



CHEC

Compliance Health &
Environmental Consulting

Remedial Action Plan

Property

Lot 1 in DP875804 & Lot 2 in DP817692

Pleasure Point, NSW

Client

Hodge Developments Pty
Ltd

CH1530-D250045

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The undersigned confirm that this document and all associated attachments relate to the Site under investigation and have been reviewed and checked for errors, omissions and inaccuracies.

Name	Signature	Position	Date
Richard Case		Managing Director	18/02/2025





Executive Summary

Compliance Health & Environmental Consulting Pty Ltd (CHEC) was engaged by Hodge Developments Pty Ltd to prepare a Remediation Action plan (RAP) for the property identified as Lot 1 in DP875804 and Lot 2 in DP817692. The RAP was requested to support the submission of a development application to Liverpool City Council for a subdivision and proposed housing estate.

The layout of the Site and approximate Site boundary are shown on the attached **Figure 1**- Site Location and **Figure 2** -Site Survey. The Site details are summarised in **Table 1** below.

Table 1 – Summary of Site Details

Lot Identification	Lot 1 in DP875804 & Lot 2 in DP817692
Site Address	Pleasure Point Road Pleasure Point, NSW
Site Area	~40ha
Zoning	RE2 – Low Density Residential
Local Government Authority	Liverpool City Council
Current Land Use	Rural residential
Proposed Land Use	Standard Residential

The property will be subdivided and developed as a residential housing estate to accommodate 462 residential lots ranging in size from 400m² to 2037m². The development will include several local roads that will be dedicated to Council. The central north of the property will be set aside for stormwater controls and open space reserve. Refer to the attached **Appendix B** –Design Drawings.

Based on the conclusions of the DSI undertaken by CHEC in May 2024 (CH1530-D240071) the following locations were identified as requiring remediation to make the site suitable for the intended land use:

- AEC-2: Up to 200m³ of soils placed in burial pit and contaminated with bonded asbestos.
- AEC-4: Soils contaminated with petroleum hydrocarbons covering an area of 100m² to a depth of approximately 0.15m
- AEC-5: A distinct portion of the 6000m³ stockpile SP-3 that contains asbestos and other waste, with a surveyed quantity of 355m³.
- AEC-6: In situ soils in the vicinity of BH15 contaminated with bonded asbestos. The area has been delineated to determine that ~10m³ of soil will require remediation.
- AEC-8: In-situ fill soils at TP65 containing bonded asbestos and covering an area of 2950m² to depths up to 1.5m.
- AEC-9: Delineation sampling determined the extent of asbestos contamination covers an area of approximately 850m² to a depth of ~0.2m. As such approximately 170m³ of soil will require remediation.
- AEC-10: The extent of asbestos contamination was delineated to cover an area of approximately 2,000m² to a depth of approximately 0.3m. As such, approximately 600m³ will require remediation in this area.
- AEC-11: Stockpile SP10 contained PAH contaminants exceeding land use criteria and will not be suitable for reuse within residential or open space areas of the development.



Based on an analysis of the available options and considering the volume of soil that requires management from different contaminant sources, a combination of the options is the preferred approach.

Hydrocarbon impacted soils will be remediated with Option 4.

The asbestos contaminated soils in AEC9 exceeded land use suitability criteria for the presence of asbestos fines and therefore, on-site treatment will not be feasible. CHEC has been advised by the client that Option 3 is not a preferred strategy and as such, soils in this area will need to be remediated with Option 5.

Asbestos fines concentrations in AEC 10 generally complied with land use suitability criteria, other than at AEC10-10. As such, soils within the vicinity of AEC10-10 may be separated and will need to be remediated with either Option 5. Once this area has been validated, the remainder of soils within this area may be remediated with option 2.

ACM in soils at AEC-2, 5, 6 and 8, will be remediated with Option 2, with the intended final placement to be in a nominated non-residential area to be determined as part of the planning process. The intention will be to reduce the ACM to an acceptable level, such that it complies with land use criteria and does not require ongoing management. Land use determination will be undertaken prior to placement and remedial works will ensure the placement method does not introduce the potential for fibre generation from any residual ACM. The remedial process for Option 2 is detailed in **Appendix D** - Option 2 Remedial Method.

Soils with elevated PAH will be used for road construction as they comply with commercial/ industrial land use HIL's and should meet the required compaction thresholds of the civil engineering specification.

Validation of land use suitability will be provided by the Remediation Consultant at the practical completion of remedial works to demonstrate the remediation/management objectives have been achieved. The validation certification is likely to require staging to align with civil works due to the size of the project, multiple land uses and requirement for suitable placement areas to become available to support the remedial objectives.

Overall, it is considered that the proposed actions outlined in this RAP conform to the requirements of the Contaminated Sites Guidelines for the NSW Site Auditor Scheme (3rd Edition) (EPA 2017) because they are: technically feasible; environmentally justifiable; and consistent with relevant laws policies and guidelines endorsed by NSW EPA.

Subject to the successful implementation of the measures described in this RAP and with consideration to the Limitations presented in **Section 11**, it is considered that the site can be made suitable for the intended uses and that the risks posed by contamination can be managed in such a way as to be adequately protective of human health and the environment.



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1.0 INTRODUCTION

1.1 BACKGROUND

Compliance Health & Environmental Consulting Pty Ltd (CHEC) was engaged by Hodge Developments Pty Ltd to prepare a Remediation Action plan (RAP) for the property identified as Lot 1 in DP875804 and Lot 2 in DP817692. The RAP was requested to support the submission of a development application to Liverpool City Council for a subdivision and proposed housing estate

This RAP is intended to guide procedures during the redevelopment works to remove or manage the risk posed by the contamination identified at the Site by the Detailed Site Investigation, CHEC 2024 (CH1530-D240071). The DSI determined that the site required remediation to make it suitable for the intended land use and should be read in conjunction with the RAP.

The RAP has been prepared in general accordance with the requirements of NSW EPA endorsed guidelines, including the National Remediation Framework, the NSW EPA *Site Auditor Guidelines 3rd Edition*, 2017 and the NSW EPA *Guidelines for Consultants Reporting on Contaminated Land*, 2020.

1.2 SITE IDENTIFICATION

The layout of the Site and approximate Site boundary are shown on the attached **Figure 1- Site Location**. The Site details are summarised in **Table 1** below.

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Current Land Use	Rural residential
Proposed Land Use	Standard Residential

1.3 PROPOSED DEVELOPMENT

The property will be subdivided and developed as a residential housing estate to accommodate 462 residential lots ranging in size from 400m² to 2037m². The development will include several local roads that will be dedicated to Council. The central north of the property will be set aside for stormwater controls and open space reserve. Refer to the attached **Appendix B –Design Drawings**.

This report has been prepared to address the requirements of the State Environmental Planning Policy (Resilience and Hazards), 2021 to accompany a Concept Development Application (CDA) DA under s4.22 of the EP&A Act that seeks consent for:

1. A Concept approval that stipulates for the future subdivision including the general arrangement of roads, works to and dedication of public open space, riparian corridors, and delivery of stormwater infrastructure for the parcel of land comprising both Lot 1 DP 875804 and Lot 2 DP 8176922, and



2. Stage 1 of the residential development on part of Lot 1 DP 875804 including subdivision of the land in 7 stages, construction of the associated roads and intersections, dedication of part of an environmental corridor, landscaping and vegetation management works together with stormwater infrastructure to be provided on both Lot 1 DP 875804 and Lot 2 DP 8176922 that will benefit the entire subdivision identified in the Concept Development Application.

The remaining part of Lot 1 DP 875804, not included in Stage 1 and the subdivision of Lot 2 DP 8176922, will be the subject of one or more subsequent development application(s).

1.4 OBJECTIVE AND SCOPE

The objective of this RAP is to document appropriate procedures and standards to enable the staged development of the property to be undertaken in a manner that will not present an unacceptable risk to human health or the environment, either during construction or in the long term.

To achieve the stated objectives, the RAP will:

- Review all previously documented site information
- Evaluate investigation data
- Establish any gaps in site information or investigation data
- Review the proposed development concept to establish receptors and pathways
- Discuss development objectives and staging
- Identify any planning or regulatory limitation on the property
- Undertake a technical review of available remedial options and appropriate
- Establish appropriate cleanup criteria and clearly define how the Site will be validated as suitable for the intended use
- Conduct a cost benefit analysis of the preferred remedial strategy to develop a sustainable remediation outcome
- Ensure the evaluation and planning of the preferred remedial strategy is clearly communicated and inclusive of contingency measures.
- Provide general information on environmental safeguards required to complete the remediation works in an environmentally acceptable manner
- Provide general information to assist the generation of work health and safety (WHS) procedures required to complete the remediation works in a manner that would mitigate risk to the health of site workers or users



2.0 SITE CONDITIONS AND SURROUNDING ENVIRONMENT

2.1 GEOLOGY & SOILS

A review of the NSW Planning, Industry & Environmental 'eSPADE' resource indicates that the site resides within the Lucas Heights Soil Landscape. The Lucas Heights Soil Landscape is characterised by gently undulating crests, ridges and plateau surfaces of the Mittagong Formation (alternating bands of shale and fine-grained sandstones). Local relief to 10–50 m; slopes < 10%. Rock outcrop is absent. Extensively to completely cleared dry sclerophyll low open-forest and low woodland.

The Site is located on the Mittagong Formation with consists of interbedded shale, laminite and fine to medium grained quartz sandstone. The Mittagong Formation is located stratigraphically between the lowest unit of the Wianamatta Group shale and Hawkesbury Sandstone. It is often relatively shallow. Minor areas of Hawkesbury Sandstone and Wianamatta Group shale may occur.

The eSPADE resource also indicated that the north eastern ~80m of the Site resides within a "H2" risk classification for Acid Sulphate Soils (ASS). This is defined as a high probability of having ASS at depths of 1–3m below the surface.

The Geotechnical Investigation produced by Green Geotechnics in April 2024 included assessment of soils in this area. The investigation noted that the property is at an elevation of between RL1 and RL40 AHD, however based on the boreholes drilled close to the Georges River (BH12 and BH14) sandstone bedrock and/or colluvial soils are preset at depths of less than 1.0 metre. This is not consistent with the geological criteria necessary for the presence of ASS. The report concluded:

"Based on our onsite observations and the subsurface conditions exposed in the boreholes, it is our opinion that the proposed development will not intercept any ASS and construction will not result in the lowering of any groundwater that may be present in the area. Our assessment is the proposed construction will not require the preparation of an Acid Sulfate Soil Management Plan."

2.2 HYDROGEOLOGY

The eSPADE resource indicated that the Sites resides within the Hawkesbury Hydrogeological Landscape (HGL), which is characterised by plateaux, scarps, benches and hills on sandstone in the areas encompassing Lucas Heights and Woronora Plateau.

This HGL comprises sedimentary rocks from the Triassic Hawkesbury Sandstone and Narrabeen Group as well as minor outbreaks of Tertiary Basalt and Jurassic Volcanics. The Hawkesbury Sandstone is composed of medium to coarse-grained quartz sandstone with minor shale and laminate lenses. The Narrabeen Group contains quartz and quartz-lithic sandstone, shale, claystone and minor conglomerate. These have been intruded by isolated Jurassic volcanic pipes containing basaltic breccia. Unconsolidated colluvial sediments derived from the surrounding Triassic sedimentary rocks have been deposited on the slopes of this HGL.

Water infiltrates vertically through interbedded sandstone and sandstone fractures (primary and secondary porosity) and laterally along bedding planes. The residence time of water moving



through this landscape is likely to be relatively low due to the steep gradient and short flow path. Therefore, salt accumulation within groundwater is likely to be reduced.

Land salinity and water EC are low. Salts are flushed from the porous sandstone matrix which prevents salt accumulation at the surface. Salinity expression at the contact between basalts or Jurassic Volcanics may be higher due to salts being flushed out from the basalt.

Based on this information, there is a potential that groundwater within the region is a viable resource. A review of WaterNSW registered bore map indicated that there is one registered bore within a 1km radius surrounding the Site, which is listed as having a listed purpose of "other". The bore is registered to extent to a depth of 150m which would indicate it is potentially used for irrigation or general water supply. Nevertheless, the bore is located upgradient from the Site and would be unlikely to be affected by any potential contamination.

Onsite groundwater is expected to follow surface trajectories towards the Georges River, which borders the north east of the property.

2.3 HISTORICAL LAND USE

Based on a review of land tiles and aerial photography in the DSI, there was a potential for contamination identified in association with the importation of fill materials and storage of miscellaneous items in the western portion of the Site. No evidence was available to indicate the potential for agricultural activities.

2.4 POTENTIAL RECEPTORS AND MIGRATION PATHWAYS

Environmental receptors include ecological communities associated with ephemeral channel which runs northwest through the property into the Georges River. Current potential human receptors include any occupants of the Site and nearby residences. Future potential receptors will include civil and construction personnel, maintenance workers and residents.

2.5 DEVELOPMENT CONTROLS

2.5.1 Liverpool City Council

The site is currently the subject of a masterplan proposal that will be submitted to Liverpool Council for planning considerations, which will likely incorporate controls specific to the development.

The Section 10.7 (2) and (5) Planning Certificates identified:

- The land does not have outstanding biodiversity value nor is it in a conservation area.
- Lot 2 is subject to flood related development control.
- The property is not listed on the loose-fill asbestos insulation register
- There are no items of environmental heritage situated on the land

2.5.2 NSW EPA Public Register Searches

A search of the NSW EPA Public Register indicated that:



-
- Neither the Site or any surrounding properties within 500m are subject to orders made under Part 3 of the Contaminated Land Management Act 1997 (CLM Act) or notices available to the public under section 58 of the CLM Act
 - No site audit statements have been provided to the EPA under section 53B of the CLM Act that relate to significantly contaminated land
 - No actions have been taken actions taken by EPA (or the previous State Pollution Control Commission) under sections 35 or 36 of the Environmentally Hazardous Chemicals Act 1985 (EHC Act)
 - No notifications have been made under the Duty to Report Contamination Guidelines

2.6 UNEXPLODED ORDINANCE SEACH

A preliminary assessment for the potential of Unexploded Ordnance Contamination was undertaken by OPEC systems. The assessment concluded:

Based on the location of Lot 1 on Plan 875804 in relation to the Holdsworth Barracks boundary, and also, because Defence have not assessed the site as being at risk of UXO contamination, it would be our professional opinion that the risk of any latent UXO contamination is extremely low.



3.0 PREVIOUS INVESTIGATIONS

3.1 DETAILED SITE INVESTIGATION (CHEC, 2024)

The DSI undertaken by CHEC identified eleven Areas of Concern that required assessment. During the DSI, CHEC made observations from 143 test pits and 21 borehole locations across the Site. A total of 97 samples were obtained for laboratory analysis from those locations. The findings of that assessment are provided below.

3.1.1 AEC -1: Historical Fire Trail Area

Anecdotal evidence suggested an extensive area of potential buried waste material as a result of historical fly tipping. A significant number of observational test pits were extended to the depth of natural ground in the area of concern and identified only two small areas of buried waste nearby at TP3 and TP2. These areas have been identified as AEC-2 and AEC-3, discussed below. AEC 1 does not warrant remediation based on the available data from this investigation, though should be monitored during earthworks for small burial pits that may occur between sample locations.

3.1.2 AEC-2: TP3 Burial Pit

A waste pit covering an area of approximately 150m² and having a depth of 2.5m was identified at test pit location TP3. Waste materials including timber, glass, brick and concrete. A fragment of ACM was also identified within the material and was calculated to exceed the HIL for the concentration of ACM within the soils. No asbestos fines or friable asbestos was identified within the soil sample obtained from TP3 and all chemical contaminants complied with the HIL and EIL. Due to the concentration of ACM, the soils related to this pit will require remediation and/or management and will be classified as Special Waste – Asbestos (with General Solid Waste soils).

3.1.3 AEC-3: TP2 Burial Pit

Whilst no ACM or other contaminant was identified at TP2, the presence of buried fill and organic waste was observed. No remediation is required specific to this location based on available evidence; however, considering excavation is likely required for geotechnical compliance, it is recommended that the material be visually assessed during development to ensure there is no contamination risk.

3.1.4 AEC 4: Oil Drum Storage

Sample TP28 was collected from the stained surface surrounding the oil drums within the material storage area. The concentrations of F3 and F4 hydrocarbons significantly exceeded both management limits and ESL's. Sample TP28-1 was collected from approximately 0.15m below the surface and was only found to contain minor concentrations of F4 hydrocarbons. As such, it is considered that the vertical extent of contamination is limited to a depth of 0.15m. Considering an approximate area of 100m² of oil-stained surface, it is expected that ~20-30m³ of soils will require remediation or management in this area. The soils will be classified as Restricted Solid Waste under the NSW EPA Waste Classification Guidelines, 2014, though may also be suitable for onsite bio remediation.



3.1.5 AEC-5: Visible ACM in SP3

Significant amounts of ACM were identified in the southern portion of SP3 during sampling. The associated soil appeared visually distinct from the remainder of the stockpile and consisted of a brown/grey silty sandy soil containing significant amount of foreign material. The remainder of the stockpile generally consisted of crushed shale, and sandstone with no foreign materials identified. All other samples within SP3 were not found to contain any asbestos and were compliant with respective criteria. The soil will require remediation of management, though it appears warranted that the Remedial Action Plan may consider segregating the portion of approximately ~1000m³ from the remainder of SP3.

Chemical analysis indicates the soil would be classified as Special Waste – Asbestos (with General Solid Waste soils)

3.1.6 AEC-6: BH15 Surface Soils

During borehole drilling for the geotechnical investigation at BH15, in the northern section of Lot 1 at the top of a small escarpment that borders Lot 2, fill had been placed between rock outcrops to level the surface. Fragments of ACM were observed in the fill, which extended to a depth of 0.4m. The distribution of this soil will require delineation to determine the extent of remediation or management necessary to make the land suitable for the intended use.

Chemical analysis indicates the soil would be classified as Special Waste – Asbestos (with General Solid Waste soils)

3.1.7 AEC-7: Fuel Storage Area

The fuel storage area was highlighted as a concern following the desktop study, though site inspections an investigation of soils down gradient of the tanks indicated there was a very low risk of the tanks being a source of soil or groundwater contamination. BH1 (environmental borehole) failed to detect any sign of contamination in soils directly down gradient of the tanks based on visual, olfactory and analytical data. During the development o the property, the tanks will need to be decommissioned in accordance with relevant Safework NSW Guidelines and Technical Notes. It is recommended that the process be monitored by a qualified contaminated land consultant in the event of unexpected finds or spills during removal.

3.1.8 AEC 8 – ACM Fill in Creek Line Scarps

No evidence of extensive fill was apparent in the lower scarp around TP83; however, the soil in the vicinity of TP65 contained significant amounts of foreign material and ACM to depths up to 1.5m. TP65 and a number of step-out test pits delineated approximately 3000m² of the contaminated area, resulting in an approximated volume of 3000m³. Laboratory analysis did not detect any friable asbestos or asbestos fines, therefore, remedial works will be limited to Class B Bonded removal work.

Chemical analysis indicates the soil would be classified as Special Waste – Asbestos (with General Solid Waste soils)



Fill was also observed on the western side of the drainage line around TP66/TP66A that contained some brick and large sandstone cobbles; however, no ACM was observed and laboratory analysis did not detect any asbestos in soil. This area should be monitored for unexpected finds during development of the land.

3.1.9 AEC 9 – TP56 Fill Soils

Field observations in the area of TP56 noted a shallow layer of fill material that contained fine fragments of glass, ceramics and metal. Whilst no ACM was apparent, the laboratory analysis did identify ACM at a concentration of 0.06%w/w. As a result, the extent of the associated soil is considered to be an area of concern that will require some form of remedial effort. The presence of elevated lead concentrations also will need to be considered in the remedial action plan.

It is recommended that additional analysis be undertaken as the first stage of remediation to delineate the distribution of the soils, and allow sufficient data to calculate a 95% UCL for lead on the targeted soil type associated with the observation of foreign material.

Chemical analysis indicates that without leachate analysis, the soil would be classified as Special Waste – Asbestos (with Restricted Solid Waste soils). The additional analysis and leachate testing should enable a general solid waste classification for the soil concentrations, though will retain the special waste-asbestos classification.

3.1.10 AEC 10 – TP15 Fill Soils

Field observations of soils associated with sample TP15-1 did note fill material and some minor foreign material, though generally the soil appeared be low risk. The discovery by laboratory analysis of ACM at a concentration of 0.008% needs to be considered in the context of the potential exposure risk. The result is representative of surface soils and disturbance is likely during development. Whilst the concentration is below land use acceptance criteria, the potential for a complete exposure pathway, and the possibility that the find may represent more significant concentrations in surrounding soils cannot be discounted without additional data.

It is recommended that further investigation is undertaken within the vicinity of TP15 to further delineate the extent of ACM contamination. Chemical analysis indicates the soil would be classified as Special Waste – Asbestos (with General Solid Waste soils) if it required exportation from the Site.

All other samples collected within the historical fill area did not exceed their respective HIL or EIL and, as such, do not require any remedial action or further investigation.

3.1.11 AEC-11: SP10 Stockpiled Soils

Soils within SP10 contained significant amounts of crushed asphalt. The presence of asphalt is considered to be the source of the significant concentrations of BaP, F3 and F4 hydrocarbons which exceeded both EILs and HILs. Whilst generally, bitumen is considered to be a low-risk source of BaP due to the restricted bioavailability and low mobility, in the context of a residential development, there may also be aesthetic consideration determining appropriate management actions.



Waste classification would need to consider the pre-classification by the NSW EPA for asphalt/bitumen as general solid waste. Despite BaP concentrations exceeding the general solid waste criteria, the material would retain that classification.

Beneficial reuse of the material may be possible where less sensitive land uses are identified, such as roadways; however, sufficient data will be required to validate the material does not present a risk to human health or the environment in that scenario.

Concentrations of contaminants in all other stockpile samples were found to be compliant with criteria and as such, do not require any remediation, management or further investigation.

3.2 DATA GAP ASSESSMENT

The data gaps at AEC6, AEC9 and AEC10 that were identified by the DSI were investigated further by CHEC on the 30th (AEC10) and 31st (AEC9) of May and the 7th June (AEC6) 2024. The data from the investigation was intended to delineate the areas of concern that required remediation so that more accurate information could be presented in the RAP. A survey of AEC5 was undertaken by ADW Johnson Pty Ltd on the 30th May 2024 to delineate the extent of asbestos impacted soils.

3.2.1 AEC 5 – Visible ACM in SP3

The quantity provided by ADW Johnson Pty Ltd determined the volume of soils associated with AEC5 to be 355m³. This quantity will be assumed as accurate for the purposes of developing appropriate remedial strategies. Refer to **Figure 4** - Sample Layout: Lot 1 West and **Appendix C** - AEC 5 Survey.

3.2.2 AEC 6 – BH15 Surface Soils

To delineate the extent of asbestos contamination within AEC6, which had previously been based on a single borehole location, the area was divided into six equal grids. A 10L sample was obtained and spread across a contrasting surface and inspected for any ACM. Additionally, a 500mL bulk asbestos sample was obtained from each of the six locations. No ACM was identified during the field investigation, nor was it identified in any of the laboratory samples. Refer to **Figure 4** - Sample Layout: Lot 1 West

Table 2 – Results of Asbestos Analysis in AEC6

	ACM	AF/FA
AEC6-1	ND	ND
AEC6-2	ND	ND
AEC6-3	ND	ND
AEC6-4	ND	ND
AEC6-5	ND	ND
AEC6-6	ND	ND
HIL/HSL	0.01	0.001

The initial find of asbestos appears to represent an isolated find of ACM and appears to be limited in its distribution. Any ground disturbance in the area should be done with appropriate precautions and undertaken in accordance with Section 7.3.



Due to the small expected volume of 10m³, based on an area of 5m x 5m surrounding the initial BH15 location, to the depth of natural ground (0.4m) it may be more advantageous to the project to dispose of the soil.

3.2.3 AEC 9 – TP56 Fill Soils

An additional 10 samples were obtained from AEC 9 on an evenly spaced grid surrounding TP56 to delineate the extent of asbestos and lead contamination. One sample (AEC9-10) was obtained from the same location as TP56 to confirm the initial finding.

At each of the 10 locations, a 10L sample was obtained and spread across a contrasting surface and inspected for any ACM. A 500mL bulk asbestos sample was obtained and analysed for the presence of asbestos in accordance with the NEPM method. A discrete sample was also obtained from each location and analysed for its lead concentration.

The initial detection of lead at a concentration of 770mg/kg could not be replicated in any of the additional 10 samples. The results indicate that the initial detection was an anomaly, potentially due to a metallic fragment and not a soil concentration, or representative of the soils generally.

Field investigations did not identify the visible presence of asbestos at any location. Laboratory analysis identified asbestos fines in sample AEC9-2 at a concentration of 0.005% w/w, which exceeds the HSL of 0.001% w/w. Asbestos fines were also identified in sample AEC9-10 at a concentration of 0.0004% w/w which was compliant with the HSL; however, did originate in surface soils, which is non-compliant with NEPM criteria. ACM was also identified in this sample at a concentration of 0.01%, not exceeding the HSL of 0.01%.

Considering AEC9-10 was obtained from the same location as the initial detection of asbestos, it confirms its presence within this area. AEC9-2 was obtained directly north of AEC9-10, though was not identified at any other location. These results provide the ability to confidently delineate the extent of the asbestos impacted soils, which is estimated to be approximately 850m², as represented by **Figure 6**. Soils in this area were observed to a depth of ~0.2m, as such it is expected that ~170m³ of soil will require remediation in this area.

Table 3 – Analytical Results of Lead and Asbestos Concentrations in AEC 9

	Lead	ACM	AF/FA
AEC9-1	54	ND	ND
AEC9-2	23	ND	0.005
AEC9-3	17	ND	ND
AEC9-4	24	ND	ND
AEC9-5	17	ND	ND
AEC9-6	28	ND	ND
AEC9-7	15	ND	ND
AEC9-8	29	ND	ND
AEC9-9	19	ND	ND
AEC9-10	14	0.01	0.0004
HIL/HSL	300	0.01	0.001

3.2.4 AEC 10 – TP15 Fill Soils

An additional 23 locations were sampled within AEC 10 on an evenly spaced grid surrounding TP15 to delineate the extent of asbestos contamination associated with similar soils reported by the DSI. At each location a 10L sample was collected and spread across a contrasting surface and



inspected for any ACM. A 500mL bulk asbestos sample was obtained and analysed for the presence of asbestos in accordance with the NEPM method. Refer to **Figure 4** - Sample Layout: Lot 1 West

Field assessment identified fragments of ACM at AEC10-13, AEC10-15 and AEC 10-19. All fragments appeared in fair condition and were not considered friable. Laboratory analysis identified the presence of asbestos in six of the 23 sample locations. These locations were generally restricted to the northern extent of the AEC, in the vicinity of TP15.

The area requiring remediation has been delineated to cover an area of approximately 2,000m². The fill identified as containing asbestos was observed to a depth of approximately 0.3m. As such, it is estimated that approximately 600m³ of soils will require remediation. It should be noted that a potential burial pit was observed at AEC10-9. Depending on the extent of this pit, the quantity of soils requiring remediation in this area may be greater than 600m³.

Additionally, it is noted that asbestos fines concentrations generally complied with land use suitability criteria, other than at AEC10-10. Considering that location was on the eastern margin of the AEC, the representative soils appear to have a limited distribution and it may be feasible to isolate that location and implement an alternate treatment strategy to account for the higher risk of asbestos fines. If so, the soils associated with AEC10-10 would account for approximately 10m³ of the overall quantity based on a 5m x 5m excavation.

Table 4 - Results of Asbestos Analysis in AEC10

	ACM (% w/w)	AF/FA (%w/w)
AEC10-2	ND	ND
AEC10-3	ND	ND
AEC10-4	ND	ND
AEC10-5	ND	ND
AEC10-6	ND	ND
AEC10-7	0.08	0.0001
AEC10-8	ND	ND
AEC10-9	ND	ND
AEC10-10	ND	0.003
AEC10-11	0.34	0.00003
AEC10-12	ND	ND
AEC10-13	ND	0.001
AEC10-13 FC	0.03	ND
AEC10-14	ND	ND
AEC10-15	ND	ND
AEC10-15 FC	0.012	--
AEC10-16	ND	0.0001
AEC10-17	ND	ND
AEC10-18	ND	ND
AEC10-19	ND	ND
AEC10-19 FC	0.008	--
AEC10-20	ND	ND
AEC10-21	ND	ND
AEC10-22	ND	ND
AEC10-23	ND	0.0003
AEC10-24	ND	ND
HIL/HSL	0.01(% w/w)	0.001(% w/w)

3.3 REMAINING DATA GAPS

Based on field observations noting relatively natural levels along the Georges River foreshore, and the lawn areas of the residences, the risk of significant contamination occurring in those areas did



not appear significant enough to warrant further disturbance with an excavator at the investigation stage.

Based on the available evidence, it would be reasonable to undertake a further investigation of the residential area at the initial remediation stage. The investigation would include observations from test pits in residential lawn areas, including sampling from building footprints.



4.0 CONCEPTUAL SITE MODEL

Table 5 – Conceptual Site Model

Source	Contaminant(s)	Migration Pathway	Receptors	Exposure Pathway	Risk Assessment
AEC 1 – Historical fire trail Area	Heavy metals, hydrocarbons, PAHs, BTEX, pesticides, asbestos	Overland Flow / erosion, Soil Infiltration	Site occupants, civil and construction personnel, maintenance workers, offsite receptors	Dermal absorption, Ingestion, Inhalation	Low Test pits at spacing of 20-30m did not identify buried waste; however, hotspots smaller than test pit spatial density may be possible. The fill identified across the west of the Site appeared to be relatively low risk with shallow natural material. To be monitored during earthworks.
AEC 2 – TP3 Burial pit	Asbestos	Disturbance – Aeolian Transport	Site occupants, civil and construction personnel, maintenance workers.	Inhalation of airborne fibres	Medium Bonded ACM was identified in buried waste without chemical contaminants. Undisturbed there is no implied risk; however, the soil will require excavation during earthworks and will require appropriate management. No AF/FA identified; therefore, remedial work can be undertaken by Class B Removalist and will require visual clearance on completion.
AEC 3 – TP2 fill area	Asbestos	Disturbance – Aeolian Transport	Site occupants, civil and construction personnel, maintenance workers.	Inhalation	Low A deep fill area was observed at TP2; however, waste material appeared to be limited to tree roots and branches with inert soils. To be monitored during earthworks.
AEC 4 – Oil drum storage	Hydrocarbons, PAHs, BTEX	Overland Flow / erosion, Soil Infiltration	Site occupants, civil and construction personnel, maintenance workers, ecological receptors	Dermal absorption, Ingestion, Inhalation	Medium Validation sampling required on removal to provide evidence that residual soils comply with land use criteria.
AEC 5 – ACM in soil stockpile SP3	Asbestos	Overland Flow / erosion, Disturbance – Aeolian Transport	Site occupants, civil and construction personnel, maintenance workers, offsite receptors	Inhalation	Medium Significant amounts of ACM and building waste were observed within a portion of a large stockpile central to the property. No AF/FA identified; therefore, remedial work can be undertaken by Class B Removalist and will require clearance of remaining stockpiled soils on completion.
AEC 6 – ACM in Fill at BH15	Asbestos	Overland Flow / erosion, Disturbance – Aeolian Transport	Site occupants, civil and construction personnel, maintenance workers, offsite receptors	Inhalation	Medium ACM was observed within soils spread across the surface in the vicinity of BH15. Additional sampling required to determine the extent of the contaminated fill associated with the ACM
AEC 7 – Fuel Storage Area	Hydrocarbons, PAHs, BTEX	Overland Flow / erosion, Soil Infiltration	Site occupants, civil and construction personnel, maintenance workers, ecological receptors	Dermal absorption, Ingestion, Inhalation	Low No contamination was apparent from the banded ASTs. Decommissioning shall be undertaken in accordance with Safework NSW and NSW EPA guidance, and monitored by a contaminated land consultant.
AEC 8 – ACM Fill Soils @TP65	Asbestos	Overland Flow / erosion, Disturbance – Aeolian Transport	Site occupants, civil and construction personnel, maintenance workers, offsite receptors	Inhalation	Medium A significant amount of fill appeared to have been placed on the south eastern bank of the creek. Chemical contaminants were measured to not be significant and No AF/FA identified; therefore, remedial work can be undertaken by Class B Removalist and will require clearance on completion.
AEC 9 – ACM surface fill @TP56	Heavy metals, asbestos	Overland Flow / erosion, Soil Infiltration, Disturbance – Aeolian Transport	Site occupants, civil and construction personnel, maintenance workers, offsite receptors	Dermal absorption, Ingestion, Inhalation	Medium Soil with foreign material, bonded asbestos and elevated heavy metal concentrations was identified across the south western corner of the eastern paddock. Additional sampling required to delineate the risk associated with these soils.
AEC 10 – ACM surface fill @TP15	Asbestos	Overland Flow / erosion, Disturbance – Aeolian Transport	Site occupants, civil and construction personnel, maintenance workers, offsite receptors	Dermal absorption, Ingestion, Inhalation	Medium Building and demolition waste was observed within soils spread across the south western corner of the eastern paddock northern boundary of the Site. Sampling required to determine the risk associated with these soils
AEC 11 – BaP in SP10 Soils	Hydrocarbons, PAHs,	Overland Flow / erosion, Soil Infiltration	Site occupants, civil and construction personnel, maintenance workers, ecological receptors	Dermal absorption, Ingestion.	Low Building and demolition waste was observed within soils spread across the south western corner of the eastern paddock northern boundary of the Site. Sampling required to determine the risk associated with these soils



5.0 REMEDIATION STRATEGY DEVELOPMENT

5.1 REMEDIATION OBJECTIVES

The remediation objectives are outlined as follows:

- Removal of unacceptable risks to human health from contaminated soils such that the Site is suitable for the proposed use as residential land;
- Appropriate management of the contaminated soils in the context of the proposed earthworks, final development and likely exposure scenarios;
- Mitigate adverse impacts on surrounding land and waterways during the remediation with implementation of environmental management controls and procedures; and,
- Maintain all relevant records during remedial work to Validate the works in accordance with the relevant NSW EPA Guidelines and with reference to the adopted clean-up criteria.

5.2 LEGISLATIVE FRAMEWORK

This RAP has been prepared with reference to the following guidelines and legislation:

- Cooperative Research Centre for Contamination Assessment and Remediation of the Environment, National Remediation Framework, 2019
- State Environmental Planning Policy (Resilience and Hazards) 2021;
- Contaminated Land Guidelines: Sampling Design. NSW EPA 2022 (EPA 2022);
- Guidelines for Consultants Reporting on Contaminated Land, NSW EPA 2020;
- Guidelines for the NSW Site Auditor Scheme (3rd Edition). Environment Protection Authority, October 2017 (EPA 2017);
- National Environment Protection (Assessment of Site Contamination Measure) Measure 1999 (as amended 2013). National Environment Protection Council (NEPC 2013);
- Work Health and *Safety Regulation 2019*. NSW Government Legislation. (WHS Regulations 2019);

The preferred hierarchy of options for remediation (clean up) and/or management adopted by NSW EPA *Guidelines for the NSW Site Auditor Scheme (3rd Edition)*, 2017 has been established within the NEPC (2013) Assessment of Site Contamination Policy Framework and is as follows:

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

If the above options are not practicable:

- Consolidation and isolation of the soil on site by 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.

When deciding which remedial option to choose, consideration is also required to be given to the sustainability (environmental, economic and social) aspects of each option to ensure an appropriate balance between the benefits and effects of undertaking remedial/management options.

In cases where no readily available or economically feasible method is available for remediation, it may be necessary to adopt appropriate regulatory controls or develop other forms of remediation. Consideration of the various option available for the Site is presented in **Table 3** below.

5.3 KNOWN EXTENT OF CONTAMNATION

Based on the conclusions of the DSI the following locations require remediation:

AEC-2: Up to 200m³ of soils placed in burial pit and contaminated with bonded asbestos. Refer to **Figure 4** - Sample Layout: Lot 1 West

AEC-4: Soils contaminated with petroleum hydrocarbons covering an area of 100m² to a depth of approximately 0.15m Refer to **Figure 4** - Sample Layout: Lot 1 West

AEC-5: A distinct portion of the 6000m³ stockpile SP-3 that contains asbestos and other waste, with a surveyed quantity of 355m³. Refer to **Figure 4** - Sample Layout: Lot 1 West

AEC-6: In situ soils in the vicinity of BH15 contaminated with bonded asbestos. The area has been delineated to determine that ~10m³ of soil will require remediation. Refer to **Figure 4** - Sample Layout: Lot 1 West

AEC-8: In-situ fill soils at TP65 containing bonded asbestos and covering an area of 2950m² to depths up to 1.5m. Refer to **Figure 6** - Sample Layout: Lot 1 South

AEC-9: Delineation sampling determined the extent of asbestos contamination covers an area of approximately 850m² to a depth of ~0.2m. As such approximately 170m³ of soil will require remediation. Refer to **Figure 6** - Sample Layout: Lot 1 South

AEC-10: The extent of asbestos contamination was delineated to cover an area of approximately 2,000m² to a depth of approximately 0.3m. As such, approximately 600m³ will require remediation in this area. Refer to **Figure 4** - Sample Layout: Lot 1 West

AEC-11: Stockpile SP10 contained PAH contaminants exceeding land use criteria and will not be suitable for reuse within residential or open space areas of the development.

Remedial options for the various AEC's, as well as safe practices, will be the focus of the evaluation process in the following sections.



5.4 REMEDIATION OPTIONS

5.4.1 Option 1: Do Nothing

In some circumstances, the process of attempting remediation through active measures, can lead to a less sustainable outcome and contamination is best left in its current state. In the event that contamination is not well defined, for example, commencement of remediation measures may leave a site in worse condition if budgetary constraints force a stoppage. The option to leave the site in its current state needs to be considered in the context of the known contamination risk and the proposed development staging.

On the basis that the current site shall be the subject of subdivision with three distinct land uses identified, the option to undertake a staged remediation needs to be considered. Staging shall account for the availability of the most suitable remedial options that utilises all possible land use scenarios as they become available.

5.4.2 Option 2: On-Site Asbestos Treatment

This option would consist of spreading the identified asbestos contaminated soils in a controlled manner and hand-picking ACM to the extent that they complied with land use HSL's. Generally applicable to sandy soils and where contamination is limited to bonded forms of asbestos.

To validate this method, soils must be sampled at a rate of 1 in 25m³ to comply with NSW EPA requirements to allow reuse at the site. Due to having a history of asbestos, the soil is not suitable for use on any final surface. The reuse of the remediated material must also consider other potential exposure scenarios covered by separate legislation, such as construction and/or maintenance workers working in ground.

5.4.3 Option 3: Physical Barrier with Management

A physical barrier is intended to negate the potential exposure pathway between the contaminant and the potential receptor where non-leachable contaminants present a risk. The method may be successfully achieved by installing and maintaining any suitable surface that will prevent the release of airborne asbestos fibres for the long term. Installation work would need to be supervised by a Licensed Asbestos Removalist and would negate the need for hand picking and validation sampling.

A Long-Term Environmental Management Plan (LTEMP) is required to provide the inspection and maintenance procedures necessary to ensure the integrity of any barrier. Implementation of the LTEMP will be enabled by way of a positive covenant under s.88BA of the Conveyancing Act 1919, which will be recorded on the property Title.

5.4.1 Option 4: Bioremediation

For hydrocarbon contaminated soils, the microbial degradation of petroleum compounds can be successfully implemented under controlled treatment conditions. The rate of degradation can depend on soil type, moisture levels and ambient temperatures, among other variables, though



can also be enhanced with introduction of specialised micro-organisms. This method is not efficient for polycyclic hydrocarbons due to their low bioavailability.

The technique requires that adequate controls ensure contamination does not migrate from the treatment area and emissions do not impact nearby receptors. Monitoring is undertaken at regular intervals to demonstrate the concentration are reduced to an acceptable level prior to reuse on the Site.

5.4.2 Option 5: Excavation and Offsite Disposal

The excavation and dispose option would include removal of all contaminated soil. The fill would require classification in accordance with the NSW EPA *Waste Classification Guidelines, 2014* under the *Protection of the Environment Operations Act 1997*, and disposal to a waste facility licensed to accept Asbestos Waste.

Validation of the excavation areas would be required by a Licensed Asbestos Assessor or competent person, as defined by the Safework Code of Practice: How to Safely Remove Asbestos, 2022, at the completion of removal to demonstrate complete removal of the contaminant. Work would need to be supervised by a Licensed Asbestos Removalist and suitable dust control and airborne asbestos monitoring would be required during excavation where asbestos fines or friable asbestos is identified.

The quantity of contaminated fill at the Site is not confirmed though, based on available evidence, is likely to be up to approximately 5000m³.

5.5 FEASIBILITY ASSESSMENT

Table 6 – Technical Assessment

Remedial Option	Benefits / Liability
1. Do Nothing	This option would prohibit the land being suitable for redevelopment for residential land use. The location of the contamination coincided with areas that are intended for residential lots. The in-situ asbestos contamination is not mobile and left in-situ whilst other stages of planning and construction are undertaken, does not represent a significant risk of harm to human health or the environment. The stockpiled soils impacted by asbestos are limited to bonded fragments of fibro cement, which does not present a significant risk of harm. It is recommended that if not immediately included with remediation work, they should be segregated labelled and covered. The area of hydrocarbon contamination is limited to approximately 100m² with no sign of migration. The relatively minor nature of this remedial area suggests it does not present a significant risk to human health or the environment; however, it is not appropriate to do nothing, considering the source continues to contribute.



Remedial Option	Benefits / Liability
2. Onsite Treatment	Onsite handpicking treatment of ACM in soils can be readily accomplished due to the demonstrated absence of asbestos fines or friable asbestos and the low clay content of the soils. The process is expected to take a minimum of 3-4 weeks with adequate resources due to the volume of material requiring treatment. Specific erosion-sediment controls will be required for work in the gully area at TP65 due to the extent of excavation and the high risk to the receiving environment in the event of rain. It is not feasible for treated soils to be used for lot fill in the residential portions of the Site. And, whilst it may be plausible to reuse the treated soil in roads, geotechnical limitations of pavement design will need to be considered.
3. Physical Barrier with LTEMP	In the context of asbestos contamination, a simple physical barrier will readily achieve the remedial objective with appropriate long-term management to maintain that barrier. Nominating an appropriate management area would need to be factored into the masterplan design and an adequate management method would need to be endorsed by Council. It is noted that the physical barrier would not consider permeability requirements, therefore, this option would not be suitable where leachable contaminants such as lead are present in the fill. Contingency would need to be considered to cater for any elevated leachable chemicals. A Long-Term Environmental Management Plan (LTEMP) would be required to provide a framework for ongoing maintenance and the contamination would be noted on title. It is likely that the most plausible option would be nominated non-residential area, and therefore property value would not be considered a significant decision input. The client has advised that the implementation of an LTEMP and ongoing management is not a viable option for the project, therefore, this method will not be considered further.
4. Bioremediation	There appears to be ample time to successfully implement a bioremediation strategy for the soils contaminated with petroleum hydrocarbons. The strategy would require source removal of liquids and storage drums prior to excavation and composting. Available space to provide an adequate treatment area will not be a constraint due to the low volume of material requiring treatment.
5. Excavation and off-site removal of the impacted material	This option would generate the highest quantity of waste, and cost, as the soil is disposed to a landfill, rather than retained onsite. Therefore, disposal overheads, environmental sustainability and social impacts should be taken into account when considering this remedial option. The feasibility of this option would depend on the quantity of asbestos contaminated fill soil, which is estimated to be in the order



	of 5000m ³ (9000t). Typical disposal rates of \$300-350/t may make this option cost prohibitive.
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5.6 PREFERRED REMEDIAL APPROACH

Based on an analysis of the available options and considering the volume of soil that requires management from different contaminant sources, a combination of the options is the preferred approach.

Hydrocarbon impacted soils will be remediated with Option 4.

The asbestos contaminated soils in AEC9 exceeded land use suitability criteria for the presence of asbestos fines and therefore, on-site treatment will not be feasible. CHEC has been advised by the client that Option 3 is not a preferred remedial strategy and as such, contaminated soils in this area will need to be disposed off-site subsequent to delineation.

Asbestos fines concentrations in AEC 10 generally complied with land use suitability criteria, other than at AEC10-10. As such, soils within the vicinity of AEC10-10 may be segregated and will need to be disposed off-site. Once this area has been validated, the remaining soils within this area may be remediated with onsite treatment for bonded asbestos in accordance with option 2.

ACM in soils at AEC-2, 5, 6 and 8, will be remediated with Option 2, with the intended final placement to be in a nominated non-residential area to be determined as part of the planning process. The intention will be to reduce the ACM to an acceptable level, such that it complies with land use criteria and does not require ongoing management. Land use determination will be undertaken prior to placement and remedial works will ensure the placement method does not introduce the potential for fibre generation from any residual ACM. The remedial process for Option 2 is detailed in **Appendix D** - Option 2 Remedial Method.

Soils with elevated PAH will be used for road construction as they comply with commercial/ industrial land use HIL's and should meet the required compaction thresholds of the civil engineering specification.



6.0 REMEDIAL WORKS PLAN

6.1 REGULATION, LICENCES & NOTIFICATIONS

6.1.1 State Environment Planning Policy (Resilience and Hazards), 2021

From review of the Site location and proposed activities, the remediation works are classified as Category 1 Remediation Works as per the meaning provided in State Environmental Planning Policy (Resilience and Hazards), 2021 and require specific Development Consent under the *Environmental Planning and Assessment Act 1997*.

Generally, notification of remediation works will be required to be given to Council at least 30 days prior to commencement, and Council requires notification within 30 days from completion of remediation works, consistent with the SEPP.

6.1.2 Protection of the Environment Operation Act 1997 (POEO Act 1997)

The proposed remediation/validation activities are not required to be licensed under the Protection of the Environment Operation Act 1997 since the works do not involve:

- a) Treatment otherwise than by incineration and storage of more than 30,000 cubic metres of contaminated soil originating exclusively from the site, or
- b) Disturbance of more than an aggregate area of 3 hectares of contaminated soil originating exclusively from the site.

All soil being transported onto the Site will require classification and notification as required by the *Protection of The Environment Operations (Waste) Regulation*, 2014 and the NSW EPA *Waste Classification Guidelines*, 2014.

Any waste classified as Asbestos Waste must only be disposed of to a facility licenced to accept that waste. Asbestos Waste must be transported in vehicles that are covered and registered for the transportation using the NSW EPA Waste Locate tracking system.

6.1.3 Work Health & Safety Act 2011

The removal and disposal of asbestos will be managed in accordance with the Work Health and Safety Act 2011, Work Health and Safety Regulation (2017) and *How to Safely Remove Asbestos: Code of Practice* (SafeWork NSW 2019),

Excavation and removal of soils containing AF is required to be conducted by a Class A licensed asbestos removal contractor.

Before starting the affected works, the appointed contractor is required to obtain a Site-specific permit approving the asbestos works from Safework NSW. A permit will not be granted without a current licence and the permit application must be made at least seven days before the work is due to commence and accompanied by an Asbestos Removal Control Plan (ARCP).



6.2 SITE ESTABLISHMENT

All safety and environmental controls are to be implemented as the first stage of remediation works.

These controls will include, but not be limited to:

- Consultation with surrounding properties to advise the nature of the work;
- Appropriate signage with contact numbers for responsible personnel;
- Decontamination areas to be established in accordance with SafeWork NSW guidelines and the ARCP;
- Sediment fencing as appropriate to mitigate sediment laden runoff from the work area;
- Airborne asbestos monitoring on the boundary of asbestos work areas;
- Locate and isolate all required underground utilities within the site such that excavation works can safely proceed.

6.3 ASBESTOS REMEDIATION

The proposed excavation and removal of waste will require a Class A asbestos removal license. Prior to commencement of works, a Work Health and Safety Plan, written in accordance with the WHS Act 2011 should be provided by the contractor. Section 10 provides management requirements during construction, which includes method for management of asbestos to protect human health and the environment during remedial works.

At the completion of works, a Validation Report will be provided with a statement that demonstrates remedial actions and development activities have made the Site suitable for the intended land use.

6.4 WORKING WITH ASBESTOS

Due to the nature of the remedial activity and identified AF, there is an inherent probability that there will be some destruction of ACM during excavation. Airborne asbestos monitoring will be undertaken for the entire period that soils are being excavated or disturbed. Generation of dust must be avoided under all circumstances.

All plant working within the asbestos work area must be assumed to be contaminated and kept within the controlled removal area until clearance of the machine is provided. No plant should be floated off-Site without being decontaminated and a clearance issued. Decontamination is to occur at the edge of the fill in a dedicated cleaning area.

6.5 MATERIAL IMPORTATION

Prior to importation of any fill material, appropriate assessment of such materials must be completed to demonstrate the material is both fit for purpose and suitable from a contamination view point. In accordance with EPA requirements, the extent of assessment will be determined by the type of material proposed to be imported.



Where material proposed to be imported is Virgin Excavated Natural Material (VENM), an assessment must demonstrate that the material is compliant with the definition of VENM as defined in the POEO Act 1997.

Where material proposed to be imported has been characterised under the Resource Recovery Framework (Order/Exemption), the material must firstly be demonstrated by the supplier as suitable for use in accordance with the requirements of the Order, via provision of a statement of compliance. Suitable materials are anticipated to comprise but will not necessarily be limited to: Excavated Natural Material (ENM), mixed organic waste and pasteurised garden organics, with reference to the list of current orders and exemptions on the NSW EPA website.

Any material imported at the Site must be compliant with DA consent conditions. Material tracking records in addition to the import assessment report are required to be included in the final Validation Report for the Site. All imported material will be subject to quality control sampling and analysis on receipt.

6.6 OFF-SITE DISPOSAL

Material identified as requiring removal from the Site must be disposed of off-Site to a facility lawfully able to receive it. Materials shall be classified in accordance with NSW EPA *Waste Classification Guidelines*, 2014 requirements or an appropriate exemption as created under the *Protection of the Environment Operations (Waste) Regulation 2014*.

In accordance with the *Protection of the Environment Operations (Waste) Regulation 2014* all asbestos waste <100 kg or <10m² in a single load must be tracked using WasteLocate. Section 42 of the regulation stipulates that the transportation of asbestos waste must comply with the following transportation requirements:

- Bonded asbestos material must be securely package at all times
- Friable asbestos must be securely packaged in a sealed container
- Asbestos-contaminated soils must be wetted down;
- All asbestos waste must be transported in a covered, leak-proof vehicle;
- Additional details including source site details, date of transportation, receiving disposal site information, approximate weight and class of asbestos must be provided to the EPA prior to transportation.

As part of the Site Validation, records associated with material tracking, including trucking receipts, landfill disposal records, material classifications etc will be reviewed to ensure material removed from the Site can be accounted for and has been disposed of lawfully.

6.7 VALIDATION

Validation of land use suitability will be provided by the Remediation Consultant at the practical completion of remedial works to demonstrate the remediation/management objectives have been achieved. The validation certification is likely to require staging to align with civil works due to the size of the project, multiple land uses and requirement for suitable placement areas to become available to support the remedial objectives.



The validation report(s) will document the final condition of the Site at the completion of works such that conclusions may be drawn on the end use suitability of the Site for the proposed development. Details of the validation program are provided in **Section 9**. The method described above will make the Site suitable for its intended use as a mixed commercial residential estate.



7.0 CONTINGENCY PLAN

Given the available Site history information and limitations identified by the Site assessment, consideration has been given to the potential for additional small-scale contamination issues that may arise during works. Contingency plans for a range of potential identified scenarios are considered to ensure firstly the safety and health of people and the environment, and the overall project objectives are achieved.

7.1 IDENTIFICATION OF OILY, ODOROUS OR STAINED MATERIALS

In the event that oily materials are encountered, the provisions outlined in the unexpected finds protocol will be implemented, comprising inspection, testing and appropriate action as advised by the Remediation Consultant.

Any suspected oily materials must be segregated from other excavated materials and placed in a designated area with appropriate odour and sediment controls until such time as appropriate assessment is completed and a methodology is confirmed for their appropriate management. In the event that the oily materials do not meet the Site Validation Criteria, then they shall be removed from the Site and disposed of at an appropriately licensed facility. A feasibility study for on-site treatment through bioremediation may be considered.

7.2 EMISSIONS COMPLAINTS

Due to the nature of the activities and type of contaminants identified at the Site, there is a potential for complaints to be received from members of the public relating to environmental emissions including:

- Odour emissions arising from handling of malodorous soil;
- Noise and vibration arising from excavation works;
- Dust emissions arising from excavation, material handling and placement.

All complaints must be recorded and acted upon to resolve the matter to the satisfaction of all parties. Appropriate actions will be taken to further control emissions following receipt of a complaint. Such additional controls are detailed in the CEMP (discussed in Section 10):

7.3 UNEXPECTED FINDS PROTOCOL

Should further impacted material (i.e., other than fill soil containing asbestos) be identified as part of an unexpected find during construction works, the remedial options in Table 6 – Technical Assessment will be required to be reviewed. In the event of an unexpected find, the following protocol must be carried out;

- All works in the vicinity of the "unexpected find" are to immediately cease and the Site foreman must be notified.
- The Site foreman must create a temporary barrier preventing worker and civilian access to the unexpected material(s). Appropriate sediment / run off controls must be implemented.



- Foreman / Client are to arrange an inspection by a suitably qualified Environmental Consultant.
- Environmental Consultant is to undertake an inspection, sampling and analysis to determine the level of risk. The Environmental Consultant is to assess the risk based on all available information and data.
- If substance assessed as **not presenting an unacceptable risk** to human health or the environment, the Site foreman is to remove safety barricades and environmental controls and continue work.
- If substance assessed as **presenting an unacceptable risk** to human health or the environment, Environmental Consultant is to supervise remediation and undertake validation/clearance as per Section 9 of the RAP.
- Following the remediation, validation and clearance, the Site foreman may remove barricades and environmental controls and continue work.
- Environmental Consultant to submit assessment/validation/clearance to Site foreman for distribution to Client.

7.4 REMEDIATION OF UNEXPECTED FINDS

Should an unexpected find require additional remediation, the following procedure will be implemented:

- Excavation of the contaminated material to the depth of identified contamination as delineated via visual/olfactory observations by the remediation consultant during remedial works. The excavated material will be required to be loaded directly into a truck with appropriate environmental controls to avoid contaminant migration and exposure associated with stockpiling material.
- Excavations are to be validated as per **Section 9** by the remediation consultant. Should validation fail (i.e. not meet adopted validation criteria), the failed wall/s or base of the excavation will be excavated a further 0.3 m in the direction of the failure (laterally or vertically), or as indicated by visual/olfactory observations and the validation process repeated until validation is achieved or to the extent practicable.
- Any stockpiled (impacted) material deemed unsuitable for onsite treatment is to be sampled by the remediation consultant for the purposes of waste classification for off-site disposal to an appropriately licensed facility lawfully able to accept the waste in accordance with EPA (2014).

It is noted that depending on the nature of the impact, final validation will be required to be tailored to confirm that the affected media has been successfully remediated.

7.5 ECOLOGICAL RISK ASSESSMENT

Should the fill characterisation identify contaminants that may present a risk to the surrounding ecological community, a risk assessment should be undertaken. Consideration needs to include potential receptors, exposure pathways and the potential for contaminants to migrate from the underlying soil.



8.0 VALIDATION DATA QUALITY OBJECTIVES

Data is required to be collected during remediation and construction works to assess the effectiveness of the implemented plan and document the final condition of the Site at the completion of all works. Such information will allow conclusions to be drawn on the end suitability of the Site for the intended land use. Data quality objectives (DQOs) have been developed for the validation assessment, as discussed in the following sections.

8.1 STATE THE PROBLEM

Site inspections and limited assessment of soils conducted by CHEC in 2023, for the purpose of waste classification, have identified asbestos within fill soils of the south eastern corner. Remediation is required due to health-based risks associated with asbestos contamination of soils. Validation of the remedial work is required to demonstrate that the identified contaminant does not present an unacceptable risk and that the Site is suitable for the intended land use.

8.2 THE GOAL OF THE STUDY

It is anticipated that the validation will be required to address the following broad issues:

- Confirm the Site conditions are consistent with those identified during previous Site investigation activities as documented herein.
- Have the works been completed in accordance with the RAP, or where variations to the works were required, have these met the objectives of the RAP?
- Confirm appropriate management of potentially contaminated material or aesthetically unsuitable material, as identified by the CSM or as a result of an Unexpected Find.
- Were materials deemed surplus classified and disposed off-Site to a facility licensed to accept the classified waste?
- Has all material imported to Site to achieve development objectives been demonstrated as suitable for use?
- Have any containment systems been installed as per the design?
- Are there any unacceptable risks to future on-site receptors following the remediation of impacted soils?
- Is the Site suitable for the proposed land uses?

8.3 INFORMATION INPUTS

The inputs to the decisions are:

- Previous investigation results as discussed in Section 4;
- The proposed development construction drawings and final proposed land form and Site features;
- Field observations in relation to inspection of all material with a potential to be impacted by asbestos or other potential contamination;
- Environmental data as collected from the validation of remedial activities;
- Material characterisation data (including field observations, sampling and analytical data) obtained during assessment of material imported to the Site;



- Relevant documents in relation to the off-Site disposal of material deemed surplus (e.g. waste classification and material characterisation data, disposal dockets);
- Relevant guideline criteria for validation and waste classification;
- Data quality indicators (DQIs) as assessed by quality assurance / quality control (QA/QC);
- Survey drawing to detail the marker layer and thickness of the physical barrier across all playing fields and viewing mounds.

8.4 STUDY BOUNDARIES

The study boundaries of the Site are defined as follows:

- The approximate lateral extent of the works relevant to this RAP is limited to Lot 1 in DP875804 and Lot 2 in DP817692, as shown on **Figure 1**; and
- The vertical extent of the validation works is anticipated to extend to natural ground

Ultimately the study boundaries will comprise the lateral and vertical extent of the development to be validated in accordance with the requirements of this plan. The temporal limits of the validation will comprise the duration of the remedial works, identified future receptors and long-term management requirements.

8.5 THE ANALYTICAL APPROACH

Validation sampling of the excavation is required for removal of waste and to characterise the residual risk by analysing for contaminants of concern. All documents relating to the importation of material, including soil classification certificates, will be reviewed to validate Site suitability prior to importation.

8.6 PERFORMANCE AND ACCEPTANCE CRITERIA

8.6.1 Data Performance

The contaminant of concern is limited to asbestos in soils. The analytical data will be compared directly to land use suitability criteria for each sample. Where data quality indicators are exceeded, each non conformance will be considered on its own merits.



8.6.2 Quality Control

To minimise the chance of error being introduced into the data collection process the following quality control measures should be implemented where applicable:

Table 7 – Data Quality Indicators

Data Precision and Accuracy		
Adequate Density	Sampling	Soil sampling frequency determined in accordance with procedure B of the NSW EPA <i>Contaminated Sites: Sampling Design Guidelines</i> , 1995 and WA DoH, 2021;.
Appropriate Techniques	Analytical	Use of analytical laboratories with adequately trained and experienced testing staff experienced in the analyses undertaken, with appropriate NATA certification.
Acceptable Percentage (RPD) for comparison	field and laboratory Relative Difference for duplicate	> 10 x LOR: 30% inorganics; 50% organics (Field) < 10 x LOR: Assessed on individual basis (Field) > 5 x LOR: 50% (laboratory) < 5 x LOR: No Limit (laboratory)
Trip Spikes		Recoverable concentrations of volatiles between 60 – 140%
Adequate performance	laboratory	Based on acceptance criteria of laboratory as specified on certificate of analysis: includes: blank samples, matrix spikes, control samples, and surrogate spike samples
Data Representativeness		
Sample and analysis selection		Representativeness of all potential contaminants
Trip Blanks/ Rinsate Blanks		No Detection above LOR
Trip Spikes		Recoverable concentrations of volatiles between 60 – 140%
Duplicate Samples		Adequate duplicate, split, rinsate and trip blank sample numbers
Laboratory selection		Adequate laboratory internal quality control and quality assurance methods, complying with the NEPM.
Documentation Completeness		
Chain of custody records		Laboratory sample receipt information received confirming receipt of samples intact and appropriate chain of custody
		NATA registered laboratory results certificates provided
Data Completeness		
Analytical Suites		Analysis for all potential contaminants of concern.
Confidence Levels		Field duplicate sample numbers complying with NEPM
Transport and Handling		Trip spike samples prepared and sent with field samples regularly
Comparability		
Analytical Standards		Use of NATA registered laboratories
Data Quality		Test methods consistent for each sample in accordance with the Sampling Analysis and Quality Plan
Traceability		Detailed logs of all sample locations to be recorded
Analytical Methods		Test methods comparable between primary and secondary laboratory
Confidence Levels		Acceptable RPD's between original samples and field duplicates and inter-laboratory triplicate samples.



8.6.1 Site Acceptance Criteria

For validation of the Site, clean up criteria are derived from the Health Screening Levels for a Residential B land use provided by the NEPM, 2013.

Table 8 – Acceptance Criteria PCOC

Contaminant	HSL B (w/w)
Bonded ACM	0.04%
FA and AF	0.001%
All forms of asbestos	No visible asbestos across surface soils

Should any unexpected finds of potentially contaminated material be identified during construction, soils should be assessed in accordance with HSL B and relevant ESLs provided by the NEPM, 2013. Imported material should be considered in the context of HSL B and ESLs provided by the NEPM, 2013.

8.7 OBTAINING DATA

The inspections and sampling regime required for validation of remedial works are summarised in **Table 9** below:

Table 9 – Validation Requirements.

Remedial Excavation	
Excavation	A sample should be obtained from every five lineal metres of wall for each excavation and from each 10m² from the base of excavation. All laboratory samples shall be analysed and reported in accordance with the NEPM method. Validation reporting should include: - A location plan of the excavation with co-ordinates relative to the lot boundaries; - The levels in mAHD of the impacted fill materials; - Daily inspections and photographic record by the environmental consultant to record when and where the marker layer has been installed; and - The levels in mAHD of the validation sampling
Exported material	
All wastes generated and proposed to be disposed off-Site shall be assessed, classified and managed in accordance with the <i>Waste Classification Guidelines</i> (EPA 2014).	



9.0 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

A stand-alone Construction Environmental Management Plan must be provided to account for all activities being undertaken at the site. To account for remedial work, any CEMP shall include the following as a minimum.

9.1 HOURS OF OPERATION

All remediation works shall be conducted within the following hours or as advised by the DA consent:

- Monday to Friday: 7am to 5 pm.
- Saturdays: 8 am to 5 pm.
- Sunday and public holidays: No work permitted

9.2 EROSION AND SEDIMENT CONTROL POLICY

All works shall be conducted in general accordance with Soils and Construction Managing Urban Stormwater Standards (Landcom 2004), which outlines the general requirements for the preparation of a soil and water management plan.

9.3 STOCKPILE MANAGEMENT

All materials stockpiled onsite overnight or longer must be covered by the Contractor to prevent the release of dust or soil erosion. Unique numbers will be provided for each stockpile, the source of the stockpile, its estimated volume, material characterisation and its location onsite will also be recorded.

The following general procedures will be implemented by the Contractor:

- No stockpiles of soil or other materials shall be placed on footpaths or road reserves unless prior Council approval has been obtained; and
- All stockpiles of soil or other materials shall be placed away from drainage lines, gutters or stormwater pits or inlets.

9.3.1 Temporary Management

Any temporary stockpiles of contaminated soil must be kept damp (not flooded) and covered by geo-fabric/plastic or sealed with a soil binding product as soon as practical. The control measure will extend beyond the perimeter of the stockpiles should be secured to prevent being blown away by wind. Stockpiles must be placed in a secured, signed and excluded location onsite.

9.3.2 Long Term Management

Long term stockpiles must be covered with geo-fabric or sealed with a soil binding product (dust-bloc) or sealed with hydro mulch. Large stockpiles should be bunded to prevent asbestos impacted water runoff.



Regular inspections of long-term stockpiles should be undertaken to ensure the controls implemented are in good condition, no dust is being generated from the stockpile and no runoff is occurring.

When the seal is broken on long term stockpiles, such as moving, excavation or tracking over the stockpile, the interim management measures must be implemented until such a time that the long-term controls can be re-implemented on the stockpile

9.4 SITE ACCESS

A sign/s shall be displayed adjacent to the site access point/s throughout the duration of the works with the contact details of the Contractor and project manager as provided and maintained by the Contractor.

All vehicle access to the site shall be stabilised to prevent the tracking of sediment onto the roads and footpaths. All materials must be removed from the roadway on a daily or as required basis.

9.5 NOISE

Remediation work shall not give rise to 'offensive noise' as defined in the Protection of the Environment Operations (POEO) Act 1997. All equipment and machinery associated with the remediation work shall be operated by the Contractor in accordance with the POEO Act (1997) and its *Noise Control Regulations 2000*.

Noise generated should be managed so as not to adversely impact the amenity or residents/business adjoining or nearby the site.

All machinery and equipment used on site will be in good working order and fitted with appropriate silencers when necessary.

9.6 VIBRATION

Vibration generated should be managed so as not to adversely impact the amenity of nearby residents.

9.7 DUST CONTROL

Dust emissions shall be confined within the site boundary. The following dust control procedures may be employed to comply with this requirement.

During the remedial works, as necessary, excavation areas will be wetted down using a water spray to minimise the potential for dust to be generated by the Contractor.

Meteorological conditions will be monitored by the Remediation Consultant and Contractor. Remedial work will be stopped or modified where meteorological conditions are adverse (i.e., dry conditions and strong winds towards sensitive receptors).



9.8 HAZARDOUS MATERIALS

Should any hazardous and/or intractable wastes be identified, they must be removed and disposed of in accordance with the requirements of NSW EPA and SafeWork NSW by the Contractor.

In particular, any hazardous wastes will be transported by a NSW EPA licensed transporter.

9.9 DISPOSAL OF CONTAMINATED SOIL

All soils will be classified, managed and disposed in accordance with the Waste Classification Guidelines (EPA 2014). Documentary evidence for all soil disposal shall be kept for inclusion in the Validation Report. The Contractor shall also log truck movements and approximate volume, via registration number and consignment number (where applicable), into and out of the site.

Trucks will be loaded in designated areas. The Contractor shall ensure that there is no material tracked out onto the street and that the load is securely covered. In addition, all site vehicles must leave the site in a forward direction.

All appropriate road rules shall be observed and state roads will be selected as far as practicable over local roads when deciding on the transport route to the off-site material disposal location.

Plant and vehicles should limit their speed when working within asbestos exclusion zones and only traverse designated paths. WasteLocate is now operational within NSW and any loads of asbestos waste that trigger the values of WasteLocate must be tracked via the online system.

9.10 COMMUNITY CONSULTATION

Owners and/or occupants of adjacent premises and across the road from the site will be notified at least seven days prior to the commencement of preparation for the remediation works. As a minimum, the notification shall include the details of an appropriate contact person.

9.11 HEALTH AND SAFETY MANAGEMENT

A Work Health & Safety Management Plan (WHSP) shall be prepared by the Contractor prior to commencement of remediation works on the site. The Plan shall contain procedures and requirements that are to be implemented as a minimum during the works.

The objectives of the WHSP are:

- Ensure all regulatory requirements for the proposed works are satisfied;
- To apply standard procedures that minimises risks resulting from the works;
- To ensure all employees are provided with appropriate training, equipment and support to consistently perform their duties in a safe manner; and
- To have procedures to protect other site workers and the general public.

These objectives will be achieved by:

- Assignment of responsibilities;



-
- An evaluation of hazards;
 - Establishment of personal protection standards, mandatory safety practices and procedures;
 - Monitoring of potential hazards and implementation of corrective measures; and
 - Provision for contingencies that may arise while operations are being conducted at the site.



10.0 CONCLUSION

Overall, it is considered that the proposed actions outlined in this RAP conform to the requirements of the Contaminated Sites Guidelines for the NSW Site Auditor Scheme (3rd Edition) (EPA 2017) because they are: technically feasible; environmentally justifiable; and consistent with relevant laws policies and guidelines endorsed by NSW EPA.

Subject to the successful implementation of the measures described in this RAP and with consideration to the Limitations presented in **Section 11**, it is considered that the site can be made suitable for the intended uses and that the risks posed by contamination can be managed in such a way as to be adequately protective of human health and the environment.



11.0 LIMITATIONS

The sole purpose of this report and the associated services performed by Compliance Health & Environmental Consulting Pty Ltd is to fulfil the scope outlined by Hodge Developments (hereafter known as the Client). This report is intended to satisfy the requirements of a Remedial Action Plan as defined by defined by State Environmental Planning Policy 55 – Remediation of Land. Compliance Health & Environmental Consulting Pty Ltd has made every effort to assess the Site in a professional manner adhering to the technical standards expected from a contaminated land consultant and report the representative condition at the time of the development of the RAP.

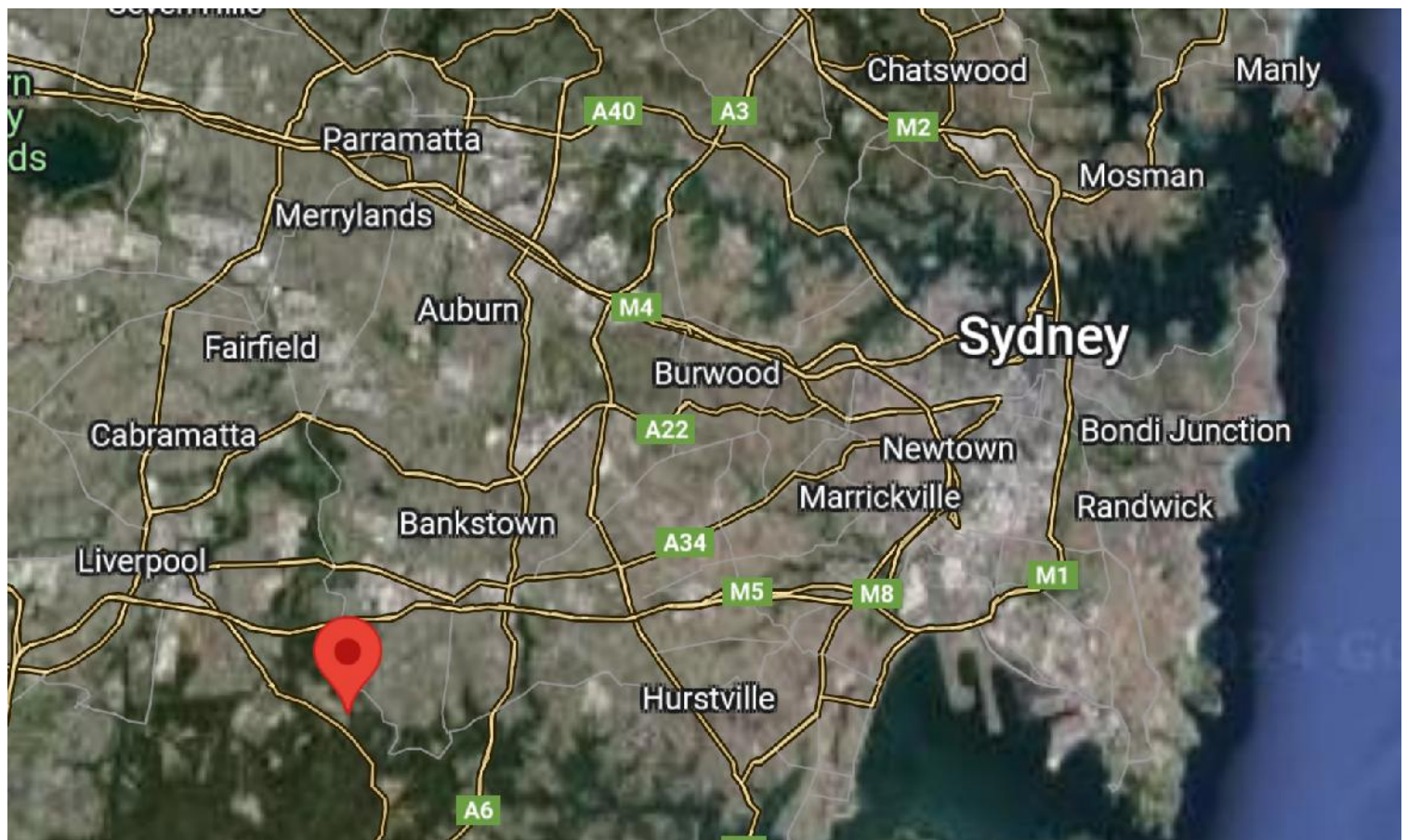
Compliance Health & Environmental Consulting Pty Ltd derived the information in this report from a number of sources which included correspondence regarding the proposal, examination of records in the public domain, previous investigations, anecdotal information regarding the site and the project, and field explorations conducted on the dates indicated. The passage of time, manifestation of latent conditions or impacts of future events may require further examination /exploration of the site and subsequent data analyses, together with a re-evaluation of the findings, observations and conclusions expressed in this report.

In preparing this report, Compliance Health & Environmental Consulting Pty Ltd may have relied upon and presumed accurate certain information (or absence thereof) relative to the site. Except as otherwise stated in the report, Compliance Health & Environmental Consulting Pty Ltd has not attempted to verify the accuracy of completeness of any such information (including for example survey data supplied by others). The findings, observations and conclusions expressed by Compliance Health & Environmental Consulting Pty Ltd in this report are not, and should not be considered an opinion concerning the completeness and accuracy of information supplied by others.

No warranty or guarantee, whether express or implied, is made with respect to the data reported or to the findings, observations and conclusions expressed in this report. Further, such data, findings and conclusions are based solely upon site conditions, information and drawings supplied by the Client and legislation etc. in existence at the time of the investigation. This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in connection with the provisions of the agreement between Compliance Health & Environmental Consulting Pty Ltd and the Client. Compliance Health & Environmental Consulting Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.



Figure 1 – Site Location



Title			
Site Location			
Site Address	Project No.	Figure No.	Date
Pleasure Point Rd, Pleasure Point	CH1530	1	29/04/2024
Client	Scale	Compiled	Revision
Hodge Developments Pty Ltd	NTS	RC	Rev. 1



Figure 2 – Site Survey

Locality : PLEASURE POINT

Parish : HOLSWORTHY

LGA : LIVERPOOL

County : CUMBERLAND

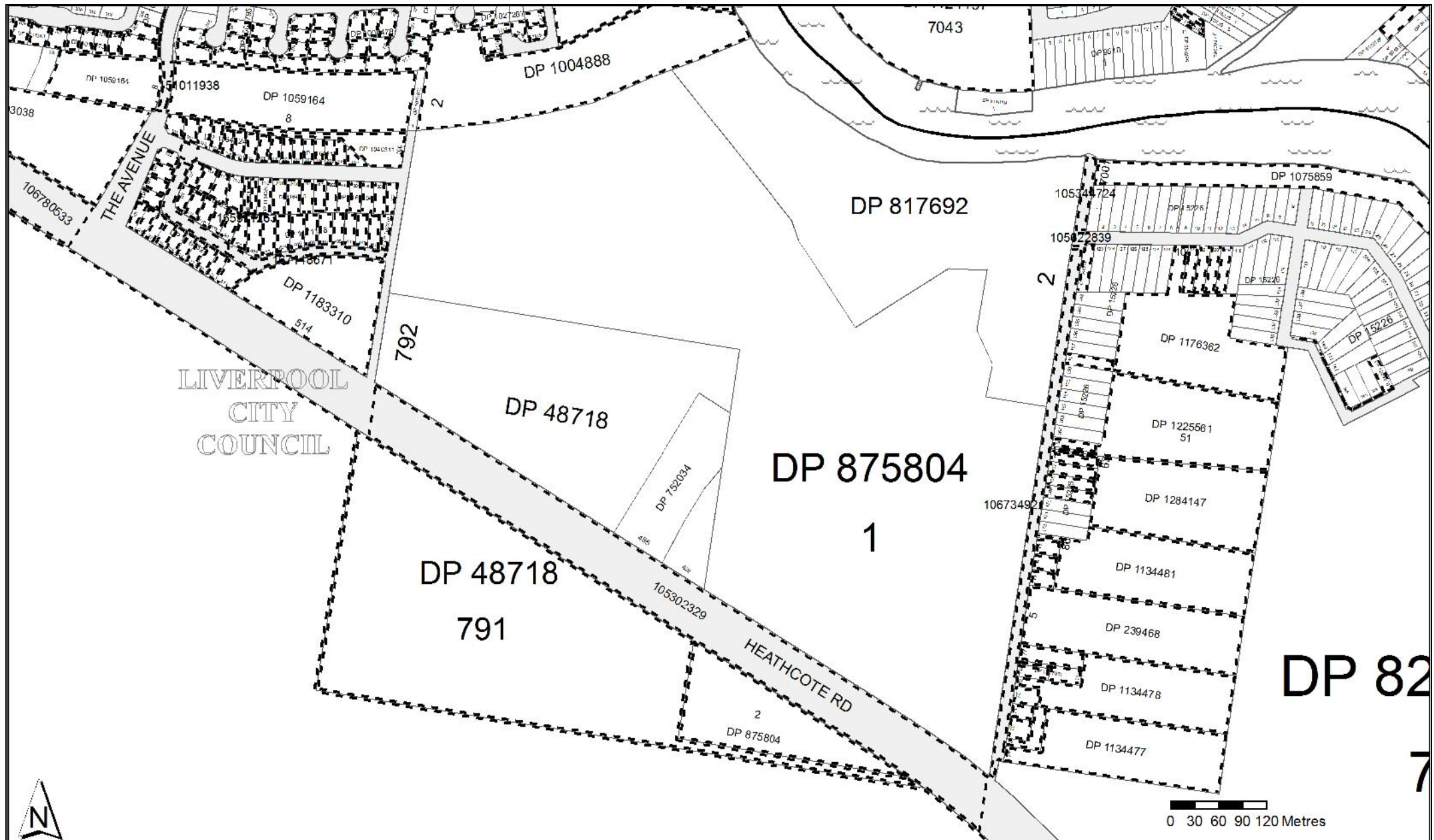
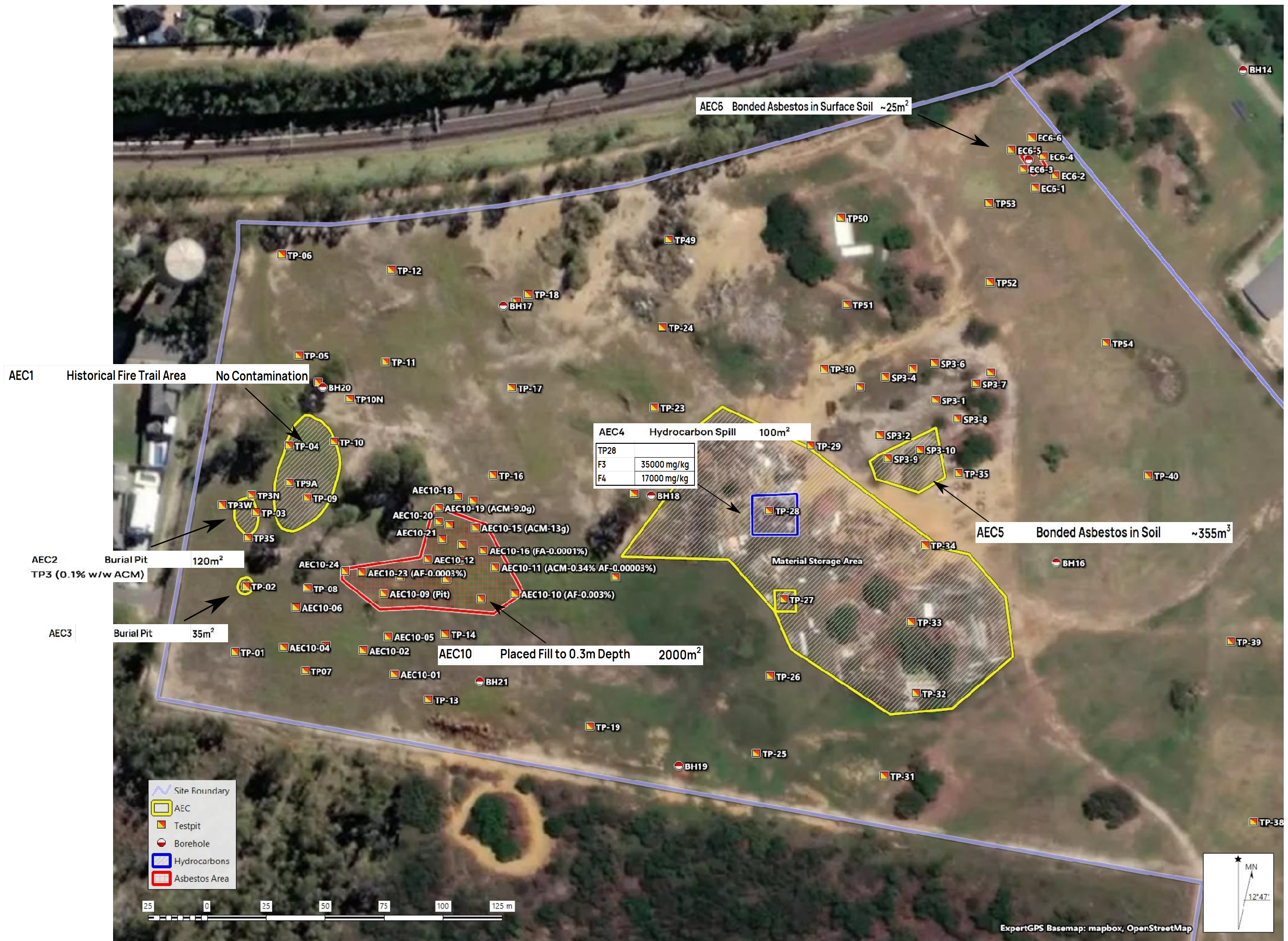




Figure 3 - Sample Layout – Full Site



Figure 4 - Sample Layout – Lot 1 West



Title Sampling Locations - Lot 1 West			
Site Address Pleasure Point Rd, Pleasure Point	Project No. CH1530	Figure No. 3	Date 14/06/2024
Client Hodge Developments Pty Ltd	Scale NTS	Compiled RC	Revision Rev. 1



Figure 5 - Sample Layout -Lot 2



SP10	
F3	3300 mg/kg
F4	2000 mg/kg
BaP(TEQ)	49mg/kg
PAH	270 mg/kg

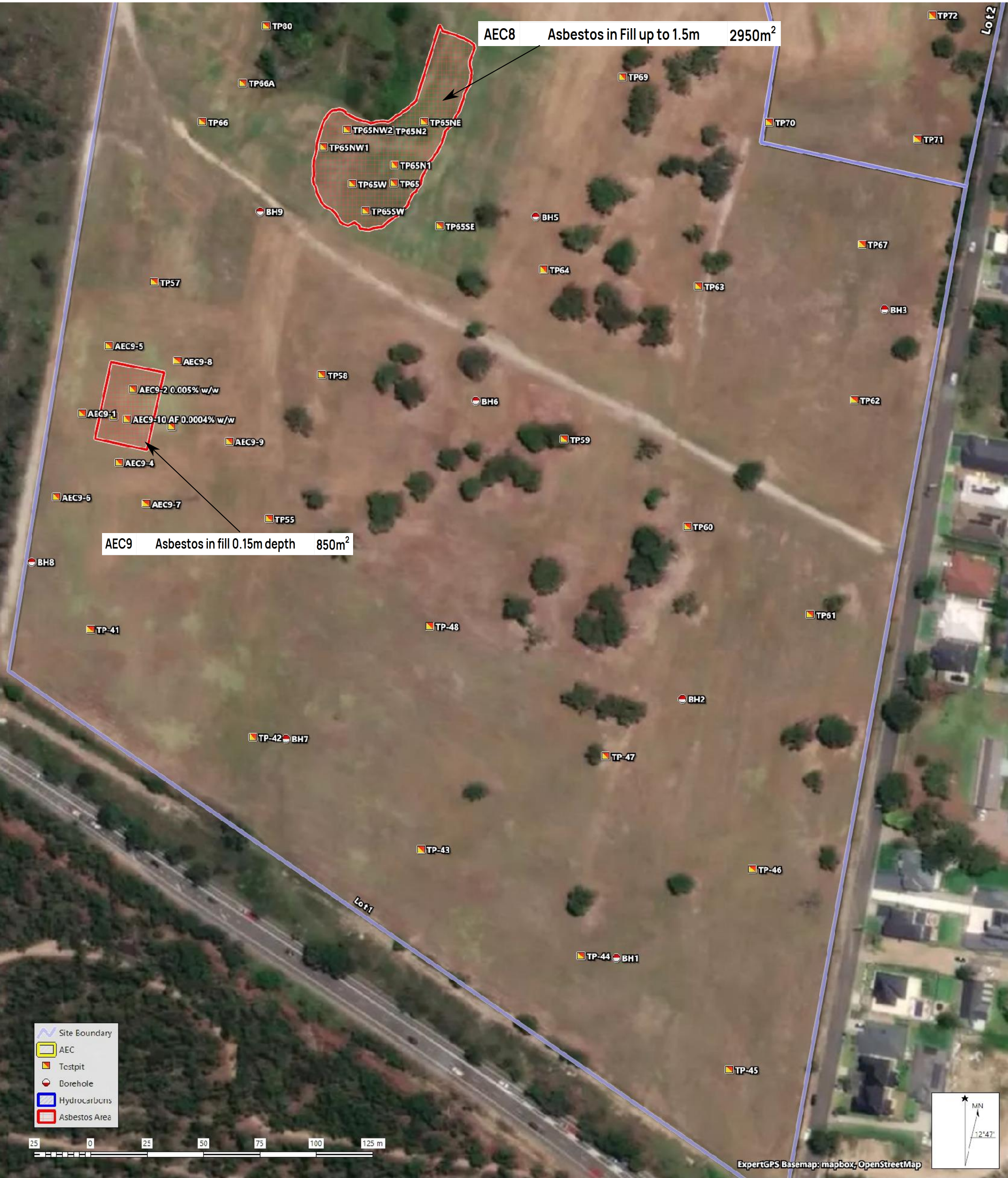
	Site Boundary
	AEC
	Testpit
	Borehole



Title Sampling Locations - Lot 2			
Site Address Pleasure Point Rd, Pleasure Point	Project No. CH1530	Figure No. 5	Date 29/04/2024
Client Hodge Developments Pty Ltd	Scale NTS	Compiled RC	Revision Rev. 1



Figure 6 - Sample Layout –Lot 1 South



 CHEC Compliance Health & Environmental Consulting	Title Sampling Locations - Lot 1 South			
	Site Address Pleasure Point Rd, Pleasure Point	Project No. CH1530	Figure No. 6	Date 14/06/2024
	Client Hodge Developments Pty Ltd	Scale NTS	Compiled RC	Revision Rev. 1



Appendix A – NATA Certified Laboratory Results



CHAIN OF CUSTODY RECORD

Page

2

Of

2

Laboratory	ASET			Project No	1530			Project Manager	R. Case			Email for Invoice	accounts@complianceenviro.com.au						
Laboratory Address	710/90 George Street, Hornsby			Project Name	Pleasure Point			Sampled by	RC			Email for Results	ops@complianceenviro.com.au						
CHEC Contact Name				Analysis Required	NEPM ASD											Containers	Required Turnaround Time (TAT)		
CHEC Phone No																500mL Plastic	Standard		
Special Directions																250mL Plastic			
Purchase Order																120mL Plastic			
Quote ID No														200mL Amber Glass					
														40mL VOA Vial					
														500mL PEAS Bottle					
														Jar (Glass or HDPE)					
														Other (Specify below)					
No	Sample ID	Sample Date	Sample Type														Sample Comments / Dangerous Goods Hazard Warning		
21	AEC10-12	30/05/24	Soil	X															
22	AEC10-13	30/05/24	Soil	X															
23	AEC10-13 FC	30/05/24	Soil	X															
24	AEC10-14	30/05/24	Soil	X															
25	AEC10-15	30/05/24	Soil	X															
26	AEC10-15 FC	30/05/24	Soil	X															
27	AEC10-16	30/05/24	Soil	X															
28	AEC10-17	30/05/24	Soil	X															
29	AEC10-18	30/05/24	Soil	X															
30	AEC10-19	30/05/24	Soil	X															
31	AEC10-19 FC	30/05/24	Soil	X															
32	AEC10-20	30/05/24	Soil	X															
33	AEC10-21	30/05/24	Soil	X															
34	AEC10-22	30/05/24	Soil	X															
35	AEC10-23	30/05/24	Soil	X															
36	AEC10-24	30/05/24	Soil	X															
37																			
38																			
39																			
40																			
Total Counts				16											16				
Deliverer	Name	R. Case	Signature	Date	Cooling Req'd: Yes / No				Cooling Method: Ice / Ice Bricks / Fridge										
	Received By		Signature	Date	Temp														



AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref : ASET118481 / 121661 / 1 - 36
Your ref : 1530 - Pleasure Point
NATA Accreditation No: 14484

06 June 2024

Compliance Health & Environmental Consulting
PO Box 275
Gosford NSW 2250



Accredited for compliance with ISO/IEC 17025 - Testing.

Attn: Mr Richard Case

Dear Richard

Asbestos Identification

This report presents the results of thirty six samples, forwarded by Compliance Health & Environmental Consulting on 03 June 2024, for analysis for asbestos.

1.Introduction:Thirty six samples forwarded were examined and analysed for the presence of asbestos on 04 June 2024, 05 June 2024 and 06 June 2024.

2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method **(Australian Standard AS 4964 - 2004 and Safer Environment Method 1 as the supplementary work instruction) (Qualitative Analysis only).**

The report also provides approximate weights and percentages, categories of asbestos forms appearing in the sample, such as **AF**(Asbestos Fines), **FA**(Friable Asbestos) and **ACM** (Asbestos Containing Material), also satisfying the requirements of the NEPM Guidelines).

3. Results : **Sample No. 1. ASET118481 / 121661 / 1. 1530 - AEC9-1.**
Approx dimensions 10.0 cm x 10.0 cm x 6.2 cm
Approximate total dry weight of soil = 620.0g.
The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of glass, sandstone and plant matter.
No asbestos detected.

Sample No. 2. ASET118481 / 121661 / 2. 1530 - AEC9-2.
Approx dimensions 10.0 cm x 10.0 cm x 7.5 cm
The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of fibre cement# (AF), glass, sandstone and plant matter.
Chrysotile# (Approximate estimated weight = 0.04g) asbestos detected.
Approximate total dry weight of soil = 754.0g.
Approximate estimated weight of asbestos in soil in the form of AF = 0.04g.
Approximate w/w percentage of asbestos in soil in the form of AF = 0.005%.

Sample No. 3. ASET118481 / 121661 / 3. 1530 - AEC9-3.
Approx dimensions 10.0 cm x 10.0 cm x 7.5 cm
Approximate total dry weight of soil = 751.0g.
The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of cement, sandstone and plant matter.
No asbestos detected.

SUITE 710 / 90 GEORGE STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY WESTFIELD NSW 1635

PHONE: (02) 99872183 FAX: (02)99872151 EMAIL: info@ausset.com.au WEBSITE: www.Ausset.com.au

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Sample No. 4. ASET118481 / 121661 / 4. 1530 - AEC9-4.

Approx dimensions 10.0 cm x 10.0 cm x 6.3 cm

Approximate total dry weight of soil = 632.0g.

The sample consisted of a mixture of sandy soil, stones, sandstone and plant matter.

No asbestos detected.

Sample No. 5. ASET118481 / 121661 / 5. 1530 - AEC9-5.

Approx dimensions 10.0 cm x 10.0 cm x 6.9 cm

Approximate total dry weight of soil = 690.0g.

The sample consisted of a mixture of sandy soil, stones, sandstone and plant matter.

No asbestos detected.

Sample No. 6. ASET118481 / 121661 / 6. 1530 - AEC9-6.

Approx dimensions 10.0 cm x 10.0 cm x 6.7 cm

Approximate total dry weight of soil = 665.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of cement, sandstone, soft fibrous material containing organic fibres, wood chips and plant matter.

No asbestos detected.

Sample No. 7. ASET118481 / 121661 / 7. 1530 - AEC9-7.

Approx dimensions 10.0 cm x 10.0 cm x 6.7 cm

Approximate total dry weight of soil = 668.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, sandstone and plant matter.

No asbestos detected.

Sample No. 8. ASET118481 / 121661 / 8. 1530 - AEC9-8.

Approx dimensions 10.0 cm x 10.0 cm x 8.6 cm

Approximate total dry weight of soil = 859.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of cement, sandstone and plant matter.

No asbestos detected.

Sample No. 9. ASET118481 / 121661 / 9. 1530 - AEC9-9.

Approx dimensions 10.0 cm x 10.0 cm x 7.5 cm

Approximate total dry weight of soil = 752.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, sandstone and plant matter.

No asbestos detected.

Sample No. 10. ASET118481 / 121661 / 10. 1530 - AEC9-10.

Approx dimensions 10.0 cm x 10.0 cm x 8.0 cm

The sample consisted of a mixture of sandy soil, stones, fragments of brick, cement, fibre cement*# (ACM and AF), glass, sandstone and plant matter.

Chrysotile*# (Approximate estimated weight as ACM = 0.11g and AF = 0.003g) asbestos detected.

Approximate total dry weight of ACM = 0.86g.

Approximate total dry weight of soil = 795.0g.

Approximate estimated weight of asbestos in soil in the form of ACM = 0.11g.

Approximate w/w percentage of asbestos in soil in the form of ACM = 0.01%.

Approximate estimated weight of asbestos in soil in the form of AF = 0.003g.

Approximate w/w percentage of asbestos in soil in the form of AF = 0.0004%.



Sample No. 11. ASET118481 / 121661 / 11. 1530 - AEC10-2.

Approx dimensions 10.0 cm x 10.0 cm x 5.7 cm

Approximate total dry weight of soil = 569.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of corroded metal, sandstone, wood chips and plant matter.

No asbestos detected.

Sample No. 12. ASET118481 / 121661 / 12. 1530 - AEC10-3.

Approx dimensions 10.0 cm x 10.0 cm x 6.2 cm

Approximate total dry weight of soil = 621.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of cement, glass, sandstone, wood chips and plant matter.

No asbestos detected.

Sample No. 13. ASET118481 / 121661 / 13. 1530 - AEC10-4.

Approx dimensions 10.0 cm x 10.0 cm x 8.4 cm

Approximate total dry weight of soil = 842.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of glass, sandstone and plant matter.

No asbestos detected.

Sample No. 14. ASET118481 / 121661 / 14. 1530 - AEC10-5.

Approx dimensions 10.0 cm x 10.0 cm x 5.9 cm

Approximate total dry weight of soil = 594.0g.

The sample consisted of a mixture of sandy soil, stones, sandstone and plant matter.

No asbestos detected.

Sample No. 15. ASET118481 / 121661 / 15. 1530 - AEC10-6.

Approx dimensions 10.0 cm x 10.0 cm x 6.8 cm

Approximate total dry weight of soil = 675.0g.

The sample consisted of a mixture of sandy soil, stones, sandstone and plant matter.

No asbestos detected.

Sample No. 16. ASET118481 / 121661 / 16. 1530 - AEC10-7.

Approx dimensions 10.0 cm x 10.0 cm x 6.7 cm

The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of brick, fibre cement*# (ACM and AF), sandstone and plant matter.

Chrysotile*# (Approximate estimated weight as ACM = 0.34g and AF = 0.0006g) asbestos, Amosite* (Approximate estimated weight = 0.07g) asbestos and Crocidolite* (Approximate estimated weight = 0.15g) asbestos detected.

Approximate total dry weight of ACM = 2.65g.

Approximate total dry weight of soil = 671.0g.

Approximate estimated weight of asbestos in soil in the form of ACM = 0.56g.

Approximate w/w percentage of asbestos in soil in the form of ACM = 0.08%.

Approximate estimated weight of asbestos in soil in the form of AF = 0.0006g.

Approximate w/w percentage of asbestos in soil in the form of AF = 0.0001%.

Sample No. 17. ASET118481 / 121661 / 17. 1530 - AEC10-8.

Approx dimensions 10.0 cm x 10.0 cm x 6.8 cm

Approximate total dry weight of soil = 675.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, sandstone, wood chips and plant matter.

No asbestos detected.



Sample No. 18. ASET118481 / 121661 / 18. 1530 - AEC10-9.

Approx dimensions 10.0 cm x 10.0 cm x 6.5 cm

Approximate total dry weight of soil = 647.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, sandstone, wood chips and plant matter.

No asbestos detected.

Sample No. 19. ASET118481 / 121661 / 19. 1530 - AEC10-10.

Approx dimensions 10.0 cm x 10.0 cm x 7.3 cm

The sample consisted of a mixture of sandy soil, stones, fragments of fibre cement# (AF), glass, sandstone and plant matter.

Chrysotile# (Approximate estimated weight = 0.02g) asbestos detected.

Approximate total dry weight of soil = 730.0g.

Approximate estimated weight of asbestos in soil in the form of AF = 0.02g.

Approximate w/w percentage of asbestos in soil in the form of AF = 0.003%.

Sample No. 20. ASET118481 / 121661 / 20. 1530 - AEC10-11.

Approx dimensions 10.0 cm x 10.0 cm x 6.4 cm

The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of cement, fibre cement*# (ACM and AF), sandstone and plant matter.

Chrysotile*# (Approximate estimated weight as ACM = 1.33g and AF = 0.0002g) asbestos, Amosite* (Approximate estimated weight asbestos = 0.28g) and Crocidolite* (Approximate estimated weight = 0.58g) asbestos detected.

Approximate total dry weight of ACM = 10.47g.

Approximate total dry weight of soil = 643.0g.

Approximate estimated weight of asbestos in soil in the form of ACM = 2.19g.

Approximate w/w percentage of asbestos in soil in the form of ACM = 0.34%.

Approximate estimated weight of asbestos in soil in the form of AF = 0.0002g.

Approximate w/w percentage of asbestos in soil in the form of AF = 0.00003%.

Sample No. 21. ASET118481 / 121661 / 21. 1530 - AEC10-12.

Approx dimensions 10.0 cm x 10.0 cm x 6.0 cm

Approximate total dry weight of soil = 594.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, sandstone, wood chips and plant matter.

No asbestos detected.

Sample No. 22. ASET118481 / 121661 / 22. 1530 - AEC10-13.

Approx dimensions 10.0 cm x 10.0 cm x 7.3 cm

The sample consisted of a mixture of sandy soil, stones, fragments of fibre cement# (AF), paint flakes, sandstone, wood chips and plant matter.

Chrysotile# (Approximate estimated weight = 0.005g) asbestos, Amosite# (Approximate estimated weight = 0.001g) asbestos and Crocidolite# (Approximate estimated weight = 0.002g) asbestos detected.

Approximate total dry weight of soil = 726.0g.

Approximate estimated weight of asbestos in soil in the form of AF = 0.008g.

Approximate w/w percentage of asbestos in soil in the form of AF = 0.001%.

λ Sample No. 23. ASET118481 / 121661 / 23. 1530 - AEC10-13 FC.

Approx dimensions 8.0 cm x 5.5 cm x 0.5 cm

The sample consisted of a fragment of a fibre cement material.

Chrysotile asbestos detected.

Approximate total dry weight of fibre cement = 35.0g.



Sample No. 24. ASET118481 / 121661 / 24. 1530 - AEC10-14.

Approx dimensions 10.0 cm x 10.0 cm x 6.0 cm

Approximate total dry weight of soil = 630.0g.

The sample consisted of a mixture of sandy soil, stones, sandstone and plant matter.

No asbestos detected.

Sample No. 25. ASET118481 / 121661 / 25. 1530 - AEC10-15.

Approx dimensions 10.0 cm x 10.0 cm x 6.7 cm

Approximate total dry weight of soil = 671.0g.

The sample consisted of a mixture of sandy soil, stones, fragments of glass, sandstone plant matter.

No asbestos detected.

λ Sample No. 26. ASET118481 / 121661 / 26. 1530 - AEC10-15 FC.

Approx dimensions 7.7 cm x 3.0 cm x 0.5 cm

The sample consisted of a fragment of a fibre cement material.

Chrysotile asbestos, Amosite asbestos and Crocidolite asbestos detected.

Approximate total dry weight of soil = 13.0g.

Sample No. 27. ASET118481 / 121661 / 27. 1530 - AEC10-16.

Approx dimensions 10.0 cm x 10.0 cm x 6.3 cm

The sample consisted of a mixture of sandy soil, stones, fragments of fibre cement# (FA), glass, sandstone, wood chips and plant matter.

Chrysotile# (Approximate estimated weight = 0.0008g) asbestos detected.

Approximate total dry weight of soil = 627.0g.

Approximate estimated weight of asbestos in soil in the form of FA = 0.0008g.

Approximate w/w percentage of asbestos in soil in the form of FA = 0.0001%.

Ω Sample No. 28. ASET118481 / 121661 / 28. 1530 - AEC10-17.

Approx dimensions 10.0 cm x 10.0 cm x 4.8 cm

Approximate total dry weight of soil = 478.0g.

The sample consisted of a mixture of sandy soil, stones, sandstone and plant matter.

No asbestos detected.

Sample No. 29. ASET118481 / 121661 / 29. 1530 - AEC10-18.

Approx dimensions 10.0 cm x 10.0 cm x 6.0 cm

Approximate total dry weight of soil = 601.0g.

The sample consisted of a mixture of sandy soil, stones, sandstone and plant matter.

No asbestos detected.

Sample No. 30. ASET118481 / 121661 / 30. 1530 - AEC10-19.

Approx dimensions 10.0 cm x 10.0 cm x 6.5 cm

Approximate total dry weight of soil = 647.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, sandstone and plant matter.

No asbestos detected.

λ Sample No. 31. ASET118481 / 121661 / 31. 1530 - AEC10-19 FC.

Approx dimensions 5.2 cm x 4.5 cm x 0.2 cm

The sample consisted of fragments of a fibre cement material.

Chrysotile asbestos detected.

Approximate total dry weight of fibre cement = 9.0g.



Sample No. 32. ASET118481 / 121661 / 32. 1530 - AEC10-20.

Approx dimensions 10.0 cm x 10.0 cm x 5.8 cm

Approximate total dry weight of soil = 581.0g.

The sample consisted of a mixture of sandy soil, stones, fragments of glass, sandstone and plant matter.

No asbestos detected.

Sample No. 33. ASET118481/ 121661/ 33. 1530 - AEC10-21.

Approx dimensions 10.0 cm x 10.0 cm x 5.0 cm

Approximate total dry weight of soil = 501.0g.

The sample consisted of a mixture of sandy soil, stones, sandstone, wood chips and plant matter.

No asbestos detected.

Sample No. 34. ASET118481 / 121661 / 34. 1530 - AEC10-22.

Approx dimensions 10.0 cm x 10.0 cm x 6.9 cm

Approximate total dry weight of soil = 685.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of mastic like material, sandstone and plant matter.

No asbestos detected.

Sample No. 35. ASET118481 / 121661 / 35. 1530 - AEC10-23.

Approx dimensions 10.0 cm x 10.0 cm x 7.8 cm

The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of fibre cement# (AF), sandstone, wood chips and plant matter.

Chrysotile# (Approximate estimated weight = 0.016g) asbestos detected.

Approximate total dry weight of soil = 778.0g.

Approximate estimated weight of asbestos in soil in the form of AF = 0.002g.

Approximate w/w percentage of asbestos in soil in the form of AF = 0.0003%.

Sample No. 36. ASET118481 / 121661 / 36. 1530 - AEC10-24.

Approx dimensions 10.0 cm x 10.0 cm x 7.0 cm

Approximate total dry weight of soil = 699.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, sandstone and plant matter.

No asbestos detected.

Reported by,

A handwritten signature in black ink, appearing to read "Mahen De Silva", with a stylized flourish at the end.

Mahen De Silva. BSc, MSc, Grad Dip (Occ Hyg)

Occupational Hygienist / Approved Identifier. Accredited for compliance with ISO/IEC 17025 - Testing.

Approved Signatory



**WORLD RECOGNISED
ACCREDITATION**

This report is consistent with the analytical procedures and reporting recommendations in the Western Australia Guidelines for the Assessment Remediation and Management of Asbestos contaminated sites



in Western Australia and it also satisfies the requirements of the current NEPM Guidelines. NATA Accreditation does not cover the performance of this service.

Disclaimers;

The approx; weights given above can be used only as a guide. They do not represent absolute weights of each kind of asbestos, as it is impossible to extract all loose fibres from soil and other asbestos containing building material samples using this method. However above figures may be used as closest approximations to the exact values in each case. Estimation and/ or reporting of asbestos fibre weights in asbestos containing materials and soil is out of the Scope of the NATA Accreditation. NATA Accreditation only covers the qualitative part of the results reported. This weight disclaimer also covers weight / weight percentages if given.

ACM - Asbestos Containing Material - Products or materials that contain asbestos in an inert bound matrix such as cement or resin. Here taken to be sound material, even as fragments and not fitting through a 7mm X 7 mm sieve.

AF -Includes asbestos free fibres, small fibre bundles and also ACM fragments that pass through a 7mm X 7 mm sieve.

FA -Friable asbestos material such as severely weathered ACM, and asbestos in the form of loose fibrous material such as insulation products.

^ denotes loose fibres of relevant asbestos types detected in soil/dust.

*** denotes asbestos detected in ACM in bonded form.**

denotes friable asbestos as soft fibro plaster, fragments of ACM smaller than 7mm which are considered as friable and / or highly weathered ACM that will easily crumble.

λ denotes samples that have been analysed only in accordance to AS 4964 – 2004.

Ω Sample volume criteria of 500mL have not been satisfied.

The results contained in this report relate only to the sample/s submitted for testing. Australian Safer Environment & Technology accepts no responsibility for whether or not the submitted sample/s is/are representative. Results indicating "No asbestos detected" indicates a reporting limit specified in AS4964 -2004 which is 0.1g/ Kg (0.01%). Any amounts detected at assumed lower level than that would be reported, however those assumed lower levels may be treated as "No asbestos detected" as specified and recommended by AS4964-2004. Trace / respirable level asbestos will be reported only when detected and trace analysis have been performed on each sample as required by AS4964-2004. When loose asbestos fibres/ fibre bundles are detected and reported that means they are larger handpicked fibres/ fibre bundles, and they do not represent respirable fibres. Dust/soil samples are always subjected to trace analysis except where the amounts involved are extremely minute and trace analysis is not possible to be carried out. When trace analysis is not performed on dust samples it will be indicated in the report that trace analysis has not been carried out due to the volume of the sample being extremely minute.

Estimation of asbestos weights involves the use of following assumptions;

Volume of each kind of Asbestos present in broken edges have been visually estimated and its been assumed that volumes remain similar throughout the binding matrix and those volumes are only approximate and not exact. Material densities have been assumed to be similar to commonly found similar materials and may not be exact.

All samples indicating "No asbestos detected" are assumed to be less than 0.001% for friable AF and FA portions detected and 0.01 % for ACM detected unless the approximate weight is given.



Page

1

Of

1

[illegible]

11:50 AM

1103891

Compliance Health & Environmental Consulting P/L
PO Box 275
Gosford
NSW 2250



NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
 NATA is a signatory to the ILAC Mutual Recognition
 Arrangement for the mutual recognition of the
 equivalence of testing, medical testing, calibration,
 inspection, proficiency testing scheme providers and
 reference materials producers reports and certificates.

Attention: **RESULTS - ALL SRAS HERE ONLY - NO INVOICES**

Report **1103891-S**
Project name **PLEASURE POINT**
Project ID **1530**
Received Date **Jun 03, 2024**

Client Sample ID			AEC9-1	AEC9-2	AEC9-3	AEC9-4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S24-Jn0003262	S24-Jn0003263	S24-Jn0003264	S24-Jn0003265
Date Sampled			May 31, 2024	May 31, 2024	May 31, 2024	May 31, 2024
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	5	mg/kg	54	23	17	24
Sample Properties						
% Moisture	1	%	13	12	15	16

Client Sample ID			AEC9-5	AEC9-6	AEC9-7	AEC9-8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S24-Jn0003266	S24-Jn0003267	S24-Jn0003268	S24-Jn0003269
Date Sampled			May 31, 2024	May 31, 2024	May 31, 2024	May 31, 2024
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	5	mg/kg	17	28	15	29
Sample Properties						
% Moisture	1	%	18	12	11	15

Client Sample ID			AEC9-9	AEC9-10
Sample Matrix			Soil	Soil
Eurofins Sample No.			S24-Jn0003270	S24-Jn0003271
Date Sampled			May 31, 2024	May 31, 2024
Test/Reference	LOR	Unit		
Heavy Metals				
Lead	5	mg/kg	19	14
Sample Properties				
% Moisture	1	%	20	16

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description

Heavy Metals

- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS

% Moisture

- Method: LTM-GEN-7080 Moisture

Testing Site

Sydney

Sydney

Extracted

Jun 06, 2024

Jun 03, 2024

Holding Time

28 Days

14 Days



web: www.eurofins.com.au
email: EnviroSales@eurofins.com

ABN: 50 005 085 521

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289
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ABN: 91 05 0159 898

Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370

ABN: 47 009 120 549

Perth ProMicro 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2561 Site# 2554
--

NZBN: 9429046024954

Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Focus) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402
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Company Name:
Address:

Project Name:
Project ID:

Compliance Health & Environmental Consulting P/L
PO Box 275
Gosford
NSW 2250

PLEASURE POINT
1530

Order No.:
Report #:
Phone:
Fax:

1103891
02 4304 0091

Received:
Due:
Priority:
Contact Name:

Jun 3, 2024 11:50 AM
Jun 10, 2024
5 Day
RESULTS - ALL SRAS HERE

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Lead	Moisture Set
Sydney Laboratory - NATA # 1261 Site # 18217						X	X
External Laboratory							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	AEC9-1	May 31, 2024		Soil	S24-Jn0003262	X	X
2	AEC9-2	May 31, 2024		Soil	S24-Jn0003263	X	X
3	AEC9-3	May 31, 2024		Soil	S24-Jn0003264	X	X
4	AEC9-4	May 31, 2024		Soil	S24-Jn0003265	X	X
5	AEC9-5	May 31, 2024		Soil	S24-Jn0003266	X	X
6	AEC9-6	May 31, 2024		Soil	S24-Jn0003267	X	X
7	AEC9-7	May 31, 2024		Soil	S24-Jn0003268	X	X
8	AEC9-8	May 31, 2024		Soil	S24-Jn0003269	X	X
9	AEC9-9	May 31, 2024		Soil	S24-Jn0003270	X	X
10	AEC9-10	May 31, 2024		Soil	S24-Jn0003271	X	X
Test Counts						10	10

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ppm: parts per million
µg/L: micrograms per litre	ppb: parts per billion	%: Percentage
org/100 mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100 mL: Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	Colour: Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank										
Heavy Metals										
Lead				mg/kg	< 5			5	Pass	
LCS - % Recovery										
Heavy Metals										
Lead				%	94			80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1				Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery										
Heavy Metals										
Lead					Result 1					
Lead				%	96			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1				Acceptance Limits	Pass Limits	Qualifying Code
Duplicate										
Heavy Metals										
Lead					Result 1	Result 2	RPD			
Lead				mg/kg	460	400	14	30%	Pass	
Duplicate										
Sample Properties										
% Moisture					Result 1	Result 2	RPD			
% Moisture				%	15	15	2.1	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised by:

Nileshni Goundar	Analytical Services Manager
Fang Yee Tan	Senior Analyst-Metal
Roopesh Rangarajan	Senior Analyst-Sample Properties



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

CHAIN OF CUSTODY RECORD

ASE7118639/121819/1-6

Laboratory		ASE7		Project No		1570		Project Manager		J. Gross		Email for Invoice		accounts@complianceenviro.com.au			
Laboratory Address		710/90 George St Hobart		Project Name		Measure Point		Sampled by		J. Gross		Email for Results		ops@complianceenviro.com.au			
CHEC Contact Name				Analysis Required		NORM AS4											
Phone No																	
Special Directions																	
Purchase Order																	
Quote ID No																	
														Required Turnaround Time (TAT)			
														24 hr			
														Sample Comments / Dangerous Goods Hazard Warning			
No	Sample ID	Sample Date	Sample Type														
1	AECS-1	7/6	Soil														
2	AECS-2																
3	AECS-3																
4	AECS-4																
5	AECS-5																
6	AECS-6																
7																	
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16																	
17																	
18																	
19																	
20																	
Total Counts		Name		Signature		Date		Temp									
Deliverce		Received By		Signature		Date											

RECEIVED
 07 JUN 2024
 BY: E.T.

URGENT



AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref : ASET118639 / 121819 / 1 - 6
Your ref : 1530 - Pleasure Point
NATA Accreditation No: 14484

11 June 2024

Compliance Health & Environmental Consulting
PO Box 275
Gosford NSW 2250



Accredited for compliance with ISO/IEC 17025 - Testing.

Attn: Mr Richard Case

Dear Richard

Asbestos Identification

This report presents the results of six samples, forwarded by Compliance Health & Environmental Consulting on 7 June 2024, for analysis for asbestos.

1.Introduction: Six samples forwarded were examined and analysed for the presence of asbestos on 11 June 2024.

2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method **(Australian Standard AS 4964 - 2004 and Safer Environment Method 1 as the supplementary work instruction) (Qualitative Analysis only).**

The report also provides approximate weights and percentages, categories of asbestos forms appearing in the sample, such as **AF**(Asbestos Fines), **FA**(Friable Asbestos) and **ACM** (Asbestos Containing Material), also satisfying the requirements of the NEPM Guidelines).

3. Results : Sample No. 1. ASET118639 / 121819 / 1. 1530 - AEC6-1.

Approx dimensions 10.0 cm x 10.0 cm x 8.6 cm

Approximate total dry weight of soil = 857.0g.

The sample consisted of a mixture of sandy soil, stones, fragments of cement, glass, paint flakes, plastic, sandstone and plant matter.

No asbestos detected.

Sample No. 2. ASET118639 / 121819 / 2. 1530 - AEC6-2.

Approx dimensions 10.0 cm x 10.0 cm x 9.6 cm

Approximate total dry weight of soil = 964.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of cement, sandstone, wood chips and plant matter.

No asbestos detected.

Sample No. 3. ASET118639 / 121819 / 3. 1530 - AEC6-3.

Approx dimensions 10.0 cm x 10.0 cm x 9.0 cm

Approximate total dry weight of soil = 898.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, sandstone and plant matter.

No asbestos detected.

Sample No. 4. ASET118639 / 121819 / 4. 1530 - AEC6-4.

Approx dimensions 10.0 cm x 10.0 cm x 10.5 cm

Approximate total dry weight of soil = 1048.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of ceramic tiles, sandstone and plant matter.

No asbestos detected.

SUITE 710 / 90 GEORGE STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY WESTFIELD NSW 1635

PHONE: (02) 99872183 FAX: (02)99872151 EMAIL: info@ausset.com.au WEBSITE: www.Ausset.com.au

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Sample No. 5. ASET118639 / 121819 / 5. 1530 - AEC6-5.

Approx dimensions 10.0 cm x 10.0 cm x 8.5 cm

Approximate total dry weight of soil = 845.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, fragments of cement, ceramic tiles, glass, sandstone, wood chips and plant matter.

No asbestos detected.

Sample No. 6. ASET118639 / 121819 / 6. 1530 - AEC6-6.

Approx dimensions 10.0 cm x 10.0 cm x 8.2 cm

Approximate total dry weight of soil = 817.0g.

The sample consisted of a mixture of sandy soil, organic fibres, stones, sandstone, wood chips and plant matter.

No asbestos detected.

Reported by,

A handwritten signature in black ink, appearing to read "Mahen De Silva". The signature is written in a cursive, flowing style.

Mahen De Silva. BSc, MSc, Grad Dip (Occ Hyg)

Occupational Hygienist / Approved Identifier.

Approved Signatory



This report is consistent with the analytical procedures and reporting recommendations in the Western Australia Guidelines for the Assessment Remediation and Management of Asbestos contaminated sites in Western Australia and it also satisfies the requirements of the current NEPM Guidelines. NATA Accreditation does not cover the performance of this service.

Disclaimers;

The approx; weights given above can be used only as a guide. They do not represent absolute weights of each kind of asbestos, as it is impossible to extract all loose fibres from soil and other asbestos containing building material samples using this method. However above figures may be used as closest approximations to the exact values in each case. Estimation and/ or reporting of asbestos fibre weights in asbestos containing materials and soil is out of the Scope of the NATA Accreditation. NATA Accreditation only covers the qualitative part of the results reported. This weight disclaimer also covers weight / weight percentages if given.

ACM - Asbestos Containing Material - Products or materials that contain asbestos in an inert bound matrix such as cement or resin. Here taken to be sound material, even as fragments and not fitting through a 7mm X 7 mm sieve.

AF -Includes asbestos free fibres, small fibre bundles and also ACM fragments that pass through a 7mm X 7 mm sieve.



FA -Friable asbestos material such as severely weathered ACM, and asbestos in the form of loose fibrous material such as insulation products.

^ denotes loose fibres of relevant asbestos types detected in soil/dust.

*** denotes asbestos detected in ACM in bonded form.**

denotes friable asbestos as soft fibro plaster, fragments of ACM smaller than 7mm which are considered as friable and / or highly weathered ACM that will easily crumble.

λ denotes samples that have been analysed only in accordance to AS 4964 – 2004.

Ω Sample volume criteria of 500mL have not been satisfied.

The results contained in this report relate only to the sample/s submitted for testing. Australian Safer Environment & Technology accepts no responsibility for whether or not the submitted sample/s is/are representative. Results indicating "No asbestos detected" indicates a reporting limit specified in AS4964 -2004 which is 0.1g/ Kg (0.01%). Any amounts detected at assumed lower level than that would be reported, however those assumed lower levels may be treated as "No asbestos detected" as specified and recommended by AS4964-2004. Trace / respirable level asbestos will be reported only when detected and trace analysis have been performed on each sample as required by AS4964-2004. When loose asbestos fibres/ fibre bundles are detected and reported that means they are larger handpicked fibres/ fibre bundles, and they do not represent respirable fibres. Dust/soil samples are always subjected to trace analysis except where the amounts involved are extremely minute and trace analysis is not possible to be carried out. When trace analysis is not performed on dust samples it will be indicated in the report that trace analysis has not been carried out due to the volume of the sample being extremely minute.

Estimation of asbestos weights involves the use of following assumptions;

Volume of each kind of Asbestos present in broken edges have been visually estimated and its been assumed that volumes remain similar throughout the binding matrix and those volumes are only approximate and not exact. Material densities have been assumed to be similar to commonly found similar materials and may not be exact.

All samples indicating "No asbestos detected" are assumed to be less than 0.001% for friable AF and FA portions detected and 0.01 % for ACM detected unless the approximate weight is given.



Appendix B – Masterplan Design Drawings



comment

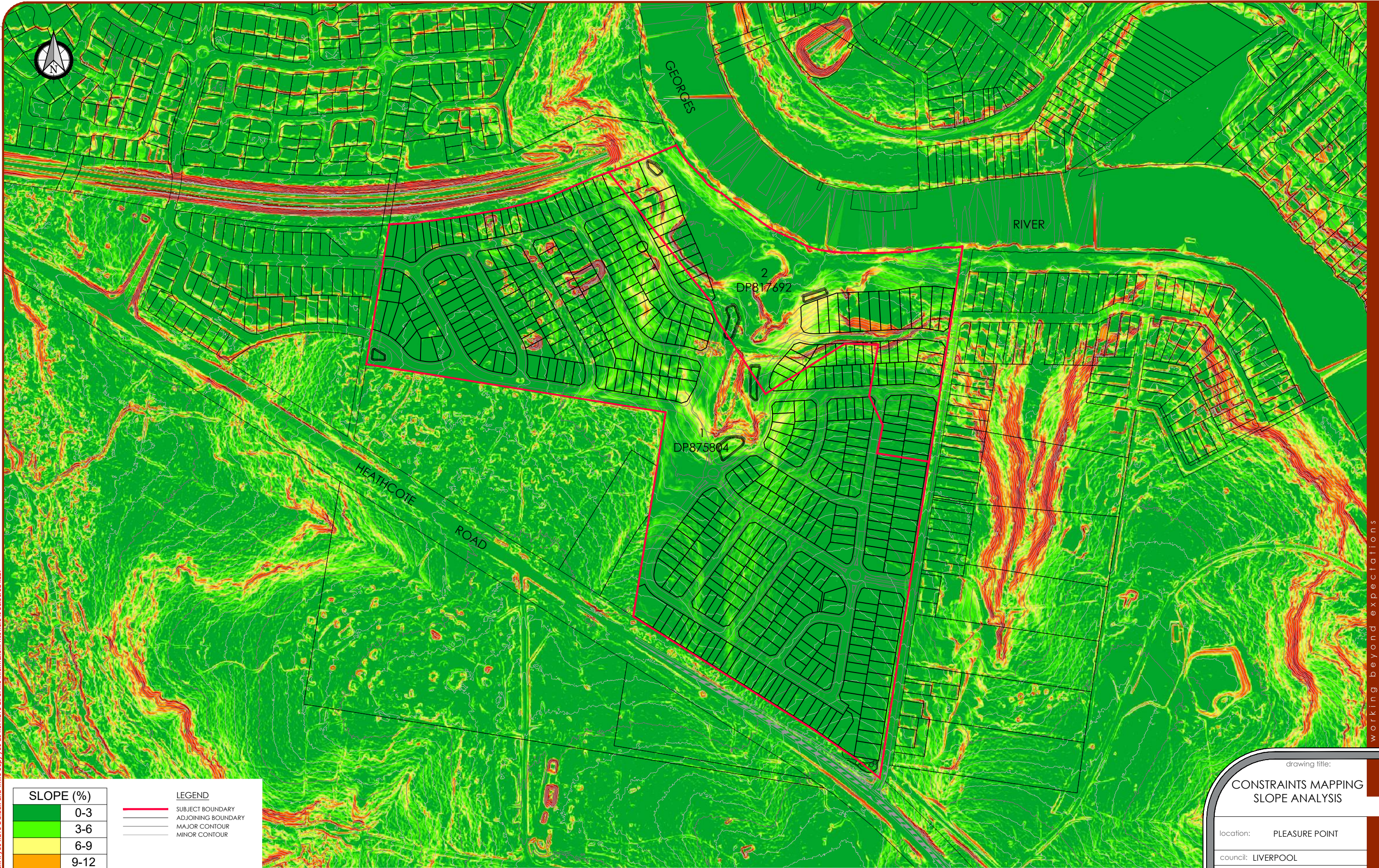
INITIAL ISSUE

management

- *development feasibility*
- *visualisation*
- *urban design*

ver.	date	comment	drawn	pm	level information	scale (A1 original size)
A	20.05.2024	INITIAL ISSUE	JJ	BM	DATUM: AHD CONTOUR INTERVAL: 1m	A1 1:2500  A3 1:5000
● project management		● civil engineering		● infrastructure		● superintendency
● economic						

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SLOPE (%)	
	0-3
	3-6
	6-9
	9-12
	12-15
	15-25
	25>

LEGEND	
	SUBJECT BOUNDARY
	ADJOINING BOUNDARY
	MAJOR CONTOUR
	MINOR CONTOUR

ver.	date	comment	drawn	pm	level information	scale (A1 original size)	notes
A	20.05.2024	INITIAL ISSUE	JJ	BM	DATUM: AHD CONTOUR INTERVAL: 1m	A1 1:2500 0 50 100 125m A3 1:5000	

SOURCE
TOPO - NSW GOVERNMENT SPATIAL SERVICES
BOUNDARIES - NSW DIGITAL CADASTRAL DATABASE (DCDB)

drawing title:

CONSTRAINTS MAPPING
SLOPE ANALYSIS

location:

PLEASURE POINT

council:

LIVERPOOL

dwg ref:

300362-CONS-00

client:

mirvac

adw johnson

central coast office

ph: (02) 4305 4300

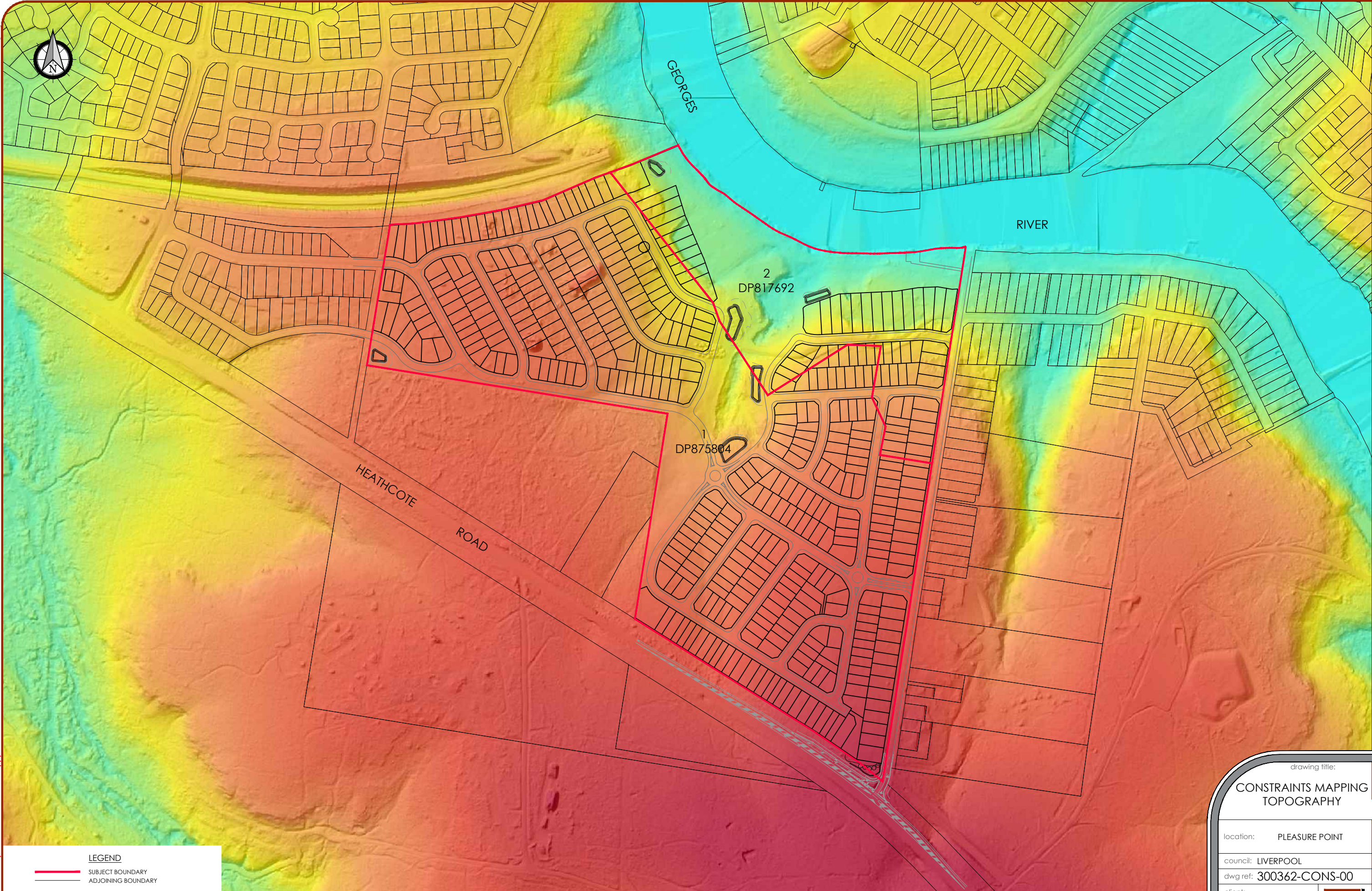
hunter office

ph: (02) 4978 5100

sydney office

ph: (02) 8046 7411

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working beyond expectations

LEGEND

SUBJECT BOUNDARY

ADJOINING BOUNDARY

RL0

RL10

RL20

RL30

RL40+

ver.	date	comment	drawn	pm	level information	scale (A1 original size)	notes
A	20.05.2024	INITIAL ISSUE	JJ	BM	DATUM: AHD CONTOUR INTERVAL: 1m	A1 1:2500 0 50 100 125m A3 1:5000	

• project management

• civil engineering

• infrastructure

• superintendency

• economic analysis

• social impact

• town planning

• surveying

• development feasibility

• visualisation

• urban design

SOURCE
TOPO - NSW GOVERNMENT SPATIAL SERVICES
BOUNDARIES - NSW DIGITAL CADASTRAL DATABASE (DCDB)

drawing title:

CONSTRAINTS MAPPING
TOPOGRAPHY

location:

PLEASURE POINT

council:

LIVERPOOL

dwg ref:

300362-CONS-00

client:

mirvac

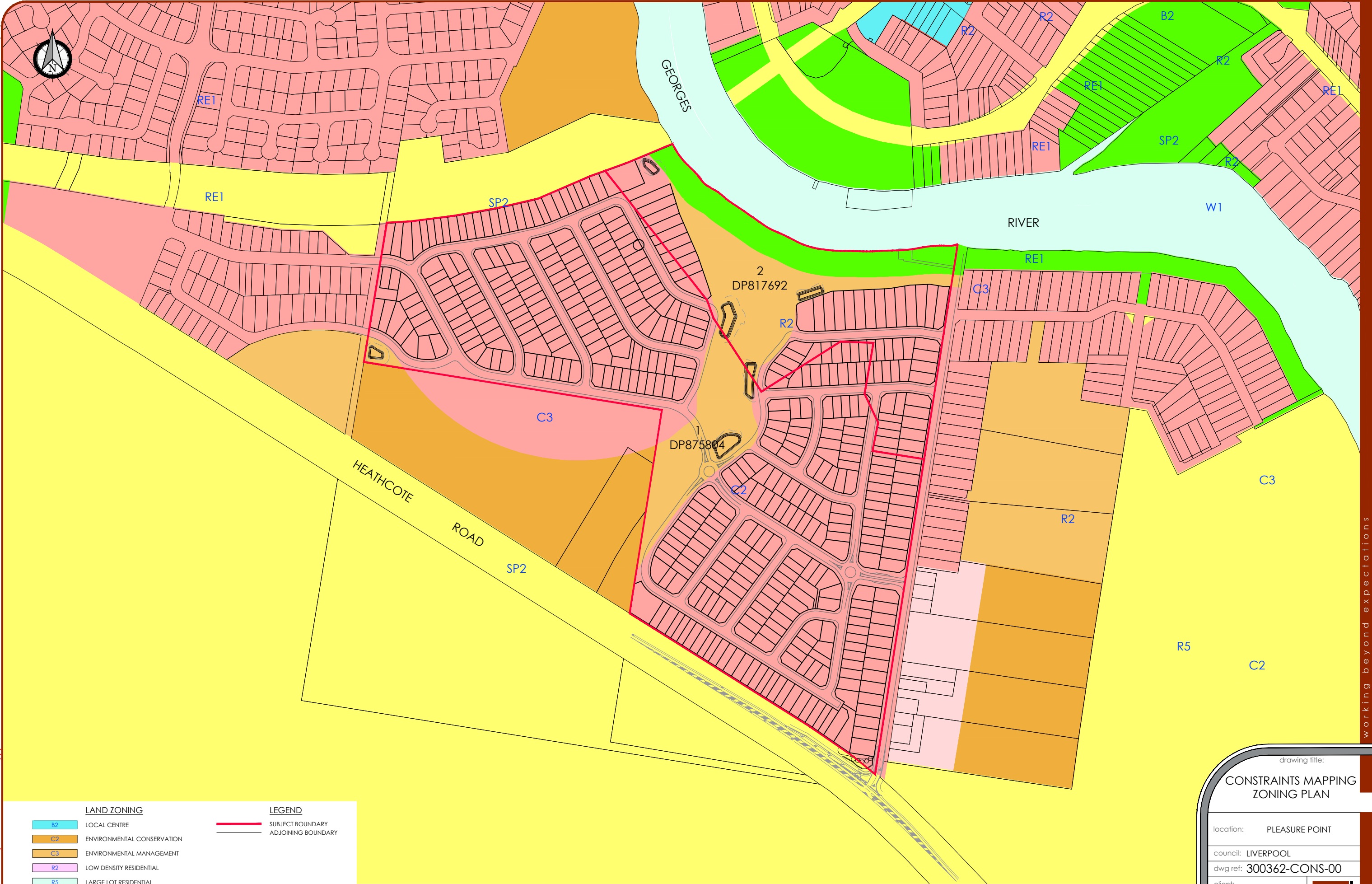
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B2

LOCAL CENTRE

C2

ENVIRONMENTAL CONSERVATION

C3

ENVIRONMENTAL MANAGEMENT

R2

LOW DENSITY RESIDENTIAL

R5

LARGE LOT RESIDENTIAL

RE1

PUBLIC RECREATION

W1

NATURAL WATERWAYS

SUBJECT BOUNDARY

ADJOINING BOUNDARY

SOURCE
ZONING - NSW DEPARTMENT OF PLANNING & ENVIRONMENT
BOUNDARIES - NSW DIGITAL CADASTRAL DATABASE (DCDB)

ver.	date	comment	drawn	pm	level information	scale (A1 original size)	notes
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• project management • civil engineering • infrastructure • superintendency • economic analysis • social impact • town planning • surveying • development feasibility • visualisation • urban design							

drawing title:

CONSTRAINTS MAPPING
ZONING PLAN

location:

PLEASURE POINT

council:

LIVERPOOL

dwg ref:

300362-CONS-00

client:

mirvac

central coast office

hunter office

sydney office

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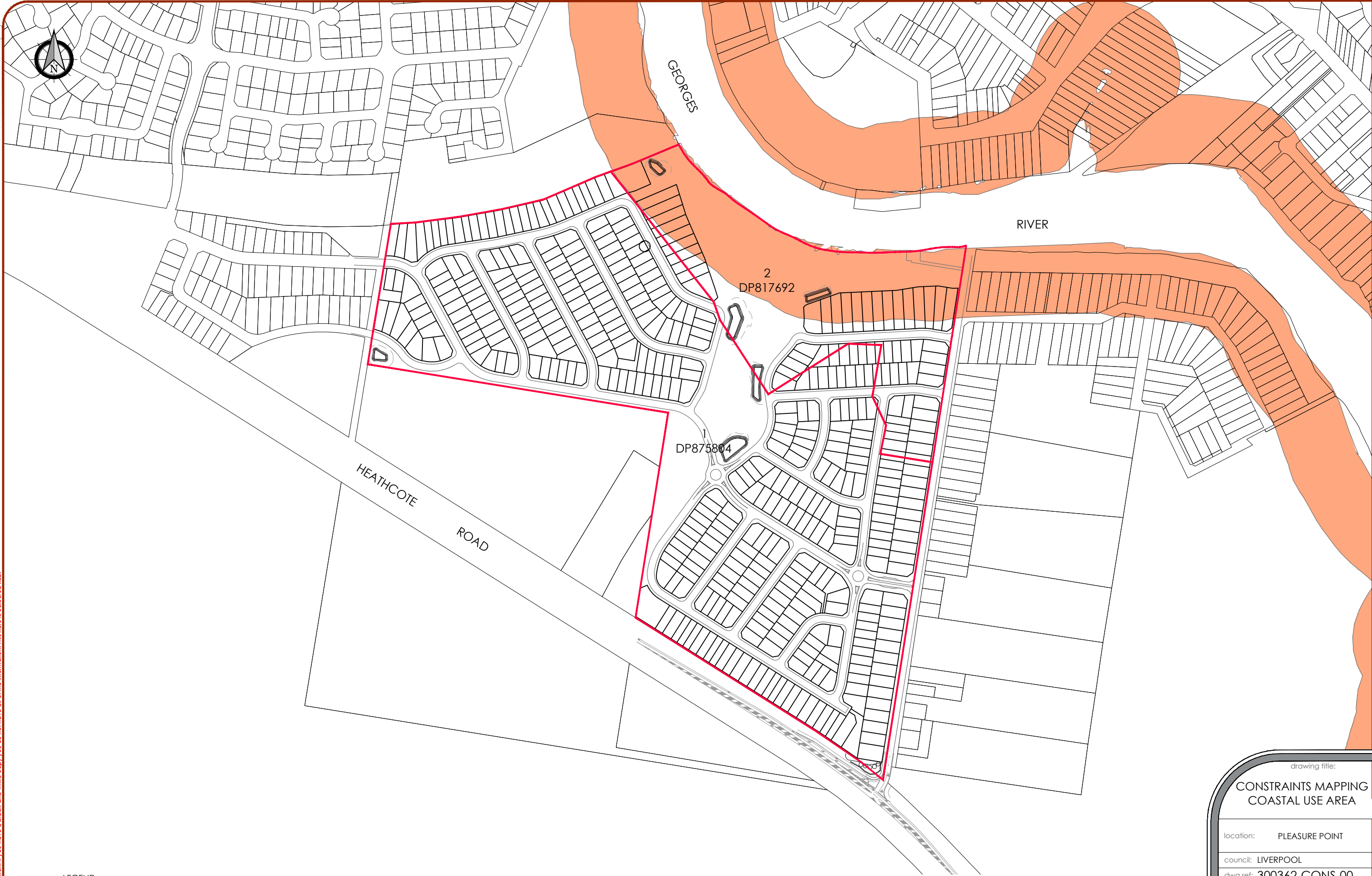
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- LEGEND
- SUBJECT BOUNDARY
 - ADJOINING BOUNDARY
 - COASTAL USE AREA

SOURCE
BOUNDARIES - NSW DIGITAL CADASTRAL DATABASE (DCDB)
COASTAL USE AREA - NSW DEPARTMENT OF PLANNING & ENVIRONMENT

ver.	date	comment	drawn	pm	level information	scale (A1 original size)	notes
A	20.05.2024	INITIAL ISSUE	JJ	BM	DATUM: AHD CONTOUR INTERVAL: 1m	A1 1:2500 0 50 100 125m A3 1:5000	

- project management
- civil engineering
- infrastructure
- superintendency
- economic analysis
- social impact
- town planning
- surveying
- development feasibility
- visualisation
- urban design

drawing title:

CONSTRAINTS MAPPING
COASTAL USE AREA

location: PLEASURE POINT

council: LIVERPOOL

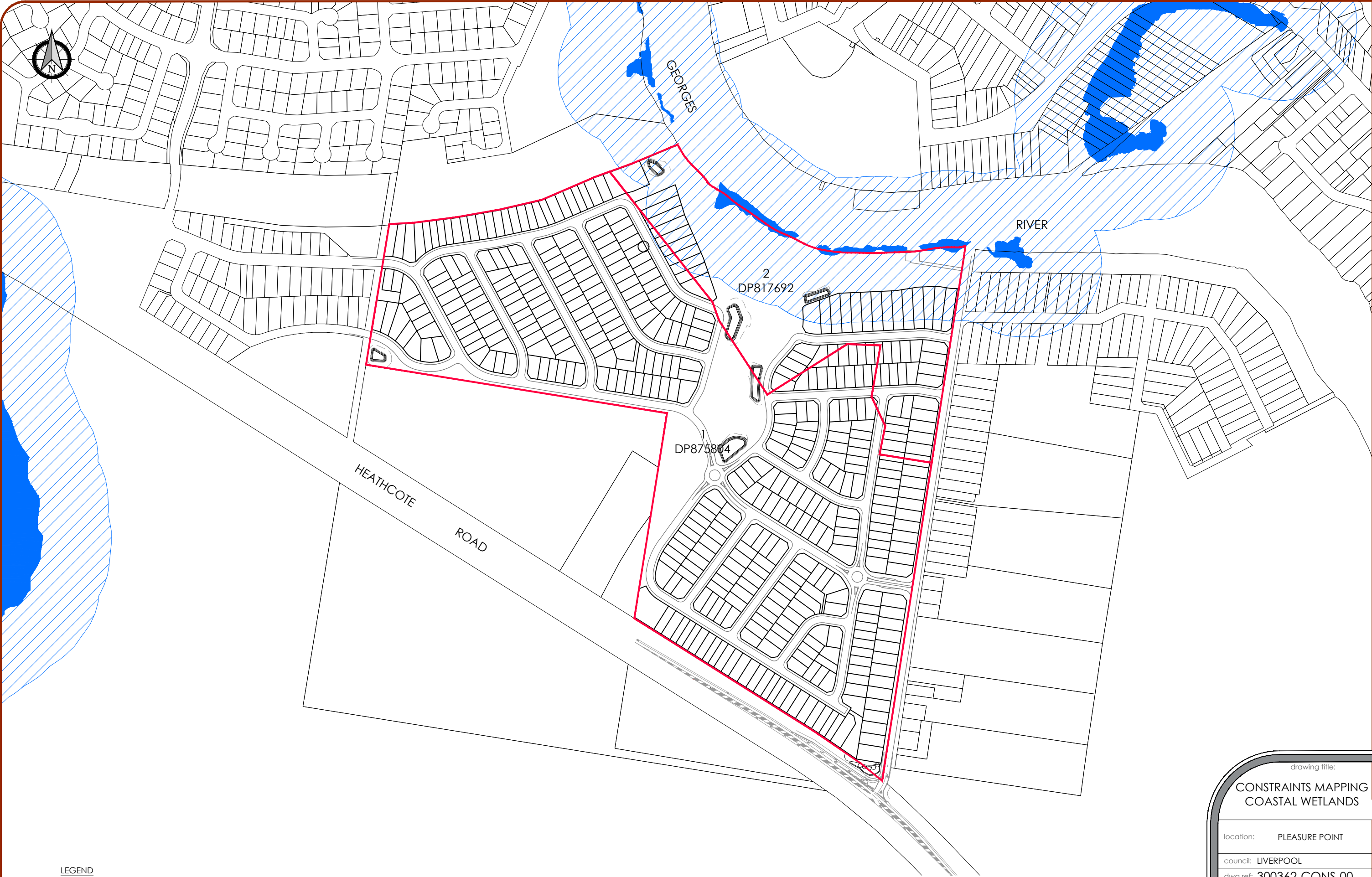
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- LEGEND**
- SUBJECT BOUNDARY
 - ADJOINING BOUNDARY
 - COASTAL WETLANDS
 - COASTAL WETLANDS PROXIMITY AREA

SOURCE
BOUNDARIES - NSW DIGITAL CADASTRAL DATABASE (DCDB)
COASTAL WETLAND - NSW DEPARTMENT OF PLANNING & ENVIRONMENT

ver.	date	comment	drawn	pm	level information	scale (A1 original size)	notes
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- project management
- civil engineering
- infrastructure
- superintendency
- economic analysis
- social impact
- town planning
- surveying
- development feasibility
- visualisation
- urban design

drawing title:

**CONSTRAINTS MAPPING
COASTAL WETLANDS**

location: PLEASURE POINT

council: LIVERPOOL

dwg ref: 300362-CONS-00

client:



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LEGEND

- SUBJECT BOUNDARY
- ADJOINING BOUNDARY
- ENVIRONMENTALLY SIGNIFICANT LAND

SOURCE
BOUNDARIES - NSW DIGITAL CADASTRAL DATABASE (DCDB)
ENVIRONMENTALLY SIGNIFICANT LAND - LIVERPOOL COUNCIL ONLINE VIEWER

ver.	date	comment	drawn	pm	level information	scale (A1 original size)	notes
A	20.05.2024	INITIAL ISSUE	JJ	BM	DATUM: AHD CONTOUR INTERVAL: 1m	A1 1:2500 0 50 100 125m A3 1:5000	

- project management
- civil engineering
- infrastructure
- superintendency
- economic analysis
- social impact
- town planning
- surveying
- development feasibility
- visualisation
- urban design

drawing title:
**CONSTRAINTS MAPPING
ENVIRONMENTALLY
SIGNIFICANT LAND**

location: PLEASURE POINT

council: LIVERPOOL

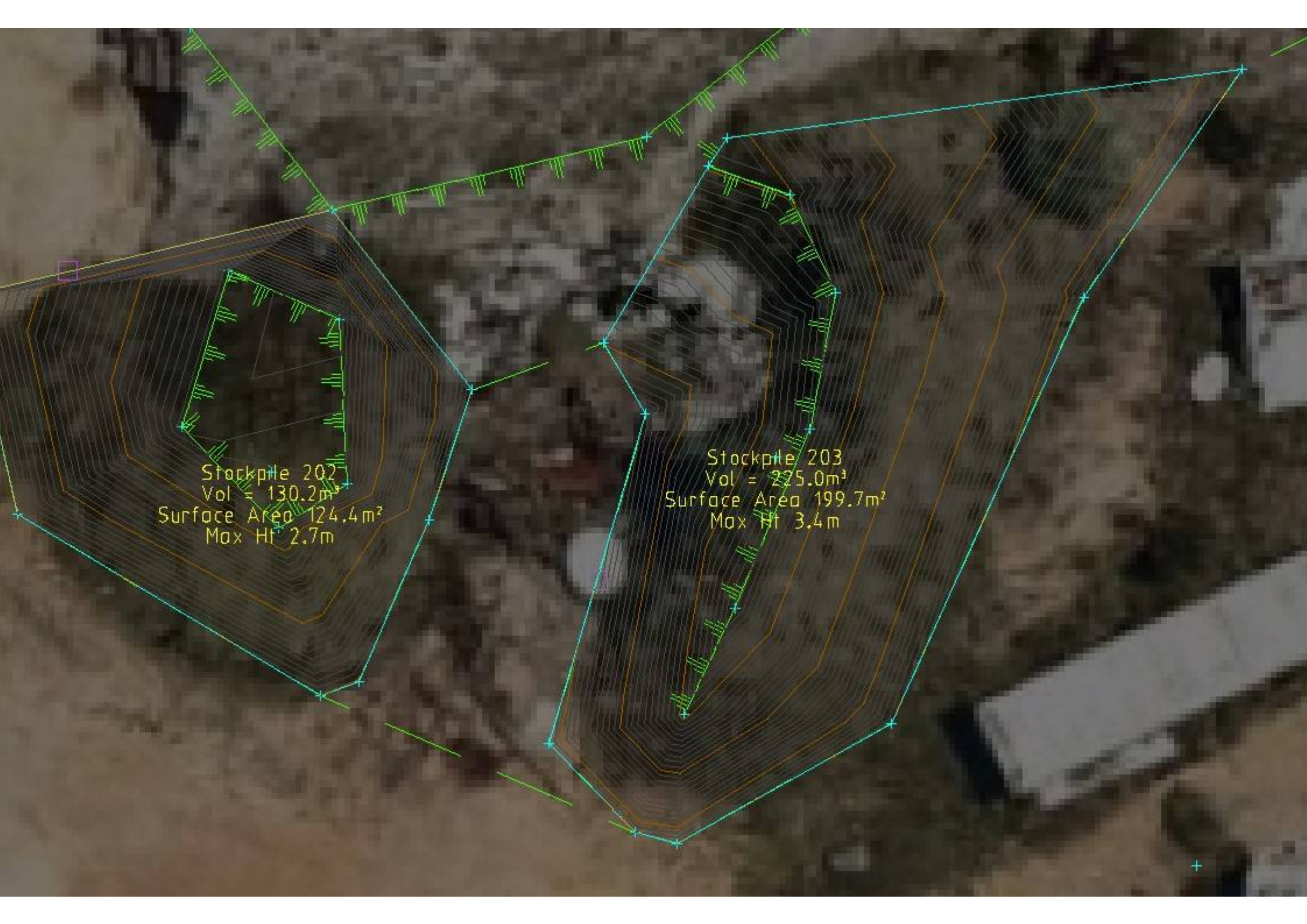
dwg ref: 300362-CONS-005

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Appendix C - AEC 5 Survey





Appendix D – Option 2 Asbestos Remediation Method

Asbestos Remediation Procedural – Option 2

Options 2 asbestos remedial works include fill soils that contain ACM, are able to be spread and handpicked and do not contain Asbestos Fines (AF) or Friable Asbestos (FA) exceeding NEPM 2013 land use suitability criteria. The soils primarily consisted of an organic loam mixed with minor clay or sandy loam. The area also contains minor building waste and foreign materials throughout the fill and on the ground surface.

The sequence of remedial activities are as follows:

1. Inspect and hand pick as required, all accessible ground surfaces.
2. Progressively excavate and consolidate into ~25m³ stockpiles.
3. Obtain representative 500ml soil sample to submit to laboratory for analysis in accordance with NEPM Method.
4. Consolidate all stockpiles compliant with NEPM, based on Laboratory analysis.
5. Excavated soils may be loaded for transport to the placement area if that placement area is not the same as the source location. Residual surfaces will be inspected and cleared for access and, if required, the process will recommence from Step 1 until the entire area is cleared.
6. In the placement process, an excavator or similar suitable plant, will spread impacted soils over a designated inspection areas with a thickness of <0.1m. Soils will be placed from the furthest point, working towards the placement area entrance.
7. Spread soils shall be systematically inspected and hand-picked as required to remove any residual ACM.
8. If spread soils have no visible asbestos, they will may be covered and compacted in their final location. Covering of the soils shall commence at the placement area entrance and work toward the furthest point to avoid mobile plant coming into contact with remediated soils.

Remediation of soils will include the following controls:

1. Establish remediation exclusion area and provide signage.
2. All personnel working in direct contact with the ACM impacted soils are required to have on appropriate Personal Protective Equipment including a P2 respiratory mask, disposable coveralls, lace-less safety boots and disposable gloves.
3. Using a hand-held metal rake, soils will be systematically turned and inspected for ACM by a Class B licensed asbestos removalist.
4. All identified ACM will be hand-picked and placed within an appropriate waste receptacle clearly labelled as asbestos waste.
5. Following the raking and hand-picking of impacted soils, visual inspection and clearances will be undertaken by a licensed asbestos assessor or competent person as defined by Safework Code of Practice: How to Safely Remove Asbestos, 2019.

Airborne asbestos monitoring is not required for this procedure due to the limited opportunity for fibre to be generated from the bonded source. Validation will consist of visual inspections of each spread by a contaminated land consultant acting as the independent competent person or by a Licenced Asbestos Assessor. Soil sampling in accordance with the NEPM, 2013 methodology will be undertaken in field and with laboratory analysis at a frequency of 1 sample / 200t stockpile to demonstrate land use suitability.
