SW		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition	Consistency/Density Index	Additional Observations
PT	GW @ 0.7m		0.5		-	FILL: Silty SAND, fine to medium grained, dark brown, with rootlets.	0.0-0.1 BH05 PID=1.1	M	-	FILL No ACM, staining, or odour.
					-	FILL: SAND, fine to medium grained, brown, with twig.	0.2-0.3 BH05 PID=1.1	D - M	-	
					SP	SAND, fine to medium grained, grey/dark grey.	0.7-0.8 BH05 PID=1.3	W	-	NATURAL No ACM, staining, or odour.
			1.0			Target depth. Borehole BH05 terminated at 1.2m				
			1.5							
			2.0							
			2.5							
			3.0							
			3.5							
			4.0							
			4.5							
			5.0							

Borehole Log

Client: New South Wales Land and Housing Corporation						Started: 27/06/2024			
Project: Detailed Site Investigation - Housing Australia Future Fund Project						Finished: 27/06/2024			
Location: 792-794 Botany Rd and 33-37 Henry Kendal Crescent, Mascot NSW						Borehole Location: Borehole Size: 110mm			
Rig Type: Geoprobe			Hole Coordinates E, N			Driller: Ged		Logged: SI	
RL Surface: m			Contractor: Stratacore			Bearing: ---		Checked: SW	

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition	Consistency/Density Index	Additional Observations
PT			0.5		-	FILL: Silty SAND, fine to medium grained, dark grey/brown, with rootlets.	0.0-0.1 BH06 PID=0.9	M	-	FILL No ACM, staining, or odour.
					-	FILL: SAND, fine to medium grained, brown, trace silt and twigs.		D - M	-	
					-	FILL: Gravelly SAND, fine to coarse grained, dark grey, with gravel of sandstone, trace rootlets.	0.4-0.5 BH06 PID=1.2	M	-	
					SC	Clayey SAND, fine to medium grained, dark grey/grey.	0.7-0.8 BH06 PID=1.4	W	-	
GW	@0.7m		1.0			Target depth. Borehole BH06 terminated at 1m				
			1.5							
			2.0							
			2.5							
			3.0							
			3.5							
			4.0							
			4.5							
			5.0							

Borehole Log

Client: New South Wales Land and Housing Corporation

Started: 26/06/2024

Project: Detailed Site Investigation - Housing Australia Future Fund Project

Finished: 26/06/2024

Location: 792-794 Botany Rd and 33-37 Henry Kendal Crescent, Mascot NSW

Borehole Size: 110mm

Rig Type: Geoprobe

Hole Coordinates E, N

Driller: Michael

Logged: SI

RL Surface: m

Contractor: Stratacore

Bearing: ---

Checked: SW

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition	Consistency/Density Index	Additional Observations
PT	GW @0.8m				-	FILL: Clayey SAND, fine to coarse grained, dark brown, with gravel of sandstone, plastic.	0.0-0.1 BH07 PID=2.2	M	-	FILL No ACM, staining, or odour.
			0.5		SP	SAND, fine to coarse grained, grey/pale grey, trace clay.	0.2-0.3 BH07 PID=2.1	M	-	NATURAL No ACM, staining, or odour.
			1.0				0.8-0.9 BH07 PID=1.8	W		
			1.5			Target depth. Borehole BH07 terminated at 1m				
			2.0							
			2.5							
			3.0							
			3.5							
			4.0							
			4.5							
			5.0							

Borehole Log

Client: New South Wales Land and Housing Corporation						Started: 26/06/2024		
Project: Detailed Site Investigation - Housing Australia Future Fund Project						Finished: 26/06/2024		
Location: 792-794 Botany Rd and 33-37 Henry Kendal Crescent, Mascot NSW						Borehole Location: Borehole Size: 110mm		
Rig Type: Geoprobe			Hole Coordinates E, N			Driller: Michael		Logged: SI
RL Surface: m			Contractor: Stratacore			Bearing: ---		Checked: SW

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition	Consistency/Density Index	Additional Observations
PT	GW @0.7m		0.5		-	FILL: Silty SAND, fine to medium grained, grey/brown, rootlets.	0.0-0.1 BH08 PID=1.3	D	-	FILL No ACM, staining, or odour.
					-	FILL: SAND, fine to medium grained, dark grey, with fragment of tree trunk and tiles, moist, trace clay	0.5-0.6 BH08 PID=1.4	M	-	
					SP	SAND, fine to medium grained, pale grey.	0.8-0.9 BH08 PID=1.5	W	-	NATURAL No ACM, staining, or odour.
			1.5			Target depth. Borehole BH08 terminated at 1.2m				
			2.0							
			2.5							
			3.0							
			3.5							
			4.0							
			4.5							
			5.0							

Borehole Log

Client: New South Wales Land and Housing Corporation					Started: 26/06/2024					
Project: Detailed Site Investigation - Housing Australia Future Fund Project					Finished: 26/06/2024					
Location: 792-794 Botany Rd and 33-37 Henry Kendal Crescent, Mascot NSW					Borehole Location: Borehole Size: 110mm					
Rig Type: Geoprobe			Hole Coordinates E, N			Driller: Michael		Logged: SI		
RL Surface: m			Contractor: Stratacore			Bearing: ---		Checked: SW		
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition	Consistency/Density Index	Additional Observations
PT	SFA	GW @0.9m	0.0		-	FILL: Silty SAND, fine to medium grained, dark grey, with rootlets.	0.0-0.1 BH09 PID=1.7			FILL No ACM, staining, or odour.
			0.3		-	FILL: SAND, fine to medium grained, brown/grey, with gravel of sandstone, trace clay, brick fragment.	0.3-0.4 BH09 PID=1.5			
			0.4				0.4-0.5 BH09 PID=1.4			
			0.5		SP	SAND, fine to medium grained, grey/dark grey.	0.7-0.8 BH09		NATURAL No ACM, staining, or odour.	
			0.9				0.9-1.0 BH09			
			1.4				1.4-1.5 BH09			
			2.0		SP	SAND, fine to medium grained, grey/dark grey.	1.9-2.0 BH09			
			2.5				2.4-2.5 BH09			
			3.0				2.9-3.0 BH09			
			3.5				3.4-3.5 BH09			
			4.0				3.9-4.0 BH09			
			4.5				4.4-4.5 BH09			
			5.0			Target depth. Borehole BH09 terminated at 4.5m				

Borehole Log

Client: New South Wales Land and Housing Corporation						Started: 26/06/2024								
Project: Detailed Site Investigation - Housing Australia Future Fund Project						Finished: 26/06/2024								
Location: 792-794 Botany Rd and 33-37 Henry Kendal Crescent, Mascot NSW						Borehole Size: 110mm								
Rig Type: Geoprobe		Hole Coordinates E, N		Driller: Michael		Logged: SI								
RL Surface: m		Contractor: Stratacore		Bearing: ---		Checked: SW								
Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition	Consistency/Density Index	Additional Observations				
SFA			GW @0.9m		-	FILL: Silty SAND, fine to medium grained, dark brown/grey, rootlets.	0.0-0.1 BH10	M - D	-	FILL No ACM, staining, or odour.				
					-	FILL: SAND, fine to medium grained, brown, trace silt, gravel of sandstone, ceramic tile, glass fragments.	0.4-0.5 BH10	M	-					
					0.5									
					1.0	SP	SAND, fine to medium grained, dark grey.	0.8-0.9 BH10	W	-	NATURAL No ACM, staining, or odour.			
								0.9-1.0 BH10						
					1.5			1.4-1.5 BH10						
					2.0			1.9-2.0 BH10						
					2.5			2.4-2.5 BH10						
					3.0			2.9-3.0 BH10						
					3.5			3.4-3.5 BH10						
					4.0			3.9-4.0 BH10						
					4.5			4.4-4.5 BH10						

Borehole Log

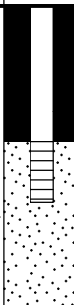
Client: New South Wales Land and Housing Corporation						Started: 26/06/2024	
Project: Detailed Site Investigation - Housing Australia Future Fund Project						Finished: 26/06/2024	
Location: 792-794 Botany Rd and 33-37 Henry Kendal Crescent, Mascot NSW						Borehole Location: Borehole Size: 110mm	
Rig Type: Geoprobe		Hole Coordinates E, N		Driller: Michael		Logged: SI	
RL Surface: m		Contractor: Stratacore		Bearing: ---		Checked: SW	

Method	Water	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition	Consistency/Density Index	Additional Observations
PT	SFA	GW @0.8m	0.0		-	FILL: Silty SAND, fine to medium grained, dark brown, with rootlets.	0.0-0.1 BH11	-	-	FILL No ACM, staining, or odour.
			0.5		SP	SAND, fine to coarse grained, brown/dark grey, with gravel of sandstone.	0.4-0.5 BH11	M	-	
			1.0		SP	SAND, fine to medium grained, dark grey. At 0.9m: becoming grey.	0.8-0.9 BH11 0.9-1.0 BH11	W	-	
			1.5				1.4-1.5 BH11			
			2.0				1.9-2.0 BH11			
			2.5				2.4-2.5 BH11			
			3.0				2.9-3.0 BH11			
			3.5				3.4-3.5 BH11			
			4.0				3.9-4.0 BH11			
			4.5				4.4-4.5 BH11			
			5.0							

Borehole Log

Client: New South Wales Land and Housing Corporation					Started: 27/06/2024						
Project: Detailed Site Investigation - Housing Australia Future Fund Project					Finished: 27/06/2024						
Location: 792-794 Botany Rd and 33-37 Henry Kendal Crescent, Mascot NSW					Borehole Location: Borehole Size: 160mm						
Rig Type: Geoprobe			Hole Coordinates E, N			Driller: Ged		Logged: SI			
RL Surface: m			Contractor: Stratacore			Bearing: ---		Checked: SW			
Method	Water	Well Details	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition	Consistency/Density Index	Additional Observations
HFA		</									

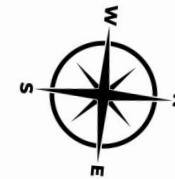
Borehole Log

Client: New South Wales Land and Housing Corporation					Started: 27/06/2024						
Project: Detailed Site Investigation - Housing Australia Future Fund Project					Finished: 27/06/2024						
Location: 792-794 Botany Rd and 33-37 Henry Kendal Crescent, Mascot NSW					Borehole Size: 110mm						
Rig Type: Geoprobe		Hole Coordinates E, N		Driller: Ged		Logged: SI					
RL Surface: m		Contractor: Stratacore		Bearing: ---		Checked: SW					
Method	Water	Well Details	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition	Consistency/Density Index	Additional Observations
PT				0.5		-	FILL: Silty SAND, fine to medium grained, dark brown, with rootlets.	0.0-0.1 SV01 DUP04/DUP04A PID=0.8	M	-	FILL ACM observed, no staining, or odour.
						-	FILL: SAND, fine to medium grained, grey/brown.	0.2-0.3 SV01 PID=0.7	M	-	FILL No ACM, staining, or odour.
						-	FILL: Sandy CLAY, low to medium plasticity, grey mottled brown/orange, with gravel and cobble of sandstone, fragment of brick.	0.5-0.6 SV01 PID=0.8	M	-	
						SP	SAND, fine to medium grained, grey/dark grey.	0.7-0.8 SV01 PID=0.6	W	-	NATURAL No ACM, staining, or odour.
	GW @0.7m			1.0			Target depth. Borehole SV01 terminated at 1m				
				1.5							
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							

Borehole Log

Client: New South Wales Land and Housing Corporation						Started: 27/06/2024	
Project: Detailed Site Investigation - Housing Australia Future Fund Project						Finished: 27/06/2024	
Location: 792-794 Botany Rd and 33-37 Henry Kendal Crescent, Mascot NSW						Borehole Size: 110mm	
Rig Type: Geoprobe		Hole Coordinates E, N		Driller: Ged		Logged: SI	
RL Surface: m		Contractor: Stratacore		Bearing: ---		Checked: SW	

Method	Water	Well Details	RL (m)	Depth (m)	Graphic Log	Classification Symbol	Material Description	Samples Tests Remarks	Moisture Condition	Consistency/Density Index	Additional Observations
PT	Not Encountered			0.5		-	FILL: Silty SAND, fine to medium grained, dark grey, rootlets.	0.0-0.1 SV02 PID=0.7	M	-	FILL No ACM, staining, or odour.
						FILL: SAND, fine to medium grained, dark grey/pale brown, with gravel of sandstone.	0.3-0.4 SV02 PID=0.8				
				1.0		-	FILL: SAND, fine to medium grained, dark grey, with some clay, gravel of sandstone, fragments of brick.	0.6-0.7 SV02 PID=0.8	M - W	-	
				1.5			Target depth. Borehole SV02 terminated at 1m				
				2.0							
				2.5							
				3.0							
				3.5							
				4.0							
				4.5							
				5.0							



	Latitude (WGA84)	Longitude (WGA84)	Approx- imate Surface RL (m)
BH1	33.925271 347 S ^o	151.194771 732 E ^o	8.022
BH2	33.925104 803 S ^o	151.195018 428 E ^o	8.200
BH3	33.924806 412 S ^o	151.194890 642 E ^o	8.205
BH4	33.925353 044 S ^o	151.195235 940 E ^o	8.385
BH5	33.924973 511 S ^o	151.195465 3313 E ^o	8.283

Base map taken from MetroMaps. Groundwater monitoring wells installed in BH1 and BH5



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Borehole Locations

Client:	Homes NSW	Project No.	32630/8546D-G	Date:	10/04/2024
Site Address:	776, 792—794 Botany Road, 33—37 Henry Kendall Crescent, Mascot	Drawing No.	24/0856	Scale:	Not to Scale
Work:	Geotechnical Investigation	Revision No.	0		

INTRODUCTION

These notes have been provided to outline the methodology and limitations inherent in geotechnical reporting. The issues discussed are not relevant to all reports and further advice should be sought if there are any queries regarding any advice or report. When copies of reports are made, they should be reproduced in full.

GEOTECHNICAL REPORTS

Geotechnical reports are prepared by qualified personnel on the information supplied or obtained and are based on current engineering standards of interpretation and analysis.

Information may be gained from limited subsurface testing, surface observations, previous work and is supplemented by knowledge of the local geology and experience of the range of properties that may be exhibited by the materials present. For this reason, geotechnical reports should be regarded as interpretative rather than factual documents, limited to some extent by the scope of information on which they rely.

Where the report has been prepared for a specific purpose (eg. design of a three-storey building), the information and interpretation may not be appropriate if the design is changed (eg. a twenty storey building). In such cases, the report and the sufficiency of the existing work should be reviewed by STS Geotechnics Pty Limited in the light of the new proposal.

Every care is taken with the report content, however, it is not always possible to anticipate or assume responsibility for the following conditions:

- Unexpected variations in ground conditions. The potential for this depends on the amount of investigative work undertaken.
- Changes in policy or interpretation by statutory authorities.
- The actions of contractors responding to commercial pressures.

If these occur, STS Geotechnics Pty Limited would be pleased to resolve the matter through further investigation, analysis or advice.

UNFORSEEN CONDITIONS

Should conditions encountered on site differ markedly from those anticipated from the information contained in the report, STS Geotechnics Pty Limited should be notified immediately. Early identification of site anomalies generally results in any problems being more readily resolved and allows re-interpretation and assessment of the implications for future work.

SUBSURFACE CONDITIONS

Logs of a borehole, recovered core, test pit, excavated face or cone penetration test are an engineering and/or geological interpretation of the subsurface conditions. The reliability of the logged information depends on the drilling/testing method, sampling and/or observation spacings and the ground conditions. It is not always possible or economic to obtain continuous high quality data. It should also be recognised that the volume or material observed or tested is only a fraction of the total subsurface profile.

Interpretation of subsurface information and application to design and construction must take into consideration the spacing of the test locations, the frequency of observations and testing, and the possibility that geological boundaries may vary between observation points.

Groundwater observations and measurements outside of specially designed and constructed piezometers should be treated with care for the following reasons:

- In low permeability soils groundwater may not seep into an excavation or bore in the short time it is left open.
- A localised perched water table may not represent the true water table.
- Groundwater levels vary according to rainfall events or season.
- Some drilling and testing procedures mask or prevent groundwater inflow.

The installation of piezometers and long term monitoring of groundwater levels may be required to adequately identify groundwater conditions.

SUPPLY OF GEOTECHNICAL INFORMATION OR TENDERING PURPOSES

It is recommended tenderers are provided with as much geological and geotechnical information that is available and that where there are uncertainties regarding the ground conditions, prospective tenders should be provided with comments discussing the range of likely conditions in addition to the investigation data.

APPENDIX A – BOREHOLE LOGS, CORE PHOTOGRAPHS, POINT LOAD TESTING RESULTS AND EXPLANATION SHEETS

BOREHOLE LOG

BH ID: BH1

Client	Homes NSW			Date	03 April 2024		
Job No.	32630/8546D-G			Logged By	LL	Review By	MT
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot			Location #	24/0856		
Drilling Contractor	Geosense Drilling Engineers		Surface RL	≈8.02 m (AHD)	Drill Bit	AD/T + WB	
Plant	Comacchio Geo 205		Inclination	90°	Hole Ø (mm)	100	

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL. DENSITY	MOISTURE CONDITION
				TOPSOIL: Silty SAND: dark brown, fine to medium grained, with rootlets	-	-	-
	BH1_0.50-0.95 SPT 0.50-0.95 3,2,3 N=5	0.5		Silty SAND: grey, dark grey, fine to medium grained			M
	BH1_1.50-1.95 SPT 1.50-1.95 1,1,2 N=3	1.0					
		1.5					
		2.0		Becoming brown	SM		
		2.5				VL - L	
	BH1_3.00-3.45 SPT 3.00-3.45 2,2,1 N=3	3.0					
		3.5		Organic Sandy SILT: black, fine to medium grained, sulfurous odour	OM		
		4.0		Silty SAND: brown, orange, fine to medium grained			
	BH1_4.50-4.95 SPT 4.50-4.95 10,17,23 N=40	4.5					
		5.0					
		5.5					
		6.0					W
		6.5					
		7.0					
	BH1_7.50-7.75 SPT 7.50-7.75 13,17/100 mm HB N=R	7.5		Becoming pale grey	SM	D	
		8.0					
		8.5					
	BH1_9.00-9.45 SPT 9.00-9.45 5,20,8 HB N=28	9.0		Becoming brown			
		9.5					

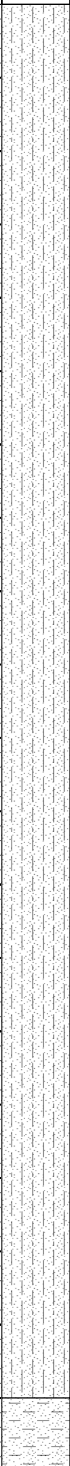
Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample	S - jar sample	WT - level of water table or free water
U - undisturbed tube sample	B - bulk sample	N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH1

Client	Homes NSW			Date	03 April 2024		
Job No.	32630/8546D-G			Logged By	LL	Review By	MT
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot			Location #	24/0856		
Drilling Contractor	Geosense Drilling Engineers		Surface RL	≈8.02 m (AHD)	Drill Bit	WB	
Plant	Comacchio Geo 205		Inclination	90°	Hole Ø (mm)	100	

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL. DENSITY	MOISTURE CONDITION
		10.5 11.0 11.5 12.0 12.5 13.0 13.5 14.0 14.5 15.0 15.5 16.0 16.5 17.0 17.5 18.0 18.5 19.0 19.5		Silty SAND: brown, grey, fine to medium grained	SM	D	W
				Sandy CLAY: brown, low to medium plasticity	CL-CI	VSt - H	W > PL

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample	S - jar sample	WT - level of water table or free water
U - undisturbed tube sample	B - bulk sample	N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH1

Client	Homes NSW			Date	03 April 2024	
Job No.	32630/8546D-G			Logged By	LL	Review By MT
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot			Location #	24/0856	
Drilling Contractor	Geosense Drilling Engineers		Surface RL	≈8.02 m (AHD)	Drill Bit	WB
Plant	Comacchio Geo 205		Inclination	90°	Hole Ø (mm)	100

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL. DENSITY	MOISTURE CONDITION
		20.5		Sandy CLAY: brown, low to medium plasticity			
		21.0					
		21.5					
		22.0			CL-CI	VSt - H	W > PL
		22.5					
		23.0					
		23.5		Silty CLAY: high plasticity, grey			
		24.0					
		24.5					
		25.0					
		25.5					
		26.0					
		26.5			CH	VSt - H	W > PL
		27.0					
		27.5					
		28.0					
		28.5					
		29.0					
		29.5		Terminated at 29.50m. Refusal on Extremely Weathered Sandstone			

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample S - jar sample WT - level of water table or free water
U - undisturbed tube sample B - bulk sample N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH2

Client	Homes NSW	Date	09 April 2024	
Job No.	32630/8546D-G	Logged By	MT/EK	Review By MT
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot		Location #	24/0856
Drilling Contractor	Terratest	Surface RL	≈8.20 m (AHD)	Drill Bit AD/T + WB
Plant	Comacchio Geo 305	Inclination	90°	Hole Ø (mm) 100

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL. DENSITY	MOISTURE CONDITION
				TOPSOIL: Silty SAND: dark brown, fine to medium grained, with rootlets	-	-	-
				Silty SAND: brown, fine to medium grained			
		0.5				L	M
		1.0					
		1.5					
		2.0					
		2.5					
		3.0					
		3.5					
		4.0			SM	L - MD	
		4.5					
		5.0					
		5.5					
		6.0					
		6.5					
		7.0					
		7.5					
		8.0				D	
		8.5					
		9.0					
		9.5					

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample	S - jar sample	WT - level of water table or free water
U - undisturbed tube sample	B - bulk sample	N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH2

Client	Homes NSW	Date	09 April 2024
Job No.	32630/8546D-G	Logged By	MT/EK
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot	Review By	MT
Drilling Contractor	Terratest	Location #	24/0856
Plant	Comacchio Geo 305	Surface RL	≈8.20 m (AHD)
		Drill Bit	WB
		Inclination	90°
		Hole Ø (mm)	100

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL. DENSITY	MOISTURE CONDITION
		10.5		Silty SAND: brown, fine to medium grained			
		11.0					
		11.5					
		12.0					
		12.5					
		13.0					
		13.5					
		14.0					
		14.5					
		15.0			SM	D	W
		15.5					
		16.0					
		16.5					
		17.0					
		17.5					
		18.0					
		18.5					
		19.0					
		19.5					

Notes: See explanation sheets for meaning of all descriptive terms and symbols

BOREHOLE LOG

BH ID: BH2

Client	Homes NSW	Date	09 April 2024
Job No.	32630/8546D-G	Logged By	MT/EK
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot	Review By	MT
Drilling Contractor	Terratest	Location #	24/0856
Plant	Comacchio Geo 305	Surface RL	≈8.20 m (AHD)
		Drill Bit	WB
		Inclination	90°
		Hole Ø (mm)	100

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL. DENSITY	MOISTURE CONDITION
		20.5		Sandy CLAY: yellow brown, medium plasticity			
		21.0					
		21.5					
		22.0					
		22.5					
		23.0			CI	VSt - H	M > PL
		23.5					
		24.0					
		24.5					
		25.0					
		25.5					
		26.0		Silty CLAY: grey brown, high plasticity, very high resistance during drilling			
		26.5					
		27.0			CH	VSt - H	M>PL
		27.5					
		28.0					
		28.5					
		29.0		Continued as cored log on next page			
		29.5					

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample S - jar sample WT - level of water table or free water
U - undisturbed tube sample B - bulk sample N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH2

Client	Homes NSW			Date	09 April 2024			
Job No.	32630/8546D-G			Logged By	MT/EK	Review By	MT	
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot			Location #	24/0856			
Drilling Contractor	Terratest	Surface RL	≈8.20 m (AHD)	Drill Bit	WB			
Plant	Comacchio Geo 305	Inclination	90°	Hole Ø (mm)	100			

METHOD	FLUSH RETURN	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING
				20			Log continued from previous page.		VL 0-1 L 0-3 M 1 H 3 VH 10 EH		30 100 300 1000 3000
				21							
				22							
				23							
				24							
				25							
				26							
				27							
				28							
				29			Started coring at 28.7m EXTREMELY WEATHERED SANDSTONE: recovered as silty clay, grey, high plasticity, with fine to medium grained sand				
	100% Water			30							

BOREHOLE LOG

BH ID: BH2

Client	Homes NSW	Date	09 April 2024
Job No.	32630/8546D-G	Logged By	MT/EK
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot	Review By	MT
Drilling Contractor	Terratest	Location #	24/0856
Plant	Comacchio Geo 305	Surface RL	≈8.20 m (AHD)
		Drill Bit	WB
		Inclination	90°
		Hole Ø (mm)	100

METHOD	FLUSH RETURN	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING
									VL ₀₋₁ L ₀₋₃ M ₁ H ₃ VH ₁₀ EH		
NMLC	100% Water	100	0	30.00		21.80	SANDSTONE: pale grey, brown, fine to medium grained	XW			
				31							
				32							
				32.20		24.00	SANDSTONE: brown, fine to medium grained, medium to thickly bedded	DW - XW		32.56: BP PR RO	
		100	66	33						32.90-32.97: XWS	
										33.05: JT 40° PR RO	
				34				FR - DW		33.74: BP CU RO	
										33.77: JT 30° PR RO	
										34.04-34.12: XWS	
						26.30	Terminated at 34.50m.			34.48: BP PR RO	
				35							
				36							
				37							
				38							
				39							
				40							

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample
U - undisturbed tube sample

S - jar sample
B - bulk sample

WT - level of water table or free water
N - Standard Penetration Test (SPT)

CORE PHOTOGRAPH OF BOREHOLE: BH2

Job No.	32630/8546D-G	East	33.925104803 S ^o	Contractor	Terratest		
Location	776, 792 – 794 Botany Road, 33 – 37 Henry Kendall Crescent, Mascot	North	151.195018428 E ^o	Drill Rig	Commachio Geo 305		
Client	Homes NSW	Surface RL	8.200 m	Logger	MT/EK	Date	09/04/2024



BOREHOLE LOG

BH ID: BH3

Client	Homes NSW	Date	10 April 2024
Job No.	32630/8546D-G	Logged By	MT/EK
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot	Review By	MT
Drilling Contractor	Terratest	Location #	24/0856
Plant	Comacchio Geo 305	Surface RL	≈8.20 m (AHD)
		Drill Bit	WB
		Inclination	90°
		Hole Ø (mm)	100

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL. DENSITY	MOISTURE CONDITION
	BH3 12.00-12.45 SPT 12.00-12.45 10,19,29 N=48	10.5 11.0 11.5 12.0 12.5 13.0 13.5 14.0 14.5 15.0 15.5 16.0 16.5 17.0 17.5 18.0 18.5 19.0 19.5		Silty SAND: yellow brown, fine to medium grained, trace of clay	SM	D	W

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample	S - jar sample	WT - level of water table or free water
U - undisturbed tube sample	B - bulk sample	N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH3

Client	Homes NSW	Date	10 April 2024
Job No.	32630/8546D-G	Logged By	MT/EK
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot	Review By	MT
Drilling Contractor	Terratest	Location #	24/0856
Plant	Comacchio Geo 305	Surface RL	≈8.20 m (AHD)
		Drill Bit	WB
		Inclination	90°
		Hole Ø (mm)	100

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL. DENSITY	MOISTURE CONDITION
		20.5		Silty SAND: yellow brown, fine to medium grained, trace of clay		D	W
		21.0					
		21.5		Sandy CLAY: medium plasticity, grey brown, very high resistance during drilling	CI		
		22.0					
		22.5					
		23.0		Silty CLAY: high plasticity, dark grey			
		23.5					
		24.0					
		24.5				VSt - H	M > PL
		25.0					
		25.5			CH		
		26.0					
		26.5					
		27.0					
		27.5					
		28.0		Continued as cored log on next page.			
		28.5					
		29.0					
		29.5					

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample
U - undisturbed tube sample
S - jar sample
B - bulk sample
WT - level of water table or free water
N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH3

Client	Homes NSW	Date	10 April 2024
Job No.	32630/8546D-G	Logged By	MT/EK
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot	Review By	MT
Drilling Contractor	Terratest	Location #	24/0856
Plant	Comacchio Geo 305	Surface RL	≈8.20 m (AHD)
		Drill Bit	WB
		Inclination	90°
		Hole Ø (mm)	100

METHOD	FLUSH RETURN	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING
				20			Log continued from previous page.		VL 0-1 L 0-3 M 1 H 3 VH 10 EH		30 100 300 1000 3000
				21							
				22							
				23							
				24							
				25							
				26							
				27							
				28			Started coring at 27.7m				
				28.50			Sandy CLAY: high plasticity, grey, sand is fine to medium grained				
	100% Water	100	0	29			EXTREMELY WEATHERED SANDSTONE: brown grey, fine to medium grained	XW			
				30							

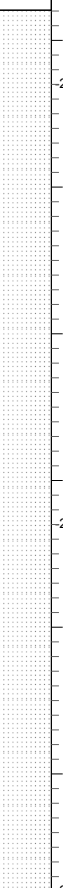
Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample
U - undisturbed tube sample
S - jar sample
B - bulk sample
WT - level of water table or free water
N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH3

Client	Homes NSW	Date	10 April 2024	
Job No.	32630/8546D-G	Logged By	MT/EK	Review By MT
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot		Location #	24/0856
Drilling Contractor	Terratest	Surface RL	≈8.20 m (AHD)	Drill Bit WB
Plant	Comacchio Geo 305	Inclination	90°	Hole Ø (mm) 100

METHOD	FLUSH RETURN	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING
									VL ₀₋₁ L ₀₋₃ M ₁ H ₃ VH ₁₀ EH		30 100 300 1000 3000
NMLC	100% Water	100	0	30		22.30	EXTREMELY WEATHERED SANDSTONE: grey, fine to medium grained	XW			
		100	84	33.50		25.30	SANDSTONE: pale grey, brown, fine to medium grained, some iron staining, very thinly bedded to thickly bedded	FR - DW		33.60: BP PR RO 33.70: BP PR RO 33.88: BP 20° PR RO 34.94: BP 20° CU RO	
				36		27.80	Terminated at 36.00m.				

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample S - jar sample WT - level of water table or free water
 U - undisturbed tube sample B - bulk sample N - Standard Penetration Test (SPT)

CORE PHOTOGRAPH OF BOREHOLE: BH3

Job No.	32630/8546D-G	Latitude	33.924806412 S ^o	Contractor	Terratest		
Location	776, 792 – 794 Botany Road, 33 – 37 Henry Kendall Crescent, Mascot	Longitude	151.194890642 E ^o	Drill Rig	Commachio Geo 305		
Client	Homes NSW	Surface RL	8.205 m	Logger	MT	Date	10/04/2024



BOREHOLE LOG

BH ID: BH4

Client	Homes NSW	Date	05 April 2024		
Job No.	32630/8546D-G	Logged By	LL	Review By	MT
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot		Location #	24/0856	
Drilling Contractor	Geosense Drilling Engineers	Surface RL	≈8.38 m (AHD)	Drill Bit	AD/T + WB
Plant	Comacchio Geo 205	Inclination	90°	Hole Ø (mm)	100

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL DENSITY	MOISTURE CONDITION
	D (0.40-0.50)	0.5		TOPSOIL: Silty SAND: dark brown, fine to medium grained, with rootlets	-	-	
	BH2_1.50-1.95 SPT 1.50-1.95 0,0,1 N=1	1.0		Silty SAND: dark brown, fine to medium grained			M
		1.5		Becoming grey			
		2.0		Becoming brown		VL	
	BH2_3.00-3.45 SPT 3.00-3.45 3,3,4 N=7	2.5			SM		
		3.0		Silty SAND: reddish brown, fine to medium grained, sulfurous odour			
		3.5				L	
	BH2_4.50-4.95 SPT 4.50-4.95 15,16,19 N=35	4.0			SM		
		4.5					
	BH2_6.00-6.26 SPT 6.00-6.26 17,26/110 mm HB N=R	5.0		Silty SAND: brown, fine to medium grained			
		5.5					
		6.0				D	
		6.5					
	BH2_7.50-7.80 SPT 7.50-7.80 13,27/150 mm HB N=R	7.0			SM		
		7.5					
		8.0					
		8.5					
		9.0		Clayey SAND: brown, fine to medium grained			
		9.5			SC	D	

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample
U - undisturbed tube sample
S - jar sample
B - bulk sample
WT - level of water table or free water
N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH4

Client	Homes NSW			Date	05 April 2024		
Job No.	32630/8546D-G			Logged By	LL	Review By	MT
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot			Location #	24/0856		
Drilling Contractor	Geosense Drilling Engineers		Surface RL	≈8.38 m (AHD)	Drill Bit	WB	
Plant	Comacchio Geo 205		Inclination	90°	Hole Ø (mm)	100	

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL. DENSITY	MOISTURE CONDITION
		10.5					
		11.0					
		11.5					
		12.0		Silty SAND: brown, fine to medium grained			
		12.5					
		13.0					
		13.5					
		14.0					
		14.5					
		15.0			SM	D	W
		15.5					
		16.0					
		16.5					
		17.0					
		17.5					
		18.0					
		18.5					
		19.0					
		19.5					

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample	S - jar sample	WT - level of water table or free water
U - undisturbed tube sample	B - bulk sample	N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH4

Client	Homes NSW			Date	05 April 2024		
Job No.	32630/8546D-G			Logged By	LL	Review By	MT
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot			Location #	24/0856		
Drilling Contractor	Geosense Drilling Engineers		Surface RL	≈8.38 m (AHD)		Drill Bit	AD/T + WB
Plant	Comacchio Geo 205		Inclination	90°		Hole Ø (mm)	100

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL. DENSITY	MOISTURE CONDITION
		20.5					
		21.0					
		21.5		Sandy CLAY: medium plasticity, brown, high resistance to drilling	CI	VSt - H	
		22.0					
		22.5					
		23.0		Silty CLAY: medium to high plasticity, grey			
		23.5					
		24.0					
		24.5					
		25.0					W > PL
		25.5					
		26.0					
		26.5			CI-CH	VSt - H	
		27.0					
		27.5					
		28.0					
		28.5					
		29.0					
		29.5					
				Terminated at 30.00m. Refusal on Extremely Weathered Sandstone.			

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample	S - jar sample	WT - level of water table or free water
U - undisturbed tube sample	B - bulk sample	N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH5

Client	Homes NSW			Date	08 April 2024		
Job No.	32630/8546D-G			Logged By	LL	Review By	MT
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot			Location #	24/0856		
Drilling Contractor	Geosense Drilling Engineers		Surface RL	≈8.28 m (AHD)	Drill Bit	AD/T + WB	
Plant	Comacchio Geo 205		Inclination	90°	Hole Ø (mm)	100	

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL. DENSITY	MOISTURE CONDITION
		0.5		TOPSOIL: Silty SAND: dark brown, fine to medium grained	-	-	-
		1.0		Silty SAND: brown, fine to medium grained			M
		1.5					
		2.0					
		2.5					
		3.0					
		3.5					
		4.0					
		4.5					
		5.0					
		5.5					
		6.0			SM		
		6.5					
		7.0					
		7.5					
		8.0					
		8.5					
		9.0					
		9.5					

BH5_6.00-6.45
SPT 6.00-6.45
8,16,18 N=34

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample
U - undisturbed tube sample
S - jar sample
B - bulk sample
WT - level of water table or free water
N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH5

Client	Homes NSW			Date	08 April 2024		
Job No.	32630/8546D-G			Logged By	LL	Review By	MT
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot			Location #	24/0856		
Drilling Contractor	Geosense Drilling Engineers		Surface RL	≈8.28 m (AHD)	Drill Bit	WB	
Plant	Comacchio Geo 205		Inclination	90°	Hole Ø (mm)	100	

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL. DENSITY	MOISTURE CONDITION
		10.5		Silty SAND: brown, fine to medium grained			
		11.0		Becoming black			
		11.5					
		12.0					
		12.5					
		13.0		Becoming brown			
		13.5					
		14.0			SM	D	W
		14.5					
		15.0					
		15.5					
		16.0		Becoming black			
		16.5					
		17.0					
		17.5					
		18.0		Clayey SAND: brown, fine to medium grained			
		18.5					
		19.0			SC		
		19.5					

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample S - jar sample WT - level of water table or free water
U - undisturbed tube sample B - bulk sample N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH5

Client	Homes NSW			Date	08 April 2024		
Job No.	32630/8546D-G			Logged By	LL	Review By	MT
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot			Location #	24/0856		
Drilling Contractor	Geosense Drilling Engineers		Surface RL	≈8.28 m (AHD)	Drill Bit	WB	
Plant	Comacchio Geo 205		Inclination	90°	Hole Ø (mm)	100	

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL. DENSITY	MOISTURE CONDITION
		20.5		Sandy CLAY: medium plasticity, brown			
		21.0					
		21.5					
		22.0					
		22.5					
		23.0					
		23.5					
		24.0					
		24.5					
		25.0			CI	Vst - H	M > PL
		25.5					
		26.0					
		26.5					
		27.0					
		27.5					
		28.0					
		28.5					
		29.0					
		29.5					

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample	S - jar sample	WT - level of water table or free water
U - undisturbed tube sample	B - bulk sample	N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH5

Client	Homes NSW			Date	08 April 2024		
Job No.	32630/8546D-G			Logged By	LL	Review By	MT
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot			Location #	24/0856		
Drilling Contractor	Geosense Drilling Engineers		Surface RL	≈8.28 m (AHD)	Drill Bit	WB	
Plant	Comacchio Geo 205		Inclination	90°	Hole Ø (mm)	100	

GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	CLASSIFICATION SYMBOL	CONSISTENCY / REL. DENSITY	MOISTURE CONDITION
		30.5 31.0 31.5 32.0 32.5 33.0 33.5 34.0		EXTREMELY WEATHERED SANDSTONE: grey brown, fine to medium grained, recovered as clayey sand	-		M > PL
		34.5 35.0 35.5 36.0 36.5 37.0 37.5 38.0 38.5 39.0 39.5		Continued as cored log on next page.			

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample	S - jar sample	WT - level of water table or free water
U - undisturbed tube sample	B - bulk sample	N - Standard Penetration Test (SPT)

BOREHOLE LOG

BH ID: BH5

Client	Homes NSW	Date	08 April 2024		
Job No.	32630/8546D-G	Logged By	LL	Review By	MT
Address	776, 792 - 794 Botany Road, 33 - 37 Kendall Crescent, Mascot		Location #	24/0856	
Drilling Contractor	Geosense Drilling Engineers	Surface RL	≈8.28 m (AHD)	Drill Bit	WB
Plant	Comacchio Geo 205	Inclination	90°	Hole Ø (mm)	100

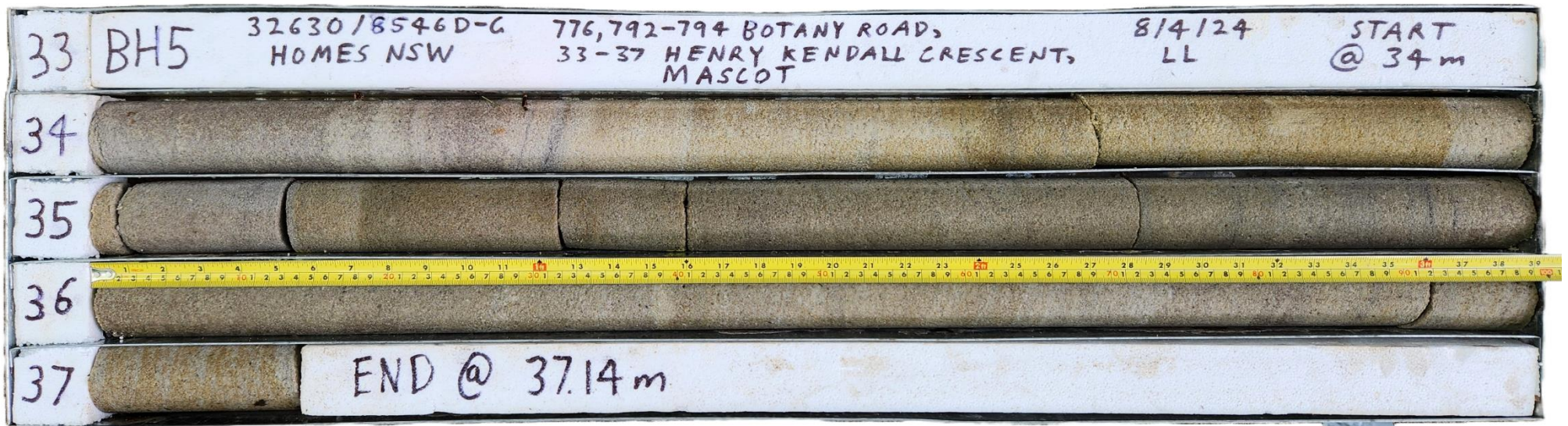
METHOD	FLUSH RETURN	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING
									VL 0-1 L 0-3 M 1 H 3 VH 10 EH		30 100 300 1000 3000
				30			Log continued from previous page.				
				31							
				32							
				33							
				34			Started coring at 34m				
NMLC	100% Water	100	100	34			SANDSTONE: pale brown, medium to coarse grained				
				35				FR	▼	35.02: BP PR RO 35.13: BP PR RO 35.32: BP PR RO 35.40: BP PR RO	
				36					▼		
				37					▼	36.92: BP PR RO	
				37.14		-28.86	Terminated at 37.14m.				
				38							
				39							
				40							

Notes: See explanation sheets for meaning of all descriptive terms and symbols

D - disturbed sample S - jar sample WT - level of water table or free water
U - undisturbed tube sample B - bulk sample N - Standard Penetration Test (SPT)

CORE PHOTOGRAPH OF BOREHOLE: BH5

Job No.	32630/8546D-G	East	33.924973511 S°	Contractor	Geosense Drilling Engineers		
Location	776, 792 – 794 Botany Road, 33 – 37 Henry Kendall Crescent, Mascot	North	151.1954653313 E°	Drill Rig	Commachio Geo 205		
Client	Homes NSW	Surface RL	8.283 m	Logger	LL	Date	07-08/04/2024



Point Load Strength Index Report

Project: 776, 792-794 BOTANY ROAD, 33-37 HENRY KENDALL CRESCENT, MASCOT

Client: HOMES NSW

Address: 4 Parramatta Square, Darcy Street, Parramatta

Test Method: AS4133.4.1

Sampling Procedure: AS 1289.1.2.1 Clause 6.5.3 - Power Auger Drilling (Not covered under NATA Scope of Accreditation)

Project No.: 32630/8546D-G

Report No.: 24/0896

Report Date: 15/04/2024

Page: 1 of 2

Borehole / Sample No.	Depth (m)	Date Sampled	Date Tested	Test Type	Is (MPa)	Is ₍₅₀₎ (MPa)	Rock Type	Failure Type	Moisture
BH2	28.75	09/04/2024	11/04/2024	D	0.068	0.069	YS	3	M
BH2	28.75	09/04/2024	11/04/2024	A	0.037	0.037	YS	3	M
BH2	29.75	09/04/2024	11/04/2024	D	0.076	0.077	YS	3	M
BH2	29.75	09/04/2024	11/04/2024	A	0.043	0.045	YS	3	M
BH2	30.20	09/04/2024	11/04/2024	D	0.093	0.095	YS	3	M
BH2	30.20	09/04/2024	11/04/2024	A	0.088	0.09	YS	3	M
BH2	31.60	09/04/2024	11/04/2024	D	0.045	0.046	YS	3	M
BH2	31.60	09/04/2024	11/04/2024	A	0.04	0.04	YS	3	M
BH2	32.20	09/04/2024	11/04/2024	D	0.098	0.099	SS	3	M
BH2	32.20	09/04/2024	11/04/2024	A	0.079	0.08	SS	3	M
BH2	32.74	09/04/2024	11/04/2024	D	0.053	0.054	SS	3	W
BH2	32.74	09/04/2024	11/04/2024	A	0.054	0.054	SS	3	W
BH2	33.20	09/04/2024	11/04/2024	D	0.49	0.5	SS	3	M
BH2	33.20	09/04/2024	11/04/2024	A	0.65	0.66	SS	3	M
BH2	34.42	09/04/2024	11/04/2024	D	0.63	0.64	SS	3	W
BH2	34.42	09/04/2024	11/04/2024	A	0.71	0.73	SS	3	M
BH3	27.70	10/04/2024	12/04/2024	D	0.034	0.035	ST	3	M
BH3	27.70	10/04/2024	12/04/2024	A	0.028	0.03	ST	3	M
BH3	28.49	10/04/2024	12/04/2024	D	0.079	0.08	ST	3	D
BH3	28.49	10/04/2024	12/04/2024	A	0.055	0.058	ST	3	D
BH3	29.18	10/04/2024	12/04/2024	D	0.067	0.068	ST	3	D
BH3	29.18	10/04/2024	12/04/2024	A	0.093	0.097	ST	3	D
BH3	30.73	10/04/2024	12/04/2024	D	0.096	0.098	ST	3	D
BH3	30.73	10/04/2024	12/04/2024	A	0.069	0.07	ST	3	D
BH3	31.44	10/04/2024	12/04/2024	D	0.076	0.078	ST	3	D
BH3	31.44	10/04/2024	12/04/2024	A	0.074	0.076	ST	3	D
BH3	32.44	10/04/2024	12/04/2024	D	0.048	0.049	ST	3	D
BH3	32.44	10/04/2024	12/04/2024	A	0.046	0.047	ST	3	D
BH3	33.29	10/04/2024	12/04/2024	D	0.051	0.052	ST	3	D

Failure Type

- 1 = Fracture through bedding or weak plane
- 2 = Fracture along bedding
- 3 = Fracture through rock mass
- 4 = Fracture influenced by natural defect or drilling
- 5 = Partial fracture or chip (invalid result)

Remarks:

Test Type

- A = Axial
- D = Diametrial
- I = Irregular
- C = Cube

Moisture Condition

- W = Wet
- M = Moist
- D = Dry

Rock Type

- SS = Sandstone
- ST = Siltstone
- SH = Shale
- YS = Claystone
- IG = Igneous

Approved Signatory..... 

Mrigesh Tamang

Technician: DC

Sampling Procedure: AS 1289.1.2.1 Clause 6.5.3 - Power Auger Drilling (Not covered under NATA Scope of Accreditation)

Failure Type	Test Type	Moisure Condition	Rock Type
1 = Fracture through bedding or weak plane	A = Axial	W = Wet	SS = Sandstone
2 = Fracture along bedding	D = Diametrial	M = Moist	ST = Siltstone
3 = Fracture through rock mass	I = Irregular	D = Dry	SH = Shale
4 = Fracture influenced by natural defect or drilling	C = Cube		YS = Claystone
5 = Partial fracture or chip (invalid result)			IG = Igneous
Remarks:			
Technician: EK		Approved Signatory.....	 Mrigesh Tamang

EXPLANATION OF NOTES, ABBREVIATIONS & TERMS USED ON BOREHOLE AND TEST PIT LOGS

DRILLING/EXCAVATION METHOD

HA	Hand Auger	ADH	Hollow Auger	NQ	Diamond Core - 47 mm
DT	Diatube Coring	RT	Rotary Tricone bit	NMLC	Diamond Core - 52 mm
NDD	Non-destructive digging	RAB	Rotary Air Blast	HQ	Diamond Core - 63 mm
AD*	Auger Drilling	RC	Reverse Circulation	HMLC	Diamond Core - 63 mm
*V	V-Bit	PT	Push Tube	EX	Tracked Hydraulic Excavator
*T	TC-Bit, e.g. AD/T	WB	Washbore	HAND	Excavated by Hand Methods

PENETRATION RESISTANCE

L	Low Resistance	Rapid penetration/ excavation possible with little effort from equipment used.
M	Medium Resistance	Penetration/ excavation possible at an acceptable rate with moderate effort from equipment used.
H	High Resistance	Penetration/ excavation is possible but at a slow rate and requires significant effort from equipment used.
R	Refusal/Practical Refusal	No further progress possible without risk of damage or unacceptable wear to equipment used.

These assessments are subjective and are dependent on many factors, including equipment power and weight, condition of excavation or drilling tools and experience of the operator.

WATER

	 Standing Water Level	 Partial water loss
	 Water Seepage	 Complete Water Loss
GWNO	GROUNDWATER NOT OBSERVED - Observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave-in of the borehole/ test pit.	
GWNE	GROUNDWATER NOT ENCOUNTERED - Borehole/ test pit was dry soon after excavation. However, groundwater could be present in less permeable strata. Inflow may have been observed had the borehole/ test pit been left open for a longer period.	

SAMPLING AND TESTING

SPT	Standard Penetration Testing to AS1289.6.3.3 2004
4,7,11 N=18	4,7,11 = Blows per 150mm. N = Blows per 300mm penetration following a 150mm seating drive
30/80mm	Where practical refusal occurs, the blows and penetration for that interval are reported, N is not reported
RW	Penetration occurred under the rod weight only, N<1
HW	Penetration occurred under the hammer and rod weight only, N<1
HB	Hammer double bouncing on anvil, N is not reported
Sampling	
S1	Jar sample – number indicates sample number
D	Disturbed Sample
B	Bulk disturbed Sample
U50	Thin walled tube sample - number indicates nominal sample diameter in millimetres
Testing	
PP	Pocket Penetrometer test expressed as instrument reading in kPa
DCP	Dynamic Cone Penetrometer (AS1289.6.3.1 1997)
PSP	Perth Sand Penetrometer (AS1289.6.3.2 1997)

GEOLOGICAL BOUNDARIES

————— = Observed Boundary (Position known)	- - - - - = Observed Boundary (Position approximate)	- -?- -?- -?- = Boundary (Interpreted or inferred)
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ROCK CORE RECOVERY

TCR = Total Core Recovery (%)

$$= \frac{\text{Length of core recovered}}{\text{Length of core run}} \times 100$$

RQD = Rock Quality Designation (%)

$$= \frac{\sum \text{Axial lengths of core} > 100\text{mm}}{\text{Length of core run}} \times 100$$

METHOD OF SOIL DESCRIPTION USED ON BOREHOLE AND TEST PIT LOGS



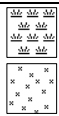
FILL



COUBLES or
BOULDERS



GRAVEL (GP or GW)



ORGANIC SOILS
(OL, OH or Pt)



SILT (ML or MH)

Combinations of these basic symbols may be used to indicate mixed materials such as sandy clay



CLAY (CL, CI or CH)



SAND (SP or SW)

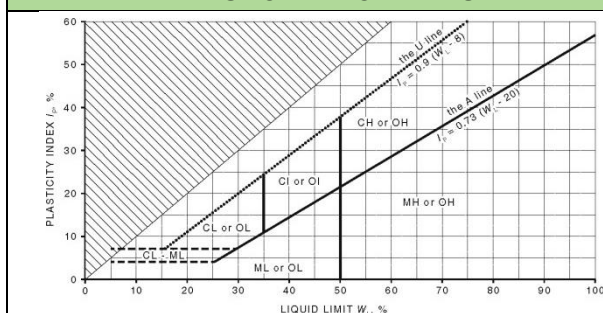
CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil is broadly classified and described in Borehole and Test Pit Logs using the preferred method given in AS 1726:2017, Section 6.1 – Soil description and classification.

PARTICLE SIZE CHARACTERISTICS

Fraction	Components	Sub Division	Size mm
Oversize	BOULDERS		>200
	COBBLES		63 to 200
Coarse grained soil	GRAVEL	Coarse	19 to 63
		Medium	6.7 to 19
		Fine	2.36 to 6.7
	SAND	Coarse	0.6 to 2.36
		Medium	0.21 to 0.6
		Fine	0.075 to 0.21
Fine grained soil	SILT		0.002 to 0.075
	CLAY		<0.002

PLASTICITY PROPERTIES



GROUP SYMBOLS

Major Divisions	Symbol	Description
COARSE GRAINED SOILS More than 65% of soil excluding oversize fraction is greater than 0.075mm	GRAVEL More than 50% of coarse fraction is >2.36mm	GW Well graded gravel and gravel-sand mixtures, little or no fines, no dry strength.
		GP Poorly graded gravel and gravel-sand mixtures, little or no fines, no dry strength.
		GM Silty gravel, gravel-sand-silt mixtures, zero to medium dry strength.
		GC Clayey gravel, gravel-sand-clay mixtures, medium to high dry strength.
	SAND More than 50% of coarse fraction is <2.36 mm	SW Well graded sand and gravelly sand, little or no fines, no dry strength.
		SP Poorly graded sand and gravelly sand, little or no fines, no dry strength.
		SM Silty sand, sand-silt mixtures, zero to medium dry strength.
		SC Clayey sand, sandy-clay mixtures, medium to high dry strength.
	Liquid Limit less < 50%	ML Inorganic silts of low plasticity, very fine sands, rock flour, silty or clayey fine sands, zero to medium dry strength.
		CL, CI Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, medium to high dry strength.
		OL Organic silts and organic silty clays of low plasticity, low to medium dry strength.
FINE GRAINED SOILS More than 35% of soil excluding oversize fraction is less than 0.075mm	Liquid Limit > 50%	MH Inorganic silts of high plasticity, high to very high dry strength.
		CH Inorganic clays of high plasticity, high to very high dry strength.
		OH Organic clays of medium to high plasticity, medium to high dry strength.
	Highly Organic soil	PT Peat muck and other highly organic soils.

MOISTURE CONDITION

Symbol	Term	Description
D	Dry	Non- cohesive and free running.
M	Moist	Soils feel cool, darkened in colour. Soil tends to stick together.
W	Wet	Soils feel cool, darkened in colour. Soil tends to stick together, free water forms when handling.

Moisture content of cohesive soils shall be described in relation to plastic limit (PL) or liquid limit (LL) for soils with higher moisture content as follows: Moist, dry of plastic limit ($w < PL$); Moist, near plastic limit ($w \approx PL$); Moist, wet of plastic limit ($w > PL$); Wet, near liquid limit ($w \approx LL$); Wet, wet of liquid limit ($w > LL$).

CONSISTENCY

Symbol	Term	Undrained Shear Strength (kPa)	SPT "N" #
VS	Very Soft	≤ 12	≤ 2
S	Soft	>12 to ≤ 25	>2 to ≤ 4
F	Firm	>25 to ≤ 50	>4 to ≤ 8
St	Stiff	>50 to ≤ 100	>8 to ≤ 15
VSt	Very Stiff	>100 to ≤ 200	>15 to ≤ 30
H	Hard	>200	>30
Fr	Friable	-	-

DENSITY

Symbol	Term	Density Index %	SPT "N" #
VL	Very Loose	≤ 15	0 to 4
L	Loose	>15 to ≤ 35	4 to 10
MD	Medium Dense	>35 to ≤ 65	10 to 30
D	Dense	>65 to ≤ 85	30 to 50
VD	Very Dense	>85	Above 50

In the absence of test results, consistency and density may be assessed from correlations with the observed behaviour of the material.

SPT correlations are not stated in AS1726:2017, and may be subject to corrections for overburden pressure, moisture content of the soil, and equipment type.

MINOR COMPONENTS

Term	Assessment Guide	Proportion by Mass
Add 'Trace'	Presence just detectable by feel or eye but soil properties little or no different to general properties of primary component	Coarse grained soils: $\leq 5\%$ Fine grained soil: $\leq 15\%$
Add 'With'	Presence easily detectable by feel or eye but soil properties little or no different to general properties of primary component	Coarse grained soils: 5 - 12% Fine grained soil: 15 - 30%
Prefix soil name	Presence easily detectable by feel or eye in conjunction with the general properties of primary component	Coarse grained soils: $>12\%$ Fine grained soil: $>30\%$

CLASSIFICATION AND INFERRED STRATIGRAPHY

Rock is broadly classified and described in Borehole and Test Pit Logs using the preferred method given in AS1726 – 2017, Section 6.2 – Rock identification, description and classification.

ROCK MATERIAL STRENGTH CLASSIFICATION

Symbol	Term	Point Load Index, $Is_{(50)}$ (MPa) #	Field Guide
VL	Very Low	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30 mm can be broken by finger pressure.
L	Low	0.1 to 0.3	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of pick point; has dull sound under hammer. A piece of core 150 mm long by 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
M	Medium	0.3 to 1	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
H	High	1 to 3	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken with pick with a single firm blow; rock rings under hammer.
VH	Very High	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
EH	Extremely High	>10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

Rock Strength Test Results



Point Load Strength Index, $Is_{(50)}$, Axial test (MPa)



Point Load Strength Index, $Is_{(50)}$, Diametral test (MPa)

Relationship between rock strength test result ($Is_{(50)}$) and unconfined compressive strength (UCS) will vary with rock type and strength, and should be determined on a site-specific basis. However UCS is typically $20 \times Is_{(50)}$.

ROCK MATERIAL WEATHERING CLASSIFICATION

Symbol	Term	Field Guide
RS	Residual Soil	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported.
XW	Extremely Weathered	Rock is weathered to such an extent that it has soil properties - i.e. it either disintegrates or can be remoulded, in water.
DW	HW	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores. In some environments it is convenient to subdivide into Highly Weathered and Moderately Weathered, with the degree of alteration typically less for MW.
	MW	
SW	Slightly Weathered	Rock slightly discoloured but shows little or no change of strength relative to fresh rock.
FR	Fresh	Rock shows no sign of decomposition or staining.

ABBREVIATIONS AND DESCRIPTIONS FOR ROCK MATERIAL AND DEFECTS

CLASSIFICATION AND INFERRED STRATIGRAPHY

Rock is broadly classified and described in Borehole and Test Pit Logs using the preferred method given in AS1726 – 2017, Section 6.2 – Rock identification, description and classification.

DETAILED ROCK DEFECT SPACING

Defect Spacing			Bedding Thickness (Stratification)	
Spacing/width (mm)	Descriptor	Symbol	Term	Spacing (mm)
<20	Extremely Close	EC	Thinly laminated	<6
20-60	Very Close	VC	Laminated	6 – 20
60-200	Close	C	Very thinly bedded	20 – 60
200-600	Medium	M	Thinly bedded	60 – 200
600-2000	Wide	W	Medium bedded	200 – 600
2000-6000	Very Wide	VW	Thickly bedded	600 – 2,000
			Very thickly bedded	> 2,000

ABBREVIATIONS AND DESCRIPTIONS FOR DEFECT TYPES

Defect Type	Abbr.	Description
Joint	JT	Surface of a fracture or parting, formed without displacement, across which the rock has little or no tensile strength. May be closed or filled by air, water or soil or rock substance, which acts as cement.
Bedding Parting	BP	Surface of fracture or parting, across which the rock has little or no tensile strength, parallel or sub-parallel to layering/ bedding. Bedding refers to the layering or stratification of a rock, indicating orientation during deposition, resulting in planar anisotropy in the rock material.
Contact	CO	The surface between two types or ages of rock.
Sheared Surface	SSU	A near planar, curved or undulating surface which is usually smooth, polished or slickensided.
Sheared Seam/ Zone (Fault)	SS/SZ	Seam or zone with roughly parallel almost planar boundaries of rock substance cut by closely spaced (often <50 mm) parallel and usually smooth or slickensided joints or cleavage planes.
Crushed Seam/ Zone (Fault)	CS/CZ	Seam or zone composed of disoriented usually angular fragments of the host rock substance, with roughly parallel near-planar boundaries. The brecciated fragments may be of clay, silt, sand or gravel sizes or mixtures of these.
Extremely Weathered Seam/ Zone	XWS/XWZ	Seam of soil substance, often with gradational boundaries, formed by weathering of the rock material in places.
Infilled Seam	IS	Seam of soil substance, usually clay or clayey, with very distinct roughly parallel boundaries, formed by soil migrating into joint or open cavity.
Vein	VN	Distinct sheet-like body of minerals crystallised within rock through typically open-space filling or crack-seal growth.

NOTE: Defects size of <100mm SS, CS and XWS. Defects size of >100mm SZ, CZ and XWZ.

ABBREVIATIONS AND DESCRIPTIONS FOR DEFECT SHAPE AND ROUGHNESS

Shape	Abbr.	Description	Roughness	Abbr.	Description
Planar	PR	Consistent orientation	Polished	POL	Shiny smooth surface
Curved	CU	Gradual change in orientation	Slickensided	SL	Grooved or striated surface, usually polished
Undulating	UN	Wavy surface	Smooth	SM	Smooth to touch. Few or no surface irregularities
Stepped	ST	One or more well defined steps	Rough	RO	Many small surface irregularities (amplitude generally <1mm). Feels like fine to coarse sandpaper
Irregular	IR	Many sharp changes in orientation	Very Rough	VR	Many large surface irregularities, amplitude generally >1mm. Feels like very coarse sandpaper

Orientation:

Vertical Boreholes – The dip (inclination from horizontal) of the defect.

Inclined Boreholes – The inclination is measured as the acute angle to the core axis.

ABBREVIATIONS AND DESCRIPTIONS FOR DEFECT COATING

Coating	Abbr.	Description	Aperture	Abbr.	Description
Clean	CN	No visible coating or infilling	Closed	CL	Closed.
Stain	SN	No visible coating but surfaces are discoloured by staining, often limonite (orange-brown)	Open	OP	Without any infill material.
Veneer	VNR	A visible coating of soil or mineral substance, usually too thin to measure (< 1 mm); may be patchy	Infilled	-	Soil or rock i.e. clay, silt, talc, pyrite, quartz, etc.

**APPENDIX B – Previous Contamination and Material Assessment
Laboratory Summary Tables**



	Metals								Inorganics	Asbestos	BTEX													
	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Moisture Content (dried @ 103°C)	Asbestos Reported Result	Naphthalene (VOC)		Benzene		Toluene		Ethylbenzene		Xylene (m & p)		Xylene (o)		Xylene Total	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	Comment	mg/kg	%	mg/kg	%	mg/kg	%	mg/kg	%	mg/kg	%	mg/kg	%	mg/kg	%
EQL	2	0.4	2	5	5	0.1	2	5	1	D/ND	0.5	1	0.1	1	0.1	1	0.1	1	0.2	1	0.1	1	0.3	1
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																								
PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)																								
PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)																								
NEPM 2013 Table 1A(1) HILs Res A Soil	100	20		6,000	300	40	400	7,400																
NEPM 2013 Table 1A(1) HILs Res B Soil	500	150		30,000	1,200	120	1,200	60,000																

Field ID	Date																							
BH01 0.0-0.1	26 Jun 2024	3.9	<0.4	9.8	27	86	0.2	<5	160	18	ND	<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
BH02 0.0-0.1	26 Jun 2024	2.2	0.5	8.4	34	150	0.2	<5	140	11	ND	<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
BH03 0.3-0.4	26 Jun 2024	<2	<0.4	<5	21	38	<0.1	<5	83	14	ND	<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
BH04 0.5-0.6	26 Jun 2024	2.2	<0.4	<5	52	94	0.2	6.8	340	16	ND	<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
BH05 0.0-0.1	26 Jun 2024	2.9	<0.4	10	47	100	0.1	5.0	240	40	ND	<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
BH06 0.0-0.1	27 Jun 2024	3.0	0.5	15	55	280	0.2	6.7	320	33	ND	<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
BH06 0.4-0.5	27 Jun 2024	4.7	0.5	6.8	47	82	0.2	25	150	27														
BH07 0.0-0.1	26 Jun 2024	7.8	<0.4	15	20	40	<0.1	7.1	140	20	ND	<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
BH08 0.0-0.1	26 Jun 2024	<2	<0.4	<5	12	47	<0.1	<5	75	3.8	ND	<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
BH08 0.5-0.6	26 Jun 2024	4.0	<0.4	5.2	30	190	0.3	<5	160	11														
BH09 0.0-0.1	27 Jun 2024	5.2	0.5	13	61	220	0.2	7.1	370	30	ND	<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
BH09 0.3-0.4	27 Jun 2024	4.2	<0.4	7.0	46	170	0.2	<5	130	9.2														
BH10 0.4-0.5	27 Jun 2024	<2	<0.4	<5	17	36	<0.1	<5	54	7.6	ND	<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
DUP1	26 Jun 2024	2.1	<0.4	7.7	31	130	0.1	<5	140	15														
DUP1A	26 Jun 2024	<5	<1	8	33	145	0.1	3	123															
DUP4	27 Jun 2024	2.6	0.6	14	65	200	0.2	7.9	350	32														
DUP4A	27 Jun 2024	<5	<1	11	56	255	0.2	8	228															
Field Blank	27 Jun 2024																							
SV01 PACM Frag	27 Jun 2024										D													
SV01 0.0-0.1	27 Jun 2024	2.7	0.5	15	51	190	0.2	6.8	290	21	ND	<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
SV01 0.7-0.8	27 Jun 2024									16		<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
SV02 0.3-0.4	27 Jun 2024	<2	<0.4	5.1	20	120	<0.1	<5	120	5.9		<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
SV02 0.6-0.7	27 Jun 2024									12		<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
Trip Blank	26 Jun 2024											<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
Trip Blank	27 Jun 2024											<0.5		<0.1		<0.1		<0.1		<0.2		<0.1		<0.3
TRIP SPIKE LAB	26 Jun 2024												87			88		87		90		90		90

Statistics																								
Number of Results	19	19	19	19	19	19	19	19	19	19	12	16	1	16	1	16	1	16	1	16	1	16	1	1
Number of Detects	13	6	15	19	19	14	10	19	19	12		0	1	0	1	0	1	0	1	0	1	0	1	1
Minimum Concentration	<2	<0.4	<5	12	36	0.1	3	54	3.8	1		<0.5	87	<0.1	88	<0.1	87	<0.1	90	<0.2	90	<0.1	90	<0.3
Minimum Detect	2.1	0.5	5.1	12	36	0.1	3	54	3.8	1		ND	87	ND	88	ND	87	ND	90	ND	90	ND	90	ND
Maximum Concentration	7.8	<1	15	65	280	0.3	25	370	40	1		<0.5	87	<0.1	88	<0.1	87	<0.1	90	<0.2	90	<0.1	90	<0.3
Maximum Detect	7.8	0.6	15	65	280	0.3	25	370	40	1		ND	87	ND	88	ND	87	ND	90	ND	90	ND	90	ND
Average Concentration *	3	0.33	8.5	38	135	0.15	5.6	190	18	1		0.25		0.05		0.05		0.05		0.1		0.05		0.15
Median Concentration *	2.6	0.2	8	34	130	0.2	3	150	16	1		0.25	87	0.05	88	0.05	87	0.05	90	0.1	90	0.05	90	0.15
Standard Deviation *	1.7	0.16	4.5	16	74	0.076	5.2	100	10	0		0		0		0		0		0		0		0
95% UCL (Student's-t) *	3.655	0.395	10.25	44.65	164.9	0.18	7.648	229.8	22.05	1		0.25		0.05		0.05		0.05		0.1		0.05		0.15
% of Detects	68	32	79	100	100	74	53	100	100	100		0	100	0	100	0	100	0	100	0	100	0	100	100
% of Non-Detects	32	68	21	0	0	26	47	0	0	0		100	0	100	0	100	0	100	0	100	0	100	0	0

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
HEPA, January 2020, PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)
HEPA, January 2020, PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand
2013, NEPM 2013 Table 1A(1) HILs Res A Soil
2013, NEPM 2013 Table 1A(1) HILs Res B Soil

Table LR1 Laboratory Analytical Results – Soils

alliance		Halogenated Benzenes		TRH							TPH					PCBs								
	Arsenic	Hexachlorobenzene	C6-Cl0 Fraction (F1)		C6-Cl0 (F1 minus BTEX)	>Cl0-Cl6 Fraction (F2)	>Cl0-Cl6 Fraction (F2 minus Naphthalene)	>Cl6-C34 Fraction (F3)	C34-C40 Fraction (F4)	>Cl0-C40 Fraction (Sum)	C6-C9 Fraction		Cl0-Cl14 Fraction	Cl15-C28 Fraction	C29-C36 Fraction	Cl0-C36 Fraction (Sum)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	PCBs (Sum of total)
	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	2	0.05	20	1	20	50	50	100	100	100	20	1	20	50	50	50	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil			700			1,000		2,500	10,000															
PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)																								
PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)																								
NEPM 2013 Table 1A(1) HILs Res A Soil	100	10																						1
NEPM 2013 Table 1A(1) HILs Res B Soil	500	15																						1

Field ID	Date																								
BH01 0.0-0.1	26 Jun 2024	3.9	<0.5	<20		<20	<50	<50	100	<100	100	<20		<20	69	<50	69	<1	<1	<1	<1	<1	<1	<1	<1
BH02 0.0-0.1	26 Jun 2024	2.2	<0.5	<20		<20	<50	<50	110	<100	110	<20		<20	55	79	134	<1	<1	<1	<1	<1	<1	<1	<1
BH03 0.3-0.4	26 Jun 2024	<2	<0.5	<20		<20	<50	<50	200	<100	200	<20		<20	110	120	230	<1	<1	<1	<1	<1	<1	<1	<1
BH04 0.5-0.6	26 Jun 2024	2.2	<0.5	<20		<20	<50	<50	620	150	770	<20		28	420	270	718	<1	<1	<1	<1	<1	<1	<1	<1
BH05 0.0-0.1	26 Jun 2024	2.9	<0.5	<20		<20	230	230	810	290	1,330	<20		250	460	560	1,270	<1	<1	<1	<1	<1	<1	<1	<1
BH06 0.0-0.1	27 Jun 2024	3.0	<0.5	<20		<20	99	99	440	130	669	<20		99	250	260	609	<1	<1	<1	<1	<1	<1	<1	<1
BH06 0.4-0.5	27 Jun 2024	4.7	<0.05															<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BH07 0.0-0.1	26 Jun 2024	7.8	<0.5	<20		<20	<50	<50	120	<100	120	<20		<20	63	86	149	<1	<1	<1	<1	<1	<1	<1	<1
BH08 0.0-0.1	26 Jun 2024	<2	<0.5	<20		<20	<50	<50	240	<100	240	<20		32	160	120	312	<1	<1	<1	<1	<1	<1	<1	<1
BH08 0.5-0.6	26 Jun 2024	4.0	<0.5															<1	<1	<1	<1	<1	<1	<1	<1
BH09 0.0-0.1	27 Jun 2024	5.2	<0.5	<20		<20	130	130	850	450	1,430	<20		130	430	640	1,200	<1	<1	<1	<1	<1	<1	<1	<1
BH09 0.3-0.4	27 Jun 2024	4.2	<0.5															<1	<1	<1	<1	<1	<1	<1	<1
BH10 0.4-0.5	27 Jun 2024	<2	<0.5	<20		<20	<50	<50	240	<100	240	<20		<20	140	130	270	<1	<1	<1	<1	<1	<1	<1	<1
DUP1	26 Jun 2024	2.1																							
DUP1A	26 Jun 2024	<5																							
DUP4	27 Jun 2024	2.6																							
DUP4A	27 Jun 2024	<5																							
Field Blank	27 Jun 2024																								
SV01 PACM Frag	27 Jun 2024																								
SV01 0.0-0.1	27 Jun 2024	2.7	<0.5	<20		<20	77	77	480	280	837	<20		81	270	360	711	<1	<1	<1	<1	<1	<1	<1	<1
SV01 0.7-0.8	27 Jun 2024			<20		<20	<50	<50	<100	<100	<100	<20		<20	<50	<50	<50								
SV02 0.3-0.4	27 Jun 2024	<2	<0.05	<20		<20	<50	<50	110	<100	110	<20		<20	76	<50	76	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SV02 0.6-0.7	27 Jun 2024			<20		<20	<50	<50	210	<100	210	<20		<20	150	88	238								
Trip Blank	26 Jun 2024			<20		<20						<20													
Trip Blank	27 Jun 2024			<20		<20						<20													
TRIP SPIKE LAB	26 Jun 2024				94								94												

Statistics																							
Number of Results	19	15	16	1	16	14	14	14	14	14	16	1	14	14	14	14	15	15	15	15	15	15	15
Number of Detects	13	0	0	1	0	4	4	13	5	13	0	1	6	13	11	13	0	0	0	0	0	0	0
Minimum Concentration	<2	<0.05	<20	94	<20	<50	<50	100	<100	100	<20	94	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Minimum Detect	2.1	ND	ND	94	ND	77	77	100	130	100	ND	94	28	55	79	69	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	7.8	<0.5	<20	94	<20	230	230	850	450	1,430	<20	94	250	460	640	1,270	<1	<1	<1	<1	<1	<1	<1
Maximum Detect	7.8	ND	ND	94	ND	230	230	850	450	1,430	ND	94	250	460	640	1,270	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	3	0.22	10		10	56	56	327	125	458	10		50	191	199	429	0.44	0.44	0.44	0.44	0.44	0.44	0.44
Median Concentration *	2.6	0.25	10	94	10	25	25	225	50	225	10	94	10	145	120	254	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Standard Deviation *	1.7	0.079	0		0	61	61	269	127	469	0		70	150	197	411	0.16	0.16	0.16	0.16	0.16	0.16	0.16
95% UCL (Student's-t) *	3.655	0.256	10		10	84.8	84.8	454.4	184.9	680.5	10		83.05	262.5	292.6	623.8	0.512	0.512	0.512	0.512	0.512	0.512	0.512
% of Detects	68	0	0	100	0	29	29	93	36	93	0	100	43	93	79	93	0	0	0	0	0	0	0
% of Non-Detects	32	100	100	0	100	71	71	7	64	7	100	0	57	7	21	7	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
HEPA, January 2020, PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)
HEPA, January 2020, PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand
2013, NEPM 2013 Table 1A(1) HILs Res A Soil
2013, NEPM 2013 Table 1A(1) HILs Res B Soil

alliance	PAH																				Particulates
	Arsenic	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a) pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (sum of total)	Organic Fibres - Comment
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	Comment
EQL	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																					
PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)																					
PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)																					
NEPM 2013 Table 1A(1) HILs Res A Soil	100																3	3	3	300	
NEPM 2013 Table 1A(1) HILs Res B Soil	500																4	4	4	400	

Field ID	Date																						
BH01 0.0-0.1	26 Jun 2024	3.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	1
BH02 0.0-0.1	26 Jun 2024	2.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	1
BH03 0.3-0.4	26 Jun 2024	<2	<0.5	<0.5	<0.5	1.0	1.9	1.3	1.7	1.7	1.3	<0.5	2.3	<0.5	1.0	<0.5	1.2	2.6	2.7	2.9	2.4	16	1
BH04 0.5-0.6	26 Jun 2024	2.2	<0.5	<0.5	0.8	5.5	8.6	5.4	6.3	8.2	6.7	1.3	10	<0.5	4.3	<0.5	3.8	11	12	12	12	72	1
BH05 0.0-0.1	26 Jun 2024	2.9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	1
BH06 0.0-0.1	27 Jun 2024	3.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	0.5	1
BH06 0.4-0.5	27 Jun 2024	4.7																					
BH07 0.0-0.1	26 Jun 2024	7.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.8	<0.5	1.2	<0.5	<0.5	<0.5	0.6	1.1	0.6	1.2	<0.5	4.2	1
BH08 0.0-0.1	26 Jun 2024	<2	<0.5	<0.5	<0.5	0.6	0.9	0.9	1.0	1.4	1.1	<0.5	1.4	<0.5	0.7	<0.5	<0.5	1.7	1.5	1.8	1.3	9.7	1
BH08 0.5-0.6	26 Jun 2024	4.0																					
BH09 0.0-0.1	27 Jun 2024	5.2	<0.5	<0.5	<0.5	0.6	0.6	0.7	0.6	0.8	0.9	<0.5	1.2	<0.5	<0.5	<0.5	<0.5	1.3	1.1	1.4	0.8	6.7	1
BH09 0.3-0.4	27 Jun 2024	4.2																					
BH10 0.4-0.5	27 Jun 2024	<2	<0.5	<0.5	0.8	1.4	2.1	2.0	1.9	2.3	2.4	0.5	4.3	<0.5	1.5	<0.5	2.1	3.9	3.4	3.4	3.4	25	1
DUP1	26 Jun 2024	2.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.5	0.6	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	0.7	0.6	1.2	<0.5	2.9	
DUP1A	26 Jun 2024	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.6	1.2	<0.5	1.0	
DUP4	27 Jun 2024	2.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	0.9	<0.5	<0.5	<0.5	<0.5	0.8	0.6	1.2	<0.5	2.2	
DUP4A	27 Jun 2024	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5		
Field Blank	27 Jun 2024																						
SV01 PACM Frag	27 Jun 2024																						1
SV01 0.0-0.1	27 Jun 2024	2.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	0.6	0.6	1.2	<0.5	1.1	1
SV01 0.7-0.8	27 Jun 2024																						
SV02 0.3-0.4	27 Jun 2024	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5		
SV02 0.6-0.7	27 Jun 2024																						
Trip Blank	26 Jun 2024																						
Trip Blank	27 Jun 2024																						
TRIP SPIKE LAB	26 Jun 2024																						

Statistics																					
Number of Results	19	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	12
Number of Detects	13	0	0	2	5	5	5	6	8	8	2	10	0	4	0	4	10	16	16	5	11
Minimum Concentration	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.5	0.5	0.5	0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.6	1.2	<0.5	0.5
Minimum Detect	2.1	ND	ND	0.8	0.6	0.6	0.7	0.5	0.5	0.5	0.5	0.5	ND	0.7	ND	0.6	0.5	0.6	1.2	0.8	0.5
Maximum Concentration	7.8	<0.5	<0.5	0.8	5.5	8.6	5.4	6.3	8.2	6.7	1.3	10	<0.5	4.3	<0.5	3.8	11	12	12	12	72
Maximum Detect	7.8	ND	ND	0.8	5.5	8.6	5.4	6.3	8.2	6.7	1.3	10	ND	4.3	ND	3.8	11	12	12	12	72
Average Concentration *	3	0.25	0.25	0.32	0.74	1.1	0.82	0.91	1.1	1	0.33	1.5	0.25	0.66	0.25	0.67	1.6	1.7	2.2	1.4	8.9
Median Concentration *	2.6	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.375	0.375	0.25	0.55	0.25	0.25	0.25	0.25	0.65	0.6	1.2	0.25	1.65
Standard Deviation *	1.7	0	0	0.19	1.3	2.1	1.3	1.5	2	1.6	0.27	2.5	0	1	0	0.97	2.7	2.9	2.7	3	18
95% UCL (Student's-t) *	3.655	0.25	0.25	0.401	1.316	1.973	1.395	1.578	1.99	1.73	0.448	2.619	0.25	1.11	0.25	1.096	2.791	2.965	3.354	2.717	16.88
% of Detects	68	0	0	12	31	31	31	38	50	50	12	62	0	25	0	25	62	100	100	31	69
% of Non-Detects	32	100	100	88	69	69	69	62	50	50	88	38	100	75	100	75	38	0	0	69	31

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

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HEPA, January 2020, PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)
HEPA, January 2020, PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand
2013, NEPM 2013 Table 1A(1) HILs Res A Soil
2013, NEPM 2013 Table 1A(1) HILs Res B Soil

alliance	Arsenic	Perfluoroalkane Carboxylic Acids																					
		Perfluorobutanoic acid (PFBA)		Perfluorohexanoic acid (PFHxA)		Perfluoropentanoic acid (PFPeA)		Perfluoroheptanoic acid (PFHpA)		Perfluorooctanoic acid (PFOA)		Perfluorodecanoic acid (PFDA)		Perfluorododecanoic acid (PFDoDA)		Perfluorononanoic acid (PFNA)		Perfluorotetradecanoic acid (PFTeDA)		Perfluorotridecanoic acid (PFTriDA)		Perfluoroundecanoic acid (PFUnDA)	
		mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L
EQL	2	0.001	0.05	0.0002	0.01	0.0002	0.01	0.0002	0.01	0.0002	0.01	0.0002	0.01	0.0002	0.01	0.0002	0.01	0.0005	0.01	0.0002	0.01	0.0002	0.01
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																							
PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)										0.1													
PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)										20													
NEPM 2013 Table 1A(1) HILs Res A Soil	100																						
NEPM 2013 Table 1A(1) HILs Res B Soil	500																						

Field ID	Date																						
BH01 0.0-0.1	26 Jun 2024	3.9																					
BH02 0.0-0.1	26 Jun 2024	2.2																					
BH03 0.3-0.4	26 Jun 2024	<2																					
BH04 0.5-0.6	26 Jun 2024	2.2																					
BH05 0.0-0.1	26 Jun 2024	2.9																					
BH06 0.0-0.1	27 Jun 2024	3.0																					
BH06 0.4-0.5	27 Jun 2024	4.7																					
BH07 0.0-0.1	26 Jun 2024	7.8																					
BH08 0.0-0.1	26 Jun 2024	<2																					
BH08 0.5-0.6	26 Jun 2024	4.0																					
BH09 0.0-0.1	27 Jun 2024	5.2																					
BH09 0.3-0.4	27 Jun 2024	4.2																					
BH10 0.4-0.5	27 Jun 2024	<2																					
DUP1	26 Jun 2024	2.1																					
DUP1A	26 Jun 2024	<5																					
DUP4	27 Jun 2024	2.6																					
DUP4A	27 Jun 2024	<5	<0.001		<0.0002		<0.0002		<0.0002		<0.0002	0.0003		<0.0002		<0.0002		<0.0005		<0.0002		<0.0002	
Field Blank	27 Jun 2024			<0.05		<0.01		<0.01		<0.01		<0.01		<0.01		<0.01		<0.01		<0.01		<0.01	<0.01
SV01 PACM Frag	27 Jun 2024																						
SV01 0.0-0.1	27 Jun 2024	2.7	<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005
SV01 0.7-0.8	27 Jun 2024		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005
SV02 0.3-0.4	27 Jun 2024	<2	<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005
SV02 0.6-0.7	27 Jun 2024		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005
Trip Blank	26 Jun 2024																						
Trip Blank	27 Jun 2024																						
TRIP SPIKE LAB	26 Jun 2024																						

Statistics																							
Number of Results	19	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1
Number of Detects	13	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<2	<0.001	<0.05	<0.0002	<0.01	<0.0002	<0.01	<0.0002	<0.01	<0.0002	<0.01	0.0003	<0.01	<0.0002	<0.01	<0.0002	<0.01	<0.0005	<0.01	<0.0002	<0.01	<0.0002	<0.01
Minimum Detect	2.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	7.8	<0.005	<0.05	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01
Maximum Detect	7.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0003	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	3	0.0021		0.002		0.002		0.002		0.002		0.0021		0.002		0.002		0.002		0.002		0.002	
Median Concentration *	2.6	0.0025	0.025	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005
Standard Deviation *	1.7	0.00089		0.0011		0.0011		0.0011		0.0011		0.00098		0.0011		0.0011		0.001		0.0011		0.0011	
95% UCL (Student's-t) *	3.655	0.00295		0.00304		0.00304		0.00304		0.00304		0.00304		0.00304		0.00304		0.00301		0.00304		0.00304	
% of Detects	68	0	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	32	100	100	100	100	100	100	100	100	100	100	80	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
HEPA, January 2020, PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)
HEPA, January 2020, PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand
2013, NEPM 2013 Table 1A(1) HILs Res A Soil
2013, NEPM 2013 Table 1A(1) HILs Res B Soil





	(n:2) Fluorotelomer Sulfonic Acids										Perfluoroalkane Sulfonic Acids												
	Arsenic	4:2 Fluorotelomer sulfonic acid (4:2 FTS)		6:2 Fluorotelomer sulfonic acid (6:2 FTS)		8:2 Fluorotelomer sulfonic acid (8:2 FTS)		10:2 Fluorotelomer sulfonic acid (10:2 FTS)		Perfluoropropanesulfonic acid (PFPrS)		Perfluorobutane sulfonic acid (PFBS)		Perfluoropentane sulfonic acid (PFPeS)		Perfluorohexane sulfonic acid (PFHxS)		Perfluoroheptane sulfonic acid (PFHpS)		Perfluorooctane sulfonic acid (PFOS)		Perfluorodecane sulfonic acid (PFDS)	
	mg/kg	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L	mg/kg	µg/L
EQL	2	0.0005	0.01	0.0005	0.05	0.0005	0.01	0.0005	0.01	0.0005	0.01	0.0002	0.01	0.0002	0.01	0.0002	0.01	0.0002	0.01	0.0002	0.01	0.0002	0.01
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																							
PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)																							
PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)																							
NEPM 2013 Table 1A(1) HILs Res A Soil	100																						
NEPM 2013 Table 1A(1) HILs Res B Soil	500																						

Field ID	Date																						
BH01 0.0-0.1	26 Jun 2024	3.9																					
BH02 0.0-0.1	26 Jun 2024	2.2																					
BH03 0.3-0.4	26 Jun 2024	<2																					
BH04 0.5-0.6	26 Jun 2024	2.2																					
BH05 0.0-0.1	26 Jun 2024	2.9																					
BH06 0.0-0.1	27 Jun 2024	3.0																					
BH06 0.4-0.5	27 Jun 2024	4.7																					
BH07 0.0-0.1	26 Jun 2024	7.8																					
BH08 0.0-0.1	26 Jun 2024	<2																					
BH08 0.5-0.6	26 Jun 2024	4.0																					
BH09 0.0-0.1	27 Jun 2024	5.2																					
BH09 0.3-0.4	27 Jun 2024	4.2																					
BH10 0.4-0.5	27 Jun 2024	<2																					
DUP1	26 Jun 2024	2.1																					
DUP1A	26 Jun 2024	<5																					
DUP4	27 Jun 2024	2.6																					
DUP4A	27 Jun 2024	<5	<0.0005		<0.0005		<0.0005		<0.0005		<0.0005		<0.0002		<0.0002		<0.0002		<0.0002		0.0041		<0.0002
Field Blank	27 Jun 2024			<0.01		<0.05		<0.01		<0.01		<0.01		<0.01		<0.01		<0.01		<0.01		<0.01	<0.01
SV01 PACM Frag	27 Jun 2024																						
SV01 0.0-0.1	27 Jun 2024	2.7	<0.005		<0.01		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005
SV01 0.7-0.8	27 Jun 2024		<0.005		<0.01		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005
SV02 0.3-0.4	27 Jun 2024	<2	<0.005		<0.01		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005
SV02 0.6-0.7	27 Jun 2024		<0.005		<0.01		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005		<0.005
Trip Blank	26 Jun 2024																						
Trip Blank	27 Jun 2024																						
TRIP SPIKE LAB	26 Jun 2024																						

Statistics																							
Number of Results	19	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1	5	1
Number of Detects	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Minimum Concentration	<2	<0.0005	<0.01	<0.0005	<0.05	<0.0005	<0.01	<0.0005	<0.01	<0.0005	<0.01	<0.0002	<0.01	<0.0002	<0.01	<0.0002	<0.01	<0.0002	<0.01	0.0041	<0.01	<0.0002	<0.01
Minimum Detect	2.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0041	ND	ND	ND
Maximum Concentration	7.8	<0.005	<0.01	<0.01	<0.05	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01	<0.005	<0.01
Maximum Detect	7.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0041	ND	ND	ND
Average Concentration *	3	0.002		0.004		0.002		0.002		0.002		0.002		0.002		0.002		0.002		0.0028		0.002	
Median Concentration *	2.6	0.0025	0.005	0.005	0.025	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005	0.0025	0.005
Standard Deviation *	1.7	0.001		0.0021		0.001		0.001		0.001		0.0011		0.0011		0.0011		0.0011		0.00072		0.0011	
95% UCL (Student's-t) *	3.655	0.00301		0.00608		0.00301		0.00301		0.00301		0.00304		0.00304		0.00304		0.00304		0.0035		0.00304	
% of Detects	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	0
% of Non-Detects	32	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
HEPA, January 2020, PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)
HEPA, January 2020, PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand
2013, NEPM 2013 Table 1A(1) HILs Res A Soil
2013, NEPM 2013 Table 1A(1) HILs Res B Soil

alliance

	PFAS												Perfluoroalkyl Sulfonamides														
	Arsenic	Perfluorononanesulfonic acid (PFNS)	Sum of PFHxS and PFOS	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of enHealth PFAS (PFHxS + PFOS + PFOA)	Sum of PFAS (PFOS + PFOA)	Sum of PFAS (PFOS + PFOA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)											
EQL	2	0.00001	0.2	0.0002	0.01	0.0002	0.1	0.0002	0.05	0.01	0.005	0.01	0.005	0.0002	0.05	0.0005	0.05	0.0002	0.05	0.0005	0.05	0.0005	0.05	0.0002	0.05	0.0005	0.05
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																											
PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)				0.01																							
PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)				2																							
NEPM 2013 Table 1A(1) HILs Res A Soil	100																										
NEPM 2013 Table 1A(1) HILs Res B Soil	500																										

Field ID	Date																										
BH01 0.0-0.1	26 Jun 2024	3.9																									
BH02 0.0-0.1	26 Jun 2024	2.2																									
BH03 0.3-0.4	26 Jun 2024	<2																									
BH04 0.5-0.6	26 Jun 2024	2.2																									
BH05 0.0-0.1	26 Jun 2024	2.9																									
BH06 0.0-0.1	27 Jun 2024	3.0																									
BH06 0.4-0.5	27 Jun 2024	4.7																									
BH07 0.0-0.1	26 Jun 2024	7.8																									
BH08 0.0-0.1	26 Jun 2024	<2																									
BH08 0.5-0.6	26 Jun 2024	4.0																									
BH09 0.0-0.1	27 Jun 2024	5.2																									
BH09 0.3-0.4	27 Jun 2024	4.2																									
BH10 0.4-0.5	27 Jun 2024	<2																									
DUP1	26 Jun 2024	2.1																									
DUP1A	26 Jun 2024	<5																									
DUP4	27 Jun 2024	2.6																									
DUP4A	27 Jun 2024	<5		<0.2	0.0041		0.0044	0.0041						<0.0002		<0.0005		<0.0002		<0.0005		<0.0005		<0.0002		<0.0005	
Field Blank	27 Jun 2024		<0.00001						<0.01		<0.1			<0.05	<0.01		<0.01		<0.05		<0.05		<0.05		<0.05		<0.05
SV01 PACM Frag	27 Jun 2024																										
SV01 0.0-0.1	27 Jun 2024	2.7		<5	<0.005		<0.05	<0.01			<0.005		<0.005	<0.005	<0.005		<0.005		<0.01		<0.005		<0.005		<0.01		<0.005
SV01 0.7-0.8	27 Jun 2024			<5	<0.005		<0.05	<0.01			<0.005		<0.005	<0.005	<0.005		<0.005		<0.01		<0.005		<0.005		<0.01		<0.005
SV02 0.3-0.4	27 Jun 2024	<2		<5	<0.005		<0.05	<0.01			<0.005		<0.005	<0.005	<0.005		<0.005		<0.01		<0.005		<0.005		<0.01		<0.005
SV02 0.6-0.7	27 Jun 2024			<5	<0.005		<0.05	<0.01			<0.005		<0.005	<0.005	<0.005		<0.01		<0.005		<0.005		<0.01		<0.005		<0.005
Trip Blank	26 Jun 2024																										
Trip Blank	27 Jun 2024																										
TRIP SPIKE LAB	26 Jun 2024																										

Statistics																											
Number of Results	19	1	5	5	1	5	1	5	1	1	4	1	4	5	1	5	1	5	1	5	1	5	1	5	1	5	1
Number of Detects	13	0	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Minimum Concentration	<2	<0.00001	<0.2	0.0041	<0.01	0.0044	<0.1	0.0041	<0.05	<0.01	<0.005	<0.01	<0.005	<0.0002	<0.05	<0.0005	<0.05	<0.0002	<0.05	<0.0005	<0.05	<0.0002	<0.05	<0.0005	<0.05	<0.0005	
Minimum Detect	2.1	ND	ND	0.0041	ND	0.0044	ND	0.0041	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Maximum Concentration	7.8	<0.00001	<5	<0.005	<0.01	<0.05	<0.1	<0.01	<0.05	<0.01	<0.005	<0.01	<0.005	<0.005	<0.05	<0.005	<0.05	<0.01	<0.05	<0.005	<0.05	<0.005	<0.01	<0.05	<0.005	<0.05	
Maximum Detect	7.8	ND	ND	0.0041	ND	0.0044	ND	0.0041	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Average Concentration *	3		2	0.0028		0.021		0.0048			0.0025		0.0025	0.002		0.002		0.004		0.002		0.002		0.004		0.002	
Median Concentration *	2.6	0.000005	2.5	0.0025	0.005	0.025	0.05	0.005	0.025	0.005	0.0025	0.005	0.0025	0.0025	0.025	0.0025	0.025	0.005	0.025	0.0025	0.025	0.0025	0.025	0.005	0.025	0.0025	
Standard Deviation *	1.7		1.1	0.00072		0.0092		0.0004			0		0	0.0011		0.001		0.0022		0.001		0.001		0.0022		0.001	
95% UCL (Student's-t) *	3.655		3.043	0.0035		0.0297		0.0052			0.0025		0.0025	0.00304		0.00301		0.00611		0.00301		0.00301		0.00611		0.00301	
% of Detects	68	0	0	20	0	20	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of Non-Detects	32	100	100	80	100	80	100	80	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
HEPA, January 2020, PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)
HEPA, January 2020, PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand
2013, NEPM 2013 Table 1A(1) HILs Res A Soil
2013, NEPM 2013 Table 1A(1) HILs Res B Soil

	Organochlorine Pesticides																							
	Arsenic	Other organochlorine pesticides EPAVic	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	2	0.1	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.5
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																								
PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)																								
PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)																								
NEPM 2013 Table 1A(1) HILs Res A Soil	100					6		50				240					10				6		300	20
NEPM 2013 Table 1A(1) HILs Res B Soil	500					10		90				600					20				10		500	30

Field ID	Date																							
BH01 0.0-0.1	26 Jun 2024	3.9	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
BH02 0.0-0.1	26 Jun 2024	2.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
BH03 0.3-0.4	26 Jun 2024	<2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
BH04 0.5-0.6	26 Jun 2024	2.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
BH05 0.0-0.1	26 Jun 2024	2.9	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
BH06 0.0-0.1	27 Jun 2024	3.0	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
BH06 0.4-0.5	27 Jun 2024	4.7	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5
BH07 0.0-0.1	26 Jun 2024	7.8	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
BH08 0.0-0.1	26 Jun 2024	<2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
BH08 0.5-0.6	26 Jun 2024	4.0	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
BH09 0.0-0.1	27 Jun 2024	5.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
BH09 0.3-0.4	27 Jun 2024	4.2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
BH10 0.4-0.5	27 Jun 2024	<2	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
DUP1	26 Jun 2024	2.1																						
DUP1A	26 Jun 2024	<5																						
DUP4	27 Jun 2024	2.6																						
DUP4A	27 Jun 2024	<5																						
Field Blank	27 Jun 2024																							
SV01 PACM Frag	27 Jun 2024																							
SV01 0.0-0.1	27 Jun 2024	2.7	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
SV01 0.7-0.8	27 Jun 2024																							
SV02 0.3-0.4	27 Jun 2024	<2	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5
SV02 0.6-0.7	27 Jun 2024																							
Trip Blank	26 Jun 2024																							
Trip Blank	27 Jun 2024																							
TRIP SPIKE LAB	26 Jun 2024																							

Statistics																								
Number of Results	19	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Number of Detects	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<2	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5
Minimum Detect	2.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	7.8	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
Maximum Detect	7.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	3	0.44	0.22	0.22	0.22	0.22	0.22	0.22	0.44	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	4.4
Median Concentration *	2.6	0.5	0.25	0.25	0.25	0.25	0.25	0.25	0.5	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	5
Standard Deviation *	1.7	0.16	0.079	0.079	0.079	0.079	0.079	0.079	0.16	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	0.079	1.7
95% UCL (Student's-t) *	3.655	0.512	0.256	0.256	0.256	0.256	0.256	0.256	0.512	0.256	0.256	0.256	0.256	0.256	0.256	0.256	0.256	0.256	0.256	0.256	0.256	0.256	0.256	5.127
% of Detects	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	32	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
HEPA, January 2020, PFAS NEMP 2020 Residential with garden/accessible soil (HIL A)
HEPA, January 2020, PFAS NEMP 2020 Residential with minimal opportunities for soil access (HIL B)
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand
2013, NEPM 2013 Table 1A(1) HILs Res A Soil
2013, NEPM 2013 Table 1A(1) HILs Res B Soil

Table LR2 Laboratory Analytical Results – Acid Sulfate Soils



Inorganics	Particle Size		Particulates	Sample Preparation	SPOCAS	Acid Sulphate Soils - Field		Difference between pH _F and pH _{ox}	Acid Sulphate Soils				Acid Sulphate Soils - Acid Base Accounting	Acid Sulphate Soils - Acidity Trail		Acid Sulphate Soils - Liming Rate	Acid Sulphate Soils - Potential Acidity	
	<2mm Fraction	>2mm Fraction	Extraneous Material	Analysed Material	HCl Extractable Sulfur Correction Factor	pH _F	pH _{ox}		Reaction Rate	Net Acidity (Acidity Units) - CRS Suite	Net Acidity (Sulfur Units) - CRS Suite	pH (KCl)	ANC Fineness Factor	Titrateable Actual Acidity (sulfur units)	Titrateable Actual Acidity	CRS Suite - Liming Rate	Chromium Reducible Sulphur (acidity units)	Chromium Reducible Sulfur
	%	G	%	%	FACTOR	-	-		-	MOL H+/T	% S	-	-	%S	mole H+/t	KG CaCO3/T	mole H+/t	%S
EQL	1	0.005	0.005	0.1	0.1	1	0.1	0.1	0	10	0.02	0.1		0.003	2	1	3	0.005
NASSG 2018						<4.0	<3.0	>1.0	>3	>18	>0.03							

Field ID	Location Code	Date																
BH01 0.0-0.1		26 Jun 2024						6.5	4.9	1.6	2.0							
BH01 0.4-0.5		26 Jun 2024						6.4	4.0	2.4	2.0							
BH01 0.9-1.0		26 Jun 2024						6.6	4.3	2.3	1.0							
BH01 1.4-1.5		26 Jun 2024						6.6	4.0	2.6	1.0							
BH01 1.9-2.0		26 Jun 2024						6.8	4.0	2.8	1.0							
BH01 1.9-2.0	20	27 Jun 2024	110	<0.005	<0.1	100	2.0			<10	<0.02	6.0	1.5	0.003	2.0	<1	<3	<0.005
BH01 2.4-2.5		26 Jun 2024						6.9	4.0	2.9	1.0							
BH01 2.4-2.5	16	27 Jun 2024	110	<0.005	<0.1	100	2.0			<10	<0.02	5.9	1.5	0.004	2.4	<1	<3	<0.005
BH01 2.9-3.0		26 Jun 2024						6.8	3.2	3.6	1.0							
BH01 2.9-3.0	17	27 Jun 2024	130	<0.005	<0.1	100	2.0			<10	<0.02	5.6	1.5	0.006	3.9	<1	3.3	0.005
BH01 3.4-3.5		27 Jun 2024						6.9	4.6	2.3	1.0							
BH01 3.9-4.0		27 Jun 2024						6.8	4.8	2	1.0							
BH01 4.4-4.5		27 Jun 2024						6.8	4.8	2	1.0							
BH09 0.0-0.1		27 Jun 2024						6.9	4.2	2.7	3.0							
BH09 0.4-0.5		27 Jun 2024						6.6	3.4	3.2	2.0							
BH09 0.4-0.5	14	27 Jun 2024	96	<0.005	<0.1	100	2.0			21	0.03	5.1	1.5	0.034	21	1.6	<3	<0.005
BH09 0.9-1.0		27 Jun 2024						6.9	3.0	3.9	2.0							
BH09 0.9-1.0	22	27 Jun 2024	86	<0.005	<0.1	100	2.0			14	0.02	5.4	1.5	0.022	14	1.0	<3	<0.005
BH09 1.4-1.5		27 Jun 2024						7.1	3.1	3	2.0							
BH09 1.4-1.5	21	27 Jun 2024	110	<0.005	<0.1	100	2.0			17	0.03	5.5	1.5	0.016	10	1.3	7.0	0.011
BH09 1.9-2.0		27 Jun 2024						7.0	3.6	3.4	2.0							
BH09 2.4-2.5		27 Jun 2024						6.9	3.4	3.5	2.0							
BH09 2.4-2.5	22	27 Jun 2024	44	<0.005	<0.1	100	2.0			14	0.02	5.6	1.5	0.012	7.3	1.0	6.4	0.010
BH09 2.9-3.0		27 Jun 2024						6.6	3.8	2.8	1.0							
BH09 3.4-3.5		27 Jun 2024						6.5	4.0	2.5	1.0							
BH09 3.9-4.0		27 Jun 2024						6.5	4.0	2.5	1.0							
BH09 4.4-4.5		27 Jun 2024						6.4	4.0	2.4	1.0							
BH10 0.0-0.1		27 Jun 2024						6.1	3.7	2.4	2.0							
BH10 0.4-0.5		27 Jun 2024						6.8	4.6	2.2	2.0							
BH10 0.9-1.0		27 Jun 2024						6.7	3.7	3	2.0							
BH10 0.9-1.0	14	27 Jun 2024	32	<0.005	<0.1	100	2.0			<10	<0.02	6.1	1.5	0.005	3.3	<1	<3	<0.005
BH10 1.4-1.5		27 Jun 2024						6.6	3.8	2.8	2.0							
BH10 1.9-2.0		27 Jun 2024						6.6	4.0	2.6	1.0							
BH10 2.4-2.5		27 Jun 2024						6.7	4.0	2.7	1.0							
BH10 2.9-3.0		27 Jun 2024						6.6	4.0	2.6	1.0							
BH10 3.4-3.5		27 Jun 2024						6.0	3.9	2.1	1.0							
BH10 3.4-3.5	21	27 Jun 2024	32	<0.005	<0.1	100	2.0			37	0.06	5.1	1.5	0.049	31	2.7	5.8	0.009
BH10 3.9-4.0		27 Jun 2024						7.0	4.0	3	1.0							
BH10 3.9-4.0	21	27 Jun 2024	37	<0.005	<0.1	100	2.0			29	0.05	5.2	1.5	0.039	25	2.1	4.0	0.006
BH10 4.4-4.5		27 Jun 2024						6.3	4.2	2.1	1.0							
BH11 0.0-0.1		27 Jun 2024						6.7	4.4	2.3	2.0							
BH11 0.0-0.1	14	27 Jun 2024	37	<0.005	<0.1	100	2.0			16	0.03	5.5	1.5	0.025	16	1.2	<3	<0.005
BH11 0.4-0.5		27 Jun 2024						7.1	4.8	2.3	2.0							
BH11 0.9-1.0		27 Jun 2024						6.9	4.5	2.4	2.0							
BH11 1.4-1.5		27 Jun 2024						7.1	4.8	2.4	2.0							
BH11 1.9-2.0		27 Jun 2024						7.1	4.9	2.3	2.0							
BH11 2.4-2.5		27 Jun 2024						7.1	5.0	2.1	1.0							
BH11 2.9-3.0		27 Jun 2024						6.9	6.2	0.7	1.0							
BH11 3.4-3.5		27 Jun 2024						6.8	4.8	2	1.0							
BH11 3.9-4.0		27 Jun 2024						6.7	4.7	2	1.0							
BH11 4.4-4.5		27 Jun 2024						6.7	4.6	2.1	1.0							
BH11 4.4-4.5	28	27 Jun 2024	28	<0.005	<0.1	100	2.0			18	0.03	5.4	1.5	0.022	14	1.3	3.9	0.006
DUP 3		27 Jun 2024						7.5	4.8	2.7	1.0							

Statistics																		
Number of Results	12	12	12	12	12	12	41	41		41	12	12	12	12	12	12	12	12
Number of Detects	12	12	0	0	12	12	41	41		41	8	8	12	12	12	8	6	6
Minimum Concentration	14	28	<0.005	<0.1	100	2	6	3		1	<10	0.02	5.1	1.5	0.003	2	1	<3
Minimum Detect	14	28	ND	ND	100	2	6	3		1	14	0.02	5.1	1.5	0.003	2	1	3.3
Maximum Concentration	28	130	<0.005	<0.1	100	2	7.5	6.2		3	37	0.06	6.1	1.5	0.049	31	2.7	7
Maximum Detect	28	130	ND	ND	100	2	7.5	6.2		3	37	0.06	6.1	1.5	0.049	31	2.7	7
Average Concentration *	19	71	0.0025	0.05	100	2	6.7	4.2		1.4	16	0.026	5.5	1.5	0.02	12	1.2	3.3
Median Concentration *	20.5	65	0.0025	0.05	100	2	6.8	4		1	15	0.025	5.5	1.5	0.019	12	1.1	2.4
Standard Deviation *	4.3	39	0	0	0	0	0.29	0.62		0.55	10	0.016	0.33	0	0.015	9.5	0.69	2.1
95% UCL (Student's-t) *	21.38	91.28	0.0025	0.05	100	2	6.819	4.37		1.584	20.75	0.0342	5.705	1.5	0.0275	17.41	1.542	4.387
% of Detects	100	100	0	0	100	100	100	100		100	67	67	100	100	100	100	67	50
% of Non-Detects	0	0	100	100	0	0	0	0		0	33	33	0	0	0	0	33	50

* A Non Detect Multiplier of 0.5 has been applied.





	BTEX							Halogenated Benzenes													
	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	1,2,3,4-tetrachlorobenzene	1,2,3,5-Tetrachlorobenzene	1,2,3-trichlorobenzene	1,2,4,5-tetrachlorobenzene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3,5-Trichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	4-chlorotoluene	Bromobenzene	Chlorobenzene	Hexachlorobenzene	Pentachlorobenzene
	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.01	1	1	1	2	1	3	0.005	0.005	5	5	5	1	5	1	1	1	1	1	5	5
NEPM 2013 Table 1C GILs, Drinking Water adjusted by 100		100	80000	30000			60000			3000		3000	150000	3000		4000			30000		

Field ID	Date																				
DUP01	19 Jul 2024	<0.01	<1	<1	<1	<2	<1	<3													
MW01	19 Jul 2024	<0.01	<1	<1	<1	<2	<1	<3	<0.005	<0.005	<5	<5	<5	<1	<5	<1	<1	<1	<1	<5	<5
STS-BH1	19 Jul 2024	<0.01	2	<1	<1	<2	<1	<3	<0.005	<0.005	<5	<5	<5	<1	<5	<1	<1	<1	<1	<5	<5
STS-BH5	19 Jul 2024	<0.01	4	<1	<1	<2	<1	<3	<0.005	<0.005	<5	<5	<5	<1	<5	<1	<1	<1	<1	<5	<5

Statistics																					
Number of Results	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.01	<1	<1	<1	<2	<1	<3	<0.005	<0.005	<5	<5	<5	<1	<5	<1	<1	<1	<1	<1	<5	<5
Minimum Detect	ND	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.01	4	<1	<1	<2	<1	<3	<0.005	<0.005	<5	<5	<5	<1	<5	<1	<1	<1	<1	<1	<5	<5
Maximum Detect	ND	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.005	1.8	0.5	0.5	1	0.5	1.5	0.0025	0.0025	2.5	2.5	2.5	0.5	2.5	0.5	0.5	0.5	0.5	0.5	2.5	2.5
Median Concentration *	0.005	1.25	0.5	0.5	1	0.5	1.5	0.0025	0.0025	2.5	2.5	2.5	0.5	2.5	0.5	0.5	0.5	0.5	0.5	2.5	2.5
Standard Deviation *	0	1.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95% UCL (Student's-t) *	0.005	3.701	0.5	0.5	1	0.5	1.5	0.0025	0.0025	2.5	2.5	2.5	0.5	2.5	0.5	0.5	0.5	0.5	0.5	2.5	2.5
% of Detects	0	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	50	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
2013, NEPM 2013 Table 1C GILs, Drinking Water
2013, NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Sand

Table LR3 Laboratory Analytical Results – Groundwater

alliance		TRH							TPH															
	Naphthalene (VOC)	G6-C10 Fraction (F1)	G6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	G6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)	Chlorinated hydrocarbons EPAVic	Other chlorinated hydrocarbons EPAVic	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,2,3-trichloropropane	1,2-dichloroethane	1,2-dichloropropane
	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.01	20	20	50	50	100	100	100	20	50	100	100	100	5	5	1	1	1	1	1	1	1	1	1
NEPM 2013 Table 1C GILs, Drinking Water adjusted by 100																					3000		300	

Field ID	Date																							
DUP01	19 Jul 2024	<0.01	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100										
MW01	19 Jul 2024	<0.01	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1
STS-BH1	19 Jul 2024	<0.01	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1
STS-BH5	19 Jul 2024	<0.01	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1

Statistics																								
Number of Results		4	4	4	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3	3	3	3	3	3
Number of Detects		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration		<0.01	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1
Minimum Detect		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration		<0.01	<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<5	<5	<1	<1	<1	<1	<1	<1	<1	<1
Maximum Detect		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *		0.005	10	10	25	25	50	50	50	10	25	50	50	50	2.5	2.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Median Concentration *		0.005	10	10	25	25	50	50	50	10	25	50	50	50	2.5	2.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Standard Deviation *		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95% UCL (Student's-t) *		0.005	10	10	25	25	50	50	50	10	25	50	50	50	2.5	2.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
% of Detects		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
2013, NEPM 2013 Table 1C GILs, Drinking Water
2013, NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Sand



	Chlorinated Hydrocarbons																
	Naphthalene (VOC)	1,3-dichloropropane	Benzal Chloride	Benzotrchloride	Benzyl chloride	Bromochloromethane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Dichloromethane
	mg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.01	1	0.1	0.1	0.005	1	1	1	1	1	5	5	5	1	1	1	5
NEPM 2013 Table 1C GILs, Drinking Water adjusted by 100									300								400

Field ID	Date																
DUP01	19 Jul 2024	<0.01															
MW01	19 Jul 2024	<0.01	<1	<0.1	<0.1	<0.005	<1	<1	<1	<1	<1	<5	<5	<5	<1	<1	<1
STS-BH1	19 Jul 2024	<0.01	<1	<0.1	<0.1	<0.005	<1	<1	<1	<1	<1	<5	<5	<5	<1	<1	<1
STS-BH5	19 Jul 2024	<0.01	<1	<0.1	<0.1	<0.005	<1	<1	<1	<1	<1	<5	<5	<5	<1	<1	<1

Statistics																	
Number of Results	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.01	<1	<0.1	<0.1	<0.005	<1	<1	<1	<1	<1	<5	<5	<5	<1	<1	<1	<5
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.01	<1	<0.1	<0.1	<0.005	<1	<1	<1	<1	<1	<5	<5	<5	<1	<1	<1	<5
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.005	0.5	0.05	0.05	0.0025	0.5	0.5	0.5	0.5	0.5	2.5	2.5	2.5	0.5	0.5	0.5	2.5
Median Concentration *	0.005	0.5	0.05	0.05	0.0025	0.5	0.5	0.5	0.5	0.5	2.5	2.5	2.5	0.5	0.5	0.5	2.5
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95% UCL (Student's-t) *	0.005	0.5	0.05	0.05	0.0025	0.5	0.5	0.5	0.5	0.5	2.5	2.5	2.5	0.5	0.5	0.5	2.5
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
2013, NEPM 2013 Table 1C GILs, Drinking Water
2013, NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Sand

Table LR3 Laboratory Analytical Results – Groundwater

										Halogenated Hydrocarbons					MAH					Solvents				
	Naphthalene (VOC)	Hexachlorobutadiene	Hexachlorocyclopentadiene	Hexachloroethane	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl chloride	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Iodomethane	Trichlorofluoromethane	Total MAH	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	Styrene	Methyl Ethyl Ketone	4-Methyl-2-pentanone	Acetone	Allyl chloride	Carbon disulfide
	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L
EQL	0.01	5	5	5	1	1	1	1	5	1	5	5	1	5	0.003	1	1	1	1	5	5	0.005	0.001	1
NEPM 2013 Table 1C GILs, Drinking Water adjusted by 100		70				5000			30		100								3000					

Field ID	Date																								
DUP01	19 Jul 2024	<0.01																							
MW01	19 Jul 2024	<0.01	<5	<5	<5	<1	<1	<1	<1	<5	<1	<5	<5	<1	<5	<0.003	<1	<1	<1	<1	<5	<5	<0.005	<0.001	<1
STS-BH1	19 Jul 2024	<0.01	<5	<5	<5	<1	<1	<1	<1	<5	<1	<5	<5	<1	<5	<0.003	<1	<1	<1	<1	<5	<5	<0.005	<0.001	<1
STS-BH5	19 Jul 2024	<0.01	<5	<5	<5	<1	<1	<1	<1	<5	<1	<5	<5	<1	<5	0.004	<1	<1	<1	<1	<5	<5	<0.005	<0.001	<1

Statistics																								
Number of Results	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.01	<5	<5	<5	<1	<1	<1	<1	<5	<1	<5	<5	<1	<5	<0.003	<1	<1	<1	<1	<5	<5	<0.005	<0.001	<1
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.004	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.01	<5	<5	<5	<1	<1	<1	<1	<5	<1	<5	<5	<1	<5	0.004	<1	<1	<1	<1	<5	<5	<0.005	<0.001	<1
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.004	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.005	2.5	2.5	2.5	0.5	0.5	0.5	0.5	2.5	0.5	2.5	2.5	0.5	2.5	0.0023	0.5	0.5	0.5	0.5	2.5	2.5	0.0025	0.0005	0.5
Median Concentration *	0.005	2.5	2.5	2.5	0.5	0.5	0.5	0.5	2.5	0.5	2.5	2.5	0.5	2.5	0.0015	0.5	0.5	0.5	0.5	2.5	2.5	0.0025	0.0005	0.5
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0014	0	0	0	0	0	0	0	0	0
95% UCL (Student's-t) *	0.005	2.5	2.5	2.5	0.5	0.5	0.5	0.5	2.5	0.5	2.5	2.5	0.5	2.5	0.00477	0.5	0.5	0.5	0.5	2.5	2.5	0.0025	0.0005	0.5
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	67	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
2013, NEPM 2013 Table 1C GILs, Drinking Water
2013, NEPM 2013 Table 1A(4) Comm/Ind HSL D GW for Vapour Intrusion, Sand



	BTEX						Halogenated Benzenes					TRH			TPH	PAH	NA		
	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Chlorobenzene	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2 minus Naphthalene)	C10-C12 Fraction	Naphthalene	2,2,4-Trimethylpentane	Freon 114	Propene
	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	mg/m3	mg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
EQL	1.6	7.5	2.2	4.4	2.2	6.6	15	3	3	3	2.3	0.1	0.1	100	100	10.5	9.3	3.5	8.6
NEPM 2013 Table 1A(2) Res A Soil Vap VOCC HILs																			
NEPM 2013 Table 1A(2) Res B Soil Vap VOCC HILs																			
NEPM 2013 Table 1A(5) Res Soil Vapour HSL A/B for Vapour Intrusion, Sand >=0m, <1m	1,000	1,300,000	330,000			220,000							180	130,000		800			
Resident Vapor Intrusion Screening Levels (VISL)																			

Field ID	Date																			
Carbon Tube	19 Jul 2024																			
DUP01	19 Jul 2024	69	<20	<6	<12	<6	<18	<40	<8	<8	<8	<6	2.5	2.4	<135	<135	<28	<25	<9	<23
SV01	19 Jul 2024	<4	<21	<6	<12	<6	<18	<42	<8	<8	<8	<6	<0.14	<0.14	610	610	<29	<26	<10	<24
SV02	19 Jul 2024	9.0	<21	<6	<12	<6	<18	<42	<8	<8	<8	<6	<0.14	<0.14	<140	<140	<29	<26	<10	<24

Statistics																			
Number of Results	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	2	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0
Minimum Concentration	<4	<20	<6	<12	<6	<18	<40	<8	<8	<8	<6	<0.14	<0.14	<135	<135	<28	<25	<9	<23
Minimum Detect	9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.5	2.4	610	610	ND	ND	ND	ND
Maximum Concentration	69	<21	<6	<12	<6	<18	<42	<8	<8	<8	<6	2.5	2.4	610	610	<29	<26	<10	<24
Maximum Detect	69	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.5	2.4	610	610	ND	ND	ND	ND
Average Concentration *	27	10	3	6	3	9	21	4	4	4	3	0.88	0.85	249	249	14	13	4.8	12
Median Concentration *	9	10.5	3	6	3	9	21	4	4	4	3	0.07	0.07	70	70	14.5	13	5	12
Standard Deviation *	37	0.29	0	0	0	0	0.58	0	0	0	0	1.4	1.3	312	312	0.29	0.29	0.29	0.29
95% UCL (Student's-t) *	88.75	10.82	3	6	3	9	21.64	4	4	4	3	3.245	3.115	776	776	14.82	13.32	5.32	12.32
% of Detects	67	0	0	0	0	0	0	0	0	0	0	33	33	33	33	0	0	0	0
% of Non-Detects	33	100	100	100	100	100	100	100	100	100	100	67	67	67	67	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

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		Chlorinated Hydrocarbons																							
	Benzene	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,2-dichloroethane	1,2-dichloropropane	Benzyl chloride	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dichloromethane	Hexachlorobutadiene	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl chloride
	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
EQI	1.6	2.7	3.4	2.7	2	2	2	2.3	2.6	3.4	5.2	3.1	4.3	5.3	2.4	10.3	2	2.3	17.4	21.3	2.7	3.4	2	2.3	2.5
NEPM 2013 Table 1A(2) Res A Soil Vap VOCC HILs		60,000															80				20	2,000			30
NEPM 2013 Table 1A(2) Res B Soil Vap VOCC HILs		60,000															80				20	2,000			30
NEPM 2013 Table 1A(5) Res Soil Vapour HSL A/B for Vapour Intrusion, Sand																									
>=0m, <1m	1,000																								
Resident Vapor Intrusion Screening Levels (VISL)																									

Field ID	Date																									
Carbon Tube	19 Jul 2024																									
DUP01	19 Jul 2024	69	<7	<9	<7	<5	<5	<5	<6	<7	<9	<14	<8	<12	<14	<6	<28	<5	<6	<47	<58	<7	<9	<5	<6	<7
SV01	19 Jul 2024	<4	<8	<10	<8	<6	<6	<6	<6	<7	<10	<15	<9	<12	<15	<7	<29	<6	<6	<49	<60	<8	<10	<6	<6	<7
SV02	19 Jul 2024	9.0	<8	<10	<8	<6	<6	<6	<6	<7	<10	<15	<9	<12	<15	<7	<29	<6	<6	<49	<60	<8	<10	<6	<6	<7

Statistics																									
Number of Results	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Number of Detects	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<4	<7	<9	<7	<5	<5	<5	<6	<7	<9	<14	<8	<12	<14	<6	<28	<5	<6	<47	<58	<7	<9	<5	<6	<7
Minimum Detect	9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	69	<8	<10	<8	<6	<6	<6	<6	<7	<10	<15	<9	<12	<15	<7	<29	<6	<6	<49	<60	<8	<10	<6	<6	<7
Maximum Detect	69	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	27	3.8	4.8	3.8	2.8	2.8	2.8	3	3.5	4.8	7.3	4.3	6	7.3	3.3	14	2.8	3	24	30	3.8	4.8	2.8	3	3.5
Median Concentration *	9	4	5	4	3	3	3	3	3.5	5	7.5	4.5	6	7.5	3.5	14.5	3	3	24.5	30	4	5	3	3	3.5
Standard Deviation *	37	0.29	0.29	0.29	0.29	0.29	0.29	0	0	0.29	0.29	0.29	0	0.29	0.29	0.29	0.29	0	0.58	0.58	0.29	0.29	0.29	0	0
95% UCL (Student's-t) *	88.75	4.32	5.32	4.32	3.32	3.32	3.32	3	3.5	5.32	7.82	4.82	6	7.82	3.82	14.82	3.32	3	25.14	30.64	4.32	5.32	3.32	3	3.5
% of Detects	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	33	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

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	Benzene	Halogenated Hydrocarbons				MAH				Solvents																VOCs	
		1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Trichlorofluoromethane	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	1-methyl-4-ethylbenzene	Styrene	1,3-Butadiene	1,4-Dioxane	Methyl Ethyl Ketone	2-hexanone (MBK)	4-Methyl-2-pentanone	Acetone	Allyl chloride	Carbon disulfide	Cyclohexane	Ethanol	Heptane	Hexane	MTBE	TOTAL UG	2-Propanol	Tetrahydrofuran	Vinyl acetate	Freon 113
	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
EQI	1.6	3.6	19.4	2.5	2.8	2.5	2.5	2.5	2.1	2.2	7.2	5.9	8.2	2.1	16.6	1.6	15.6	3.5	9.4	2.1	5	7.2	10	50	1.5	7	3.8
NEPM 2013 Table 1A(2) Res A Soil Vap VOCC HILs																											
NEPM 2013 Table 1A(2) Res B Soil Vap VOCC HILs																											
NEPM 2013 Table 1A(5) Res Soil Vapour HSL A/B for Vapour Intrusion, Sand >=0m, <1m	1,000																										
Resident Vapor Intrusion Screening Levels (VISL)						62.6	62.6		1040								730	6260	-	417	730	108	209	2090			

Field ID	Date																											
Carbon Tube	19 Jul 2024																						<10					
DUP01	19 Jul 2024	69	<10	<52	<7	<8	<7	<7	<7	<6	<6	<19	<16	<22	<6	<45	<4	<42	150	<25	150	350	<19		<135	<4	<19	<10
SV01	19 Jul 2024	<4	<10	<54	<7	<8	<7	<7	<7	<6	<6	<20	<17	<23	<6	<46	<4	63	<10	<26	<6	<14	<20		<140	<4	<20	<11
SV02	19 Jul 2024	9.0	<10	<54	<7	<8	<7	<7	<7	<6	<6	<20	<17	<23	<6	<46	<4	<44	<10	45	<6	<14	<20		420	<4	<20	<11

Statistics																											
Number of Results	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1	3	3	3	3
Number of Detects	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	1	0	0	0
Minimum Concentration	<4	<10	<52	<7	<8	<7	<7	<7	<6	<6	<19	<16	<22	<6	<45	<4	<42	<10	<25	<6	<14	<19	<10	<135	<4	<19	<10
Minimum Detect	9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	63	150	45	150	350	ND	ND	420	ND	ND	ND
Maximum Concentration	69	<10	<54	<7	<8	<7	<7	<7	<6	<6	<20	<17	<23	<6	<46	<4	63	150	45	150	350	<20	<10	420	<4	<20	<11
Maximum Detect	69	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	63	150	45	150	350	ND	ND	420	ND	ND	ND
Average Concentration *	27	5	27	3.5	4	3.5	3.5	3.5	3	3	9.8	8.3	11	3	23	2	35	53	24	52	121	9.8		186	2	9.8	5.3
Median Concentration *	9	5	27	3.5	4	3.5	3.5	3.5	3	3	10	8.5	11.5	3	23	2	22	5	13	3	7	10	5	70	2	10	5.5
Standard Deviation *	37	0	0.58	0	0	0	0	0	0	0	0.29	0.29	0.29	0	0.29	0	24	84	19	85	198	0.29		203	0	0.29	0.29
95% UCL (Student's-t) *	88.75	5	27.64	3.5	4	3.5	3.5	3.5	3	3	10.32	8.82	11.82	3	23.32	2	75.74	194.5	54.89	195.1	455.2	10.32		527.7	2	10.32	5.82
% of Detects	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	33	33	33	33	0	0	33	0	0	0
% of Non-Detects	33	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	67	67	67	67	67	100	100	67	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.



EQL	Metals								Asbestos	BTEX							Halogenated Benzenes
	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Asbestos Reported Result	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Hexachlorobenzene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	Comment	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	2	0.4	2	5	5	0.1	2	5	D/ND	0.5	0.1	0.1	0.1	0.2	0.1	0.3	0.05

Lab Report Number	Field ID	Date	Matrix Type																	
1113927	BH02 0.0-0.1	26 Jun 2024	Soil	2.2	0.5	8.4	34	150	0.2	<5	140	ND	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.5
1113927	DUP1	26 Jun 2024	Soil	2.1	<0.4	7.7	31	130	0.1	<5	140									
RPD				5	22	9	9	14	67	0	0									
1113927	BH02 0.0-0.1	26 Jun 2024	Soil	2.2	0.5	8.4	34	150	0.2	<5	140	ND	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.5
ES2421894	DUP1A	26 Jun 2024	Soil	<5	<1	8	33	145	0.1	3	123									
RPD				0	0	5	3	3	67	0	13									
1113927	SV01 0.0-0.1	27 Jun 2024	Soil	2.7	0.5	15	51	190	0.2	6.8	290	ND	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.5
1113927	DUP4	27 Jun 2024	Soil	2.6	0.6	14	65	200	0.2	7.9	350									
RPD				4	18	7	24	5	0	15	19									
1113927	SV01 0.0-0.1	27 Jun 2024	Soil	2.7	0.5	15	51	190	0.2	6.8	290	ND	<0.5	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	<0.5
ES2421894	DUP4A	27 Jun 2024	Soil	<5	<1	11	56	255	0.2	8	228									
RPD				0	0	31	9	29	0	16	24									

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 99999999 (0 - 10 x EQL); 50 (10 - 20 x EQL); 30 (> 20 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory



EQL	TRH							TPH					PCBs							
	C6-Cl0 Fraction (F1)	C6-Cl0 (F1 minus BTEX)	>Cl0-Cl6 Fraction (F2)	>Cl0-Cl6 Fraction (F2 minus Naphthalene)	>Cl6-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>Cl0-C40 Fraction (Sum)	C6-C9 Fraction	Cl0-Cl4 Fraction	Cl5-C28 Fraction	C29-C36 Fraction	Cl0-C36 Fraction (Sum)	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	PCBs (Sum of total)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	20	20	50	50	100	100	100	20	20	50	50	50	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Lab Report Number	Field ID	Date	Matrix Type																	
1113927	BH02 0.0-0.1	26 Jun 2024	Soil	<20	<20	<50	<50	110	<100	110	<20	<20	55	79	134	<1	<1	<1	<1	<1
1113927	DUP1	26 Jun 2024	Soil																	
RPD																				
1113927	BH02 0.0-0.1	26 Jun 2024	Soil	<20	<20	<50	<50	110	<100	110	<20	<20	55	79	134	<1	<1	<1	<1	<1
ES2421894	DUP1A	26 Jun 2024	Soil																	
RPD																				
1113927	SV01 0.0-0.1	27 Jun 2024	Soil	<20	<20	77	77	480	280	837	<20	81	270	360	711	<1	<1	<1	<1	<1
1113927	DUP4	27 Jun 2024	Soil																	
RPD																				
1113927	SV01 0.0-0.1	27 Jun 2024	Soil	<20	<20	77	77	480	280	837	<20	81	270	360	711	<1	<1	<1	<1	<1
ES2421894	DUP4A	27 Jun 2024	Soil																	
RPD																				

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier rang
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any r



	PAH																			
	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a) pyrene	Benzo(b+))fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ (calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ (calc (Zero)	PAHs (Sum of total)
EQL	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Lab Report Number	Field ID	Date	Matrix Type																				
1113927	BH02 0.0-0.1	26 Jun 2024	Soil	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5
1113927	DUP1	26 Jun 2024	Soil	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.5	0.6	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	0.7	0.6	1.2	<0.5	2.9
RPD				0	0	0	0	0	0	0	0	18	0	18	0	0	0	33	0	0	0	141	
1113927	BH02 0.0-0.1	26 Jun 2024	Soil	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5
ES2421894	DUP1A	26 Jun 2024	Soil	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.6	1.2	<0.5	1.0
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67
1113927	SV01 0.0-0.1	27 Jun 2024	Soil	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	0.6	0.6	1.2	<0.5	1.1
1113927	DUP4	27 Jun 2024	Soil	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	0.9	<0.5	<0.5	<0.5	<0.5	0.8	0.6	1.2	<0.5	2.2
RPD				0	0	0	0	0	0	0	0	0	0	57	0	0	0	0	29	0	0	0	67
1113927	SV01 0.0-0.1	27 Jun 2024	Soil	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	0.6	0.6	1.2	<0.5	1.1
ES2421894	DUP4A	27 Jun 2024	Soil	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0	0	0	75

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier rang

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any r



EQL	Perfluoroalkane Carboxylic Acids											(n:2) Fluorotelomer Sulfonic Acids			
	Perfluorobutanoic acid (PFBA)	Perfluorohexanoic acid (PFHxA)	Perfluoropentanoic acid (PFPeA)	Perfluoroheptanoic acid (PFHpA)	Perfluorooctanoic acid (PFOA)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoDA)	Perfluorononanoic acid (PFNA)	Perfluorotetradecanoic acid (PFTeDA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnDA)	4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	10:2 Fluorotelomer sulfonic acid (10:2 FTS)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	0.001	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0005	0.0002	0.0002	0.0005	0.0005	0.0005	0.0005

Lab Report Number	Field ID	Date	Matrix Type														
1113927	BH02 0.0-0.1	26 Jun 2024	Soil														
1113927	DUP1	26 Jun 2024	Soil														
RPD																	
1113927	BH02 0.0-0.1	26 Jun 2024	Soil														
ES2421894	DUP1A	26 Jun 2024	Soil														
RPD																	
1113927	SV01 0.0-0.1	27 Jun 2024	Soil	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
1113927	DUP4	27 Jun 2024	Soil														
RPD																	
1113927	SV01 0.0-0.1	27 Jun 2024	Soil	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005	
ES2421894	DUP4A	27 Jun 2024	Soil	<0.001	<0.0002	<0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002	<0.0005	<0.0002	<0.0002	<0.0005	<0.0005	<0.0005
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier rang
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any r





	Perfluoroalkane Sulfonic Acids							PFAS					Perfluoroalkyl Sulfonamides							
	Perfluoropropanesulfonic acid (PFPS)	Perfluorobutane sulfonic acid (PFBS)	Perfluoropentane sulfonic acid (PFPeS)	Perfluorohexane sulfonic acid (PFHxS)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluorooctane sulfonic acid (PFOs)	Perfluorodecane sulfonic acid (PFDS)	Perfluorononanesulfonic acid (PFNS)	Sum of PFHxS and PFOs	Sum of PFAS	Sum of PFAS (WA DER List)	Sum of enHealth PFAS (PFHxS + PFOs + PFOA)	Sum of PFAS (PFOs + PFOA)	Perfluorooctane sulfonamide (FOSA)	N-Methyl perfluorooctane sulfonamide (MeFOSA)	N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	N-methyl perfluorooctane sulfonamidoethanol (MeFOSE)	N-Ethyl perfluorooctane sulfonamide (EtFOSA)	N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)
EQL	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	0.0005	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.2	0.0002	0.0002	0.0002	0.0002	0.005	0.005	0.0002	0.0005	0.0002	0.0005	0.0005	0.0002

Lab Report Number	Field ID	Date	Matrix Type																		
1113927	BH02 0.0-0.1	26 Jun 2024	Soil																		
1113927	DUP1	26 Jun 2024	Soil																		
RPD																					
1113927	BH02 0.0-0.1	26 Jun 2024	Soil																		
ES2421894	DUP1A	26 Jun 2024	Soil																		
RPD																					
1113927	SV01 0.0-0.1	27 Jun 2024	Soil	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
1113927	DUP4	27 Jun 2024	Soil																		
RPD																					
1113927	SV01 0.0-0.1	27 Jun 2024	Soil	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<5	<0.005	<0.05	<0.01	<0.005	<0.005	<0.005	<0.005	<0.01	<0.005	<0.005
ES2421894	DUP4A	27 Jun 2024	Soil	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	0.0041	<0.0002	<0.2	0.0041	0.0044	0.0041			<0.0002	<0.0005	<0.0002	<0.0005	<0.0005
RPD				0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier rang
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any r



EQL	Organochlorine Pesticides																						
	Other organochlorine pesticides EPA/Vic	4,4'-DDE	β-BHC	Aldrin	Aldrin + Dieldrin	β-BHC	Chlordane	δ-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	β-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Toxaphene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.1	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.5

Lab Report Number	Field ID	Date	Matrix Type																				
1113927	BH02 0.0-0.1	26 Jun 2024	Soil	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
1113927	DUP1	26 Jun 2024	Soil																				
RPD																							
1113927	BH02 0.0-0.1	26 Jun 2024	Soil	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
ES2421894	DUP1A	26 Jun 2024	Soil																				
RPD																							
1113927	SV01 0.0-0.1	27 Jun 2024	Soil	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
1113927	DUP4	27 Jun 2024	Soil																				
RPD																							
1113927	SV01 0.0-0.1	27 Jun 2024	Soil	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<10
ES2421894	DUP4A	27 Jun 2024	Soil																				
RPD																							

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier rang
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any r





BTEX						Halogenated Benzenes					TRH			TPH	PAH			
Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Chlorobenzene	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2 minus Naphthalene)	C10-C12 Fraction	Naphthalene	2,2,4-Trimethylpentane	Freon 114	Propene
µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	mg/m3	mg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
1.6	7.5	2.2	4.4	2.2	6.6	15	3	3	3	2.3	0.1	0.1	100	100	10.5	9.3	3.5	8.6

EQL

Lab Report Number	Field ID	Date	Matrix type																			
1120383	SV02	19 Jul 2024	Gas	9.0	<21	<6	<12	<6	<18	<42	<8	<8	<8	<6	<0.14	<0.14	<140	<140	<29	<26	<10	<24
1120383	DUP01	19 Jul 2024	Gas	69	<20	<6	<12	<6	<18	<40	<8	<8	<8	<6	2.5	2.4	<135	<135	<28	<25	<9	<23
RPD				154	0	0	0	0	0	0	0	0	0	0	179	178	0	0	0	0	0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (> 20 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

alliance	Chlorinated Hydrocarbons																										
	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,2-dichloroethane	1,2-dichloropropane	Benzyl chloride	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dichloromethane	Hexachlorobutadiene	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl chloride			
	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3			
EQL	2.7	3.4	2.7	2	2	2	2.3	2.6	3.4	5.2	3.1	4.3	5.3	2.4	10.3	2	2.3	17.4	21.3	2.7	3.4	2	2.3	2.5			
Lab Report Number	Field ID	Date	Matrix Type																								
1120383	SV02	19 Jul 2024	Gas	<8	<10	<8	<6	<6	<6	<6	<7	<10	<15	<9	<12	<15	<7	<29	<6	<6	<49	<60	<8	<10	<6	<6	<7
1120383	DUP01	19 Jul 2024	Gas	<7	<9	<7	<5	<5	<5	<6	<7	<9	<14	<8	<12	<14	<6	<28	<5	<6	<47	<58	<7	<9	<5	<6	<7
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range)
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any

alliance	Halogenated Hydrocarbons				MAH				Solvents																VOCs			
	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Trichlorofluoromethane	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	1-methyl-4 ethyl benzene	Styrene	1,3-Butadiene	1,4-Dioxane	Methyl Ethyl Ketone	2-hexanone (MBK)	4-Methyl-2-pentanone	Acetone	Allyl chloride	Carbon disulfide	Cyclohexane	Ethanol	Heptane	Hexane	MTBE	2-Propanol	Tetrahydrofuran	Vinyl acetate	Freon 113			
	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3			
EQL	3.6	19.4	2.5	2.8	2.5	2.5	2.5	2.1	2.2	7.2	5.9	8.2	2.1	16.6	1.6	15.6	3.5	9.4	2.1	5	7.2	50	1.5	7	3.8			
Lab Report Number	Field ID	Date	Matrix Type																									
1120383	SV02	19 Jul 2024	Gas	<10	<54	<7	<8	<7	<7	<7	<6	<6	<20	<17	<23	<6	<46	<4	<44	<10	45	<6	<14	<20	420	<4	<20	<11
1120383	DUP01	19 Jul 2024	Gas	<10	<52	<7	<8	<7	<7	<7	<6	<6	<19	<16	<22	<6	<45	<4	<42	150	<25	150	350	<19	<135	<4	<19	<10
RPD				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	175	57	185	185	0	103	0	0	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier ran)
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any

Table LR7 Laboratory Analytical Results – RPD Calculations Groundwater

	BTEX								Halogenated Benzenes														
	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Total BTEX	1,2,3,4-tetrachlorobenzene	1,2,3,5-Tetrachlorobenzene	1,2,3-trichlorobenzene	1,2,4,5-tetrachlorobenzene	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3,5-Trichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	4-chlorotoluene	Bromobenzene	Chlorobenzene	Hexachlorobenzene	Pentachlorobenzene	
	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EQL	0.005	1	1	1	2	1	2	1	0.005	0.005	5	5	5	1	5	1	1	1	1	1	5	5	
Lab Report Number	Field ID	Date	Matrix Type																				
1119913	MW01	19 Jul 2024	Water	<0.01	<1	<1	<1	<2	<1	<3	-	<0.005	<0.005	<5	<5	<5	<1	<5	<1	<1	<1	<5	<5
1119913	DUP01	19 Jul 2024	Water	<0.01	<1	<1	<1	<2	<1	<3	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				0	0	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-
1119913	MW01	19 Jul 2024	Water	<0.01	<1	<1	<1	<2	<1	<3	-	<0.005	<0.005	<5	<5	<5	<1	<5	<1	<1	<1	<5	<5
ES2423967	TRIP01	19 Jul 2024	Water	<0.005	4	<2	<2	<2	<2	<2	4	-	-	-	-	-	-	-	-	-	-	-	-
RPD				0	120	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 1000 (1 - 10 x EQL); 50 (10 - 20 x EQL); 30 (> 20 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Table LR7 Laboratory Analytical Results – RPD Calculations Groundwater

				TRH							TPH																								
				G6-C10 Fraction (F1)	G6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	G6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)	Chlorinated hydrocarbons EPAV/c	Other chlorinated hydrocarbons EPAV/c	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,2,3-trichloropropane	1,2-dichloroethane										
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L									
EQL				20	20	50	50	100	100	100	20	50	100	50	50	5	5	1	1	1	1	1	1	1											
Lab Report Number				Field ID				Date				Matrix Type																							
1119913				MW01				19 Jul 2024				Water				<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<5	<5	<1	<1	<1	<1	<1	<1
1119913				DUP01				19 Jul 2024				Water				<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	-	-	-	-	-	-	-	-
RPD																0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-
1119913				MW01				19 Jul 2024				Water				<20	<20	<50	<50	<100	<100	<100	<20	<50	<100	<100	<100	<5	<5	<1	<1	<1	<1	<1	<1
ES2423967				TRIP01				19 Jul 2024				Water				<20	<20	<100	<100	<100	<100	<100	<20	<50	<100	<50	<50	-	-	-	-	-	-	-	-
RPD																0	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-	-	-	-	-

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier ran)
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any



EQL	Chlorinated Hydrocarbons																		
	1,2-dichloropropane	1,3-dichloropropane	Benzal Chloride	Benzotrifluoride	Benzyl chloride	Bromochloromethane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	dis-1,2-dichloroethene	dis-1,3-dichloropropene	Dibromomethane	Dichloromethane	Hexachlorobutadiene	Hexachlorocyclopentadiene
	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	1	1	0.1	0.1	0.005	1	1	1	1	1	5	5	5	1	1	1	5	5	5

Lab Report Number	Field ID	Date	Matrix Type																
1119913	MW01	19 Jul 2024	Water	<1	<1	<0.1	<0.1	<0.005	<1	<1	<1	<1	<1	<5	<5	<5	<1	<1	<1
1119913	DUP01	19 Jul 2024	Water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1119913	MW01	19 Jul 2024	Water	<1	<1	<0.1	<0.1	<0.005	<1	<1	<1	<1	<1	<5	<5	<5	<1	<1	<1
ES2423967	TRIP01	19 Jul 2024	Water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range)
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any

Table LR7 Laboratory Analytical Results – RPD Calculations Groundwater

							Halogenated Hydrocarbons					MAH					Solvents				
	Hexachloroethane	Trichloroethene	Tetrachloroethene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl chloride	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Iodomethane	Trichlorofluoromethane	Total MAH	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	Styrene	Methyl Ethyl Ketone	4-Methyl-2-pentanone	Acetone	Allyl chloride	Carbon disulfide
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L
EQL	5	1	1	1	1	5	1	5	5	1	5	0.003	1	1	1	1	5	5	0.005	0.001	1
Lab Report Number	Field ID	Date	Matrix Type																		
1119913	MW01	19 Jul 2024	Water	<5	<1	<1	<1	<1	<5	<1	<5	<5	<1	<1	<1	<1	<5	<5	<0.005	<0.001	<1
1119913	DUP01	19 Jul 2024	Water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1119913	MW01	19 Jul 2024	Water	<5	<1	<1	<1	<1	<5	<1	<5	<5	<1	<1	<1	<1	<5	<5	<0.005	<0.001	<1
ES2423967	TRIP01	19 Jul 2024	Water	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RPD				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*RPDs have only been considered where a concentration is greater than 1 times the EQL.
**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range)
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any

Preliminary Waste Classification Assessment - Table LR1
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW

17716.3-ER-2-1

Preliminary Waste Classification Assessment - Table LR1							Field ID	BH01 0.0-0.1	BH02 0.0-0.1	BH03 0.3-0.4	BH04 0.5-0.6	BH05 0.0-0.1	BH06 0.0-0.1	BH06 0.4-0.5
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW							Date	26 Jun 2024	26 Jun 2024	26 Jun 2024	26 Jun 2024	26 Jun 2024	27 Jun 2024	27 Jun 2024
							Depth	0 - 0.1	0 - 0.1	0.3 - 0.4	0.5 - 0.6	0 - 0.1	0 - 0.1	0.4 - 0.5
17716.3-ER-2-1							Matrix Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil
			NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 General Solid Waste SCC1 (with leached)	NSW 2014 General Solid Waste TCLP1 (leached)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)								
	Unit	EQL												
Metals														
Arsenic	mg/kg	2	100	500		400	3.9	2.2	<2	2.2	2.9	3.0	4.7	
Cadmium	mg/kg	0.4	20	100		80	<0.4	0.5	<0.4	<0.4	<0.4	0.5	0.5	
Chromium (III+VI)	mg/kg	2	100*			400*	9.8	8.4	<5	<5	10	15	6.8	
Copper	mg/kg	5					27	34	21	52	47	55	47	
Lead	mg/kg	5	100	1,500		400	86	150	38	94	100	280	82	
	mg/L	0.01			5		--	--	--	--	--	0.04	--	
Mercury	mg/kg	0.1	4	50		16	0.2	0.2	<0.1	0.2	0.1	0.2	0.2	
Nickel	mg/kg	2	40	1,050		160	<5	<5	<5	6.8	5.0	6.7	25	
Zinc	mg/kg	5					160	140	83	340	240	320	150	
Asbestos														
Asbestos Reported Result	Comment						Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	Non-Detect	--	
BTEX														
Naphthalene (VOC)	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	
	%	1					--	--	--	--	--	--	--	
Benzene	mg/kg	0.1	10	18		40	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	
	%	1					--	--	--	--	--	--	--	
Toluene	mg/kg	0.1	288	518		1,152	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	
	%	1					--	--	--	--	--	--	--	
Ethylbenzene	mg/kg	0.1	600	1,080		2,400	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	
	%	1					--	--	--	--	--	--	--	
Xylene (m & p)	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	--	
	%	1					--	--	--	--	--	--	--	
Xylene (o)	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--	
	%	1					--	--	--	--	--	--	--	
Xylene Total	mg/kg	0.3	1,000	1,800		4,000	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	--	
Xylene Total	%	1					--	--	--	--	--	--	--	
TRH														
C6-C10 Fraction (F1)	mg/kg	20					<20	<20	<20	<20	<20	<20	--	
	%	1					--	--	--	--	--	--	--	
C6-C10 (F1 minus BTEX)	mg/kg	20					<20	<20	<20	<20	<20	<20	--	
>C10-C16 Fraction (F2)	mg/kg	50					<50	<50	<50	<50	230	99	--	
>C10-C16 Fraction (F2 minus Naphthalene)	mg/kg	50					<50	<50	<50	<50	230	99	--	
>C16-C34 Fraction (F3)	mg/kg	100					100	110	200	620	810	440	--	
>C34-C40 Fraction (F4)	mg/kg	100					<100	<100	<100	150	290	130	--	
>C10-C40 Fraction (Sum)	mg/kg	100					100	110	200	770	1,330	669	--	
TPH														
C6-C9 Fraction	mg/kg	20	650	650		2,600	<20	<20	<20	<20	<20	<20	--	
	%	1					--	--	--	--	--	--	--	
C10-C14 Fraction	mg/kg	20					<20	<20	<20	28	250	99	--	
C15-C28 Fraction	mg/kg	50					69	55	110	420	460	250	--	
C29-C36 Fraction	mg/kg	50					<50	79	120	270	560	260	--	
C10-C36 Fraction (Sum)	mg/kg	50	10,000	10,000		40,000	69	134	230	718	1,270	609	--	
PAH														
Acenaphthene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	
Acenaphthylene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	
Anthracene	mg/kg	0.5					<0.5	<0.5	<0.5	0.8	<0.5	<0.5	--	
Benzo(a)anthracene	mg/kg	0.5					<0.5	<0.5	1.0	5.5	<0.5	<0.5	--	
Benzo(a) pyrene	mg/kg	0.5	0.8	10		3.2	<0.5	<0.5	1.9	8.6	<0.5	<0.5	--	
	µg/L	1			40		--	--	<1	<1	--	--	--	
Benzo(b+j)fluoranthene	mg/kg	0.5					<0.5	<0.5	1.3	5.4	<0.5	<0.5	--	
Benzo(g,h,i)perylene	mg/kg	0.5					<0.5	<0.5	1.7	6.3	<0.5	<0.5	--	
Benzo(k)fluoranthene	mg/kg	0.5					<0.5	<0.5	1.7	8.2	<0.5	<0.5	--	
Chrysene	mg/kg	0.5					<0.5	<0.5	1.3	6.7	<0.5	<0.5	--	
Dibenz(a,h)anthracene	mg/kg	0.5					<0.5	<0.5	<0.5	1.3	<0.5	<0.5	--	
Fluoranthene	mg/kg	0.5					<0.5	<0.5	2.3	10	<0.5	0.5	--	
Fluorene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5					<0.5	<0.5	1.0	4.3	<0.5	<0.5	--	
Naphthalene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	
Phenanthrene	mg/kg	0.5					<0.5	<0.5	1.2	3.8	<0.5	<0.5	--	
Pyrene	mg/kg	0.5					<0.5	<0.5	2.6	11	<0.5	<0.5	--	
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5					<0.5	<0.5	2.4	12	<0.5	<0.5	--	
PAHs (Sum of total)	mg/kg	0.5	200	200		800	<0.5	<0.5	16	72	<0.5	0.5	--	

Preliminary Waste Classification Assessment - Table LR1
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW

17716.3-ER-2-1

Preliminary Waste Classification Assessment - Table LR1							Field ID	BH01 0.0-0.1	BH02 0.0-0.1	BH03 0.3-0.4	BH04 0.5-0.6	BH05 0.0-0.1	BH06 0.0-0.1	BH06 0.4-0.5
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW							Date	26 Jun 2024	26 Jun 2024	26 Jun 2024	26 Jun 2024	26 Jun 2024	27 Jun 2024	27 Jun 2024
							Depth	0 - 0.1	0 - 0.1	0.3 - 0.4	0.5 - 0.6	0 - 0.1	0 - 0.1	0.4 - 0.5
							Matrix Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil
17716.3-ER-2-1														
			NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 General Solid Waste SCC1 (with leached)	NSW 2014 General Solid Waste TCLP1 (leached)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)								
	Unit	EQL												
PCBs														
PCBs (Sum of total)	mg/kg	0.1	50	50		50	<1	<1	<1	<1	<1	<1	<1	<0.1
Perfluoroalkane Carboxylic Acids														
Perfluorohexanoic acid (PFHxA)	µg/L	0.01					--	--	--	--	--	--	--	--
	mg/kg	0.005					--	--	--	--	--	--	--	--
Perfluorooctanoic acid (PFOA)	µg/L	0.01			500		--	--	--	--	--	--	--	--
Perfluorooctanoic acid (PFOA)	mg/kg	0.005		18			--	--	--	--	--	--	--	--
Perfluoroalkane Sulfonic Acids														
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01					--	--	--	--	--	--	--	--
	mg/kg	0.005					--	--	--	--	--	--	--	--
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01					--	--	--	--	--	--	--	--
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.005					--	--	--	--	--	--	--	--
PFAS														
Perfluorononanesulfonic acid (PFNS)	mg/L	0.00001					--	--	--	--	--	--	--	--
	µg/kg	5					--	--	--	--	--	--	--	--
Sum of PFHxS and PFOS	µg/L	0.01			50		--	--	--	--	--	--	--	--
	mg/kg	0.005		1.8			--	--	--	--	--	--	--	--
Sum of PFAS	µg/L	0.1					--	--	--	--	--	--	--	--
	mg/kg	0.05					--	--	--	--	--	--	--	--
Sum of PFAS (WA DER List)	µg/L	0.05					--	--	--	--	--	--	--	--
	mg/kg	0.01					--	--	--	--	--	--	--	--
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)	µg/L	0.01					--	--	--	--	--	--	--	--
	mg/kg	0.005					--	--	--	--	--	--	--	--
Sum of PFAS (PFOS + PFOA)	µg/L	0.01					--	--	--	--	--	--	--	--
Sum of PFAS (PFOS + PFOA)	mg/kg	0.005					--	--	--	--	--	--	--	--
Organochlorine Pesticides														
Organochlorine pesticides EPAVic	mg/kg	0.1					<1	<1	<1	<1	<1	<1	<1	<0.1
Other organochlorine pesticides EPAVic	mg/kg	0.1					<1	<1	<1	<1	<1	<1	<1	<0.1
4,4-DDE	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
a-BHC	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Aldrin	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Aldrin + Dieldrin	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
b-BHC	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Chlordane	mg/kg	0.1					<1	<1	<1	<1	<1	<1	<1	<0.1
d-BHC	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
DDD	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
DDT	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
DDT+DDE+DDD	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Dieldrin	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Endosulfan I	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Endosulfan II	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Endosulfan sulphate	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Endrin	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Endrin aldehyde	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Endrin ketone	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
g-BHC (Lindane)	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Heptachlor	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Heptachlor epoxide	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Methoxychlor	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05
Toxaphene	mg/kg	0.5					<10	<10	<10	<10	<10	<10	<10	<0.5

Environmental Standards
NSW EPA, November 2014, NSW 2014 General Solid Waste CT1 (No Leaching)
NSW EPA, November 2014, NSW 2014 General Solid Waste SCC1 (with leached)
NSW EPA, November 2014, NSW 2014 General Solid Waste TCLP1 (leached)
NSW EPA, November 2014, NSW 2014 Restricted Solid Waste CT2 (No Leaching)

Statistics
* Chromium VI only
* A Non Detect Multiplier of 0.5 has been applied.

Preliminary Waste Classification Assessment - Table LR1
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW

17716.3-ER-2-1

Preliminary Waste Classification Assessment - Table LR1							Field ID	BH07 0.0-0.1	BH08 0.0-0.1	BH08 0.5-0.6	BH09 0.0-0.1	BH09 0.3-0.4	BH10 0.4-0.5	SV01 0.0-0.1
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW							Date	26 Jun 2024	26 Jun 2024	26 Jun 2024	27 Jun 2024	27 Jun 2024	27 Jun 2024	27 Jun 2024
17716.3-ER-2-1							Depth	0 - 0.1	0 - 0.1	0.5 - 0.6	0 - 0.1	0.3 - 0.4	0.4 - 0.5	0 - 0.1
							Matrix Type	Soil	Soil	Soil	Soil	Soil	Soil	
			NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 General Solid Waste SCC1 (with leached)	NSW 2014 General Solid Waste TCLP1 (leached)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)								
	Unit	EQL												
Metals														
Arsenic	mg/kg	2	100	500		400	7.8	<2	4.0	5.2	4.2	<2	2.7	
Cadmium	mg/kg	0.4	20	100		80	<0.4	<0.4	<0.4	0.5	<0.4	<0.4	0.5	
Chromium (III+VI)	mg/kg	2	100*			400*	15	<5	5.2	13	7.0	<5	15	
Copper	mg/kg	5					20	12	30	61	46	17	51	
Lead	mg/kg	5	100	1,500		400	40	47	190	220	170	36	190	
	mg/L	0.01			5		--	--	0.04	0.04	--	--	0.03	
Mercury	mg/kg	0.1	4	50		16	<0.1	<0.1	0.3	0.2	0.2	<0.1	0.2	
Nickel	mg/kg	2	40	1,050		160	7.1	<5	<5	7.1	<5	<5	6.8	
Zinc	mg/kg	5					140	75	160	370	130	54	290	
Asbestos														
Asbestos Reported Result	Comment						Non-Detect	Non-Detect	--	Non-Detect	--	Non-Detect	Non-Detect	
BTEX														
Naphthalene (VOC)	mg/kg	0.5					<0.5	<0.5	--	<0.5	--	<0.5	<0.5	
	%	1					--	--	--	--	--	--	--	
Benzene	mg/kg	0.1	10	18		40	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	
	%	1					--	--	--	--	--	--	--	
Toluene	mg/kg	0.1	288	518		1,152	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	
	%	1					--	--	--	--	--	--	--	
Ethylbenzene	mg/kg	0.1	600	1,080		2,400	<0.1	<0.1	--	<0.1	--	<0.1	<0.1	
	%	1					--	--	--	--	--	--	--	
Xylene (m & p)	mg/kg	0.2					<0.2	<0.2	--	<0.2	--	<0.2	<0.2	
	%	1					--	--	--	--	--	--	--	
Xylene (o)	mg/kg	0.1					<0.1	<0.1	--	<0.1	--	<0.1	<0.1	
	%	1					--	--	--	--	--	--	--	
Xylene Total	mg/kg	0.3	1,000	1,800		4,000	<0.3	<0.3	--	<0.3	--	<0.3	<0.3	
Xylene Total	%	1					--	--	--	--	--	--	--	
TRH														
C6-C10 Fraction (F1)	mg/kg	20					<20	<20	--	<20	--	<20	<20	
	%	1					--	--	--	--	--	--	--	
C6-C10 (F1 minus BTEX)	mg/kg	20					<20	<20	--	<20	--	<20	<20	
>C10-C16 Fraction (F2)	mg/kg	50					<50	<50	--	130	--	<50	77	
>C10-C16 Fraction (F2 minus Naphthalene)	mg/kg	50					<50	<50	--	130	--	<50	77	
>C16-C34 Fraction (F3)	mg/kg	100					120	240	--	850	--	240	480	
>C34-C40 Fraction (F4)	mg/kg	100					<100	<100	--	450	--	<100	280	
>C10-C40 Fraction (Sum)	mg/kg	100					120	240	--	1,430	--	240	837	
TPH														
C6-C9 Fraction	mg/kg	20	650	650		2,600	<20	<20	--	<20	--	<20	<20	
	%	1					--	--	--	--	--	--	--	
C10-C14 Fraction	mg/kg	20					<20	32	--	130	--	<20	81	
C15-C28 Fraction	mg/kg	50					63	160	--	430	--	140	270	
C29-C36 Fraction	mg/kg	50					86	120	--	640	--	130	360	
C10-C36 Fraction (Sum)	mg/kg	50	10,000	10,000		40,000	149	312	--	1,200	--	270	711	
PAH														
Acenaphthene	mg/kg	0.5					<0.5	<0.5	--	<0.5	--	<0.5	<0.5	
Acenaphthylene	mg/kg	0.5					<0.5	<0.5	--	<0.5	--	<0.5	<0.5	
Anthracene	mg/kg	0.5					<0.5	<0.5	--	<0.5	--	0.8	<0.5	
Benzo(a)anthracene	mg/kg	0.5					<0.5	0.6	--	0.6	--	1.4	<0.5	
Benzo(a) pyrene	mg/kg	0.5	0.8	10		3.2	<0.5	0.9	--	0.6	--	2.1	<0.5	
	µg/L	1			40		--	--	--	--	--	<1	--	
Benzo(b+j)fluoranthene	mg/kg	0.5					<0.5	0.9	--	0.7	--	2.0	<0.5	
Benzo(g,h,i)perylene	mg/kg	0.5					<0.5	1.0	--	0.6	--	1.9	<0.5	
Benzo(k)fluoranthene	mg/kg	0.5					0.5	1.4	--	0.8	--	2.3	<0.5	
Chrysene	mg/kg	0.5					0.8	1.1	--	0.9	--	2.4	<0.5	
Dibenz(a,h)anthracene	mg/kg	0.5					<0.5	<0.5	--	<0.5	--	0.5	<0.5	
Fluoranthene	mg/kg	0.5					1.2	1.4	--	1.2	--	4.3	0.5	
Fluorene	mg/kg	0.5					<0.5	<0.5	--	<0.5	--	<0.5	<0.5	
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5					<0.5	0.7	--	<0.5	--	1.5	<0.5	
Naphthalene	mg/kg	0.5					<0.5	<0.5	--	<0.5	--	<0.5	<0.5	
Phenanthrene	mg/kg	0.5					0.6	<0.5	--	<0.5	--	2.1	<0.5	
Pyrene	mg/kg	0.5					1.1	1.7	--	1.3	--	3.9	0.6	
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5					<0.5	1.3	--	0.8	--	3.4	<0.5	
PAHs (Sum of total)	mg/kg	0.5	200	200		800	4.2	9.7	--	6.7	--	25	1.1	

Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW

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			NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 General Solid Waste SCC1 (with leached)	NSW 2014 General Solid Waste TCLP1 (leached)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)							
	Unit	EQL											
PCBs													
PCBs (Sum of total)	mg/kg	0.1	50	50		50	<1	<1	<1	<1	<1	<1	<1
Perfluoroalkane Carboxylic Acids													
Perfluorohexanoic acid (PFHxA)	µg/L	0.01					--	--	--	--	--	--	<0.01
	mg/kg	0.005					--	--	--	--	--	--	<0.005
Perfluorooctanoic acid (PFOA)	µg/L	0.01			500		--	--	--	--	--	--	<0.01
Perfluorooctanoic acid (PFOA)	mg/kg	0.005		18			--	--	--	--	--	--	<0.005
Perfluoroalkane Sulfonic Acids													
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01					--	--	--	--	--	--	<0.01
	mg/kg	0.005					--	--	--	--	--	--	<0.005
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01					--	--	--	--	--	--	0.02
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.005					--	--	--	--	--	--	<0.005
PFAS													
Perfluorononanesulfonic acid (PFNS)	mg/L	0.00001					--	--	--	--	--	--	<0.00001
	µg/kg	5					--	--	--	--	--	--	<5
Sum of PFHxS and PFOS	µg/L	0.01			50		--	--	--	--	--	--	0.02
	mg/kg	0.005		1.8			--	--	--	--	--	--	<0.005
Sum of PFAS	µg/L	0.1					--	--	--	--	--	--	<0.1
	mg/kg	0.05					--	--	--	--	--	--	<0.05
Sum of PFAS (WA DER List)	µg/L	0.05					--	--	--	--	--	--	<0.05
	mg/kg	0.01					--	--	--	--	--	--	<0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)	µg/L	0.01					--	--	--	--	--	--	0.02
	mg/kg	0.005					--	--	--	--	--	--	<0.005
Sum of PFAS (PFOS + PFOA)	µg/L	0.01					--	--	--	--	--	--	0.02
	mg/kg	0.005					--	--	--	--	--	--	<0.005
Organochlorine Pesticides													
Organochlorine pesticides EPAVic	mg/kg	0.1					<1	<1	<1	<1	<1	<1	<1
Other organochlorine pesticides													
EPAVic	mg/kg	0.1					<1	<1	<1	<1	<1	<1	<1
4,4-DDE	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
a-BHC	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin + Dieldrin	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
b-BHC	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chlordane	mg/kg	0.1					<1	<1	<1	<1	<1	<1	<1
d-BHC	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DDD	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DDT	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
DDT+DDE+DDD	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan I	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan II	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endosulfan sulphate	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Endrin ketone	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
g-BHC (Lindane)	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	mg/kg	0.05					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Toxaphene	mg/kg	0.5					<10	<10	<10	<10	<10	<10	<10

NSW EPA, November 2014

NSW EPA, November 2014, NSW 2014 General Solid Waste SCC1 (with leached)

NSW EPA, November 2014, NSW 2014 General Solid Waste TCLP1 (leached)

NSW EPA, November 2014, NSW 2014 Restricted Solid Waste CT2 (No Leach)

* Chromi

* A Non Detect Mul

Preliminary Waste Classification Assessment - Table LR1
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW

Field ID	SV01 0.7-0.8	SV02 0.3-0.4
Date	27 Jun 2024	27 Jun 2024
Depth	0.7 - 0.8	0.3 - 0.4
Matrix Type	Soil	Soil

17716.3-ER-2-1

	Unit	EQL	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 General Solid Waste SCC1 (with leached)	NSW 2014 General Solid Waste TCLP1 (leached)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)		
Metals								
Arsenic	mg/kg	2	100	500		400	--	<2
Cadmium	mg/kg	0.4	20	100		80	--	<0.4
Chromium (III+VI)	mg/kg	2	100*			400*	--	5.1
Copper	mg/kg	5					--	20
Lead	mg/kg	5	100	1,500		400	--	120
	mg/L	0.01			5		--	--
Mercury	mg/kg	0.1	4	50		16	--	<0.1
Nickel	mg/kg	2	40	1,050		160	--	<5
Zinc	mg/kg	5					--	120
Asbestos								
Asbestos Reported Result	Comment						--	--
BTEX								
Naphthalene (VOC)	mg/kg	0.5					<0.5	<0.5
	%	1					--	--
Benzene	mg/kg	0.1	10	18		40	<0.1	<0.1
	%	1					--	--
Toluene	mg/kg	0.1	288	518		1,152	<0.1	<0.1
	%	1					--	--
Ethylbenzene	mg/kg	0.1	600	1,080		2,400	<0.1	<0.1
	%	1					--	--
Xylene (m & p)	mg/kg	0.2					<0.2	<0.2
	%	1					--	--
Xylene (o)	mg/kg	0.1					<0.1	<0.1
	%	1					--	--
Xylene Total	mg/kg	0.3	1,000	1,800		4,000	<0.3	<0.3
Xylene Total	%	1					--	--
TRH								
C6-C10 Fraction (F1)	mg/kg	20					<20	<20
	%	1					--	--
C6-C10 (F1 minus BTEX)	mg/kg	20					<20	<20
>C10-C16 Fraction (F2)	mg/kg	50					<50	<50
>C10-C16 Fraction (F2 minus Naphthalene)	mg/kg	50					<50	<50
>C16-C34 Fraction (F3)	mg/kg	100					<100	110
>C34-C40 Fraction (F4)	mg/kg	100					<100	<100
>C10-C40 Fraction (Sum)	mg/kg	100					<100	110
TPH								
C6-C9 Fraction	mg/kg	20	650	650		2,600	<20	<20
	%	1					--	--
C10-C14 Fraction	mg/kg	20					<20	<20
C15-C28 Fraction	mg/kg	50					<50	76
C29-C36 Fraction	mg/kg	50					<50	<50
C10-C36 Fraction (Sum)	mg/kg	50	10,000	10,000		40,000	<50	76
PAH								
Acenaphthene	mg/kg	0.5					--	<0.5
Acenaphthylene	mg/kg	0.5					--	<0.5
Anthracene	mg/kg	0.5					--	<0.5
Benzo(a)anthracene	mg/kg	0.5					--	<0.5
Benzo(a) pyrene	mg/kg	0.5	0.8	10		3.2	--	<0.5
	µg/L	1			40		--	--
Benzo(b+j)fluoranthene	mg/kg	0.5					--	<0.5
Benzo(g,h,i)perylene	mg/kg	0.5					--	<0.5
Benzo(k)fluoranthene	mg/kg	0.5					--	<0.5
Chrysene	mg/kg	0.5					--	<0.5
Dibenz(a,h)anthracene	mg/kg	0.5					--	<0.5
Fluoranthene	mg/kg	0.5					--	<0.5
Fluorene	mg/kg	0.5					--	<0.5
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5					--	<0.5
Naphthalene	mg/kg	0.5					--	<0.5
Phenanthrene	mg/kg	0.5					--	<0.5
Pyrene	mg/kg	0.5					--	<0.5
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5					--	<0.5
PAHs (Sum of total)	mg/kg	0.5	200	200		800	--	<0.5

Preliminary Waste Classification Assessment - Table LR1
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW

Field ID	SV01 0.7-0.8	SV02 0.3-0.4
Date	27 Jun 2024	27 Jun 2024
Depth	0.7 - 0.8	0.3 - 0.4
Matrix Type	Soil	Soil

17716.3-ER-2-1

	Unit	EQL	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 General Solid Waste SCC1 (with leached)	NSW 2014 General Solid Waste TCLP1 (leached)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)		
PCBs								
PCBs (Sum of total)	mg/kg	0.1	50	50		50	--	<0.1
Perfluoroalkane Carboxylic Acids								
Perfluorohexanoic acid (PFHxA)	µg/L	0.01					<0.01	<0.01
	mg/kg	0.005					<0.005	<0.005
Perfluorooctanoic acid (PFOA)	µg/L	0.01			500		0.01	<0.01
Perfluorooctanoic acid (PFOA)	mg/kg	0.005		18			<0.005	<0.005
Perfluoroalkane Sulfonic Acids								
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01					<0.01	<0.01
	mg/kg	0.005					<0.005	<0.005
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01					0.06	0.04
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.005					<0.005	<0.005
PFAS								
Perfluorononanesulfonic acid (PFNS)	mg/L	0.00001					<0.00001	<0.00001
	µg/kg	5					<5	<5
Sum of PFHxS and PFOS	µg/L	0.01			50		0.06	0.04
	mg/kg	0.005		1.8			<0.005	<0.005
Sum of PFAS	µg/L	0.1					<0.1	<0.1
	mg/kg	0.05					<0.05	<0.05
Sum of PFAS (WA DER List)	µg/L	0.05					0.07	<0.05
	mg/kg	0.01					<0.01	<0.01
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)	µg/L	0.01					0.07	0.04
	mg/kg	0.005					<0.005	<0.005
Sum of PFAS (PFOS + PFOA)	µg/L	0.01					0.07	0.04
Sum of PFAS (PFOS + PFOA)	mg/kg	0.005					<0.005	<0.005
Organochlorine Pesticides								
Organochlorine pesticides EPAVic	mg/kg	0.1					--	<0.1
Other organochlorine pesticides EPAVic	mg/kg	0.1					--	<0.1
4,4-DDE	mg/kg	0.05					--	<0.05
a-BHC	mg/kg	0.05					--	<0.05
Aldrin	mg/kg	0.05					--	<0.05
Aldrin + Dieldrin	mg/kg	0.05					--	<0.05
b-BHC	mg/kg	0.05					--	<0.05
Chlordane	mg/kg	0.1					--	<0.1
d-BHC	mg/kg	0.05					--	<0.05
DDD	mg/kg	0.05					--	<0.05
DDT	mg/kg	0.05					--	<0.05
DDT+DDE+DDD	mg/kg	0.05					--	<0.05
Dieldrin	mg/kg	0.05					--	<0.05
Endosulfan I	mg/kg	0.05					--	<0.05
Endosulfan II	mg/kg	0.05					--	<0.05
Endosulfan sulphate	mg/kg	0.05					--	<0.05
Endrin	mg/kg	0.05					--	<0.05
Endrin aldehyde	mg/kg	0.05					--	<0.05
Endrin ketone	mg/kg	0.05					--	<0.05
g-BHC (Lindane)	mg/kg	0.05					--	<0.05
Heptachlor	mg/kg	0.05					--	<0.05
Heptachlor epoxide	mg/kg	0.05					--	<0.05
Methoxychlor	mg/kg	0.05					--	<0.05
Toxaphene	mg/kg	0.5					--	<0.5

Environmental Standards

NSW EPA, November 2014, NSW 2014 General Solid Waste CT1 (No Leaching)
NSW EPA, November 2014, NSW 2014 General Solid Waste SCC1 (with leached)
NSW EPA, November 2014, NSW 2014 General Solid Waste TCLP1 (leached)
NSW EPA, November 2014, NSW 2014 Restricted Solid Waste CT2 (No Leaching)

Statistics

* Chromium VI only
* A Non Detect Multiplier of 0.5 has been applied.

Preliminary Waste Classification Assessment - Table LR1
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW

17716.3-ER-2-1

Field ID	SV02 0.6-0.7						SV01 PACM Frag		DUP1		DUP1A		DUP4		DUP4A	
	27 Jun 2024						27 Jun 2024		26 Jun 2024		26 Jun 2024		27 Jun 2024		27 Jun 2024	
	0.6 - 0.7						0 - 0.2		0 - 0.1		0 - 0.1		0 - 0.1		0 - 0.1	
	Soil						Soil		Soil		Soil		Soil		Soil	
Date																
Depth																
Matrix Type																
		Unit	EQL	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 General Solid Waste SCC1 (with leached)	NSW 2014 General Solid Waste TCLP1 (leached)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)									
Metals																
Arsenic		mg/kg	2	100	500		400		--	--	2.1	<5	2.6	<5		
Cadmium		mg/kg	0.4	20	100		80		--	--	<0.4	<1	0.6	<1		
Chromium (III+VI)		mg/kg	2	100*			400*		--	--	7.7	8	14	11		
Copper		mg/kg	5						--	--	31	33	65	56		
Lead		mg/kg	5	100	1,500		400		--	--	130	145	200	255		
		mg/L	0.01			5			--	--	--	--	--	--		
Mercury		mg/kg	0.1	4	50		16		--	--	0.1	0.1	0.2	0.2		
Nickel		mg/kg	2	40	1,050		160		--	--	<5	3	7.9	8		
Zinc		mg/kg	5						--	--	140	123	350	228		
Asbestos																
Asbestos Reported Result		Comment							--	Detected	--	--	--	--	--	--
BTEX																
Naphthalene (VOC)		mg/kg	0.5						<0.5	--	--	--	--	--	--	--
		%	1						--	--	--	--	--	--	--	--
Benzene		mg/kg	0.1	10	18		40		<0.1	--	--	--	--	--	--	--
		%	1						--	--	--	--	--	--	--	--
Toluene		mg/kg	0.1	288	518		1,152		<0.1	--	--	--	--	--	--	--
		%	1						--	--	--	--	--	--	--	--
Ethylbenzene		mg/kg	0.1	600	1,080		2,400		<0.1	--	--	--	--	--	--	--
		%	1						--	--	--	--	--	--	--	--
Xylene (m & p)		mg/kg	0.2						<0.2	--	--	--	--	--	--	--
		%	1						--	--	--	--	--	--	--	--
Xylene (o)		mg/kg	0.1						<0.1	--	--	--	--	--	--	--
		%	1						--	--	--	--	--	--	--	--
Xylene Total		mg/kg	0.3	1,000	1,800		4,000		<0.3	--	--	--	--	--	--	--
Xylene Total		%	1						--	--	--	--	--	--	--	--
TRH																
C6-C10 Fraction (F1)		mg/kg	20						<20	--	--	--	--	--	--	--
		%	1						--	--	--	--	--	--	--	--
C6-C10 (F1 minus BTEX)		mg/kg	20						<20	--	--	--	--	--	--	--
>C10-C16 Fraction (F2)		mg/kg	50						<50	--	--	--	--	--	--	--
>C10-C16 Fraction (F2 minus Naphthalene)		mg/kg	50						<50	--	--	--	--	--	--	--
>C16-C34 Fraction (F3)		mg/kg	100						210	--	--	--	--	--	--	--
>C34-C40 Fraction (F4)		mg/kg	100						<100	--	--	--	--	--	--	--
>C10-C40 Fraction (Sum)		mg/kg	100						210	--	--	--	--	--	--	--
TPH																
C6-C9 Fraction		mg/kg	20	650	650		2,600		<20	--	--	--	--	--	--	--
		%	1						--	--	--	--	--	--	--	--
C10-C14 Fraction		mg/kg	20						<20	--	--	--	--	--	--	--
C15-C28 Fraction		mg/kg	50						150	--	--	--	--	--	--	--
C29-C36 Fraction		mg/kg	50						88	--	--	--	--	--	--	--
C10-C36 Fraction (Sum)		mg/kg	50	10,000	10,000		40,000		238	--	--	--	--	--	--	--
PAH																
Acenaphthene		mg/kg	0.5						--	--	<0.5	<0.5	<0.5	<0.5		
Acenaphthylene		mg/kg	0.5						--	--	<0.5	<0.5	<0.5	<0.5		
Anthracene		mg/kg	0.5						--	--	<0.5	<0.5	<0.5	<0.5		
Benzo(a)anthracene		mg/kg	0.5						--	--	<0.5	<0.5	<0.5	<0.5		
Benzo(a) pyrene		mg/kg	0.5	0.8	10		3.2		--	--	<0.5	<0.5	<0.5	<0.5		
		µg/L	1			40			--	--	--	--	--	--		
Benzo(b+j)fluoranthene		mg/kg	0.5						--	--	<0.5	<0.5	<0.5	<0.5		
Benzo(g,h,i)perylene		mg/kg	0.5						--	--	0.5	<0.5	<0.5	<0.5		
Benzo(k)fluoranthene		mg/kg	0.5						--	--	0.5	0.5	<0.5	<0.5		
Chrysene		mg/kg	0.5						--	--	0.6	<0.5	0.5	<0.5		
Dibenz(a,h)anthracene		mg/kg	0.5						--	--	<0.5	<0.5	<0.5	<0.5		
Fluoranthene		mg/kg	0.5						--	--	0.6	<0.5	0.9	<0.5		
Fluorene		mg/kg	0.5						--	--	<0.5	<0.5	<0.5	<0.5		
Indeno(1,2,3-c,d)pyrene		mg/kg	0.5						--	--	<0.5	<0.5	<0.5	<0.5		
Naphthalene		mg/kg	0.5						--	--	<0.5	<0.5	<0.5	<0.5		
Phenanthrene		mg/kg	0.5						--	--	<0.5	<0.5	<0.5	<0.5		
Pyrene		mg/kg	0.5						--	--	0.7	0.5	0.8	<0.5		
Benzo(a)pyrene TEQ calc (Zero)		mg/kg	0.5						--	--	<0.5	<0.5	<0.5	<0.5		
PAHs (Sum of total)		mg/kg	0.5	200	200		800		--	--	2.9	1.0	2.2	<0.5		

Preliminary Waste Classification Assessment - Table LR1
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW

17716.3-ER-2-1

							Field ID						
							Date	SV02 0.6-0.7	SV01 PACM Frag	DUP1	DUP1A	DUP4	DUP4A
							Depth	27 Jun 2024	27 Jun 2024	26 Jun 2024	26 Jun 2024	27 Jun 2024	27 Jun 2024
							Matrix Type	0.6 - 0.7	0 - 0.2	0 - 0.1	0 - 0.1	0 - 0.1	0 - 0.1
								Soil	Soil	Soil	Soil	Soil	Soil
	Unit	EQL	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 General Solid Waste SCC1 (with leached)	NSW 2014 General Solid Waste TCLP1 (leached)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)							
PCBs													
PCBs (Sum of total)	mg/kg	0.1	50	50		50	--	--	--	--	--	--	--
Perfluoroalkane Carboxylic Acids													
Perfluorohexanoic acid (PFHxA)	µg/L	0.01					<0.01	--	--	--	--	--	--
	mg/kg	0.005					<0.005	--	--	--	--	--	--
Perfluorooctanoic acid (PFOA)	µg/L	0.01			500		0.02	--	--	--	--	--	--
Perfluorooctanoic acid (PFOA)	mg/kg	0.005		18			<0.005	--	--	--	--	--	--
Perfluoroalkane Sulfonic Acids													
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01					<0.01	--	--	--	--	--	--
	mg/kg	0.005					<0.005	--	--	--	--	--	--
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01					0.03	--	--	--	--	--	--
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.005					<0.005	--	--	--	--	--	--
PFAS													
Perfluorononanesulfonic acid (PFNS)	mg/L	0.00001					<0.00001	--	--	--	--	--	--
	µg/kg	5					<5	--	--	--	--	--	--
Sum of PFHxS and PFOS	µg/L	0.01			50		0.03	--	--	--	--	--	--
	mg/kg	0.005		1.8			<0.005	--	--	--	--	--	--
Sum of PFAS	µg/L	0.1					<0.1	--	--	--	--	--	--
	mg/kg	0.05					<0.05	--	--	--	--	--	--
Sum of PFAS (WA DER List)	µg/L	0.05					0.05	--	--	--	--	--	--
	mg/kg	0.01					<0.01	--	--	--	--	--	--
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)	µg/L	0.01					0.05	--	--	--	--	--	--
	mg/kg	0.005					<0.005	--	--	--	--	--	--
Sum of PFAS (PFOS + PFOA)	µg/L	0.01					0.05	--	--	--	--	--	--
	mg/kg	0.005					<0.005	--	--	--	--	--	--
Organochlorine Pesticides													
Organochlorine pesticides EPAVic	mg/kg	0.1					--	--	--	--	--	--	--
Other organochlorine pesticides EPAVic	mg/kg	0.1					--	--	--	--	--	--	--
4,4-DDE	mg/kg	0.05					--	--	--	--	--	--	--
a-BHC	mg/kg	0.05					--	--	--	--	--	--	--
Aldrin	mg/kg	0.05					--	--	--	--	--	--	--
Aldrin + Dieldrin	mg/kg	0.05					--	--	--	--	--	--	--
b-BHC	mg/kg	0.05					--	--	--	--	--	--	--
Chlordane	mg/kg	0.1					--	--	--	--	--	--	--
d-BHC	mg/kg	0.05					--	--	--	--	--	--	--
DDD	mg/kg	0.05					--	--	--	--	--	--	--
DDT	mg/kg	0.05					--	--	--	--	--	--	--
DDT+DDE+DDD	mg/kg	0.05					--	--	--	--	--	--	--
Dieldrin	mg/kg	0.05					--	--	--	--	--	--	--
Endosulfan I	mg/kg	0.05					--	--	--	--	--	--	--
Endosulfan II	mg/kg	0.05					--	--	--	--	--	--	--
Endosulfan sulphate	mg/kg	0.05					--	--	--	--	--	--	--
Endrin	mg/kg	0.05					--	--	--	--	--	--	--
Endrin aldehyde	mg/kg	0.05					--	--	--	--	--	--	--
Endrin ketone	mg/kg	0.05					--	--	--	--	--	--	--
g-BHC (Lindane)	mg/kg	0.05					--	--	--	--	--	--	--
Heptachlor	mg/kg	0.05					--	--	--	--	--	--	--
Heptachlor epoxide	mg/kg	0.05					--	--	--	--	--	--	--
Methoxychlor	mg/kg	0.05					--	--	--	--	--	--	--
Toxaphene	mg/kg	0.5					--	--	--	--	--	--	--

Environmental Standards
NSW EPA, November 2014, NSW 2014 General Solid Waste CT1 (No Leaching)
NSW EPA, November 2014, NSW 2014 General Solid Waste SCC1 (with leached)
NSW EPA, November 2014, NSW 2014 General Solid Waste TCLP1 (leached)
NSW EPA, November 2014, NSW 2014 Restricted Solid Waste CT2 (No Leaching)

Statistics
* Chromium VI only
* A Non Detect Multiplier of 0.5 has been applied.

Preliminary Waste Classification Assessment - Table LR1
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW

17716.3-ER-2-1

Preliminary Waste Classification Assessment - Table LR1							Field ID	Trip Blank	Trip Blank	Field Blank
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW							Date	26 Jun 2024	27 Jun 2024	27 Jun 2024
							Depth			
							Matrix Type	Soil	Soil	Water
			NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 General Solid Waste SCC1 (with leached)	NSW 2014 General Solid Waste TCLP1 (leached)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)				
	Unit	EQL								
Metals										
Arsenic	mg/kg	2	100	500		400	--	--	--	
Cadmium	mg/kg	0.4	20	100		80	--	--	--	
Chromium (III+VI)	mg/kg	2	100*			400*	--	--	--	
Copper	mg/kg	5					--	--	--	
Lead	mg/kg	5	100	1,500		400	--	--	--	
	mg/L	0.01			5		--	--	--	
Mercury	mg/kg	0.1	4	50		16	--	--	--	
Nickel	mg/kg	2	40	1,050		160	--	--	--	
Zinc	mg/kg	5					--	--	--	
Asbestos										
Asbestos Reported Result	Comment						--	--	--	
BTEX										
Naphthalene (VOC)	mg/kg	0.5					<0.5	<0.5	--	
	%	1					--	--	--	
Benzene	mg/kg	0.1	10	18		40	<0.1	<0.1	--	
	%	1					--	--	--	
Toluene	mg/kg	0.1	288	518		1,152	<0.1	<0.1	--	
	%	1					--	--	--	
Ethylbenzene	mg/kg	0.1	600	1,080		2,400	<0.1	<0.1	--	
	%	1					--	--	--	
Xylene (m & p)	mg/kg	0.2					<0.2	<0.2	--	
	%	1					--	--	--	
Xylene (o)	mg/kg	0.1					<0.1	<0.1	--	
	%	1					--	--	--	
Xylene Total	mg/kg	0.3	1,000	1,800		4,000	<0.3	<0.3	--	
Xylene Total	%	1					--	--	--	
TRH										
C6-C10 Fraction (F1)	mg/kg	20					<20	<20	--	
	%	1					--	--	--	
C6-C10 (F1 minus BTEX)	mg/kg	20					<20	<20	--	
>C10-C16 Fraction (F2)	mg/kg	50					--	--	--	
>C10-C16 Fraction (F2 minus Naphthalene)	mg/kg	50					--	--	--	
>C16-C34 Fraction (F3)	mg/kg	100					--	--	--	
>C34-C40 Fraction (F4)	mg/kg	100					--	--	--	
>C10-C40 Fraction (Sum)	mg/kg	100					--	--	--	
TPH										
C6-C9 Fraction	mg/kg	20	650	650		2,600	<20	<20	--	
	%	1					--	--	--	
C10-C14 Fraction	mg/kg	20					--	--	--	
C15-C28 Fraction	mg/kg	50					--	--	--	
C29-C36 Fraction	mg/kg	50					--	--	--	
C10-C36 Fraction (Sum)	mg/kg	50	10,000	10,000		40,000	--	--	--	
PAH										
Acenaphthene	mg/kg	0.5					--	--	--	
Acenaphthylene	mg/kg	0.5					--	--	--	
Anthracene	mg/kg	0.5					--	--	--	
Benzo(a)anthracene	mg/kg	0.5					--	--	--	
Benzo(a) pyrene	mg/kg	0.5	0.8	10		3.2	--	--	--	
	µg/L	1			40		--	--	--	
Benzo(b+j)fluoranthene	mg/kg	0.5					--	--	--	
Benzo(g,h,i)perylene	mg/kg	0.5					--	--	--	
Benzo(k)fluoranthene	mg/kg	0.5					--	--	--	
Chrysene	mg/kg	0.5					--	--	--	
Dibenz(a,h)anthracene	mg/kg	0.5					--	--	--	
Fluoranthene	mg/kg	0.5					--	--	--	
Fluorene	mg/kg	0.5					--	--	--	
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5					--	--	--	
Naphthalene	mg/kg	0.5					--	--	--	
Phenanthrene	mg/kg	0.5					--	--	--	
Pyrene	mg/kg	0.5					--	--	--	
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5					--	--	--	
PAHs (Sum of total)	mg/kg	0.5	200	200		800	--	--	--	

Preliminary Waste Classification Assessment - Table LR1
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW

17716.3-ER-2-1

							Field ID	Trip Blank	Trip Blank	Field Blank
							Date	26 Jun 2024	27 Jun 2024	27 Jun 2024
							Depth			
							Matrix Type	Soil	Soil	Water
	Unit	EQL	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 General Solid Waste SCC1 (with leached)	NSW 2014 General Solid Waste TCLP1 (leached)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)				
PCBs										
PCBs (Sum of total)	mg/kg	0.1	50	50		50	--	--	--	
Perfluoroalkane Carboxylic Acids										
Perfluorohexanoic acid (PFHxA)	µg/L	0.01					--	--	--	<0.01
	mg/kg	0.005					--	--	--	--
Perfluorooctanoic acid (PFOA)	µg/L	0.01			500		--	--	--	<0.01
Perfluorooctanoic acid (PFOA)	mg/kg	0.005		18			--	--	--	--
Perfluoroalkane Sulfonic Acids										
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01					--	--	--	<0.01
	mg/kg	0.005					--	--	--	--
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01					--	--	--	<0.01
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.005					--	--	--	--
PFAS										
Perfluorononanesulfonic acid (PFNS)	mg/L	0.00001					--	--	--	<0.00001
	µg/kg	5					--	--	--	--
Sum of PFHxS and PFOS	µg/L	0.01			50		--	--	--	<0.01
	mg/kg	0.005		1.8			--	--	--	--
Sum of PFAS	µg/L	0.1					--	--	--	<0.1
	mg/kg	0.05					--	--	--	--
Sum of PFAS (WA DER List)	µg/L	0.05					--	--	--	<0.05
	mg/kg	0.01					--	--	--	--
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)	µg/L	0.01					--	--	--	<0.01
	mg/kg	0.005					--	--	--	--
Sum of PFAS (PFOS + PFOA)	µg/L	0.01					--	--	--	<0.01
Sum of PFAS (PFOS + PFOA)	mg/kg	0.005					--	--	--	--
Organochlorine Pesticides										
Organochlorine pesticides EPAVic	mg/kg	0.1					--	--	--	--
Other organochlorine pesticides EPAVic	mg/kg	0.1					--	--	--	--
4,4-DDE	mg/kg	0.05					--	--	--	--
a-BHC	mg/kg	0.05					--	--	--	--
Aldrin	mg/kg	0.05					--	--	--	--
Aldrin + Dieldrin	mg/kg	0.05					--	--	--	--
b-BHC	mg/kg	0.05					--	--	--	--
Chlordane	mg/kg	0.1					--	--	--	--
d-BHC	mg/kg	0.05					--	--	--	--
DDD	mg/kg	0.05					--	--	--	--
DDT	mg/kg	0.05					--	--	--	--
DDT+DDE+DDD	mg/kg	0.05					--	--	--	--
Dieldrin	mg/kg	0.05					--	--	--	--
Endosulfan I	mg/kg	0.05					--	--	--	--
Endosulfan II	mg/kg	0.05					--	--	--	--
Endosulfan sulphate	mg/kg	0.05					--	--	--	--
Endrin	mg/kg	0.05					--	--	--	--
Endrin aldehyde	mg/kg	0.05					--	--	--	--
Endrin ketone	mg/kg	0.05					--	--	--	--
g-BHC (Lindane)	mg/kg	0.05					--	--	--	--
Heptachlor	mg/kg	0.05					--	--	--	--
Heptachlor epoxide	mg/kg	0.05					--	--	--	--
Methoxychlor	mg/kg	0.05					--	--	--	--
Toxaphene	mg/kg	0.5					--	--	--	--

Environmental Standards

NSW EPA, November 2014, NSW 2014 General Solid Waste CT1 (No Leaching)
NSW EPA, November 2014, NSW 2014 General Solid Waste SCC1 (with leached)
NSW EPA, November 2014, NSW 2014 General Solid Waste TCLP1 (leached)
NSW EPA, November 2014, NSW 2014 Restricted Solid Waste CT2 (No Leaching)

Statistics

* Chromium VI only
* A Non Detect Multiplier of 0.5 has been applied.

Preliminary Waste Classification Assessment - Table LR1
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW

17716.3-ER-2-1

			NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 General Solid Waste SCC1 (with leached)	NSW 2014 General Solid Waste TCLP1 (leached)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)
	Unit	EQL				
Metals						
Arsenic	mg/kg	2	100	500		400
Cadmium	mg/kg	0.4	20	100		80
Chromium (III+VI)	mg/kg	2	100*			400*
Copper	mg/kg	5				
Lead	mg/kg	5	100	1,500		400
	mg/L	0.01			5	
Mercury	mg/kg	0.1	4	50		16
Nickel	mg/kg	2	40	1,050		160
Zinc	mg/kg	5				
Asbestos						
Asbestos Reported Result	Comment					
BTEX						
Naphthalene (VOC)	mg/kg	0.5				
	%	1				
Benzene	mg/kg	0.1	10	18		40
	%	1				
Toluene	mg/kg	0.1	288	518		1,152
	%	1				
Ethylbenzene	mg/kg	0.1	600	1,080		2,400
	%	1				
Xylene (m & p)	mg/kg	0.2				
	%	1				
Xylene (o)	mg/kg	0.1				
	%	1				
Xylene Total	mg/kg	0.3	1,000	1,800		4,000
Xylene Total	%	1				
TRH						
C6-C10 Fraction (F1)	mg/kg	20				
	%	1				
C6-C10 (F1 minus BTEX)	mg/kg	20				
>C10-C16 Fraction (F2)	mg/kg	50				
>C10-C16 Fraction (F2 minus Naphthalene)	mg/kg	50				
>C16-C34 Fraction (F3)	mg/kg	100				
>C34-C40 Fraction (F4)	mg/kg	100				
>C10-C40 Fraction (Sum)	mg/kg	100				
TPH						
C6-C9 Fraction	mg/kg	20	650	650		2,600
	%	1				
C10-C14 Fraction	mg/kg	20				
C15-C28 Fraction	mg/kg	50				
C29-C36 Fraction	mg/kg	50				
C10-C36 Fraction (Sum)	mg/kg	50	10,000	10,000		40,000
PAH						
Acenaphthene	mg/kg	0.5				
Acenaphthylene	mg/kg	0.5				
Anthracene	mg/kg	0.5				
Benzo(a)anthracene	mg/kg	0.5				
Benzo(a) pyrene	mg/kg	0.5	0.8	10		3.2
	µg/L	1			40	
Benzo(b+j)fluoranthene	mg/kg	0.5				
Benzo(g,h,i)perylene	mg/kg	0.5				
Benzo(k)fluoranthene	mg/kg	0.5				
Chrysene	mg/kg	0.5				
Dibenz(a,h)anthracene	mg/kg	0.5				
Fluoranthene	mg/kg	0.5				
Fluorene	mg/kg	0.5				
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5				
Naphthalene	mg/kg	0.5				
Phenanthrene	mg/kg	0.5				
Pyrene	mg/kg	0.5				
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5				
PAHs (Sum of total)	mg/kg	0.5	200	200		800

Number of Results	Minimum Concentration	Maximum Concentration	Average Concentration *	Geometric Average *	Median Concentration *	Standard Deviation *	Geometric Standard Deviation *
19	<2	7.8	3	2.5	2.6	1.7	1.8
19	<0.4	<1	0.33	0.3	0.2	0.16	1.6
19	<5	15	8.5	7.1	8	4.5	1.9
19	12	65	38	34	34	16	1.6
19	36	280	135	114	130	74	1.9
4	0.03	0.04	0.038	0.037	0.04	0.005	1.2
19	0.1	0.3	0.15	0.13	0.2	0.076	1.9
19	3	25	5.6	4.4	3	5.2	1.9
19	54	370	190	166	150	100	1.7
12	1	1	1	1	1	0	1
16	<0.5	<0.5	0.25	0.25	0.25	0	1
1	87	87	87	87	87		
16	<0.1	<0.1	0.05	0.05	0.05	0	1
1	88	88	88	88	88		
16	<0.1	<0.1	0.05	0.05	0.05	0	1
1	87	87	87	87	87		
16	<0.1	<0.1	0.05	0.05	0.05	0	1
1	90	90	90	90	90		
16	<0.2	<0.2	0.1	0.1	0.1	0	1
1	90	90	90	90	90		
16	<0.1	<0.1	0.05	0.05	0.05	0	1
1	90	90	90	90	90		
16	<0.3	<0.3	0.15	0.15	0.15	0	1
1	90	90	90	90	90		
16	<20	<20	10	10	10	0	1
1	94	94	94	94	94		
16	<20	<20	10	10	10	0	1
14	<50	230	56	39	25	61	2.2
14	<50	230	56	39	25	61	2.2
14	100	850	327	235	225	269	2.4
14	<100	450	125	87	50	127	2.3
14	100	1,430	458	275	225	469	2.9
16	<20	<20	10	10	10	0	1
1	94	94	94	94	94		
14	<20	250	50	24	10	70	3.3
14	<50	460	191	138	145	150	2.4
14	<50	640	199	122	120	197	3
14	<50	1,270	429	258	254	411	3.2
16	<0.5	<0.5	0.25	0.25	0.25	0	1
16	<0.5	<0.5	0.25	0.25	0.25	0	1
16	<0.5	0.8	0.32	0.29	0.25	0.19	1.5
16	<0.5	5.5	0.74	0.41	0.25	1.3	2.4
16	<0.5	8.6	1.1	0.46	0.25	2.1	2.9
3	<1	<1	0.5	0.5	0.5	0	1
16	<0.5	5.4	0.82	0.44	0.25	1.3	2.6
16	0.5	6.3	0.91	0.47	0.25	1.5	2.7
16	0.5	8.2	1.1	0.55	0.375	2	2.9
16	0.5	6.7	1	0.55	0.375	1.6	2.7
16	0.5	1.3	0.33	0.29	0.25	0.27	1.5
16	0.5	10	1.5	0.73	0.55	2.5	3.1
16	<0.5	<0.5	0.25	0.25	0.25	0	1
16	<0.5	4.3	0.66	0.39	0.25	1	2.4
16	<0.5	<0.5	0.25	0.25	0.25	0	1
16	<0.5	3.8	0.67	0.39	0.25	0.97	2.4
16	0.5	11	1.6	0.75	0.65	2.7	3.2
16	<0.5	12	1.4	0.51	0.25	3	3.4
16	0.5	72	8.9	1.9	1.65	18	6.5

Field ID	Date	Depth	Matrix Type
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[illegible]

NSW EPA, November 2014, NSW 2014 General Solid Waste CT1 (No Leaching)
NSW EPA, November 2014, NSW 2014 General Solid Waste SCC1 (with leached)
NSW EPA, November 2014, NSW 2014 General Solid Waste TCLP1 (leached)
NSW EPA, November 2014, NSW 2014 Restricted Solid Waste CT2 (No Leaching)

* Chromium VI only
* A Non Detect Multiplier of 0.5 has been applied.

Preliminary Waste Classification Assessment - Table LR1
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW

17716.3-ER-2-1

							Field ID
							Date
							Depth
							Matrix Type
	Unit	EQL	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 General Solid Waste SCC1 (with leached)	NSW 2014 General Solid Waste TCLP1 (leached)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)	95% UCL (Student's-t) *
Metals							
Arsenic	mg/kg	2	100	500		400	3.655
Cadmium	mg/kg	0.4	20	100		80	0.395
Chromium (III+VI)	mg/kg	2	100*			400*	10.25
Copper	mg/kg	5					44.65
Lead	mg/kg	5	100	1,500		400	164.9
	mg/L	0.01			5		0.0434
Mercury	mg/kg	0.1	4	50		16	0.18
Nickel	mg/kg	2	40	1,050		160	7.648
Zinc	mg/kg	5					229.8
Asbestos							
Asbestos Reported Result	Comment						1
BTEX							
Naphthalene (VOC)	mg/kg	0.5					0.25
	%	1					
Benzene	mg/kg	0.1	10	18		40	0.05
	%	1					
Toluene	mg/kg	0.1	288	518		1,152	0.05
	%	1					
Ethylbenzene	mg/kg	0.1	600	1,080		2,400	0.05
	%	1					
Xylene (m & p)	mg/kg	0.2					0.1
	%	1					
Xylene (o)	mg/kg	0.1					0.05
	%	1					
Xylene Total	mg/kg	0.3	1,000	1,800		4,000	0.15
Xylene Total	%	1					
TRH							
C6-C10 Fraction (F1)	mg/kg	20					10
	%	1					
C6-C10 (F1 minus BTEX)	mg/kg	20					10
>C10-C16 Fraction (F2)	mg/kg	50					84.8
>C10-C16 Fraction (F2 minus Naphthalene)	mg/kg	50					84.8
>C16-C34 Fraction (F3)	mg/kg	100					454.4
>C34-C40 Fraction (F4)	mg/kg	100					184.9
>C10-C40 Fraction (Sum)	mg/kg	100					680.5
TPH							
C6-C9 Fraction	mg/kg	20	650	650		2,600	10
	%	1					
C10-C14 Fraction	mg/kg	20					83.05
C15-C28 Fraction	mg/kg	50					262.5
C29-C36 Fraction	mg/kg	50					292.6
C10-C36 Fraction (Sum)	mg/kg	50	10,000	10,000		40,000	623.8
PAH							
Acenaphthene	mg/kg	0.5					0.25
Acenaphthylene	mg/kg	0.5					0.25
Anthracene	mg/kg	0.5					0.401
Benzo(a)anthracene	mg/kg	0.5					1.316
Benzo(a) pyrene	mg/kg	0.5	0.8	10		3.2	1.973
	µg/L	1			40		0.5
Benzo(b+j)fluoranthene	mg/kg	0.5					1.395
Benzo(g,h,i)perylene	mg/kg	0.5					1.578
Benzo(k)fluoranthene	mg/kg	0.5					1.99
Chrysene	mg/kg	0.5					1.73
Dibenz(a,h)anthracene	mg/kg	0.5					0.448
Fluoranthene	mg/kg	0.5					2.619
Fluorene	mg/kg	0.5					0.25
Indeno(1,2,3-c,d)pyrene	mg/kg	0.5					1.11
Naphthalene	mg/kg	0.5					0.25
Phenanthrene	mg/kg	0.5					1.096
Pyrene	mg/kg	0.5					2.791
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5					2.717
PAHs (Sum of total)	mg/kg	0.5	200	200		800	16.88

Preliminary Waste Classification Assessment - Table LR1
Housing Australia Future Fund Project - 792-794 Botany Rd and 33-37 Henry Kendall Cres, Mascot NSW

17716.3-ER-2-1

							Field ID
							Date
							Depth
							Matrix Type
	Unit	EQL	NSW 2014 General Solid Waste CT1 (No Leaching)	NSW 2014 General Solid Waste SCC1 (with leached)	NSW 2014 General Solid Waste TCLP1 (leached)	NSW 2014 Restricted Solid Waste CT2 (No Leaching)	95% UCL (Student's-t) *
PCBs							
PCBs (Sum of total)	mg/kg	0.1	50	50		50	0.512
Perfluoroalkane Carboxylic Acids							
Perfluorohexanoic acid (PFHxA)	µg/L	0.01					0.005
	mg/kg	0.005					0.0025
Perfluorooctanoic acid (PFOA)	µg/L	0.01			500		0.0152
Perfluorooctanoic acid (PFOA)	mg/kg	0.005		18			0.0025
Perfluoroalkane Sulfonic Acids							
Perfluorohexane sulfonic acid (PFHxS)	µg/L	0.01					0.005
	mg/kg	0.005					0.0025
Perfluorooctane sulfonic acid (PFOS)	µg/L	0.01					0.0508
Perfluorooctane sulfonic acid (PFOS)	mg/kg	0.005					0.0025
PFAS							
Perfluorononanesulfonic acid (PFNS)	mg/L	0.00001					0.000005
	µg/kg	5					2.5
Sum of PFHxS and PFOS	µg/L	0.01			50		0.0508
	mg/kg	0.005		1.8			0.0025
Sum of PFAS	µg/L	0.1					0.05
	mg/kg	0.05					0.025
Sum of PFAS (WA DER List)	µg/L	0.05					0.0585
	mg/kg	0.01					0.005
Sum of enHealth PFAS (PFHxS + PFOS + PFOA)	µg/L	0.01					0.0612
	mg/kg	0.005					0.0025
Sum of PFAS (PFOS + PFOA)	µg/L	0.01					0.0612
Sum of PFAS (PFOS + PFOA)	mg/kg	0.005					0.0025
Organochlorine Pesticides							
Organochlorine pesticides EPAVic	mg/kg	0.1					0.512
Other organochlorine pesticides EPAVic	mg/kg	0.1					0.512
4,4-DDE	mg/kg	0.05					0.256
a-BHC	mg/kg	0.05					0.256
Aldrin	mg/kg	0.05					0.256
Aldrin + Dieldrin	mg/kg	0.05					0.256
b-BHC	mg/kg	0.05					0.256
Chlordane	mg/kg	0.1					0.512
d-BHC	mg/kg	0.05					0.256
DDD	mg/kg	0.05					0.256
DDT	mg/kg	0.05					0.256
DDT+DDE+DDD	mg/kg	0.05					0.256
Dieldrin	mg/kg	0.05					0.256
Endosulfan I	mg/kg	0.05					0.256
Endosulfan II	mg/kg	0.05					0.256
Endosulfan sulphate	mg/kg	0.05					0.256
Endrin	mg/kg	0.05					0.256
Endrin aldehyde	mg/kg	0.05					0.256
Endrin ketone	mg/kg	0.05					0.256
g-BHC (Lindane)	mg/kg	0.05					0.256
Heptachlor	mg/kg	0.05					0.256
Heptachlor epoxide	mg/kg	0.05					0.256
Methoxychlor	mg/kg	0.05					0.256
Toxaphene	mg/kg	0.5					5.127

Environmental Standards

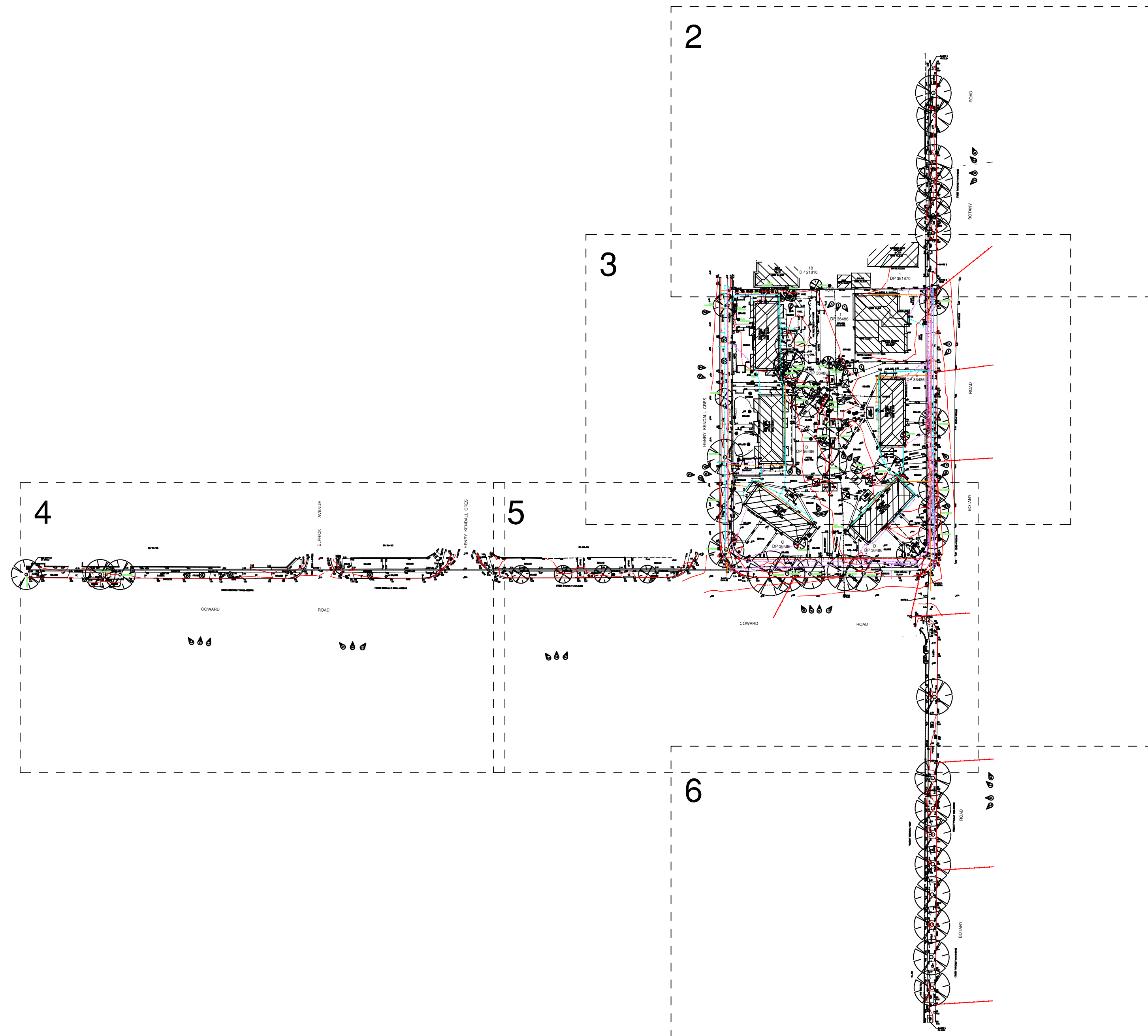
NSW EPA, November 2014, NSW 2014 General Solid Waste CT1 (No Leaching)
NSW EPA, November 2014, NSW 2014 General Solid Waste SCC1 (with leached)
NSW EPA, November 2014, NSW 2014 General Solid Waste TCLP1 (leached)
NSW EPA, November 2014, NSW 2014 Restricted Solid Waste CT2 (No Leaching)

Statistics

* Chromium VI only
* A Non Detect Multiplier of 0.5 has been applied.

APPENDIX C – Site Survey Plan

L.G.A. BAYSIDE COUNCIL



BOUNDARY CO-ORDINATES

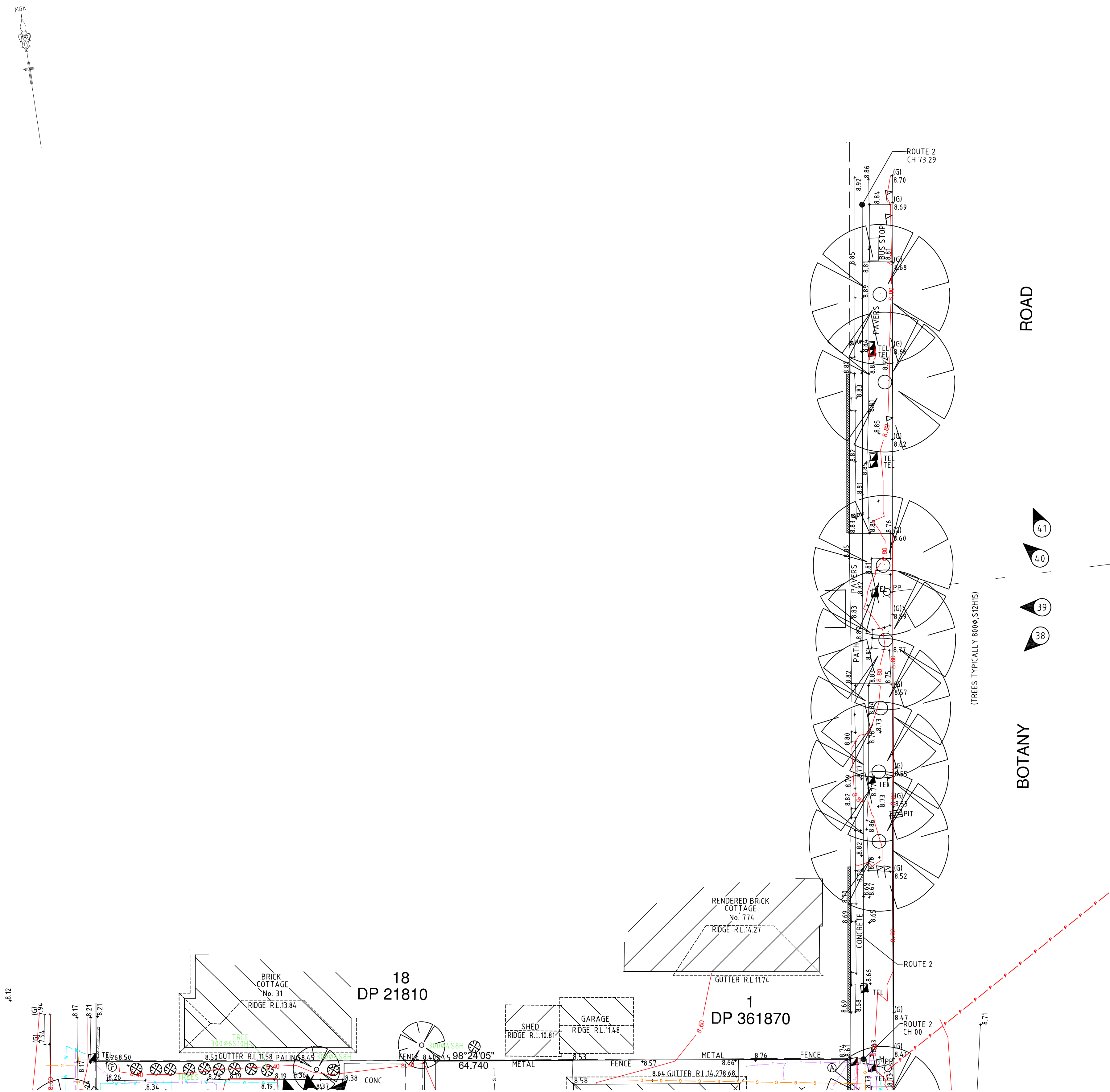
BDY CNR	EASTING	NORTHING
A	333 206.618	6 244 738.431
B	333 194.136	6 244 654.762
C	333 188.246	6 244 650.399
D	333 130.150	6 244 664.282
E	333 142.572	6 244 747.890

- - DENOTES PHOTO LOCATION
 - DENOTES BOUNDARY CORNER

NOTES:

- 1) TITLE BEARINGS AND DIMENSIONS ARE SHOWN.
BOUNDARIES DETERMINED FROM PLANS
AVAILABLE ON PUBLIC RECORD.
- 2) THIS SURVEY HAS BEEN MADE PURSUANT TO SECTION 9 OF
THE SURVEYING & SPATIAL INFORMATION REGULATION 2017.
- 3) ORIGIN OF LEVELS: PM 29751 N 88.096(A.H.D.) SCIMS
- 4) SITE COMPLETES LOT A TO D COMPLETES LOT 1 & LOT 2 OF 36486
- 4) SITE AREA 5796m² BY TITLE DIMENSIONS.
- 5) UNDERGROUND SERVICES HAVE NOT BEEN INVESTIGATED.
- 6) TREE SIZES ARE INDICATIVE
3000S/1048 DENOTES TREE SIZE 3.0 TRUNK DIAMETER,
10 SPREAD, 8 HIGH.
(G) - DENOTES TOP OF GUTTER.
- DENOTES EASEMENT TO DRAIN WATER (DEALING NO C3 13685)
- 7) TREE NAMES SHOWN CONSTITUTE OUR OPINION ONLY
IF TREE SPECIES IDENTIFYING AND/OR ANY CONSTRUCTION OR
DEMOLITION BE DETERMINED BY A QUALIFIED ARBORIST
- 8) SERVICE PIT LOCATIONS HAVE BEEN DETERMINED BY SURVEY.
LOCATION OF UNDERGROUND SERVICES HAVE BEEN DETERMINED
ON SITE BY DIGSAFE PTY. LTD. USING HAND WAND
UNDERGROUND DETECTION AND GROUND PENETRATING RADAR (GPR).
DUE TO SITE SOIL DENSITIES AND CONDITIONS SOME SERVICES WERE
UNTRACEABLE AT POINTS, NON-SIGNAL, PRODUCING SERVICES MAY
EXIST AND ARE NOT DETECTED BY ANY CONSTRUCTION OR
DEMOLITION, THOROUGH SEARCH OF ALL AUTHORITIES SHOULD
BE MADE TO DETERMINE THE EXTENT AND NATURE OF SERVICES POT
EXISTING, AND ANY AUGMENTATION SHOULD BE USED WHEN EXAMINING SERVICES.
- 9) [500A] DENOTES SERVICE 500M BELOW SURFACE.
DEPTH QUALITY CLASSIFICATION 'A'
- 10) FOR DEPTH QUALITY CLASSIFICATION REFERS TO DIGSAFE REPORT.

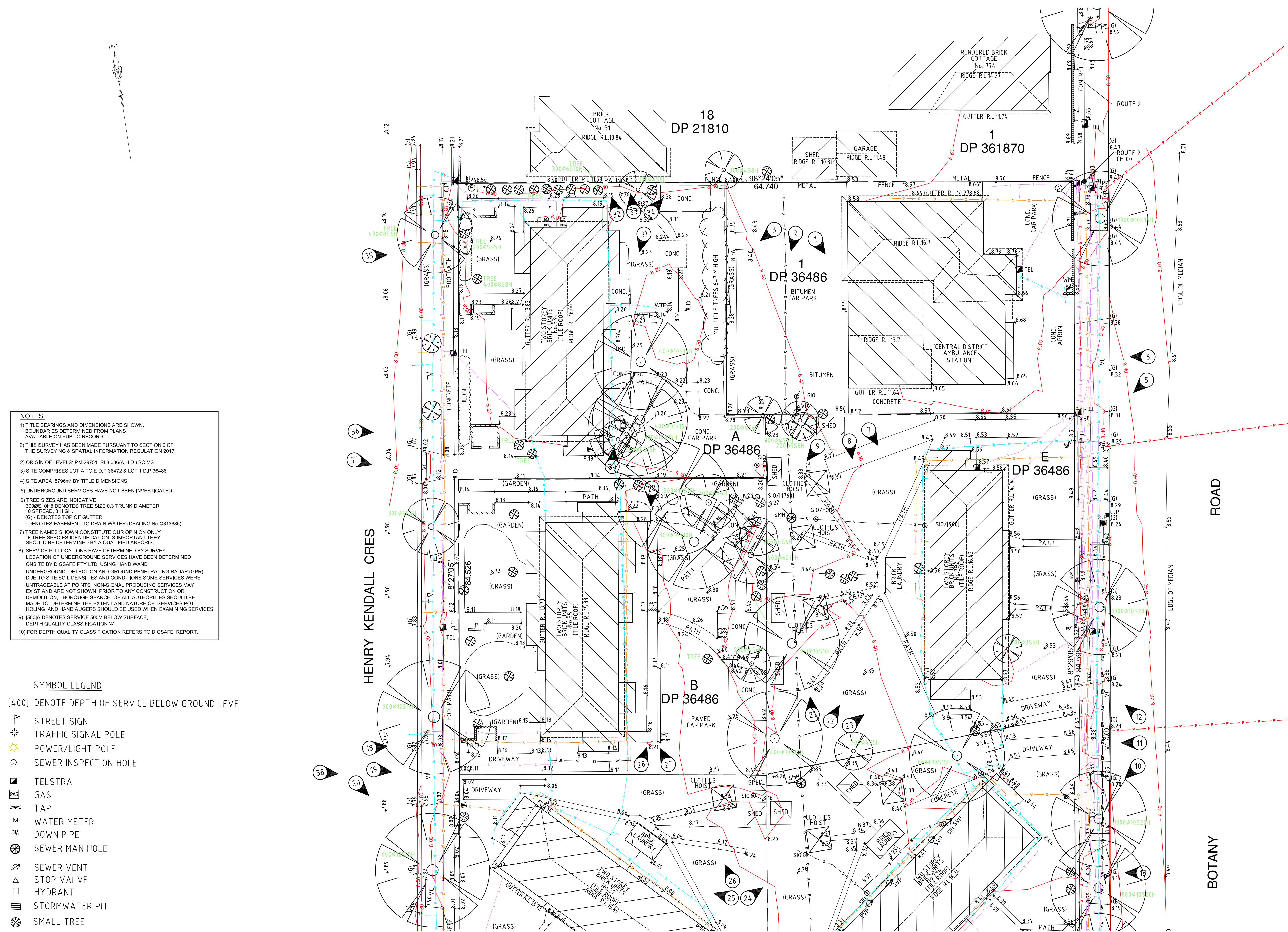
No.	DATE	NOTATION/AMENDMENT	No.	DATE	NOTATION/AMENDMENT	CONTOUR INTERVAL: DATUM: A.H.D. ORIGIN OF DATUM: PM 29751 RL8.086 SCIMS 100 YEAR FLOOD RL: N/A RECOMMENDED MINIMUM FLOOR RL: N/A SOURCE OF FLOOD INFO: N/A		LEGEND OF COMMONLY USED SYMBOLS SEWER ELECTRICITY O/H ELECTRICITY U/G TELECOM GAS STORMWATER BENCH MARK SURVEY CONTROL MARK		REDUCTION RATIO 1 : 1000 (A1) LAND TITLE INFORMATION LOTS: A - E LOT 1 PLAN Nos : D,P 36472 D,P 36486 OTHER: AREA: 5796m²		DATE OF SURVEY: 12.04.24 SURVEY CONSULTANT: Norton Survey Partners SURVEYORS & LAND TITLE CONSULTANTS PH +61 2 9555 2744 office@nspartners.com.au SUITE 1 /505 BALMAIN ROAD LILYFIELD N.S.W. 2040 REGISTERED SURVEYOR JACK HUGHES REF: 54037-1 DWG		 Family & Community Services Land & Housing Corporation DRAWING TITLE DETAIL & LEVEL SURVEY		LOCATION STREET ADDRESS 776-794 BOTANY ROAD, 33-37 HENRY KENDALL CRESCENT JOB NUMBER 54037		TYPE S SHT. 1 OF 10	
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- NOTES:**
- 1) TITLE BEARINGS AND DIMENSIONS ARE SHOWN. BOUNDARIES DETERMINED FROM PLANS AVAILABLE ON PUBLIC RECORD.
 - 2) THIS SURVEY HAS BEEN MADE PURSUANT TO SECTION 9 OF THE SURVEYING & SPATIAL INFORMATION REGULATION 2017.
 - 3) SITE COMPRISES LOT A TO E D.P. 36472 & LOT 1 D.P. 36486
 - 4) SITE AREA 5796m² BY TITLE DIMENSIONS.
 - 5) UNDERGROUND SERVICES HAVE NOT BEEN INVESTIGATED.
 - 6) TREE SIZES ARE INDICATIVE. D300S10H8 DENOTES TREE SIZE 0.3 TRUNK DIAMETER, 10 SPREAD, 8 HIGH. (G) - DENOTES TOP OF GUTTER. - DENOTES EASEMENT TO DRAIN WATER (DEALING No.Q313685)
 - 7) TREE NAMES SHOWN CONSTITUTE OUR OPINION ONLY IF TREE SPECIES IDENTIFICATION IS IMPORTANT THEY SHOULD BE DETERMINED BY A QUALIFIED ARBORIST.
 - 8) SERVICE PIT LOCATIONS HAVE DETERMINED BY SURVEY. LOCATION OF UNDERGROUND SERVICES HAVE BEEN DETERMINED ON SITE BY DIGSAFE PTY LTD, USING HAND WAND UNDERGROUND DETECTION AND GROUND PENETRATING RADAR (GPR). DUE TO SITE SOIL DENSITIES AND CONDITIONS SOME SERVICES WERE UNTRACEABLE AT POINTS. NON-SIGNAL PRODUCING SERVICES MAY EXIST AND ARE NOT SHOWN. PRIOR TO ANY CONSTRUCTION OR DEMOLITION THOROUGH SEARCH OF ALL AUTHORITIES SHOULD BE MADE TO DETERMINE THE EXTENT AND NATURE OF SERVICES. POT HOLES AND HAND AUGERS SHOULD BE USED WHEN EXAMINING SERVICES.
 - 9) [500]A DENOTES SERVICE 500M BELOW SURFACE, DEPTH QUALITY CLASSIFICATION 'A'.
 - 10) FOR DEPTH QUALITY CLASSIFICATION REFERS TO DIGSAFE REPORT.

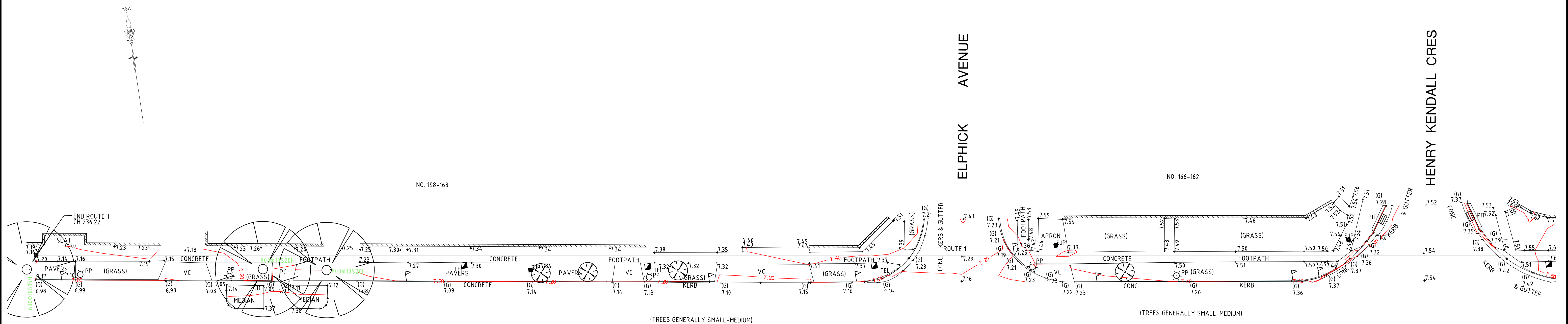
- SYMBOL LEGEND**
- [400] DENOTE DEPTH OF SERVICE BELOW GROUND LEVEL
- STREET SIGN
 - TRAFFIC SIGNAL POLE
 - POWER/LIGHT POLE
 - SEWER INSPECTION HOLE
 - TELSTRA
 - GAS
 - TAP
 - WATER METER
 - DOWN PIPE
 - SEWER MAN HOLE
 - SEWER VENT
 - STOP VALVE
 - HYDRANT
 - STORMWATER PIT
 - SMALL TREE

No.	DATE	NOTATION/AMENDMENT	No.	DATE	NOTATION/AMENDMENT	CONTOUR INTERVAL: DATUM: A.H.D. ORIGIN OF DATUM: PM 29/51 RL8.086 SCIMS 100 YEAR FLOOD RL: N/A RECOMMENDED MINIMUM FLOOR RL: N/A SOURCE OF FLOOD INFO: N/A	LEGEND OF COMMONLY USED SYMBOLS SEWER ELECTRICITY O/H ELECTRICITY U/G TELECOM GAS STORMWATER BENCH MARK SURVEY CONTROL MARK PM SSM	REDUCTION RATIO 1 : 200 (A1) LAND TITLE INFORMATION LOTS: PLAN NOs : D.P. 36472 & D.P. 36486 OTHER: AREA: 5796m²	DATE OF SURVEY: 12.04.24 SURVEY CONSULTANT: Norton Survey Partners SURVEYORS & LAND TITLE CONSULTANTS PH +61 2 9555 2744 office@nspartners.com.au SUITE 1 /505 BALMAIN ROAD LILYFIELD N.S.W. 2040 REGISTERED SURVEYOR JACK HUGHES REF. 54032-A-DWG	Family & Community Services Land & Housing Corporation DRAWING TITLE DETAIL & LEVEL SURVEY	LOCATION MASCOT STREET ADDRESS 776-794 BOTANY ROAD, 33-37 HENRY KENDALL CRESCENT JOB NUMBER 54037	TYPE S SHT. 2 OF 10
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NO.	DATE	NOTATION/AMENDMENT	NO.	DATE	NOTATION/AMENDMENT	CONTOUR INTERVAL: DATUM: A.H.D. ORIGIN OF DATUM: PM 29751 RL8.086 SCIMS 100 YEAR FLOOD RL: N/A RECOMMENDED MINIMUM FLOOR RL: N/A SOURCE OF FLOOD INFO: N/A	LEGEND OF COMMONLY USED SYMBOLS SEWER ELECTRICITY O/H ELECTRICITY U/G TELECOM GAS STORMWATER BENCH MARK SURVEY CONTROL MARK PM SSM	REDUCTION RATIO 1 : 0 5 10 15 20 LAND TITLE INFORMATION LOTS: A TO E & LOT 1 PLAN Nos : D.P 36472 & D.P 36486 OTHER: AREA: 5796m ²	DATE OF SURVEY: 12.04.24 SURVEY CONSULTANT: Norton Survey Partners SURVEYORS & LAND TITLE CONSULTANTS PH +61 2 9555 2744 office@nspartners.com.au SUITE 1 /505 BALMAIN ROAD LILYFIELD N.S.W. 2040 REGISTERED SURVEYOR JACK HUGHES REF: 54037-1 DVOG	 Family & Community Services Land & Housing Corporation DRAWING TITLE DETAIL & LEVEL SURVEY	LOCATION MASCOT STREET ADDRESS 776-794 BOTANY ROAD, 33-37 HENRY KENDALL CRESCENT JOB NUMBER 54037	TYPE S SHT. 3 OF 10
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L.G.A. BAYSIDE COUNCIL



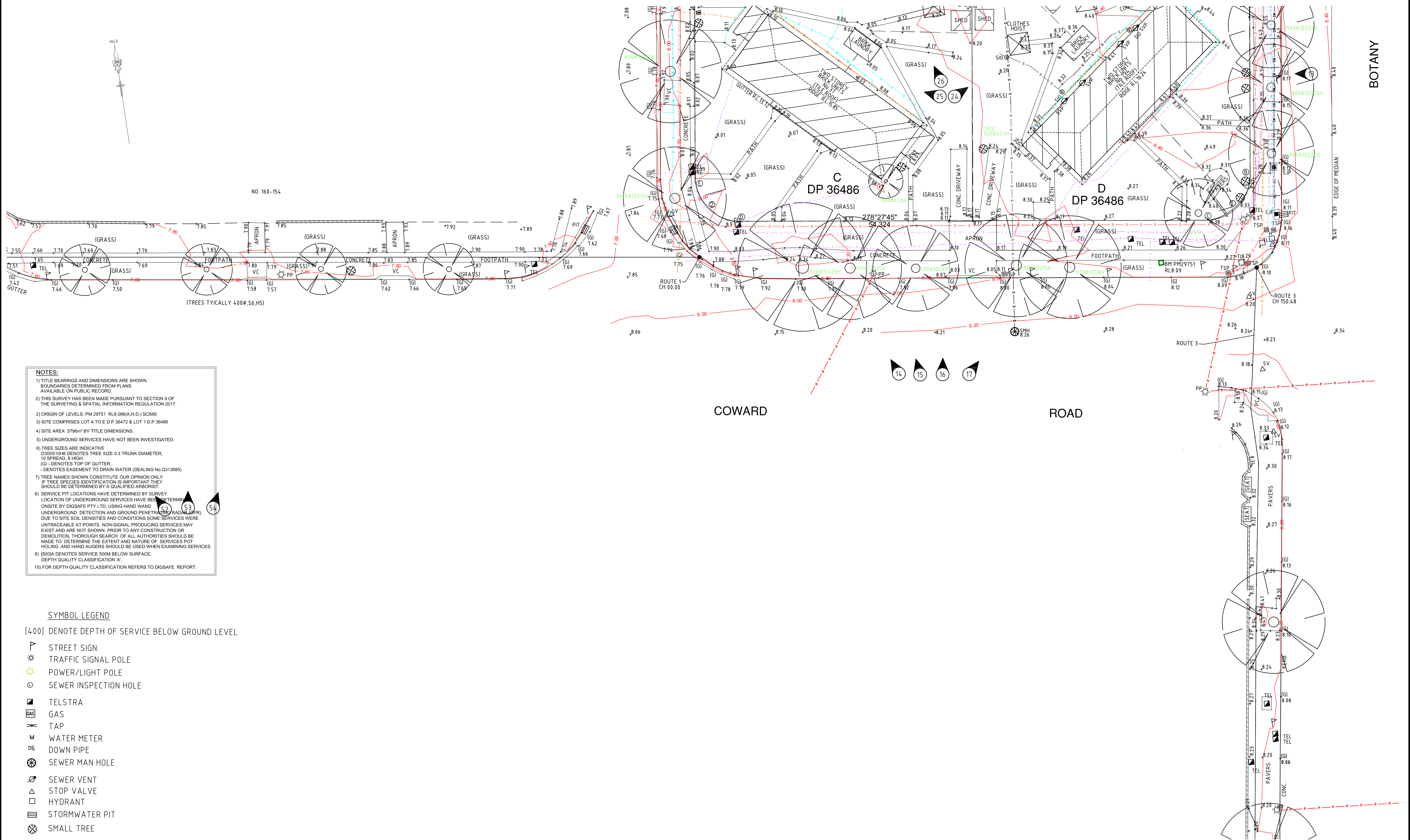
- NOTES:**
- 1) TITLE BEARINGS AND DIMENSIONS ARE SHOWN. BOUNDARIES DETERMINED FROM PLANS AVAILABLE ON PUBLIC RECORD.
 - 2) THIS SURVEY HAS BEEN MADE PURSUANT TO SECTION 9 OF THE SURVEYING & SPATIAL INFORMATION REGULATION 2017.
 - 3) ORIGIN OF LEVELS: PM 29751 R/L8.086(H.A.D.) SCIMS
 - 4) SITE COMPIRES LOT A TO E D.P. 36472 & LOT 1 D.P. 36486
 - 4) SITE AREA, 5796sq' BY TITLE DIMENSIONS.
 - 5) UNDERGROUND SERVICES HAVE NOT BEEN INVESTIGATED.
 - 6) TREE SIZES ARE INDICATIVE
D300S10H8 DENOTES TREE SIZE 0.3 TRUNK DIAMETER, 10 SPREAD, 8 HIGH.
(G)- DENOTES TOP OF GUTTER.
- DENOTES EASEMENT TO DRAIN WATER (DEALING NO.331685)
 - 7) TREE NAMES SHOWN CONSTITUTE OUR OPINION ONLY IF TREE SPECIES IDENTIFICATION IS IMPORTANT THEY SHOULD BE DETERMINED BY A QUALIFIED ARBORIST.
 - 8) SERVICE PIT LOCATIONS HAVE DETERMINED BY SURVEY. LOCATIONS OF OTHER SERVICES HAVE BEEN DETERMINED ONLY BY DISGASE PIT LTD. USING HAND WAND
UNDERGROUND DETECTION AND GROUND PENETRATING RADAR (GPR) DUE TO SITE SOIL DENSITIES AND CONDITIONS SOME SERVICES WERE UNTRACEABLE AT POINTS. NON-SIGNAL, PRODUCING SERVICES MAY EXIST BUT ARE NOT SHOWN. PRIOR TO ANY CONSTRUCTION OR DEMOLITION, THOROUGH SEARCH OF ALL AUTHORITIES SHOULD BE MADE TO DETERMINE THE EXTENT AND NATURE OF SERVICES POT HAZARD AND DANGERS SHOULD BE HAD BEEN EXAMINING SERVICES
 - 9) [509A] DENOTES SERVICE 500M BELOW SURFACE.
DEPTH QUALITY CLASSIFICATION 'A'.
 - 10) FOR DEPTH QUALITY CLASSIFICATION REFERS TO DISGASE. REPORT.

SYMBOL LEGEND

[400] DENOTE DEPTH OF SERVICE BELOW GROUND LEVEL

- | | |
|---|-----------------------|
|  | STREET SIGN |
|  | TRAFFIC SIGNAL POLE |
|  | POWER/LIGHT POLE |
|  | SEWER INSPECTION HOLE |
|  | TELSTRA |
|  | GAS |
|  | TAP |
|  | WATER METER |
|  | DOWN PIPE |
|  | SEWER MAN HOLE |
|  | SEWER VENT |
|  | STOP VALVE |
|  | HYDRANT |
|  | STORMWATER PIT |
|  | SMALL TREE |

No.	DATE	NOTATION/AMENDMENT	No.	DATE	NOTATION/AMENDMENT	CONTOUR INTERVAL: DATUM: A.H.D. ORIGIN OF DATUM: PM 29751 RL8.086 SCIMS 100 YEAR FLOOD RL: N/A RECOMMENDED MINIMUM FLOOR RL: N/A SOURCE OF FLOOD INFO: N/A		LEGEND OF COMMONLY USED SYMBOLS SEWER ELECTRICITY O/H ELECTRICITY U/G TELECOM GAS STORMWATER BENCH MARK SURVEY CONTROL MARK		REDUCTION RATIO 1 : 200 (A1) LAND TITLE INFORMATION LOTS: A TO E & LOT 1 PLAN NOS : D.P 36472 & D.P 36486 OTHER: AREA: 5796m²		DATE OF SURVEY: 12.04.24 SURVEY CONSULTANT: Norton Survey Partners SURVEYORS & LAND TITLE CONSULTANTS PH +61 2 9555 2744 office@nspartners.com.au SUITE 1 /505 BALMAIN ROAD LILYFIELD N.S.W. 2040 REGISTERED SURVEYOR JACK HUGHES REF: 54037-1 DWG		 Family & Community Services Land & Housing Corporation		LOCATION MASCOT			
						FILE		FILE SIZE (MB)		CHECKED BY				DRAWING TITLE DETAIL & LEVEL SURVEY		STREET ADDRESS 776-794 BOTANY ROAD, 33-37 HENRY KENDALL CRESCENT		TYPE S	
																JOB NUMBER 54037		SHT. 4 OF 10	



No.	DATE	NOTATION/AMENDMENT	No.	DATE	NOTATION/AMENDMENT
					CONTOUR INTERVAL: DATUM: A.H.D. ORIGIN OF DATUM: PM 29751 RL8.086 SCIMS 100 YEAR FLOOD RL: N/A RECOMMENDED MINIMUM FLOOR RL: N/A SOURCE OF FLOOD INFO: N/A
				FILE	FILE SIZE (MB)
				CHECKED BY	

LEGEND OF COMMONLY USED SYMBOLS

SEWER
ELECTRICITY O/H
ELECTRICITY U/G
TELECOM
GAS
STORMWATER
BENCH MARK
SURVEY CONTROL MARK

REDUCTION RATIO 1 : 200 (A1)

LAND TITLE INFORMATION

LOTS: A TO E & LOT 1

PLAN NOS : D.P.36472 & D.P.36486

OTHER:

AREA: 5796m²

DATE OF SURVEY: 12.04.24
SURVEY CONSULTANT:

Norton Survey Partners
SURVEYORS & LAND
TITLE CONSULTANTS
PH +61 2 9555 2744
office@nspartners.com.au
SUITE 1 /505 BALMAIN ROAD
LILYFIELD N.S.W. 2040

REGISTERED SURVEYOR JACK HUGHES REF: 54037-1 DWG.

**Family &
Community Services**
Land & Housing Corporation

DRAWING TITLE

DETAIL & LEVEL SURVEY

LOCATION

MASCOT

STREET ADDRESS

776-794 BOTANY ROAD,
33-37 HENRY KENDALL
CRESCENT

JOB NUMBER

54037

SHT. 5
OF 10

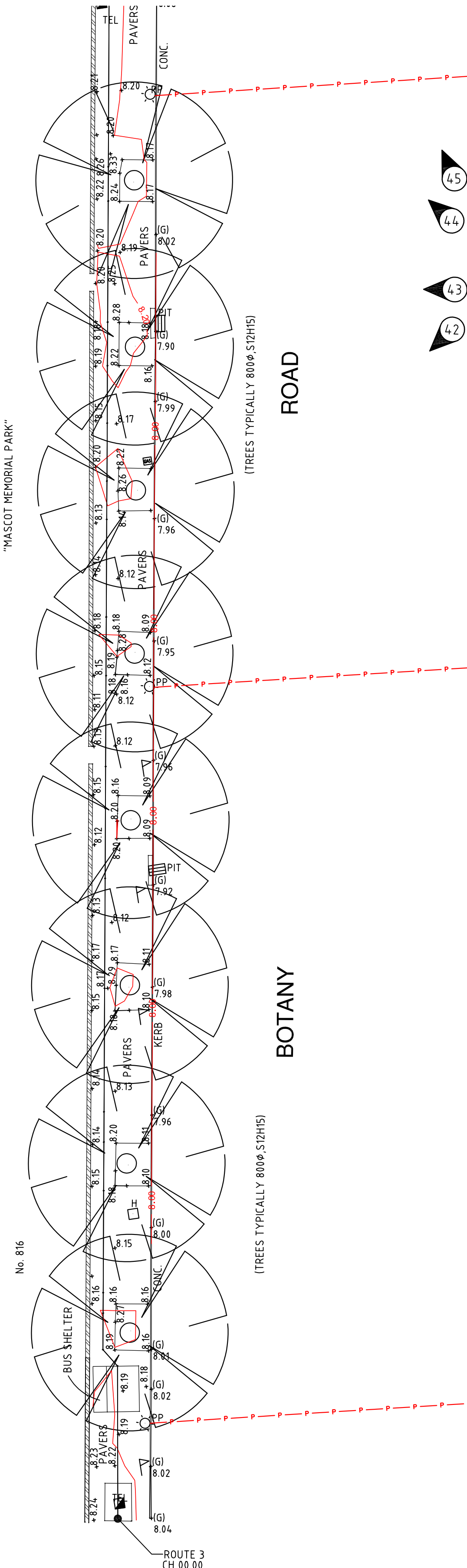


- NOTES:**
- 1) TITLE BEARINGS AND DIMENSIONS ARE SHOWN. BOUNDARIES DETERMINED FROM PLANS AVAILABLE ON PUBLIC RECORD.
 - 2) THIS SURVEY HAS BEEN MADE PURSUANT TO SECTION 9 OF THE SURVEYING & SPATIAL INFORMATION REGULATION 2017.
 - 2) ORIGIN OF LEVELS: PM 29751 RL8.086(A.H.D.) SCIMS
 - 3) SITE COMPRISES LOT A TO E D.P 36472 & LOT 1 D.P 36486
 - 4) SITE AREA 5796m² BY TITLE DIMENSIONS.
 - 5) UNDERGROUND SERVICES HAVE NOT BEEN INVESTIGATED.
 - 6) TREE SIZES ARE INDICATIVE
3000S19H DENOTES TREE SIZE 0.3 TRUNK DIAMETER, 10 SPREAD, 8 HIGH.
(G) - DENOTES TOP OF GUTTER.
- DENOTES EASEMENT TO DRAIN WATER (DEALING No.Q313685)
 - 7) TREE NAMES SHOWN CONSTITUTE OUR OPINION ONLY IF TREE SPECIES IDENTIFICATION IS IMPORTANT THEY SHOULD BE DETERMINED BY A QUALIFIED ARBORIST.
 - 8) SERVICE PIT LOCATIONS HAVE DETERMINED BY SURVEY. LOCATION OF UNDERGROUND SERVICES HAVE BEEN DETERMINED ONSITE BY DIGSAFE PTY LTD. USING HAND WAND. UNDERGROUND DETECTION AND GROUND PENETRATING RADAR (GPR). DUE TO SITE SOIL DENSITIES AND CONDITIONS SOME SERVICES WERE UNTRACEABLE AT POINTS. NON-SIGNAL PRODUCING SERVICES MAY EXIST AND ARE NOT SHOWN. PRIOR TO ANY CONSTRUCTION OR DEMOLITION, THOROUGH SEARCH OF ALL AUTHORITIES SHOULD BE MADE TO DETERMINE THE EXTENT AND NATURE OF SERVICES POT HOLING AND HAND AUGERS SHOULD BE USED WHEN EXAMINING SERVICES.
 - 9) [500]A DENOTES SERVICE 500M BELOW SURFACE, DEPTH QUALITY CLASSIFICATION 'A'.
 - 10) FOR DEPTH QUALITY CLASSIFICATION REFERS TO DIGSAFE REPORT.

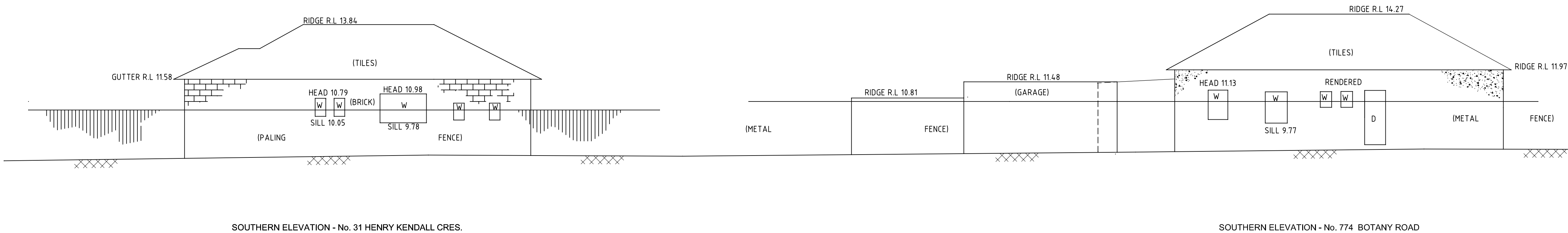
SYMBOL LEGEND

[400] DENOTE DEPTH OF SERVICE BELOW GROUND LEVEL

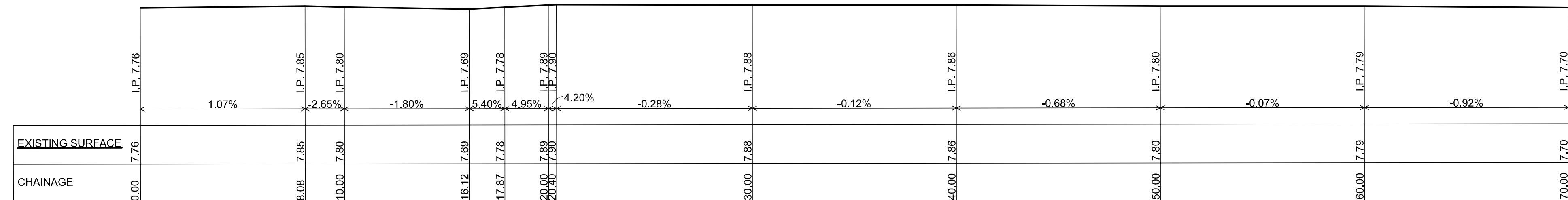
- STREET SIGN
- TRAFFIC SIGNAL POLE
- POWER/LIGHT POLE
- SEWER INSPECTION HOLE
- TELSTRA
- GAS
- TAP
- WATER METER
- DOWN PIPE
- SEWER MAN HOLE
- SEWER VENT
- STOP VALVE
- HYDRANT
- STORMWATER PIT
- SMALL TREE



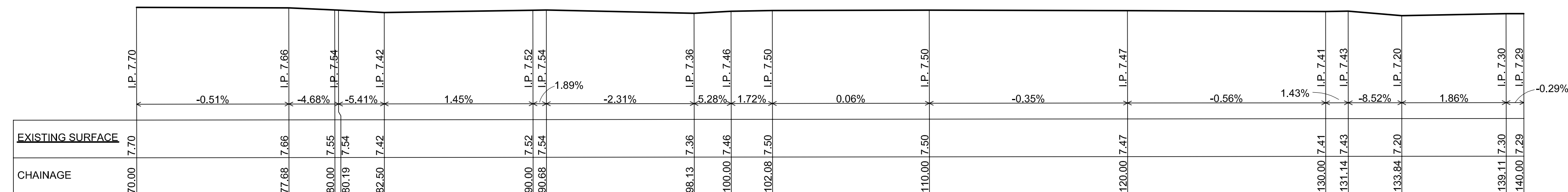
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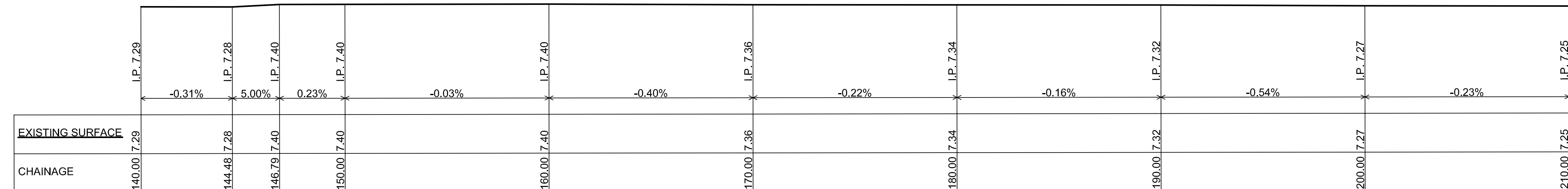
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						DATUM: A.H.D. ORIGIN OF DATUM: PM 29751 RL8.086 SCIMS 100 YEAR FLOOD RL: N/A RECOMMENDED MINIMUM FLOOR RL: N/A SOURCE OF FLOOD INFO: N/A	SEWER ELECTRICITY O/H ELECTRICITY U/G TELECOM GAS STORMWATER BENCH MARK SURVEY CONTROL MARK		LOTS: A TO E & LOT 1 PLAN Nos : D.P 36472 & D.P 36486 OTHER: AREA: 5796m ²	Norton Survey Partners SURVEYORS & LAND TITLE CONSULTANTS PH +61 2 9555 2744 office@nspartners.com.au SUITE 1 /505 BALMAIN ROAD LILYFIELD N.S.W. 2040 	DRAWING TITLE	STREET ADDRESS	TYPE
												776-794 BOTANY ROAD, 33-37 HENRY KENDALL CRESCENT	S
												JOB NUMBER	SHT. 7
												54037	OF 10



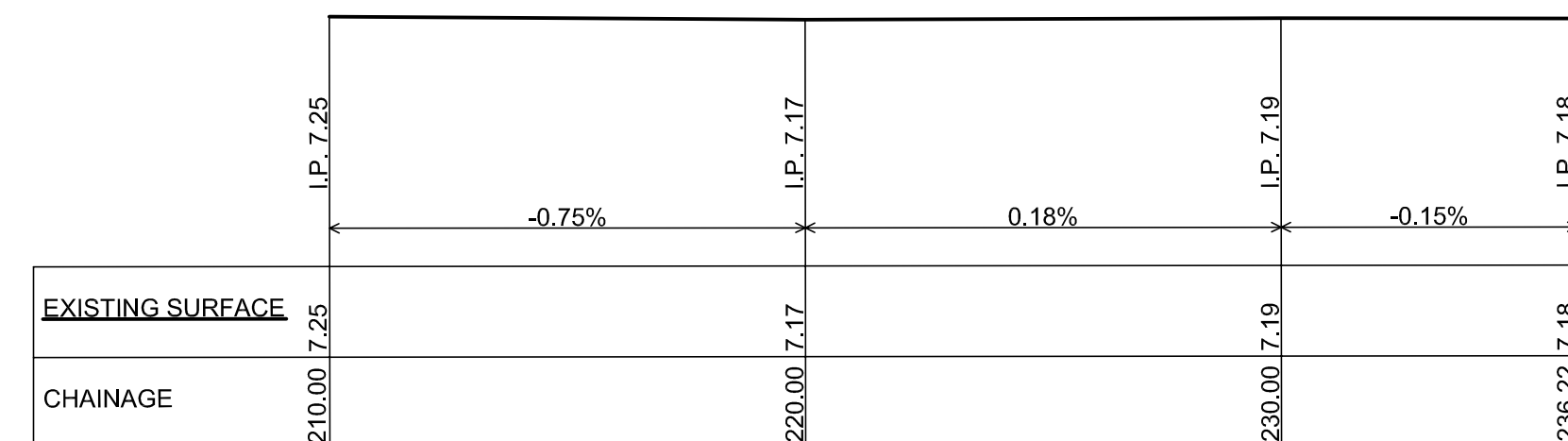
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Scale Horizontal 1:100 Vertical 1:100



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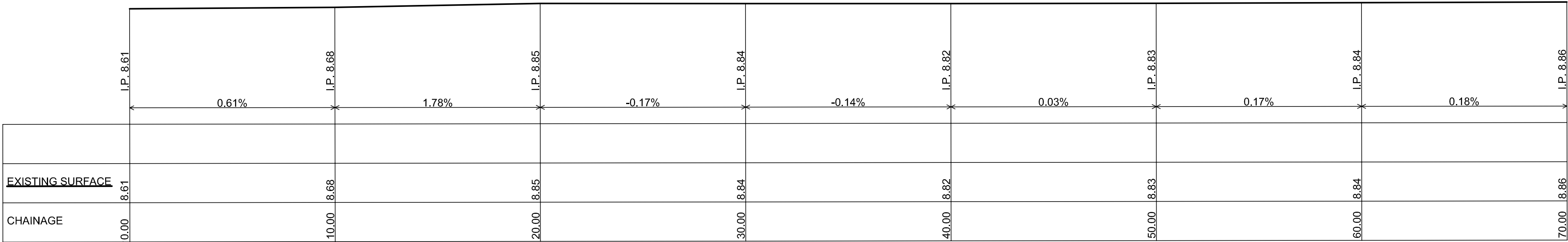
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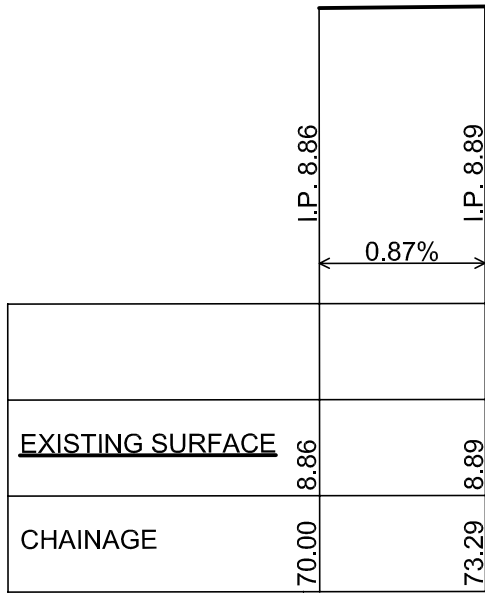
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(COWARD STREET)

No.	DATE	NOTATION/AMENDMENT	No.	DATE	NOTATION/AMENDMENT	CONTOUR INTERVAL: DATUM: A.H.D. ORIGIN OF DATUM: PM 29751 RL8.086 SCIMS 100 YEAR FLOOD RL: N/A RECOMMENDED MINIMUM FLOOR RL: N/A SOURCE OF FLOOD INFO: N/A	LEGEND OF COMMONLY USED SYMBOLS SEWER ELECTRICITY O/H ELECTRICITY U/G TELECOM GAS STORMWATER BENCH MARK SURVEY CONTROL MARK PM SSM	REDUCTION RATIO 1 : 150 (A1) 0 5 10 15 20 LAND TITLE INFORMATION LOTS: A TO E & LOT 1 PLAN NOS : D,P 36472 & D,P 36486 OTHER: AREA: 5796m²	DATE OF SURVEY: 12.04.24 SURVEY CONSULTANT: Norton Survey Partners SURVEYORS & LAND TITLE CONSULTANTS PH +61 2 9555 2744 office@nspartners.com.au SUITE 1 /505 BALMAIN ROAD LILLYFIELD N.S.W. 2040 REGISTERED SURVEYOR JACK HUGHES REF: 54037-1.DWG	 Family & Community Services Land & Housing Corporation	DRAWING TITLE DETAIL & LEVEL SURVEY	LOCATION MASCOT	STREET ADDRESS 776-794 BOTANY ROAD, 33-37 HENRY KENDALL CRESCENT JOB NUMBER 54037	TYPE S SHT. 8 OF 10
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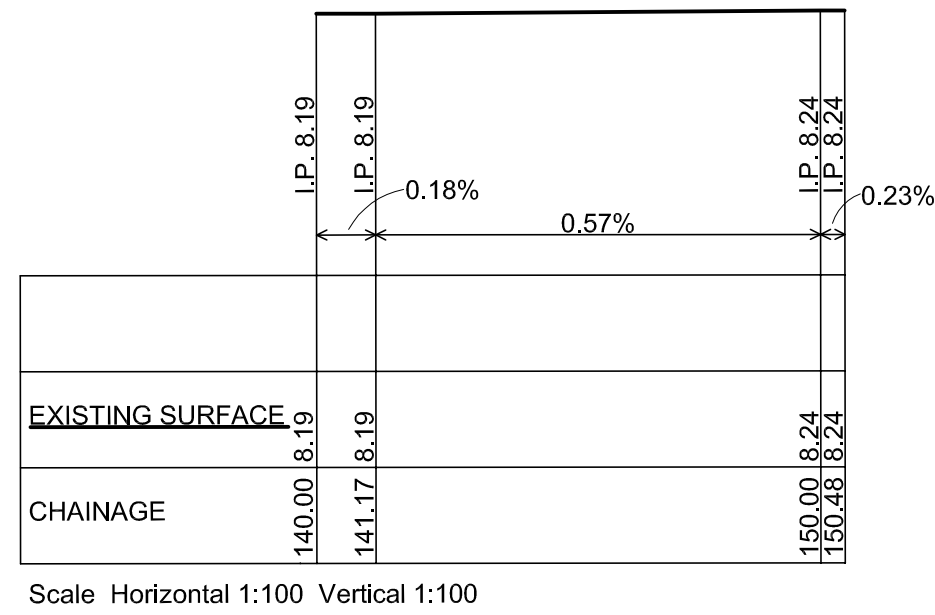
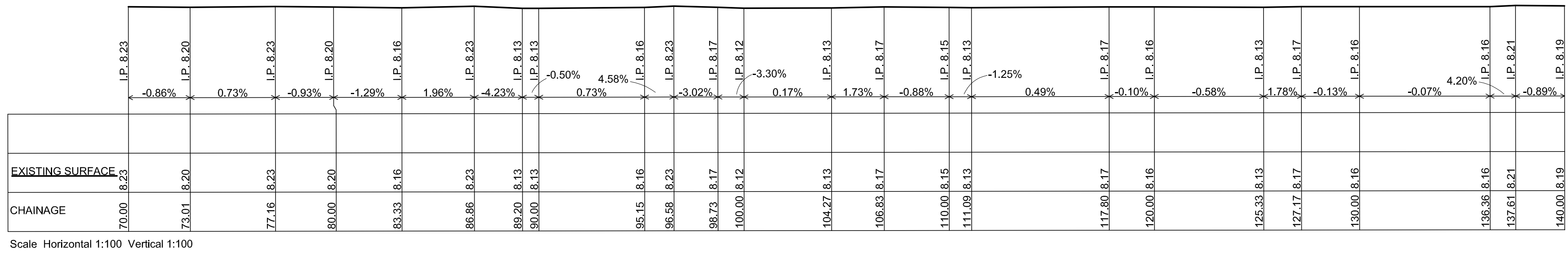
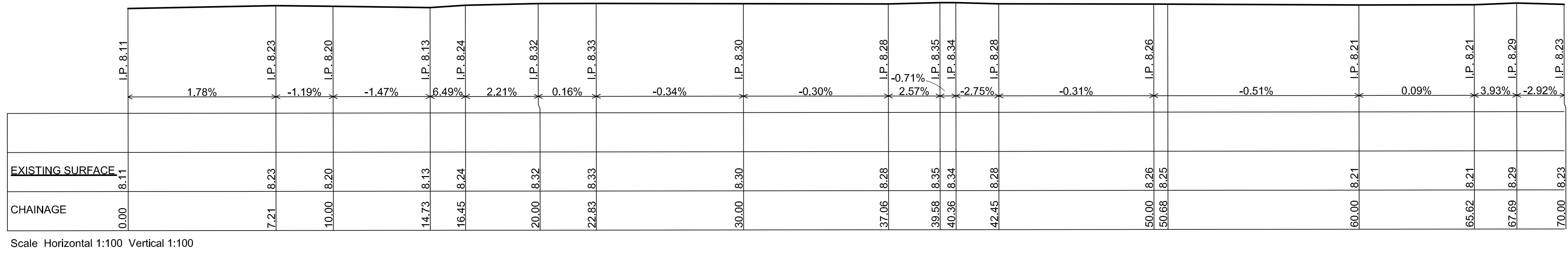
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Scale Horizontal 1:100 Vertical 1:100

ROUTE 2
CHAINAGE 00.00 - 73.29
(BOTANY ROAD NORTH)

No.	DATE	NOTATION/AMENDMENT	No.	DATE	NOTATION/AMENDMENT	CONTOUR INTERVAL: DATUM: A.H.D. ORIGIN OF DATUM: PM 29751 RL8.086 SCIMS 100 YEAR FLOOD RL: N/A RECOMMENDED MINIMUM FLOOR RL: N/A SOURCE OF FLOOD INFO: N/A	LEGEND OF COMMONLY USED SYMBOLS SEWER — S — S — S — S — S — S — S — ELECTRICITY O/H — P — P — P — P — P — P — P — ELECTRICITY U/G — E — E — E — E — E — E — E — TELECOM — T — T — T — T — T — T — T — GAS — G — G — G — G — G — G — G — STORMWATER — SW — SW — SW — SW — SW — SW — SW — BENCH MARK ▲ SURVEY CONTROL MARK ■ PM SSM	REDUCTION RATIO 1 : 150 (A1) 0 5 10 15 20 LAND TITLE INFORMATION LOTS: A TO E & LOT 1 PLAN NOs : D.P 36472 & D.P 36486 OTHER: AREA: 5796m²	DATE OF SURVEY: 12.04.24 SURVEY CONSULTANT: Norton Survey Partners SURVEYORS & LAND TITLE CONSULTANTS PH +61 2 9555 2744 office@nspartners.com.au SUITE 1 /505 BALMAIN ROAD LILYFIELD N.S.W. 2040 REGISTERED SURVEYOR JACK HUGHES REF: 54037-1.DWG	NSW GOVERNMENT Family & Community Services Land & Housing Corporation DRAWING TITLE DETAIL & LEVEL SURVEY	LOCATION MASCOT STREET ADDRESS 776-794 BOTANY ROAD, 33-37 HENRY KENDALL CRESCENT JOB NUMBER 54037	TYPE S SHT. 8 OF 10
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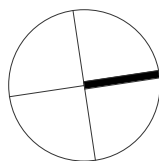
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CHAINAGE 00.00 - 150.48
(BOTANY ROAD SOUTH)

No.	DATE	NOTATION/AMENDMENT	No.	DATE	NOTATION/AMENDMENT	CONTOUR INTERVAL: DATUM: A.H.D. ORIGIN OF DATUM: PM 29751 RL8.086 SCIMS 100 YEAR FLOOD RL: N/A RECOMMENDED MINIMUM FLOOR RL: N/A SOURCE OF FLOOD INFO: N/A	LEGEND OF COMMONLY USED SYMBOLS SEWER — S — S — S — S — S — S — S — ELECTRICITY O/H — P — P — P — P — P — P — P — ELECTRICITY U/G — E — E — E — E — E — E — E — TELECOM — T — T — T — T — T — T — T — GAS — G — G — G — G — G — G — G — STORMWATER — SW — SW — SW — SW — SW — SW — SW — BENCH MARK  SURVEY CONTROL MARK  PM SSM	REDUCTION RATIO 1 : 150(A1)  LAND TITLE INFORMATION LOTS: A TO E & LOT 1 PLAN NOS : D.P 36472 & D.P 36486 OTHER: AREA: 5796m²	DATE OF SURVEY: 12.04.24 SURVEY CONSULTANT: Norton Survey Partners SURVEYORS & LAND TITLE CONSULTANTS PH +61 2 9555 2744 office@nspartners.com.au SUITE 1 /505 BALMAIN ROAD LILYFIELD N.S.W. 2040 REGISTERED SURVEYOR: JACK HUGHES REF: 54037-1-DWG	 Family & Community Services Land & Housing Corporation DRAWING TITLE DETAIL & LEVEL SURVEY	LOCATION MASCOT STREET ADDRESS 776-794 BOTANY ROAD, 33-37 HENRY KENDALL CRESCENT JOB NUMBER 54037	TYPE S SHT. 10 OF 10
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APPENDIX D – Proposed Development Plans

In accepting and utilising this document the recipient agrees that SJB Architecture (NSW) Pty. Ltd. ACN 081 094 724 T/A SJB Architects, retain all common law, statutory law and other rights including copyright and intellectual property rights. The recipient agrees not to use this document for any purpose other than its intended use, to waive all claims against SJB Architects resulting from unauthorised changes, or to reuse the document on other projects without prior written consent from SJB Architects. Under no circumstances shall transfer of this document be deemed a sale. SJB Architects makes no warranties of fitness for any purpose. The Builder/Contractor shall verify job dimensions prior to any work commencing. Use figured dimensions only. Do not scale drawings.

PRELIMINARY



0 2 4 10m
1:200 @A1

Nominated Architects: Adam Haddow-7188 | John Pradel-7004

Rev	Date	Revision	By	Chk.
1	08.08.2024	Issued for Information	WG	WG
2	09.08.2024	Issued for Client Review	WG	WG
3	15.08.2024	For Client Review and Coordination	WG	WG
4	22.08.2024	For Client Review/Consultant Coordination	WG	WG
5	27.08.2024	Issued for Review and Coordination	WG	WG
6	03.09.2024	Issued for Information	WG	WG
7	10.09.2024	Issued for Information	WG	WG
8	16.09.2024	Issued for Information	BD	WG
9	17.09.2024	Issued for Review	JL	WG

NOTE: MINOR CHANGES TO FORM AND CONFIGURATION MAY BE REQUIRED WHEN DRAWINGS ARE SUBSEQUENTLY PREPARED FOR CONSTRUCTION PURPOSES AFTER THE GRANT OF DEVELOPMENT CONSENT.

Client

HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY KENDALL CRESCENT, MASCOT

Drawing Name
FLOOR PLAN - GROUND

Date
17.09.2024

Scale
1 : 200

Sheet Size
A1

Drawn
Author

Chk.
Checker

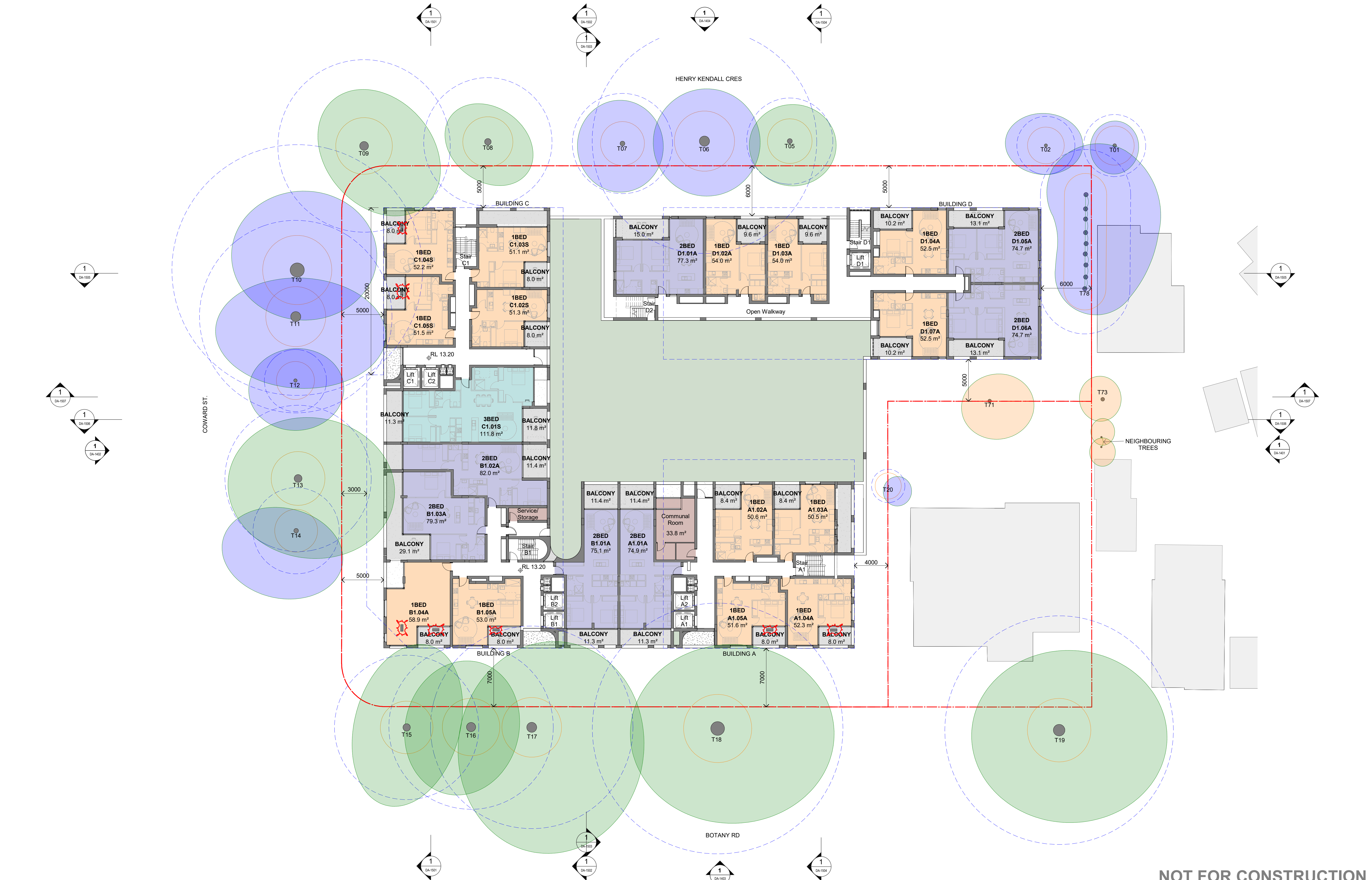
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Drawing No.
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Revision
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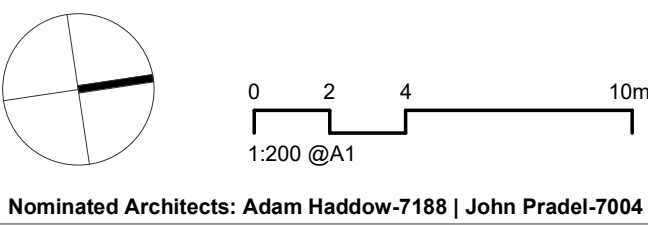
SJB Architects
Level 2, 490 Crown Street
Sunny Hills NSW 2010
T 61 2 9380 9911
www.sjb.com.au





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PRELIMINARY



Rev	Date	Revision	By	Chk.
1	08.08.2024	Issued for Information	WG	WG
2	09.08.2024	Issued for Client Review	WG	WG
3	15.08.2024	For Client Review and Coordination	WG	WG
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6	29.08.2024	Issued for Review	WG	WG
7	03.09.2024	Issued for Information	WG	WG
8	10.09.2024	Issued for Information	WG	WG
9	16.09.2024	Issued for Information	BD	WG
10	17.09.2024	Issued for Review	JL	WG

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HOMES NSW

Project
792-794 BOTANY ROAD AND 33-37 HENRY KENDALL CRESCENT, MASCOT
Drawing Name
FLOOR PLAN - LEVEL 1

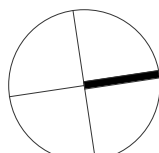
Date
17.09.2024
Scale
1 : 200
Sheet Size
A1
Drawn
Author
Chk.
Checker
Job No.
6956
Revision
/ 10

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0 2 4 10m
1:200 @A1

Nominated Architects: Adam Haddow-7188 | John Pradel-7004

Rev	Date	Revision	By	Chk.
1	08.08.2024	Issued for Information	WG	WG
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Client

HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY KENDALL CRESCENT, MASCOT

Drawing Name

FLOOR PLAN - LEVEL 2

Date Scale Sheet Size

17.09.2024 1 : 200 A1

Drawn Chk. Job No.

Author Checker 6956

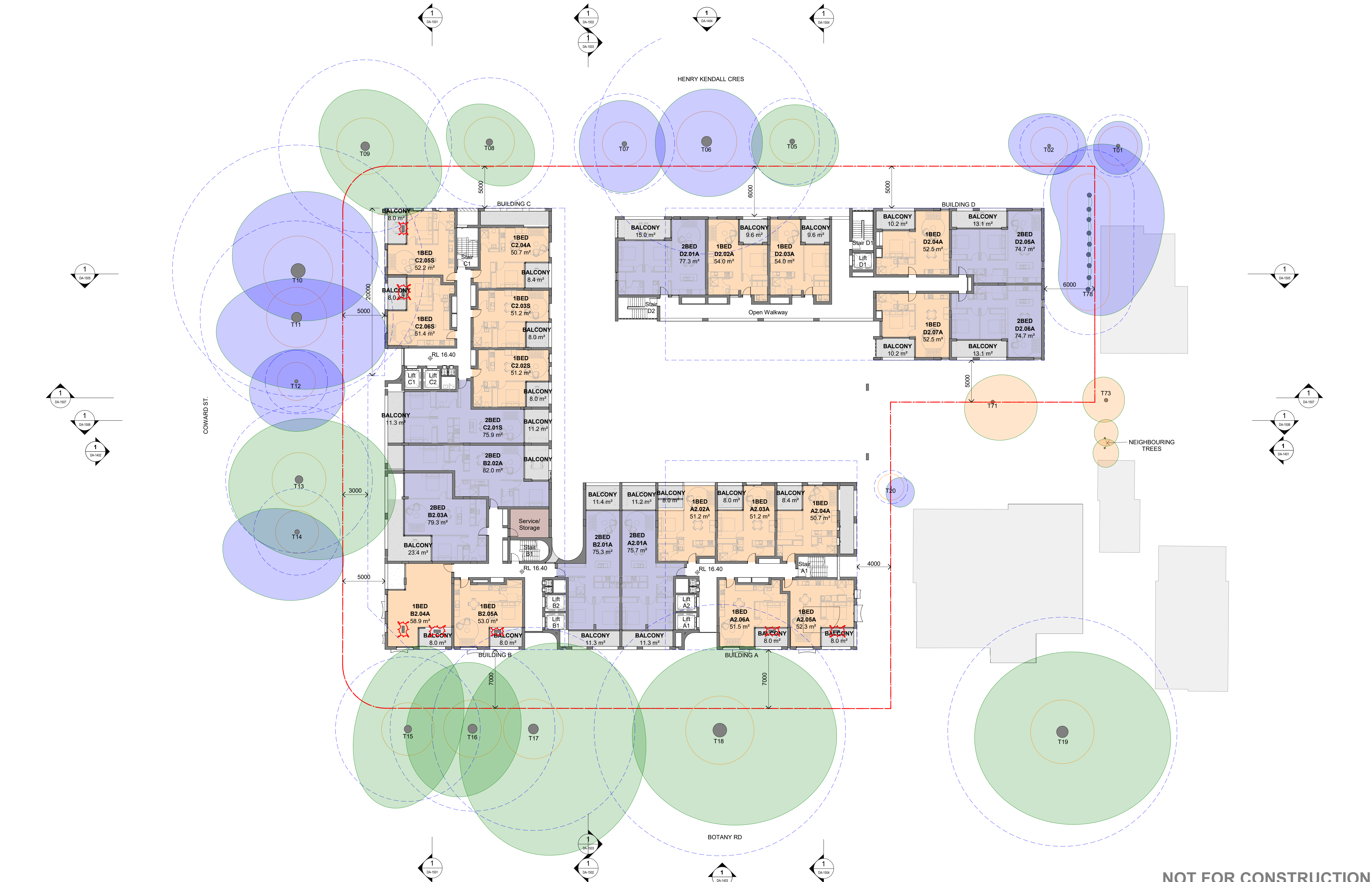
Drawing No. Revision

DA-1003 / 10

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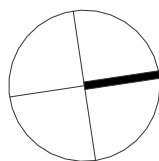
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PRELIMINARY



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1:200 @A1

Nominated Architects: Adam Haddow-7188 | John Pradel-7004

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Client

HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY KENDALL CRESCENT, MASCOT

Drawing Name

FLOOR PLAN - LEVEL 4

Date 17.09.2024 Scale 1 : 200 Sheet Size A1

Drawn Chk. Job No.

Author Checker 6956

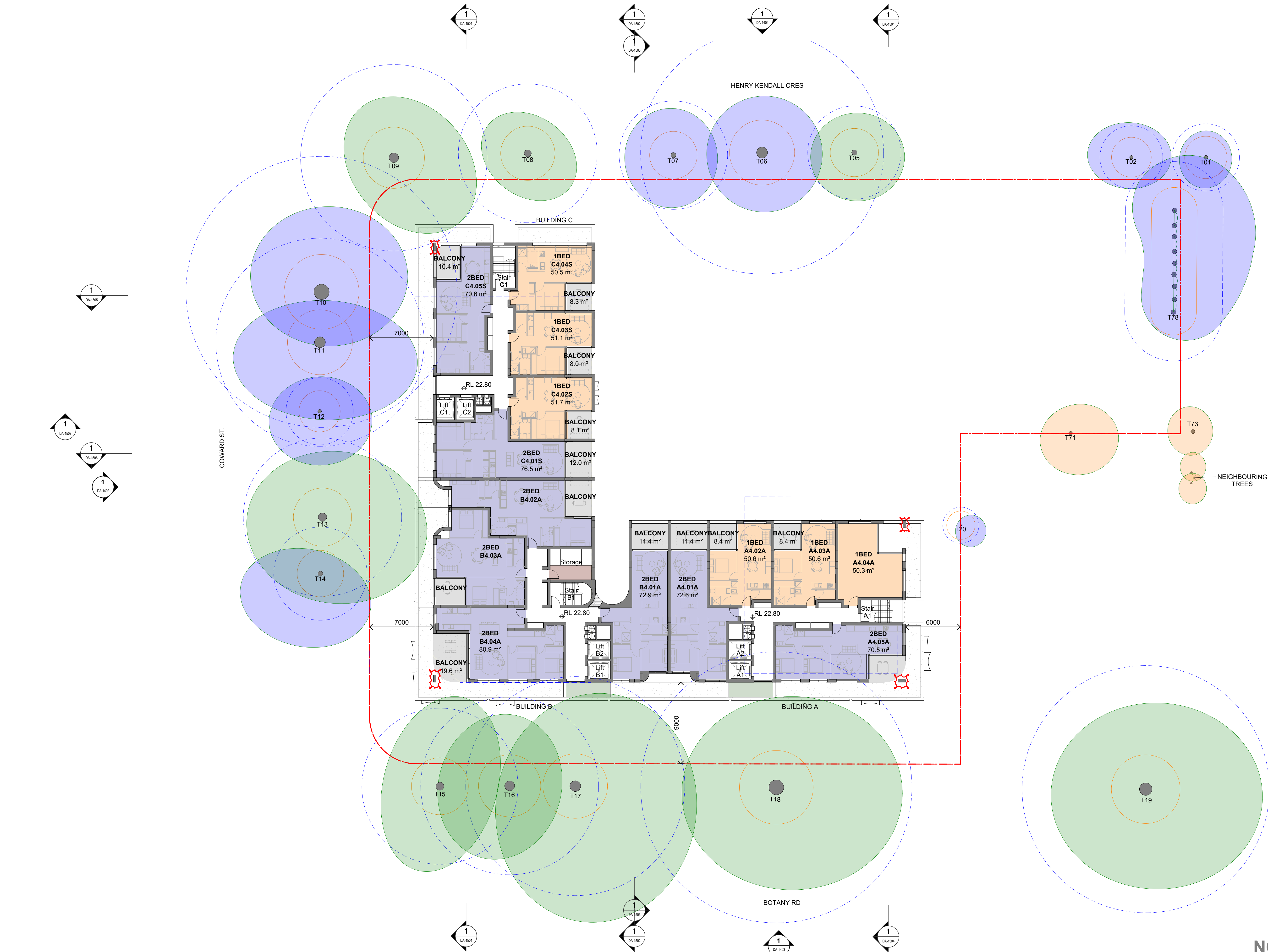
Drawing No. Revision

DA-1005 / 10

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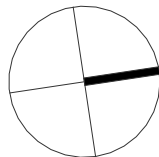
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HOMES NSW

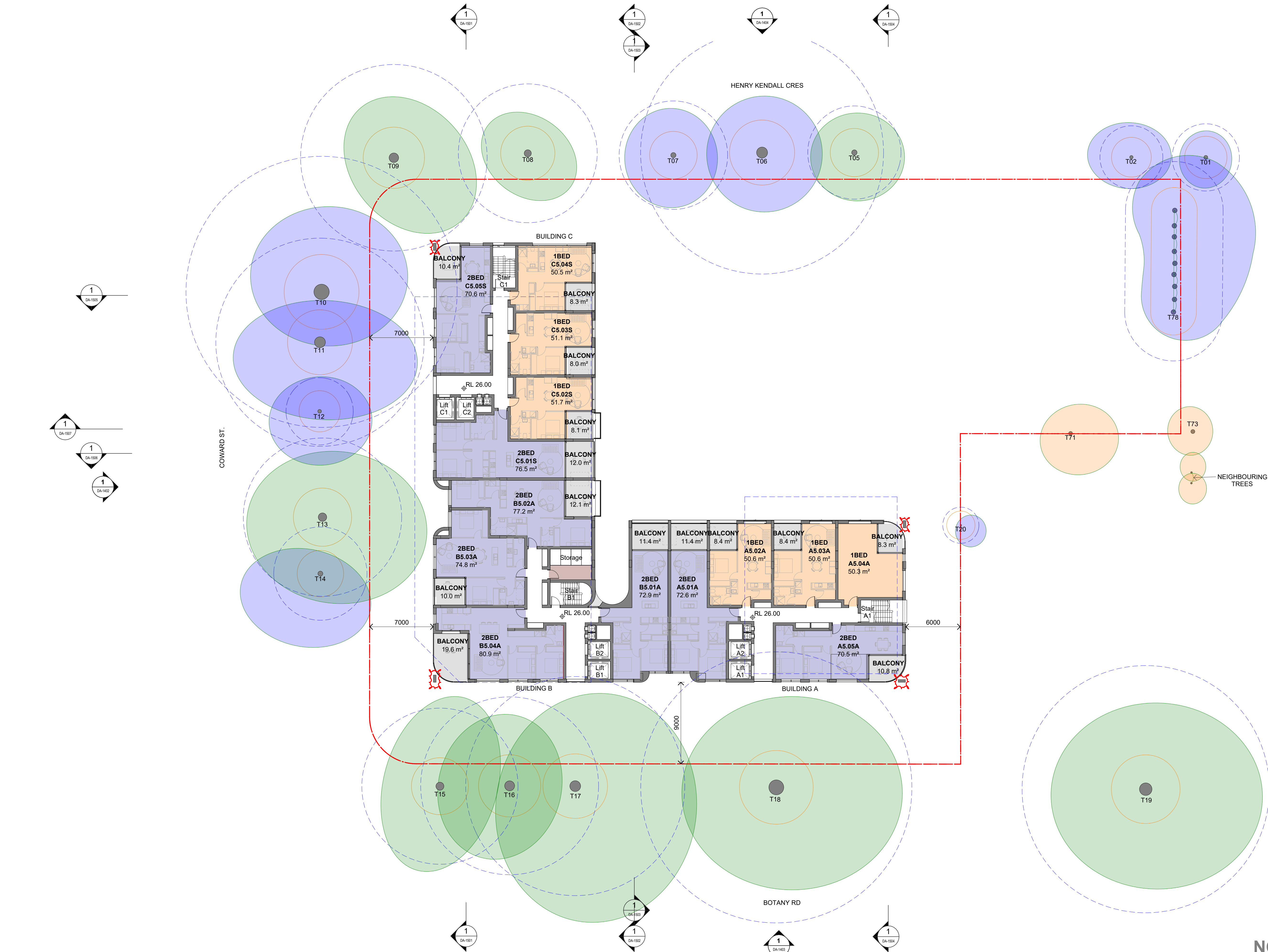
Project

792-794 BOTANY ROAD AND 33-37 HENRY KENDALL CRESCENT, MASCOT

Drawing Name
FLOOR PLAN - LEVEL 5

Date	Scale	Sheet Size
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Drawn	Chk.	Job No.
Author	Checker	6956
Drawing No.	Revision	
DA-1006	/ 10	

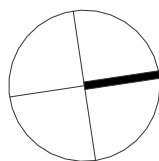
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Nominated Architects: Adam Haddow-7188 | John Pradel-7004

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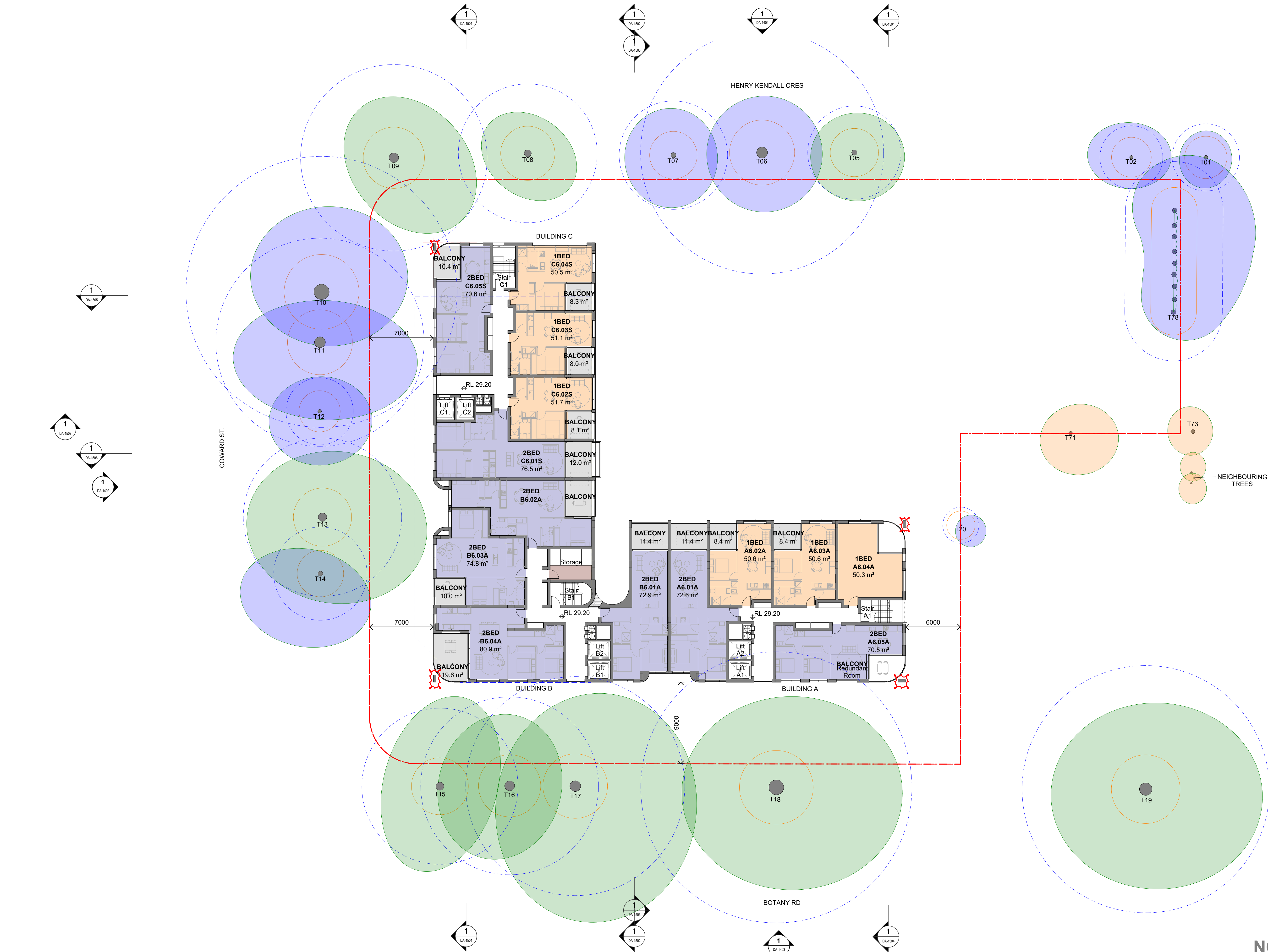
Project

792-794 BOTANY ROAD AND 33-37 HENRY KENDALL CRESCENT, MASCOT

Drawing Name
FLOOR PLAN - LEVEL 6

Date	Scale	Sheet Size
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Drawing No.	Revision	
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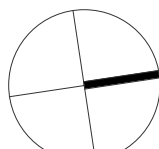
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HOMES NSW

Project
792-794 BOTANY ROAD AND 33-37 HENRY KENDALL CRESCENT, MASCOT

Drawing Name
FLOOR PLAN - LEVEL 7

Date	Scale	Sheet Size
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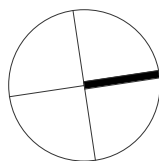
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Client

HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY KENDALL CRESCENT, MASCOT

Drawing Name

FLOOR PLAN - ROOF

Date 17.09.2024 Scale 1 : 200 Sheet Size A1

Drawn Chk. Job No. 6956

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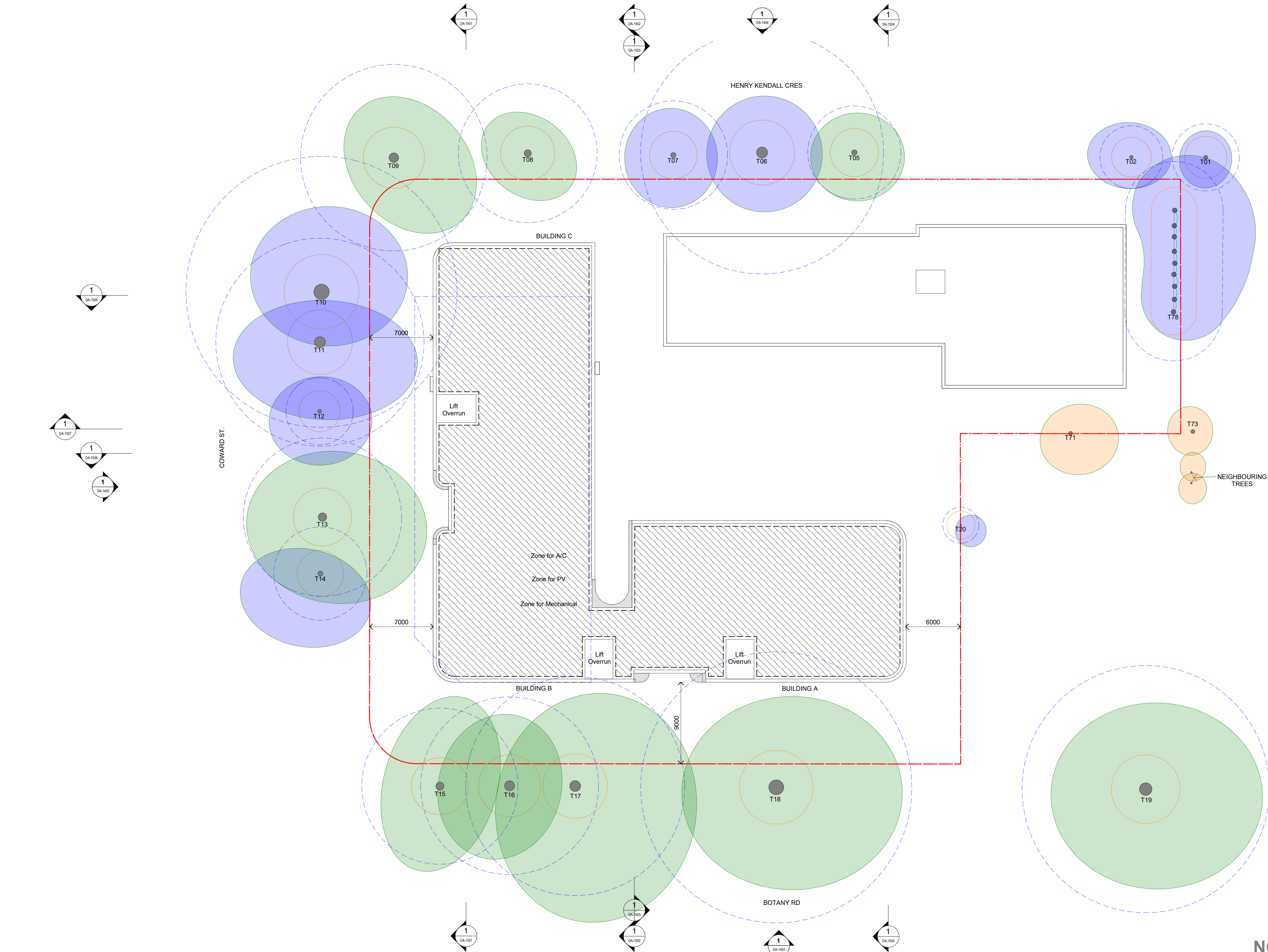
Drawing No. Revision

DA-1009 / 9

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▼ ROOF	35600
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▼ LEVEL 6	29200
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RL 36.23

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PRELIMINARY

Nominated Architects: Adam Haddow-7188 | John Pradel-7004

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Client

HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY
KENDALL CRESCENT, MASCOT

Drawing Name

ELEVATION - NORTH

Date

17.09.2024

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Sheet Size

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Drawn

Chk.

Job No.

Author

Checker

6956

Drawing No.

DA-1401

Revision

/ 5

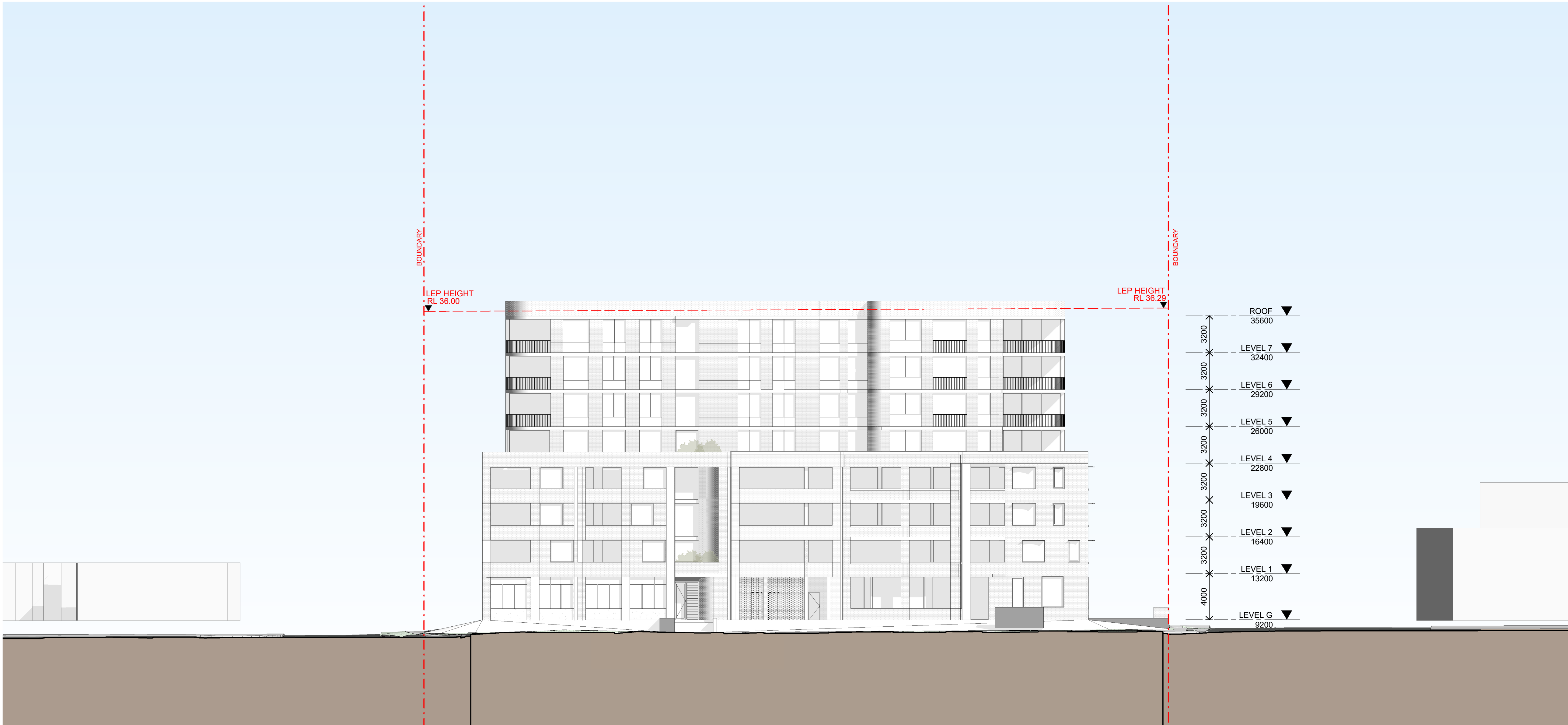
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Client

HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY
KENDALL CRESCENT, MASCOT

Drawing Name

ELEVATION - SOUTH

Date

17.09.2024

1 : 200

Sheet Size

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Drawn

Chk.

Job No.

Author

Checker

6956

Drawing No.

DA-1402

Revision

/ 5

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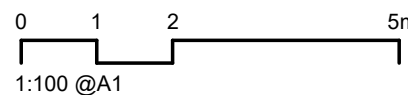




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PRELIMINARY

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HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY KENDALL CRESCENT, MASCOT

Drawing No.

ELEVATION - EAST

Date

17.09.2024

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Sheet Size

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Drawn

Chk.

Job No.

Author

Checker

6956

Drawing No.

DA-1403

Revision

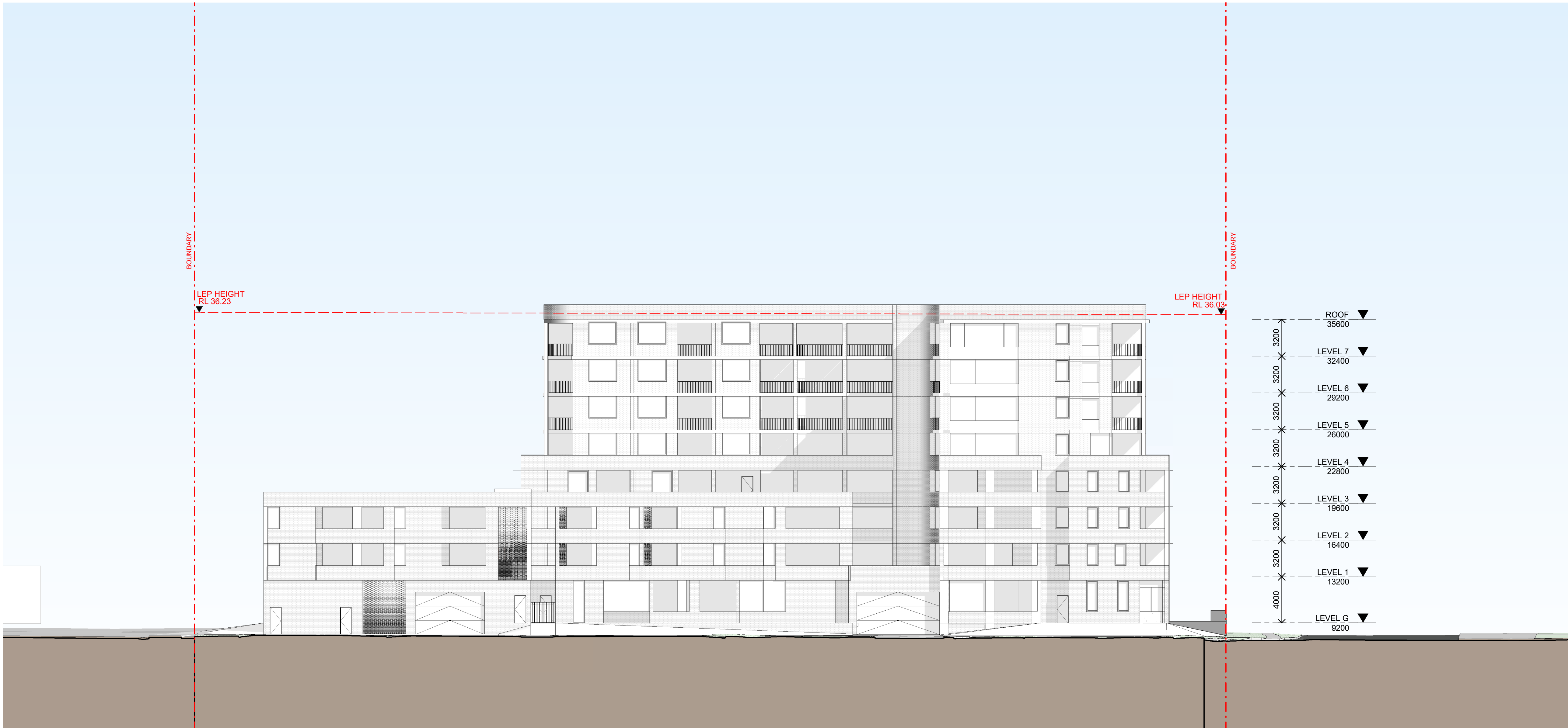
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HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY
KENDALL CRESCENT, MASCOT

Drawing Name

ELEVATION - WEST

Date

17.09.2024

Scale

1 : 200

Sheet Size

A1

Drawn

Chk.

Job No.

Author

Checker

6956

Drawing No.

DA-1404

Revision

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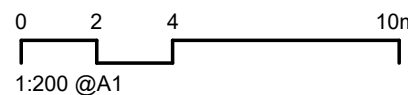
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7	10.09.2024	Issued for Information	WG	WG
8	17.09.2024	Issued for Review	JL	WG

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Client

HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY
KENDALL CRESCENT, MASCOT

Drawing Name

BUILDING SECTION A

Date

17.09.2024

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Sheet Size

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Drawn

Chk.

Job No.

Author

Checker

6956

Drawing No.

DA-1501

Revision

/ 8

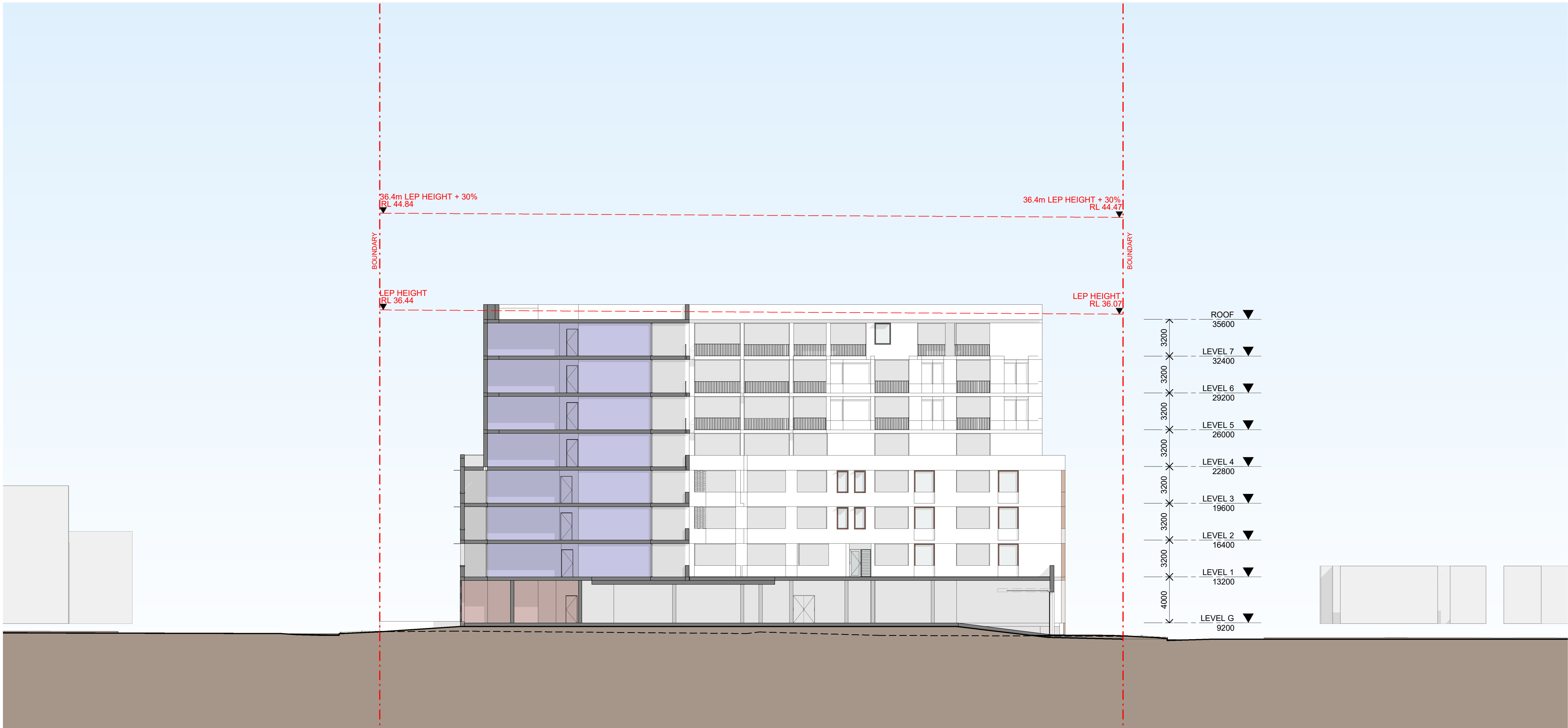
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PRELIMINARY

Nominated Architects: Adam Haddow-7188 | John Pradel-7004

Rev	Date	Revision	By	Chk.
1	25.06.2024	CONCEPT ISSUED FOR CLIENT REVIEW	MA	WG
2	16.07.2024	CONCEPT ISSUE	WG	WG
3	15.08.2024	For Client Review and Coordination	WG	WG
4	22.08.2024	For Client Review/Consultant Coordination	WG	WG
5	27.08.2024	Issued for Review and Coordination	WG	WG
6	10.09.2024	Issued for Information	WG	WG
7	17.09.2024	Issued for Review	JL	WG

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Client

HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY
KENDALL CRESCENT, MASCOT

Drawing Name

BUILDING SECTION B

Date

17.09.2024

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Sheet Size

A1

Drawn

Chk.

Job No.

Author

Checker

6956

Drawing No.

DA-1502

Revision

/ 7

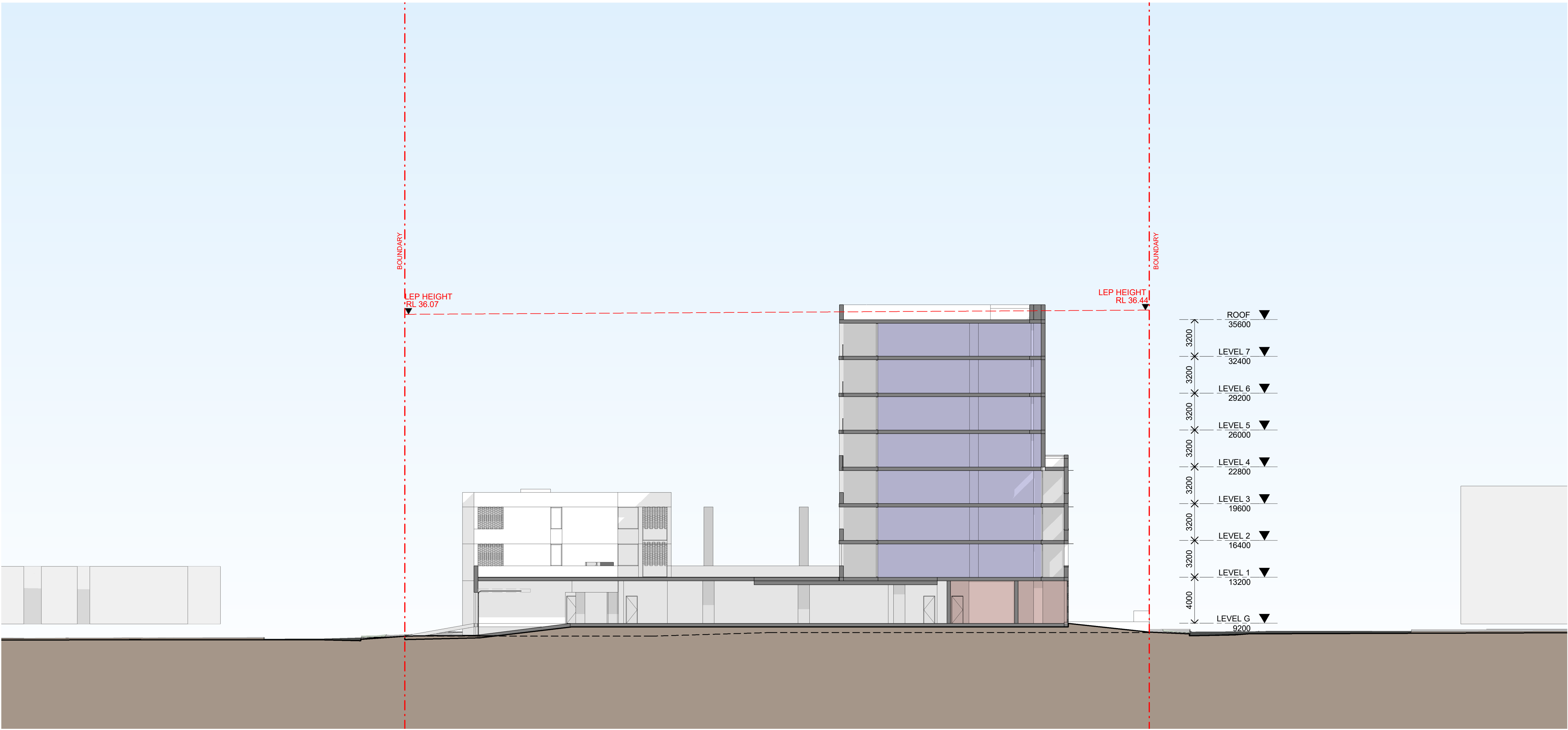
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PRELIMINARY

Nominated Architects: Adam Haddow-7188 | John Pradel-7004

Rev	Date	Revision	By	Chk.
1	13.08.2024	For review	WG	WG
2	15.08.2024	For Client Review and Coordination	WG	WG
3	22.08.2024	For Client Review/Consultant Coordination	WG	WG
4	27.08.2024	Issued for Review and Coordination	WG	WG
5	10.09.2024	Issued for Information	WG	WG
6	17.09.2024	Issued for Review	JL	WG

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Client

HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY
KENDALL CRESCENT, MASCOT

Drawing Name

BUILDING SECTION C

Date

17.09.2024

1 : 200

Sheet Size

A1

Drawn

Chk.

Job No.

Author

Checker

6956

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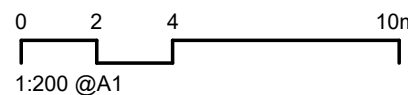




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PRELIMINARY

Nominated Architects: Adam Haddow-7188 | John Pradel-7004



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1	13.08.2024	For review	WG	WG
2	15.08.2024	For Client Review and Coordination	WG	WG
3	22.08.2024	For Client Review/Consultant Coordination	WG	WG
4	27.08.2024	Issued for Review and Coordination	WG	WG
5	10.09.2024	Issued for Information	WG	WG
6	16.09.2024	Issued for Information	BD	WG
7	17.09.2024	Issued for Review	JL	WG

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Client

HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY
KENDALL CRESCENT, MASCOT

Drawing Name

BUILDING SECTION D

Date

17.09.2024

1 : 200

Sheet Size

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Drawn

Chk.

Job No.

Author

Checker

6956

Drawing No.

DA-1504

Revision

/ 7

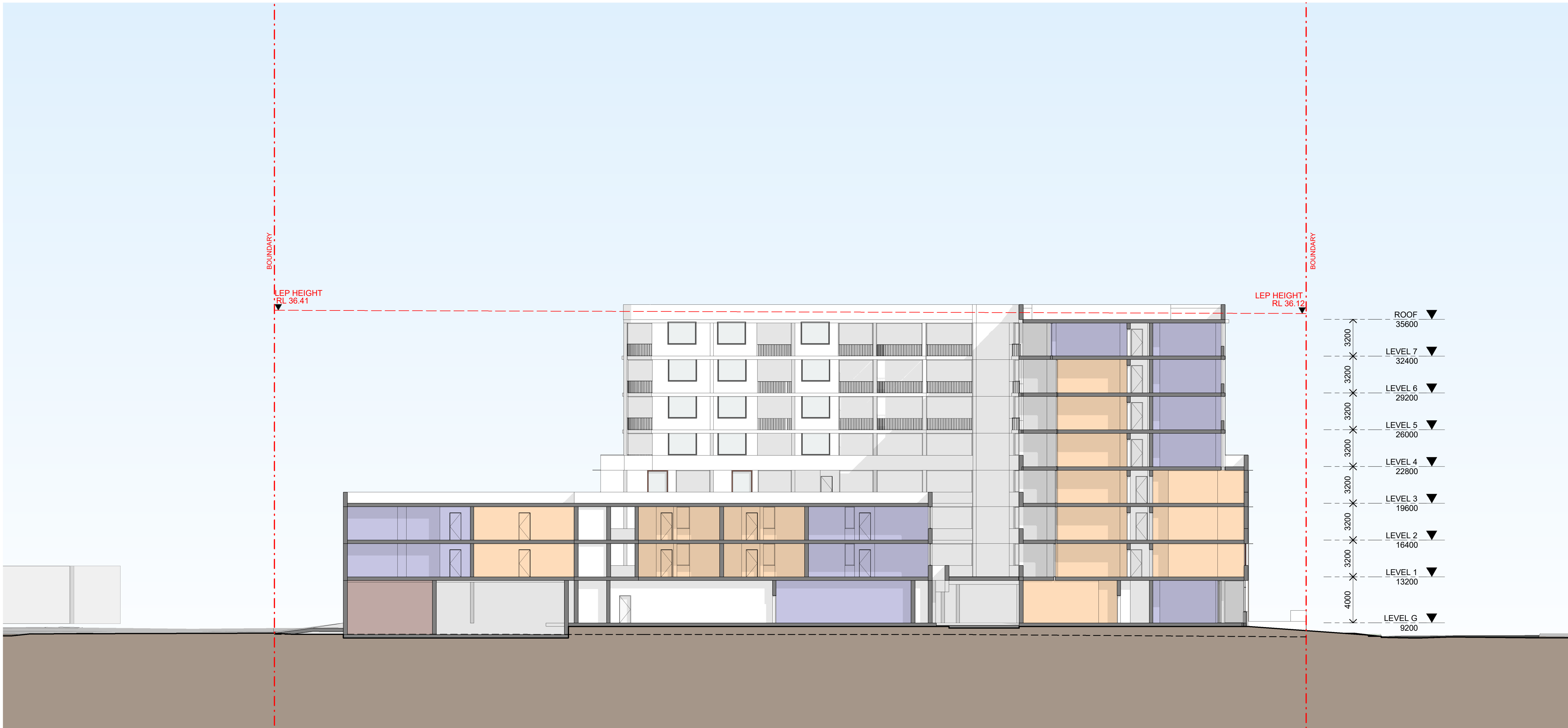
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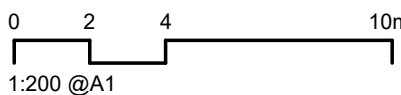




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6	27.08.2024	Issued for Review and Coordination	WG	WG
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HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY
KENDALL CRESCENT, MASCOT

Drawing Name

BUILDING SECTION E

Date

17.09.2024

Scale

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Sheet Size

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Chk.

Job No.

Author

Checker

6956

Drawing No.

DA-1505

Revision

/ 8

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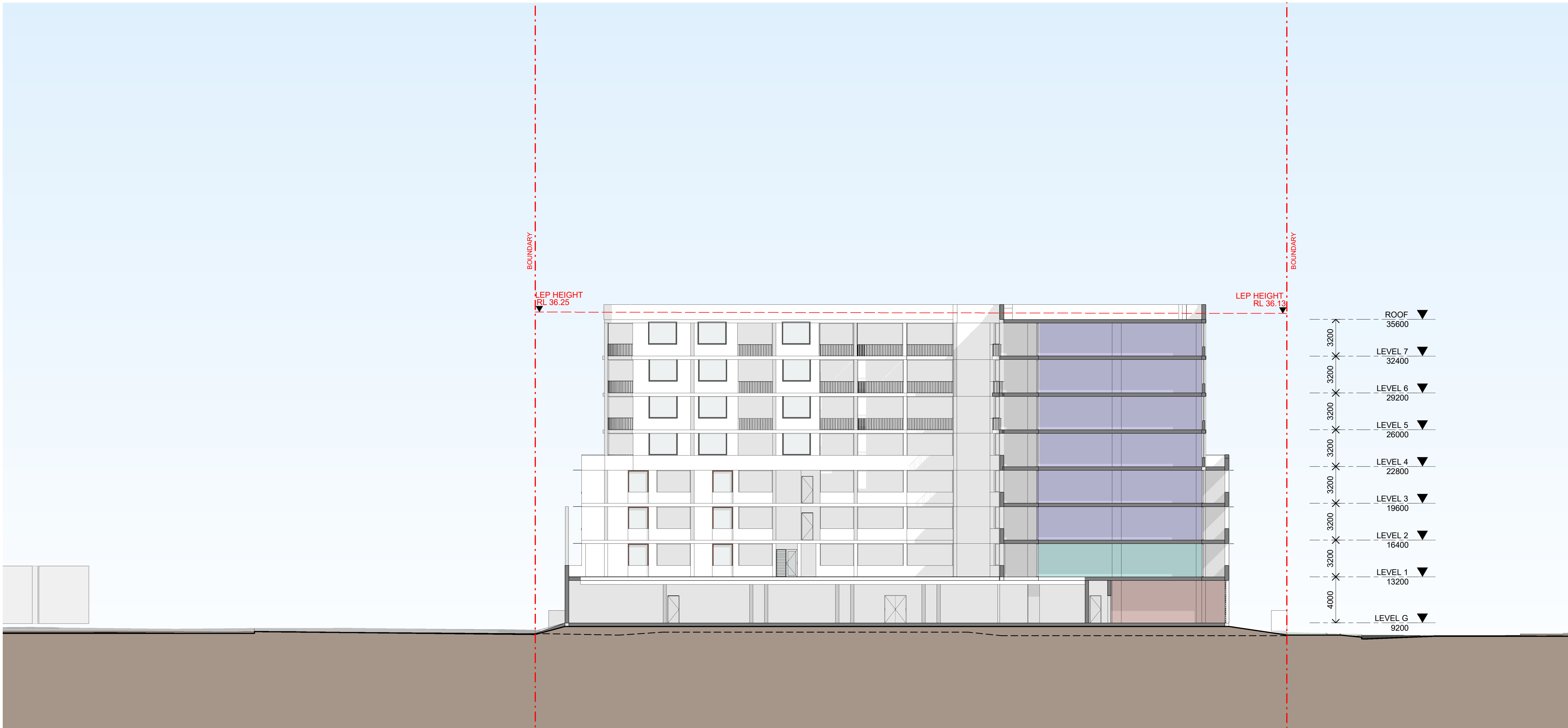
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Client

HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY
KENDALL CRESCENT, MASCOT

Drawing Name

BUILDING SECTION F

Date

17.09.2024

Scale

1 : 200

Sheet Size

A1

Drawn

Chk.

Job No.

Author

Checker

6956

Drawing No.

DA-1506

Revision

/ 7

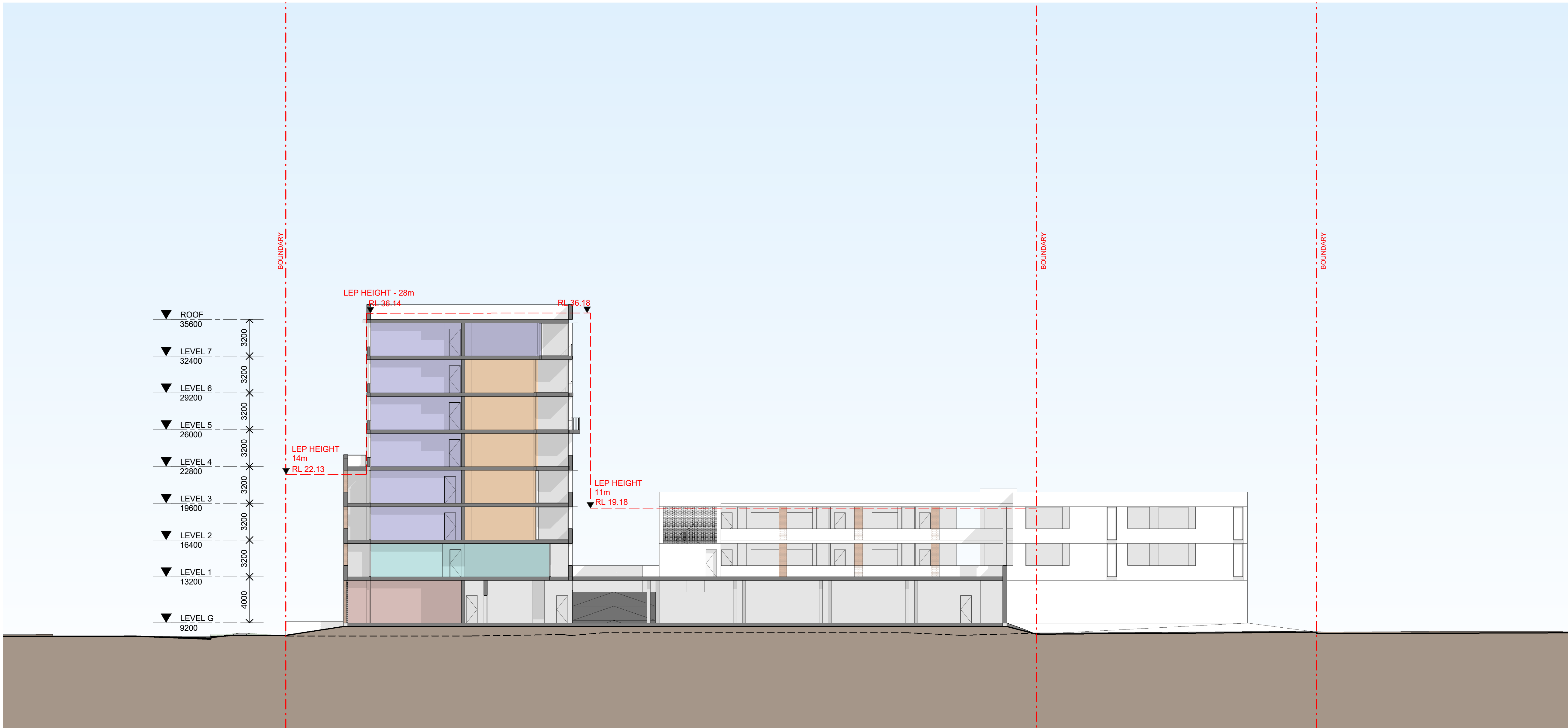
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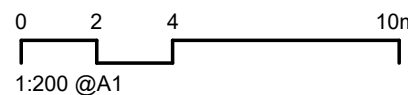




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Client

HOMES NSW

Project

792-794 BOTANY ROAD AND 33-37 HENRY
KENDALL CRESCENT, MASCOT

Drawing Name

BUILDING SECTION G

Date

17.09.2024

Scale

1 : 200

Sheet Size

A1

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Job No.

Author

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Drawing No.

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