eiaustralia

Contamination | Remediation | Geotechnical

IL CAPITANO INVESTMENTS PTY LTD

Detailed Site Investigation

86-94 Castlereagh & 77-79 Bathurst Streets,
Liverpool NSW

E24273.E02_Rev0
13 August, 2019

Document Control

Report Title:	Detailed Site Investigation
Report No:	E24273.E02_Rev0

Copies	Recipient
1 Soft Copy (PDF – Secured, issued by email)	Sam Sofi Il Capitano Investments Pty Ltd 79 Bathurst Street, LIVERPOOL NSW 2170
2 Original (Saved to Digital Archives)	EI Australia Pty Ltd Suite 6.01, 55 Miller Street, PYRMONT NSW 2009

Author	Technical Reviewer
JOEL HEININGER **Environmental Engineer**	**MALCOLM DALE** **Senior Principal – Contaminated Land**

Revision	Details	Date	Amended By
0	Original	13 August, 2019	-

© 2019 EI Australia (EI) ABN: 42 909 129 957

This report is protected by copyright law and may only be reproduced, in electronic or hard copy format, if it is copied and distributed in full and with prior written permission by EI.

EXECUTIVE SUMMARY

Il Capitano Investments Pty Ltd engaged EI Australia Pty Ltd (EI) to conduct a Detailed Site Investigation (DSI) for the property located at 86-94 Castlereagh & 77-79 Bathurst Streets, Liverpool NSW (herein referred to as 'the site'). This environmental assessment was completed as part of a development application process through Liverpool City Council to allow site redevelopment.

A review of the previous environmental site investigations completed by Douglas Partners (DP) indicated that:

- Based on historical information, the site was occupied by low-density residential houses until 1979/1980, at which time 86 Castlereagh Street was redeveloped for use as a service station;
- Several dip and fill points were observed on the service station of the site, revealing the presence of four USTs. These USTs/UPSSs (Underground Storage Tanks/Underground Petroleum Storage Systems) were identified in information sourced from a dangerous goods search in previous reports (DP, 2005), and were identified from approximately 1980. A fifth UST (waste oil tank) may be located in the vicinity of the mechanical workshop based on visual evidence during the site inspection;

Soil sampling and analysis was conducted at thirteen (13) test bore locations, where the sub-surface layers were found to comprise anthropogenic filling overlying residual clays and shale bedrock. An assessment against the NEPM (2013) HIL-B/HSL-D investigation levels found that no soil samples exceeded the adopted criteria.

Groundwater sampling and analysis was conducted at four (4) groundwater monitoring well locations, installed both up and down hydraulic gradient of the UPSS infrastructure. Two of the monitoring wells sampled were installed during previous investigations by Douglas Partners. This was due to two of the newly installed monitoring wells being noted as 'dry' during the groundwater monitoring event on 26 July, 2019.

During the groundwater monitoring event, standing water levels in wells were measured between 2.25 – 6.70 mBGL, with groundwater noted to flow hydraulically east towards the Georges River. Results of groundwater samples compared against the NEPM (2013) HSL D and ANZG (2018) *Fresh Water Criteria* indicated that heavy metals exceeded the adopted criteria in three monitoring wells for cadmium, nickel and zinc. EI consider the exceedances to be representative of background water quality, and not thought to represent a cause for environmental concern.

Soil vapour sampling and analysis was conducted at two (2) test bore locations placed within the vicinity of the eastern site boundary, where a dry cleaning business resides next door. An assessment against the NEPM (2013) HIL-B/HSL-D investigation levels indicated that the soil vapour readings do not exceeded the adopted criteria. There may still be a soil vapour risk near dip and fill points and surrounding USTs/UPSS, however, the removal of such infrastructure during remediation and bulk excavation of the site should mitigate these risks.

Based on the findings of this investigation, and due to the presence of tanks and associated infrastructure, the site will need to be remediated in accordance with the POEO *Underground Petroleum Storage Systems Regulation* (2014) and associated guidelines (DECCW*, 2008).* EI conclude that the site can be made suitable for the proposed development, so long as the following recommendations are implemented:

- Conduct a Hazardous Materials Survey (HMS) of current site buildings. EI recommend that a HMS is conducted prior to site demolition;

- A Remedial Action Plan (RAP) should be prepared in accordance with the following, prior to the commencement of site works as part of the proposed development:
  - NSW Office of Environment and Heritage (2011) Guidelines for consultants reporting on contaminated sites;
  - Protection of the Environment Operations (2014) Underground Petroleum Storage Systems Regulation; and
  - Department of Environment, Climate Change and Water (NSW) (2008) Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation.
- The RAP should provide details of the methodology and procedures required for effective site remediation, including:
  - Sampling analysis and quality plan (SAQP) for the validation of remediation activities performed on-site;
  - Design of supplementary investigations to close the data gaps identified during this investigation (**Section 9.1**). EI note that due to site constraints, the additional investigations and remediation works may be conducted after site demolition and following removal of UPSS when access to areas of environmental concern are made available;
  - Removal of UPSS and validation resulting excavations; this may require an additional round of groundwater monitoring may be required to further characterise the groundwater if the tanks are found to be in poor condition;
  - Waste classification assessment, in order to enable classification of surplus site soils to be excavated and disposed off-site during remediation works and material imported to the site, in accordance with the NSW EPA (2014) *Waste Classification Guidelines and Waste Regulations*;
  - Work health and safety considerations, and;
  - Contingency plan to address unexpected finds (such as additional tanks, contamination under UPSS infrastructure, vehicle hoists and buildings (e.g. soil staining, asbestos) and alternative remediation methods to deal with potential groundwater or vapour contamination under the UPSS infrastructure.
- Preparation of a final site validation report by a suitably qualified environmental consultant, certifying the site suitability of soils and groundwater for future proposed land uses.

TABLE OF CONTENTS

Page Number

EXECUTIVE SUMMARY **III**

1. INTRODUCTION **1**
1.1 Background and Purpose 1
1.2 Proposed Development 1
1.3 Regulatory Framework 2
1.4 Project Objectives 2
1.5 Scope of Works 2
1.5.1 Desktop Study 2
1.5.2 Fieldwork and Laboratory Analysis 3
1.6 Data Analysis and Reporting 3

2. SITE DESCRIPTION **4**
2.1 Property Identification, Location and Physical Setting 4
2.2 Surrounding Land Use 5
2.3 Regional Setting 5
2.4 On-site UPSS Summary 6

3. PREVIOUS INVESTIGATIONS **8**
3.1 Available Documents 8

4. CONCEPTUAL SITE MODEL **11**
4.1 Per or Poly-fluoroalkyl Substances (PFAS) 11
4.2 Emerging Chemicals 11
4.3 Potential Contamination Sources 12
4.4 Chemicals of Concern 13
4.5 Potential Sources, Exposure Pathways and Receptors 13
4.6 Data Gaps 15
4.7 Summary of Potential Contamination 15

5. SAMPLING, ANALYTICAL AND QUALITY PLAN (SAQP) **16**
5.1 Data Quality Objectives (DQO) 16
5.2 Data Quality Indicators 21

6. METHODOLOGY **22**
6.1 Sampling Rationale 22
6.2 Investigation Constraints 22
6.3 Assessment Criteria 22
6.3.1 Soil 22
6.3.2 Groundwater 23
6.3.3 Soil Vapour 25
6.4 Soil Investigation 25

6.5 Groundwater Investigation 27
6.6 Soil Vapour Investigation 29

7. DATA QUALITY ASSESSMENT 31
7.1 Quality Overview 32

8. RESULTS 33
8.1 Soil Investigation Results 33
8.1.1 Site Geology and Sub-surface Conditions 33
8.1.2 Field Observations 33

8.2 Groundwater Investigation Results 33
8.2.1 Discussion of Field Water Quality Results 35

8.3 Laboratory Analytical Results 36
8.3.1 Soil Analytical Results 36
8.3.2 Groundwater Analytical Results 37
8.3.3 Soil Vapour Analytical Results 39

9. SITE CHARACTERISATION 41
9.1 Review of Conceptual Site Model 41
9.2 Soil Characterisation 41
9.3 Groundwater Characterisation 41
9.4 Soil Vapour Characterisation 41
9.5 Asbestos Risk 42

10. CONCLUSIONS 43

11. RECOMMENDATIONS 45

12. STATEMENT OF LIMITATIONS 46

REFERENCES 47

ABBREVIATIONS 49

Schedule of Tables

Table 2-1	Site Identification, Location and Zoning	4
Table 2-2	Surrounding Land Uses	5
Table 2-3	Regional Setting Information	5
Table 2-4	UPSS Fuel/Chemical Storage Details	7
Table 3-1	Summary of Previous Investigation Works and Findings	8
Table 4-1	PFAS Decision Tree	11
Table 4-2	Emerging or Controlled Chemicals	12
Table 4-3	Conceptual Site Model	14
Table 5-1	Summary of Project Data Quality Objectives	17
Table 5-2	Summary of Project Data Quality Objectives	21
Table 6-1	Adopted Investigation Levels for Soil	23
Table 6-2	Assessment of Groundwater Environmental Values	24
Table 6-3	Adopted Investigation Levels for Groundwater	25
Table 6-4	Adopted Investigation Levels for Soil Vapour	25
Table 6-5	Summary of Soil Investigation Methodology	26
Table 6-6	Summary of Groundwater Investigation Methodology	27
Table 6-7	Summary of Soil Vapour Investigation Methodology	29
Table 7-1	Quality Control Process	31
Table 8-1	Generalised Subsurface Profile	33
Table 8-2	Monitoring Well Construction Details	34
Table 8-3	Groundwater Field Data	35
Table 8-4	Summary of Soil Analytical Results	36
Table 8-5	Summary of Groundwater Analytical Results	38
Table 8-6	Summary of Soil Vapour Analytical Results	40

Appendices

APPENDIX A - FIGURES

A.1 Site Location

A.2 Sampling Location Plan

APPENDIX B - TABLES

B.1 Sample Register

B.2 Soil Analytical Results

B.3 Groundwater Analytical Results

B.4 Soil Vapour Analytical Results

APPENDIX C – PROPOSED DEVELOPMENT PLANS

APPENDIX D – SITE PHOTOGRAPHS

APPENDIX E – BOREHOLE LOGS

APPENDIX F – FIELD DATA SHEETS

APPENDIX G – CALIBRATION DOCUMENTATION

APPENDIX H – CHAIN OF CUSTODY AND SAMPLE RECEIPT FORMS

APPENDIX I – LABORATORY ANALYTICAL REPORTS

APPENDIX J – QA/QC ASSESSMENT

APPENDIX K – LABORATORY QA/QC POLICIES AND DQOS

1. INTRODUCTION

1.1 Background and Purpose

Mr. Sam Sofi of Il Capitano Investments Pty Ltd engaged EI Australia (EI) to conduct a Detailed Site Investigation (DSI) for site characterisation purposes at the site located at 86-94 Castlereagh & 77-79 Bathurst Streets, Liverpool NSW ('the site').

As shown in **Figure 1**, the site is located within the Local Government Area of Liverpool City Council. The land parcel is also identified as Lots 7, 8, 9, 10 and 11 in DP. 7541, Lot 4 in DP.800326 and SP.38492. The site covers a total area of 4,371 m^2, as depicted in the site plan presented as **Figure 2**.

This assessment was conducted to support a Development Application (DA) to Liverpool City Council for the redevelopment of the site. An additional purpose of this assessment is to enable the developer to meet the requirements of *State Environmental Planning Policy 55* (SEPP-55), *Remediation of Land* and obligations under the *Contaminated Land Management Act 1997* (CLM Act), for the assessment and management of contaminated soil and/or groundwater.

EI understand that this assessment follows on from previous investigations completed at the site by Douglas Partners (DP) as follows:

- *Preliminary Contamination Assessment, Corner Memorial Avenue & Castlereagh Street, Liverpool*. Project No. 43021, dated May 2005;
- *Detailed Site Investigation, Lots 10 and 11, Corner of Memorial Avenue and Castlereagh Street, Liverpool NSW*. Project No. 43021.01 Rev1, dated August 2013;
- *Preliminary Site Investigation, Proposed Memorial Avenue Mixed Use Development, 86-94 Castlereagh Street & 77-79 Bathurst Street, Liverpool*. Project No. 86567.00, dated November 2018; and
- *Preliminary Geotechnical Investigation, Proposed Mixed Use Development, 86-94 Castlereagh Street & 77-79 Bathurst Street, Liverpool NSW*. Project No. 92327.01, dated December 2018.

1.2 Proposed Development

To assist with the preparation of this report, the Client has supplied EI with the following documents regarding the proposed development of the site:

- Architectural Plans for Development Application, prepared by Allen Jack and Cotter, Project No: 18005, Drawing Nos. DA1001 and DA2000, Issue 1, dated 22 February 2019;
- Survey Plan prepared by Burton & Field Surveying & Land Development, Project No. S2863/77762, dated 4 April, 2019.

Based on the above drawings, EI understands that the proposed development involves the demolition of existing site structures, with the construction of two mixed-use apartment towers overlying a three-level basement car park. The basement car park is proposed to cover the entire site footprint (as illustrated in the proposed development plans attached in **Appendix C**).

The lowest basement is proposed to have a finished floor level of RL 11.00 mAHD. To achieve the BEL, an excavation depth of approximately 10 m Below Ground Level (mBGL) is expected.

Locally deeper excavations for lift overrun pits, footings, working platform, crane pads and service trenches may be required.

1.3 Regulatory Framework

The following regulatory framework and guidelines were considered during the preparation of this report:

- ANZG (2018) Australian and New Zealand Guidelines for Fresh and Marine Water Quality;
- *Contaminated Land Management Act 1997*;
- DEC (2007) Guidelines for the Assessment and Management of Groundwater Contamination;
- DECCW (2008) Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008;
- EPA (1995) Sampling Design Guidelines;
- EPA (2014) Technical Note: Investigation of Service Station Sites;
- *Liverpool Development Control Plan (2008);*
- *Liverpool Local Environmental Plan (2008)*;
- NEPC (2013) Schedule B(1) Guideline on Investigation Levels for Soil and Groundwater;
- NEPC (2013) Schedule B(2) Guideline on Site Characterisation;
- OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites;
- *POEO (2014) Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2014;* and
- *State Environment Protection Policy 55 (SEPP 55) – Remediation of Land*.

1.4 Project Objectives

The primary objectives of this investigation were to:

- Evaluate the potential for site contamination on the basis of historical land uses, anecdotal and documentary evidence of possible pollutant sources;
- To investigate the degree of any potential contamination by means of limited intrusive sampling and laboratory analysis, for relevant contaminants; and
- Where site contamination is confirmed, make recommendations for the appropriate management of any contaminated soils and/or groundwater.

1.5 Scope of Works

To achieve the above objectives, the following scope of works was adopted:

1.5.1 Desktop Study

- A review of relevant topographical, geological, hydrogeological and soil landscape maps for the project area;
- A search through the OEH Land Information records to confirm that there are no statutory notices or actions current on the site under *sections 35 or 36 of the Environmentally Hazardous Chemicals Act 1985 (EHC Act)*) or the *Contaminated Land Management Act* (1997);

- Review of all previous Douglas Partners environmental reports;
- Preparation of a Work, Health, Safety & Environmental Plan;
- Preparation of proposed bore location plan, and brief fieldwork plan including potential impacts on current site operations; and
- Review of DBYD plans and any plans provided by the client of existing buried services on site.

1.5.2 Fieldwork and Laboratory Analysis

- Supervision of sub-contractor to carry out underground search for buried services using elector-magnetic equipment;
- A detailed site walkover inspection;
- Drilling of boreholes at thirteen (13) locations, distributed across accessible areas of the site;
- Construction of four (4) groundwater monitoring bores drilled to a maximum depth of 9m (or refusal), both up-gradient and down-gradient of the proposed re-development area;
- Multiple level soil sampling within fill and natural soils, and one round of groundwater sampling from the groundwater monitoring bores installed during the investigation;
- Drilling and installation of two (2) soil vapour (SV) sampling points by hand held power drill to the base of the concrete slab, to characterise current sub-slab VOC and cVOC concentrations;
- Laboratory analysis of selected soil, groundwater and soil vapour samples for relevant analytical parameters as determined from the site history survey and field observations during the investigation program.

1.6 Data Analysis and Reporting

A DSI report would be prepared to document the desk study findings, the conceptual site model, data quality objectives, investigation methodologies and results. The report would also provide a record of observations made during the detailed site walkover inspection, borehole and monitoring well construction logs and a discussion of laboratory analytical results in regards to potential risks to human health, the environment and the aesthetic uses of the land.

2. SITE DESCRIPTION

2.1 Property Identification, Location and Physical Setting

The site identification details and associated information are presented in **Table 2-1**, while the site locality is shown in **Figure 1**.

Table 2-1 Site Identification, Location and Zoning

Attribute	Description
Street Address	86-94 Castlereagh & 77-79 Bathurst Streets, Liverpool NSW
Location Description	The Site is bounded by Memorial Avenue to the north, Castlereagh Street to the west, Commercial buildings (including a dry cleaner) and Bathurst Street to the east, and residential units and commercial offices to the south. The site comprises an active service station along with a mechanical workshop, car parking facility and restaurant. The site is covered with concrete hardstand across its entirety.
Site Coordinates	North-western corner of site (datum GDA94-MGA56): Easting: 307708.658. Northing: 6244264.239. (Source: http://maps.six.nsw.gov.au)
Site Area	Approx. 4,371m^2 (Source: http://maps.six.nsw.gov.au)
Lot and Deposited Plan (DP)	▪ Lots 7, 8, 9, 10 and 11 in DP. 7541; ▪ Lot 4 in DP. 800326; and ▪ SP. 38492
State Survey Marks	Four State Survey (SS) marks are situated in close proximity to the site: ▪ SS154648: 1m north-west the corner of Memorial Avenue and Castlereagh Street; ▪ SS154633: 27 m north-east of the site on the corner of Memorial Avenue and Bathurst Street; ▪ PM61515D: 2 m east of the site on the corner of Norfolk Street and Bathurst Street; and ▪ SS57086: located 27m south of the site on Norfolk Street.. (Source: http://maps.six.nsw.gov.au).
Local Government Authority	Liverpool City Council
Parish	St Luke
County	Cumberland
Current Zoning	B4 – Mixed Use (Liverpool Local Environment Plan, 2008)

2.2 Surrounding Land Use

The site is situated within an area of mixed uses on surrounding land as described in **Table 2-2**. The local sensitive receptors within close proximity to the site are also identified.

Table 2-2 Surrounding Land Uses

Direction	Land Use Description	Sensitive Receptors (distance from site)
North	Memorial Avenue then medium density residential housing and commercial buildings (medical centre).	Residential dwellings, less than 20m north of the site on adjacent properties (following Memorial Avenue).
South	Medium-high density residential housing and commercial buildings.	Barakat Family Day Care Centre, approximately 50m south-east of the site.
East	Commercial/retail buildings (including a dry cleaner), then Bathurst Street, followed by more commercial/retail.	
West	Castlereagh Street then, medium density residential housing.	Bulldog Park, approximately 150m west of the site.

2.3 Regional Setting

Local topography, geology, soil landscape and hydrogeological information are summarised in **Table 2-3**.

Table 2-3 Regional Setting Information

Attribute	Description
Topography	The local topography of the site is generally flat with a slight fall towards the north/north-east. Relative Levels (RLs) range from approximately 20.93 mAHD in the west to 20.80 mAHD in the east.
Site Drainage	Site drainage is likely to be consistent with the general slope of the site. Stormwater is likely to be collected by pit and pipe drainage along Memorial Avenue and drain to the municipal stormwater system.
Regional Geology	With reference to the 1:100 000 scale Geological Series Penrith Sheet 9030 (Ref. DMR, 1991), the site is underlain by Bringelly Shales of the Wianamatta Group, comprised of carbonaceous claystone, claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff.
Soil Landscapes	The Soil Conservation Service of NSW Soil Landscapes of the Sydney 1:100,000 Sheet (Chapman and Murphy, 2002) indicates that the site overlies the *Blacktown - Residual Landscape (bt)*. The landscape comprises gently undulating rises on Wianamatta Group shales. Local relief to 30 m, slopes usually >5% with broad rounded crests and ridges with gently inclined slopes. Soils are identified as shallow to moderately deep (>100 cm) hard setting mottled texture contrast soils, red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and in drainage lines.

Attribute	Description
Acid Sulfate Soil Risk	With reference to the Liverpool Acid Sulfate Soil Risk Map (1:25,000 scale; Murphy, 1997), the subject land lies within the map class description of *No Known Occurrence*. In such cases, acid sulphate soils (ASS) are not known or expected to occur and "land management activities are not likely to be affected by ASS materials". The Liverpool Local Environmental Plan (LEP) 2008 Acid Sulfate Soils Map (Sheet ASS_011) indicated the site was situated in an area not classified as being affected by Acid Sulfate Soils. Given the above information, further Acid Sulfate Soils Assessment was not considered to be warranted.
Likelihood & Depth of Filling	Based on observations during previous intrusive investigations (DP), the maximum depth of fill was recorded at approximately 1.5 mBGL. The approximate depth of fill across the site is expected to be approximately 0.5 - 1.0 mBGL.
Typical Soil Profile	A layer of anthropogenic filling overlying residual clays and shale bedrock.
Depth to Groundwater	The Standing Water Level (SWL) collected during the GME was reported between 2.25 and 6.70 mBGL. Onsite groundwater conditions, including groundwater flow direction, are discussed in **Section 8.2**.
Nearest Surface Water Feature	Brickmakers Creek, located approximately 565 m to the west. The Georges River is also located approximately 690 m east of the site.
Anticipated Groundwater Flow Direction	Groundwater is anticipated to flow hydraulically east, towards the Georges River.

2.4 On-site UPSS Summary

The following details regarding on-site UPSS were obtained from observations made during a site visit on 11 July 2019 and site layout plans from the Dangerous Goods search carried out in previous investigations (DP, 2005).

Product storage details, including existing and historical infrastructure where available, have been summarised in **Table 2-4.** Tank ID Location references can be viewed on **Figure A.2**.

Table 2-4 UPSS Fuel/Chemical Storage Details

Tank ID Location	Product type	Capacity (L)	Year installed	Construction (assumed)	Corrosion protection	Overfill protection	Status
Underground storage tanks							
1	ULP [1]	44,000	UK [4]	Steel	UK	Yes[5]	In-use
2	E10 ULP	44,000	1979/1980	Steel	UK	Yes	In-use
3	PULP [2]	10,000	1979/1980	Steel	UK	Yes	In-use
4	Diesel	12,000	UK	Steel	UK	Yes	In-use
Waste oil & other chemical storage							
5	WO [3]	1,892	1979/1980	Steel	UK	UK	UK [6]

Note 1 ULP – Unleaded Petrol
Note 2 PULP – Premium Unleaded Petrol
Note 3 WO – Waste Oil
Note 4 UK – Unknown
Note 5 See photos 5 & 6
Note 6 The WO tank is not thought to be in use, due to the presence of waste oil stored in above ground containers/tanks (see photographs).

Various hazardous materials and several USTs/UPSSs from the WorkCover NSW database (as presented in the PSI presented by DP, 2018) were identified from 1979. A total of five USTs/UPSSs were identified to be present on site within the written records, and are illustrated in **Figure A.2**. Photographs showing dip points and approximate tank locations taken throughout the investigation can be found in **Appendix D**.

Other site inventory present at the time of the site inspection included:

- Three bowsers were located within the vicinity of the service station located at 86 Castlereagh Street, Liverpool;
- Two bowsers were noted in the central portion of the service station on a bowser island, linked to tanks 1, 2 and 3 (**Photographs 3** and **6**);
- A third bowser was located in the north-western corner of the site, linked to tank 4;
- Several dip and fill points (in a spill protection box) were observed in the western and eastern portions of the site, revealing the presence of four USTs. Separate dip and fill points were observed in the eastern portion of the site in front of the mechanical workshop, most likely related to the waste oil tank (**Photographs 5** and **6**);
- An oil/water separator pit was observed below a large metal plate in the eastern portion of the site;
- Storage of LPG gas refill cylinders were located immediately outside the service station building, and west of the building;
- A storage area for chemicals and waste oil was noted in an area adjoining the mechanical workshop (**Photograph 7**);
- Vehicle hoists were identified within the mechanical workshop which were in-use at the time of this investigation; and
- A storage area for chemicals and maintenance supplies was noted within the adjoining property at 90-94 Castlereagh Street;

Overall, based on site observations and the WorkCover NSW records it is likely that four USTs are currently present on-site

3. PREVIOUS INVESTIGATIONS

3.1 Available Documents

This investigation follows on from previous investigations completed at the site including:

- *Preliminary Contamination Assessment, Corner Memorial Avenue & Castlereagh Street, Liverpool*. Project No. 43021, dated May 2005;
- *Detailed Site Investigation, Lots 10 and 11, Corner of Memorial Avenue and Castlereagh Street, Liverpool NSW*. Project No. 43021.01 Rev1, dated August 2013;
- *Preliminary Site Investigation, Proposed Memorial Avenue Mixed Use Development, 86-94 Castlereagh Street & 77-79 Bathurst Street, Liverpool*. Project No. 86567.00, dated November 2018; and
- *Preliminary Geotechnical Investigation, Proposed Mixed Use Development, 86-94 Castlereagh Street & 77-79 Bathurst Street, Liverpool NSW*. Project No. 92327.01, dated December 2018.

A summary of the environmental components of the above reports are provided in **Table 3-1**.

Table 3-1 Summary of Previous Investigation Works and Findings

Assessment Details	Project Tasks and Findings
DP (2005) – Preliminary Contamination Assessment – Corner Memorial Avenue and Castlereagh Street (Service Station)	
Purpose	▪ To assess the potential for contamination at the site; and ▪ To provide recommendations on the need for further works, as necessary, to make the site suitable for the proposed development.
Scope of Works	▪ Undertake site history searches (title deeds, aerial photographs, NSW WorkCover/Dangerous Goods, council records review); ▪ Review available site information with reference to local geology and groundwater bores; and ▪ Undertake a site inspection.
Key Findings	▪ There is a low risk of contamination at 90-94 Castlereagh Street, with the only potential source of contamination arising from surficial spills/leaks from car parking; ▪ Based on historical information, the site was occupied by residential houses until 1979/1980, at which time 86 Castlereagh Street was redeveloped for use as a service station; ▪ The presence of four active USTs, bowsers, delivery lines, hydraulic hoists and an oil/water separator were identified in the service station of 86 Castlereagh Street; ▪ USTs were noted as being no more than 25 years old, with no leaks recorded; ▪ Solvent contamination risk from the neighbouring dry cleaner is considered to be low as the facility is considered down-gradient from the site.
Conclusions and Recommendations	Further investigation is required to determine the presence and extent of contamination associated with the site, including an intrusive assessment of both soil and groundwater.

Assessment Details	Project Tasks and Findings
DP (2013) – Detailed Site Investigation	
Purpose	▪ To evaluate the potential for site contamination by means of intrusive sampling and laboratory analysis for relevant contaminants of concern.
Scope of Works	▪ Review of previous report:; ▪ Conduct service location and ground penetrating radar (GPR) scan; ▪ Drilling of seven (7) test boreholes to a maximum depth of 6 mBGL; ▪ Conversion of three (3) test bores into groundwater monitoring wells; ▪ Multiple level sampling from both fill and natural soil horizons and one round of groundwater sampling from the monitoring wells.
Key Findings	▪ The current and historic use of the site as a service station presents a potential source of contamination, including potential leakages of UPSS; ▪ Primary contaminants of potential concern are listed as TPH, BTEX, PAH and lead. ▪ Alternative potential contaminants of concern are listed as heavy metals, VOCs, phenols, OCP, OPP and asbestos; ▪ Field observations only identified signs of contamination in one location, namely hydrocarbon odours in filling to a depth of 1.5 m (in the eastern portion of the petrol station); ▪ No phase separated hydrocarbon or hydrocarbon odours were observed in groundwater; ▪ All samples were reported within the adopted assessment criteria (with the exception of F1 marginally exceeding in one replicate sample).
Conclusions and Recommendations	▪ The monitoring wells installed within the service station should be monitored over a six month period for signs of petroleum contamination; ▪ Tank integrity testing should be undertaken prior to any leasing of the site; ▪ Contamination issues should be reviewed during the development application phase for any future redevelopment (further intrusive testing and assessment); ▪ Preparation of a Remediation Action Plan (RAP) to detail the remediation works; ▪ The site was considered to be rendered compatible with high density residential land use, following removal of the service station infrastructure and remediation of the associated contamination.

Assessment Details	Project Tasks and Findings
DP (2018) – Preliminary Site Investigation	
Purpose	▪ Identify potential sources of contamination from historical information (desktop study); ▪ Assess data from previous investigations; ▪ Obtain and assess additional data from the collection of groundwater samples from existing monitoring wells.
Scope of Works	▪ Review all previous environmental reports for the site; ▪ Review of topography/soil maps, historical title deeds, groundwater bore information, aerial photographs, EPA public registers and planning certificates from council; ▪ Purging and sampling of three existing groundwater monitoring wells (where possible); ▪ Preparation of report.
Key Findings	▪ Groundwater monitoring and visual inspection reports were reviewed which were undertaken by MIG during 2015 and 2016. It was concluded in these reports that visual inspections of the groundwater samples showed no evidence of the presence of hydrocarbons. ▪ Analysis of results for soil sampling (DP, 2013) indicated that TRH F1 contamination was noted marginally above health investigation limits at one location; ▪ Groundwater at the service station had been impacted by petroleum hydrocarbons (TRH F1, benzene, naphthalene and MTBE), however, the concentrations were generally low, and not thought to pose an ecological risk;
Conclusions and Recommendations	▪ A detailed site investigation should be completed, focussing on areas that have not been investigated; ▪ A Remediation Action Plan (RAP) should be prepared for remediation of the service station and any other contaminated identified in subsequent investigations.
DP (2018) – Preliminary Geotechnical Investigation	
Purpose	To provide broad information on sub-surface conditions with preliminary comments given on site classification, site preparation measures, excavation conditions, the performance of suitable foundation systems and likely bearing pressures.
Scope of Works	▪ Drilling of four (4) cored boreholes to a maximum depth of 10.2 mBGL; ▪ Standard penetration tests (SPTs) were to be carried out at a depth of 1.0m then 1.5m intervals within all boreholes; ▪ Laboratory analysis of selected samples for point load testing and soil aggressivity;
Key Findings and Conclusions	▪ No groundwater seepage was observed in any borehole during drilling. During a GME the groundwater level was recorded at 13.9 and 12.4 mAHD; ▪ It is anticipated that the proposed basement excavation will require dewatering, as the design excavation level is proposed at 11.0 mAHD. ▪ The investigation indicated that sub-surface conditions underling the site generally comprise variable depths of filling overlying silty clay and clay of very stiff to hard consistency; ▪ Bedrock comprising shale of variable strength and weathering condition was encountered in all boreholes.

4. CONCEPTUAL SITE MODEL

In accordance with NEPM (2013) Schedule B2 – Guideline on Site Characterisation and to aid in the assessment of data collection for the site, EI developed a preliminary conceptual site model (CSM) as part of this investigation to assess plausible pollutant linkages between potential contamination sources, migration pathways and receptors. The CSM provides a framework for the review of the reliability and useability of the data collected and to identify data gaps in the existing site characterisation.

4.1 Per or Poly-fluoroalkyl Substances (PFAS)

The EPA (2017) Auditor Guidelines require that PFAS substances are considered in assessing contamination. EI use the following Decision Tree (**Table 4-1** below) based on EnRisk (2016) for prioritising the potential for PFAS compounds being present on Site and whether PFAS sampling of soil and water is required. This also considers the list of activities outlined in Appendix B of the PFAS NEMP (2018).

Table 4-1 PFAS Decision Tree

Preliminary Screening	Decision
Did fire training occur on-site?	No
Did fire training occur, or is an airport or fire station up-gradient of or adjacent to the site? [1]	No
Have “fuel” fires ever occurred on-site? (e.g. ignition of fuel (solvent, petrol, diesel, kerosene) tanks?)[2]	No
Have PFAS been used in manufacturing or stored on-Site ?[3]	No
If Yes to any questions, has site analytical suite been optimised to include preliminary sampling and testing for PFAS in soil (ASLP Testing) and water?	-

Note 1 Runoff from fire training areas may impact surface water, sediment and groundwater.
Note 2 Unless specific fuel fires have been documented in historical information, it has been assumed that no fuel fires have occurred
Note 3 PFAS is used wide range of industrial processes and consumer products, including in the manufacture of non-stick cookware, specialised garments and textiles, Scotchguard™ and similar products (used to protect fabric, furniture, leather and carpets from oils and stains), metal plating and in some types of fire-fighting foam (https://www.nicnas.gov.au/chemical-information/factsheets/chemical-name/perfluorinated-chemicals-pfas)

4.2 Emerging Chemicals

The NSW EPA uses Chemical Control Orders (CCOs) as a primary legislative tool under the EHC Act (1985) to selectively and specifically control particular chemicals of concern, and limit their potential impact on the environment. CCOs provide the EPA a rapid and flexible mechanism for responding to emerging chemical issues. As with PFAS compounds, EI has considered chemicals controlled by CCOs, and other potential emerging chemicals, as outlined in **Table 4-2** below.

Table 4-2 Emerging or Controlled Chemicals

Chemicals of Concern (CCO or emerging)	Decision
Were aluminium smelter wastes used or stored on Site (CCO, 1986)?	No
Do dioxin contaminated wastes (CCO, 1986) have the potential to impact the Site? [1]	No
Were organotin products (CCO, 1989) used or stored on Site? [2]	No
Were polychlorinated biphenyls (PCBs) used or PCB wastes (CCO, 1997) stored on-Site? [3]	Yes *Old fluorescent lights may have been used.*
Were scheduled chemical or wastes (CCO, 2004) used or stored [4]	Yes *Organochlorine pesticides for termite control may have been used*
Are other emerging chemicals suspected? [5]	No
If Yes to any questions, has site sampling suite been optimised to include specific sampling for other chemicals of concern in soil, air, and water	Yes

Note 1 From burning of certain chemicals, smelting or chemical manufacturing or fire on or near the Site.
Note 2 From anti-fouling paints used or removed at boat & ship yards and marinas.
Note 3 From older transformer oils & electrical capacitors
Note 4 Twenty-four mostly organochlorine pesticides and industrial by-products
Note 5 Other chemicals considered as emerging e.g. 1,4 dioxane (associated with some cVOCs).

4.3 Potential Contamination Sources

On the basis of the findings of the current investigation and former investigations, potential contamination sources are as follows:

- Unknown type and concentration of contaminants within any anthropogenic fill imported to the site for levelling or other purpose;
- Use and weathering of building structures (i.e. painted surfaces, metallic structures, cement-fibre sheeting including ACM, etc.);
- Historic and current use of the site as a service station and mechanical workshop;
- Possible impacts from historic use of pesticides beneath site structures;
- Impacts from uncontrolled demolition of historic site structures;
- Spills and leaks from parked vehicles; and
- Migration of contamination onto site from adjoining properties (dry cleaners) and unknown offsite contamination sources; and

4.4 Chemicals of Concern

- **Soil:**
  - Heavy metals (HM), total recoverable hydrocarbons (TRH), the monocyclic aromatic hydrocarbon compounds: *benzene, toluene, ethyl-benzene* and *xylenes* (BTEX), volatile-organic compounds (VOC) polycyclic aromatic hydrocarbons (PAH), organochlorine and organophosphorus pesticides (OCP/OPP), polychlorinated biphenyls (PCB), phenolic compounds and asbestos.
- **Groundwater:**
  - HM, TRH, BTEX, PAH, phenolic compounds and VOCs including potentially chlorinated VOCs (cVOCs).

4.5 Potential Sources, Exposure Pathways and Receptors

Potential contamination sources, exposure pathways and human and environmental receptors that were considered relevant for this assessment are summarised along with a qualitative assessment of the potential risks posed by complete exposure pathways in **Table 4-3**.

Table 4-3 Conceptual Site Model

Potential Sources	Impacted Media	Chemicals of Potential Concern	Transport mechanism	Exposure pathway	Potential receptor
Fill soils of unknown origin, Historic and current use of the site; Possible impacts from historic use of pesticides beneath site structures; Impacts from uncontrolled demolition of historic site structures; Spills and leaks from parked vehicles; Migration of contamination onto site from adjoining properties and unknown offsite contamination sources Contamination from sub-surface infrastructure, including USTs	Soil / Soil Vapour	HM, TRH, PAH, OCP/OPP, PCB, BTEXN, VOC	Disturbance of surface and subsurface soils during site redevelopment, future site maintenance and future use of the site post redevelopment	Ingestion Dermal contact Inhalation of dust particulates	Construction and maintenance workers End users of the site post redevelopment
			Atmospheric dispersion from soil to outdoor and indoor air spaces	Inhalation dust particulates	
		F1 and F2 TRH, BTEXN and VOCs	Volatilisation of contamination from soil and diffusion to indoor air spaces	Inhalation of vapours from impacted soil	
		HM, TRH, PAH, OCP, BTEXN	Plant uptake of contamination present in root zone	Plant uptake	Future ecological receptors (e.g. site vegetation in landscaped areas post redevelopment)
		VOCs, cVOCs	Volatilisation of soil impacted from dry cleaners and diffusion into air spaces	Inhalation of vapours from soils	Future site users and construction and maintenance workers.
	Groundwater	HMs, TRH, BTEXN, PAH, phenols, and VOCs	Volatilisation of contamination from groundwater to indoor or outdoor air spaces (onsite and offsite)	Inhalation of vapours	End users of the site post-development Construction and maintenance workers Basements users
			Migration of dissolved phase impacts in groundwater	Biota uptake, Ingestion Dermal contact	Aquatic ecosystems Recreational water users
			Potential seepage into deep basement intercepting water table (on and offsite)	Dermal contact Ingestion	Basements users Construction and maintenance workers
Building fabrics containing hazardous materials	-	Lead, PCB and asbestos	Release of hazardous materials during uncontrolled demolition of building fabrics	Ingestion; Dermal contact; Inhalation of airborne contaminants	Construction and maintenance workers

4.6 Data Gaps

Based on the CSM derived for the site and the above qualitative assessment of risks, the following data gaps have been identified:

- Unknown quality of fill and natural soils at the site;
- Unknown quality of groundwater at the site;
- Unknown quality of soil vapour impacts from the adjacent dry cleaning business and service station;
- Uncertainty in regards to contamination from sub-surface infrastructure including USTs;
- Uncertainty in regards to possible impacts from historic and current use of the site, including mechanical workshop and service station;
- Uncertainty in regards to weathering of former building structures (i.e. painted surfaces, metallic structures, cement-fibre sheeting, etc.);
- Uncertainty in regards to possible impacts from historic use of pesticides beneath site structures or garden areas;
- Uncertainty in regards to the migration of contamination onto site from neighbouring properties (dry cleaner) and unknown contamination sources; and
- Uncertainty in regards to hazardous materials, including potential asbestos-containing materials (ACM) from building products used onsite.

4.7 Summary of Potential Contamination

EI considers there is a moderate risk for contamination to be present on-site. The available historical information presented in previous investigations (DP, 2005) indicated that the site was occupied by residential dwellings up until 1979/1980. The commercial service station and mechanical workshop were then constructed into their current state. Records indicated the presence of five sub-surface infrastructures present (USTs and UPSS), posing the moderate contamination risk. The underground tanks appear to be made of steel and in good condition based on the records reviewed. The tanks are inferred to have been installed in 1979/1980.

Storage of chemicals for cars and cleaning, along with lubricants is also noted both within the mechanical workshop of 86 Castlereagh Street and the storage room within 90-94 Castlereagh Street. As concrete hardstand is present across the site however, the risk of associated contamination is considered low.

Adjacent to the site a commercial dry cleaning business is in operation. Exactly when the dry cleaning business commenced operation is unknown, however it appears the commercial centre of businesses was constructed around 1980.

5. SAMPLING, ANALYTICAL AND QUALITY PLAN (SAQP)

The SAQP ensures that the data collected as part of the environmental works carried out at the site are representative, and provide a robust basis for site assessment decisions. This SAQP includes the following:

- Data quality objectives, including a summary of the objectives of the ESA;
- Investigation methodology including media to be sampled, details of analytes and parameters to be monitored and a description of intended sampling points;
- Sampling methods and procedures;
- Field screening methods;
- Analysis Methods;
- Sample handling, preservation, and storage; and
- Analytical QA/QC.

5.1 Data Quality Objectives (DQO)

In accordance with the USEPA (2006) *Data Quality Assessment* and the EPA (2017): *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme*, the process of developing Data Quality Objectives (DQO) was used by the EI assessment team to determine the appropriate level of data quality needed for the specific data requirements of the project. The DQO process that was applied for this assessment is documented in **Table 5-1**.

Table 5-1 Summary of Project Data Quality Objectives

DQO Steps	Details	Comments (changes during investigation)
1. State the Problem Summarise the contamination problem that will require new environmental data, and identify the resources available to resolve the problem; develop a conceptual site model.	The site located at 86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool NSW includes an active service station, mechanical workshop, car parking facility and fine dining restaurant, and an investigation is required to quantify any potential contamination to enable the Development Application to be assessed by Liverpool City Council. Review of previous investigations (summarised in **Section 3**) identified contamination that may be present in the site soil and groundwater, contributed by various potential sources listed in **Section 4.3** and summarised in **Section 4.5**. The proposed redevelopment which is outlined in **Section 1.2** involves the construction of two mixed-use apartment towers overlying a three-level basement car park. The basement car park is proposed to cover the entire site footprint. There are two land use scenarios that fit the proposed site use: ▪ Building footprint over basement car parking ‣ HIL-B / HSL D This investigation is required to characterise the condition of the site soil and groundwater and enable the developer to meet their obligations under *State Environmental Planning Policy 55* (SEPP-55) and the *Contaminated Land Management Act 1997* (CLM Act), for the assessment and management of contaminated soil and/or groundwater.	-
2. Identify the Goal of the Study (Identify the decisions) Identify the decisions that need to be made on the contamination problem and the new environmental data required to make them.	Based on the objectives outlined in **Section 1.4**, the decisions that need to be made are: ▪ Has the nature, extent and source of any soil or groundwater impacts onsite been defined? ▪ What impact do the site specific, geologic and hydrogeological conditions have on the fate and transport of any impacts that may be identified? ▪ Does the level of impact coupled with the fate and transport of identified contaminants represent an unacceptable risk to identified human and/or environmental receptors on or offsite? ▪ Does the collected data provide sufficient information to allow the suitability of the site to be determined, or selection and design of an appropriate remedial strategy, if necessary? If the data does not provide sufficient information, what data gaps require closure to enable the suitability of the site to be determined, or selection and design of an appropriate remedial strategy?	-

DQO Steps	Details	Comments (changes during investigation)
3. Identify Information Inputs (Identify inputs to decision) Identify the information needed to support any decision and specify which inputs require new environmental measurements.	Inputs to the decision making process include: ▪ Proposed development plans and land use; ▪ Aerial photographs, historical Land Title records, and Council requirements; ▪ Review of previous investigations at the site by Douglas Partners; ▪ National and NSW EPA guidelines endorsed under the *NSW Contaminated Land Management Act 1997*; ▪ Soil and groundwater samples and observations obtained from an intrusive investigation in locations, and to depths deemed appropriate for investigative purposes (or prior auger refusal); ▪ Investigation sampling to verify the presence of onsite contamination and to evaluate the potential risks to sensitive receptors; and ▪ Laboratory analysis of selected soil and groundwater samples will comprise COPC presented in **Section 4.4.** At the end of the assessment, a decision must be made regarding whether the environmental conditions are suitable for the proposed redevelopment, or if additional investigations are required to confirm site suitability, or remedial works to make the site suitable for the proposed use.	The desktop study and associated information (aerial photographs, land titles, dangerous goods search, and groundwater bore search) was reviewed from within previous environmental investigations (DP, 2005).
4. Define the Boundaries of the Study Specify the spatial and temporal aspects of the environmental media that the data must represent to support decision.	Lateral – The cadastral boundaries of the site; Vertical – From the existing ground level, the basement bulk excavation level (BEL) is proposed to be completed to approximately 10 mBGL (RL 11.0 mAHD) and locally deeper for lift over-run pits; and Temporal – The results will be valid on the day samples are collected and will remain valid as long as no changes occur in regards to site use, and contamination (if present) does not migrate onto the site from off-site sources.	-

DQO Steps	Details	Comments (changes during investigation)
5. Develop the Analytic Approach (Develop a decision rule) To define the parameter of interest, specify the action level, and integrate previous DQO outputs into a single statement that describes a logical basis for choosing from alternative actions.	Laboratory test results will be accepted if: ▪ All contracted laboratories are accredited by NATA for the analyses undertaken; ▪ All laboratory analytical data is within pre-determined data acceptance criteria, in accordance with laboratory quality assurance and quality control (QA/QC) policies and DQOs; ▪ QA/QC results demonstrate acceptable reliability and representativeness of the data set; and ▪ Laboratory practical quantitation limits (PQL) are below the adopted acceptance/assessment criteria for the tested chemical of concern. The decision rules for the investigation were: ▪ If the concentrations of contaminants in the soil data exceed the relevant health-based investigation criteria, the health screening criteria and ecological criteria where accessible soils would be used for planting, for the intended land use; then assess the need to further investigate the extent of impacts onsite. ▪ If the concentrations of contaminants in the soil data are below the relevant health-based investigation criteria, the health screening criteria and ecological criteria where accessible soils would be used for planting, for the intended land use; then the site will be deemed suitable for the proposed development. ▪ Decision criteria for QA/QC measures are defined by the Data Quality Indicators (DQI) in **Table 5-2.**	-

6. Specify Performance or Acceptance Criteria (Specify limits on decision errors)
Specify the decision-maker's acceptable limits on decision errors, which are used to establish performance goals for limiting uncertainties in the data.
	Specific limits for this project are to be in accordance with the National and NSW EPA guidance, and appropriate indicators of data quality and standard procedures for field sampling and handling. This should include the following points to quantify tolerable limits:
	▪ The null hypothesis for the investigation is that the 95% Upper Confidence Limits (UCL) of the mean for contaminants of concern exceed relevant commercial / industrial land use criteria across the site.
	▪ The acceptance of the site will be based on the probability that:
	  ‣ The 95% UCL of the mean of the data will satisfy the given site criteria. Therefore, a limit on the decision error will be 5% that a conclusive statement may be incorrect;
	  ‣ The standard deviation of the results is less than 50% of the relevant remediation acceptance criterion; and
	  ‣ No single results exceed the remediation acceptance criteria by 250% or more.
	▪ Soil concentrations for chemicals of concern that are below investigation criteria made or approved by the NSW EPA will be treated as acceptable and indicative of suitability for the proposed land use(s).
	▪ If contaminant concentrations in soil and/or groundwater exceed the adopted criteria, further investigation will be considered prudent. If no contamination is detected in soil and/or groundwater, no further action is required.
		-

DQO Steps	Details	Comments (changes during investigation)
7. Develop the Detailed Plan for Obtaining Data (Optimise the design for obtaining data) Identify the most resource-effective sampling and analysis design for general data that are expected to satisfy the DQOs.	In order to identify the most resource-effective sampling and analysis design for general data that are expected to satisfy the DQOs: ▪ Thirteen (13) sampling locations were proposed for the site using both a systematic and targeted sampling pattern across accessible areas of the site. ▪ Four (4) groundwater monitoring wells were proposed to be installed and gauged to assess groundwater quality at the site. ▪ Two (2) soil vapour (SV) sampling points were proposed to be installed via hand held power drill to the base of the concrete slab, to characterise current sub-slap cVOC concentrations. ▪ An upper soil profile sample will be collected at each borehole location and tested for chemicals of concern, to assess the conditions of the fill layer, and impacts from commercial activities at ground level. Further sampling would also be carried out at deeper soil layers. Samples will be selected based on field observations (including visual and olfactory evidence, as well as soil vapour screening in headspace samples) whilst giving consideration to characterise the subsurface soil stratigraphy. ▪ Written instructions will be issued to guide field personnel in the required fieldwork activities; ▪ Field screening for potential VOC contamination will be carried out with a portable Photo-Ionisation Detector (PID); ▪ Representative soil samples will be collected from the site and analysed to allow characterisation of soils; and ▪ Review of the results will be undertaken to determine if further excavation and additional sampling is warranted. Additional investigations would be considered to be warranted where soil concentrations are found to exceed remediation criteria endorsed by the NSW EPA, relevant to the proposed land use(s).	-

5.2 Data Quality Indicators

To ensure that the validation data were of an acceptable quality, they were assessed against the data quality indicators (DQI) outlined in **Table 5-2**, which related to both field and laboratory-based procedures. The overall assessment of data quality is discussed in **Section 7**.

Table 5-2 Summary of Project Data Quality Objectives

QA/QC Measures (PARC)	Data Quality Indicators
Precision – A quantitative measure of the variability (or reproducibility) of data	Data precision would be assessed by reviewing the performance of blind field duplicate sample sets, through calculation of relative percentage differences (RPD). Data precision would be deemed acceptable if RPDs are found to be less than 30%. RPDs that exceed this range may be considered acceptable where: ▪ Results are less than 10 times the limits of reporting (LOR); ▪ Results are less than 20 times the LOR and the RPD is less than 50%; or ▪ Heterogeneous materials or volatile compounds are encountered.
Accuracy – A quantitative measure of the closeness of reported data to the "true" value	Data accuracy would be assessed through the analysis of: ▪ Method blanks, which are analysed for the analytes targeted in the primary samples; ▪ Matrix spike and matrix spike duplicate sample sets; and ▪ Laboratory control samples.
Representativeness – The confidence (expressed qualitatively) that data are representative of each medium present onsite	To ensure the data produced by the laboratory is representative of conditions encountered in the field, the laboratory would carry out the following: ▪ Blank samples will be run in parallel with field samples to confirm there are no unacceptable instances of laboratory artefacts; ▪ Review of relative percentage differences (RPD) values for field and laboratory duplicates to provide an indication that the samples are generally homogeneous, with no unacceptable instances of significant sample matrix heterogeneities; and ▪ The appropriateness of collection methodologies, handling, storage and preservation techniques will be assessed to ensure/confirm there was minimal opportunity for sample interference or degradation (i.e. volatile loss during transport due to incorrect preservation / transport methods).
Completeness – A measure of the amount of useable data from a data collection activity	Analytical data sets acquired during the assessment will be evaluated as complete, upon confirmation that: ▪ Standard operating procedures (SOPs) for sampling protocols were adhered to; and ▪ Copies of all COC documentation are presented, reviewed and found to be properly completed. It can therefore be considered whether the proportion of "useable data" generated in the data collection activities is sufficient for the purposes of the land use assessment.
Comparability – The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event	Given that a reported data set can comprise several data sets from separate sampling episodes, issues of comparability between data sets are reduced through adherence to SOPs and regulator-endorsed or published guidelines and standards on each data gathering activity. In addition the data will be collected by experienced samplers and NATA-accredited laboratory methodologies will be employed in all laboratory testing programs.

6. METHODOLOGY

6.1 Sampling Rationale

With reference to the CSM described in **Section 4**, soil, groundwater and soil vapour investigation works were planned in accordance with the following rationale:

- Sampling fill and natural soils from thirteen (13) test bore locations located across accessible areas of the site to characterise in-situ soils;
- Sampling groundwater during a single groundwater monitoring event (GME), from four (4) newly installed groundwater monitoring wells to characterise groundwater on-site;
- Sampling of soil vapour during a single sampling event from two (2) soil vapour inserts;
- Laboratory analysis of representative soil, soil vapour and groundwater samples for the identified contaminants of concern.

6.2 Investigation Constraints

The number of test bores drilled, soil vapour points sampled and groundwater monitoring wells installed during the investigation phase achieved the planned investigation scope described in **Section 6.1.** Soils beneath existing dwellings (i.e. mechanical workshop) however could not be analysed during these investigations due to access restrictions.

Additionally, two of the four newly installed groundwater monitoring wells were found dry during the GME, which was conducted two weeks following installation. As such, two previously installed wells noted as DP_BH2 and DP_BH4 (DP, 2018) were used for sampling within the south-east and south-west portions of the site. Locations of these wells are exemplified in **Figure A.2**.

6.3 Assessment Criteria

For the purposes of this investigation, the adopted soil assessment criteria are referred to as the Soil Investigation Levels (SILs), the Soil Vapour Investigation Levels (IHILs) and the adopted groundwater assessment criteria are referred to as the Groundwater Investigation Levels (GILs). SILs, IHILs and GILs are presented alongside the analytical results in the corresponding summary tables, which are discussed in **Section 8**.

The assessment criteria proposed for this project are outlined in **Table 6-1, 6-3** and **6-4.** These were selected from available published guidelines that are endorsed by national or state regulatory authorities, with due consideration of the exposure scenario that is expected for various parts of the site, the likely exposure pathways and the identified potential receptors.

6.3.1 Soil

The soil assessment criteria proposed for this project are outlined in **Table 6-1**. These were selected from available published guidelines that are endorsed by national or state regulatory authorities, with due consideration of the exposure scenario that is expected for various parts of the site, the likely exposure pathways, and the identified potential receptors.

Table 6-1 Adopted Investigation Levels for Soil

Adopted Guidelines	Rationale
NEPM, 2013 Soil HILs, HSLs, & Management Limits for TPHs	**Soil Health-based Investigation Levels (HILs)** All soil samples will be assessed against the NEPM 2013 HIL-B thresholds for residential sites with minimal opportunities for soil access. **Soil Health-based Screening Levels (HSLs)** The NEPM 2013 *HSL-D*[1] thresholds for commercial/industrial sites for vapour intrusion would be applied to assess for potential human health impacts from residual vapours resulting from petroleum, BTEX, & naphthalene. Soils asbestos results to be assessed against the NEPM 2013 Soil HSL thresholds for "all forms of asbestos". **Management Limits for Petroleum Hydrocarbons** Should the HSLs be exceeded for petroleum hydrocarbons, soil samples would also assessed against the NEPM 2013 *Management Limits* for the TRH fractions F1 – F4 to assess propensity for phase-separated hydrocarbons (PSH), fire and explosive hazards & adverse effects on buried infrastructure.

Note 1 As the proposed development contains a communal basement car park and commercial properties occupying the ground floor, HSL-D was used as per *Schedule B1, Note 1, Table 1A(3)* (NEPM Schedule B1, 2013).

6.3.2 Groundwater

In accordance with DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*, groundwater acceptance criteria are based on environmental values considered relevant for groundwater use at the site and surrounding uses of groundwater and surface waters that may be effected by the site. Potential environmental values include:

- Aquatic ecosystems: surface water and groundwater ecosystems;
- Human Uses: these include but are not limited to potable water supply, agricultural water supply (irrigation and stock watering), industrial water use, aquaculture and human consumption of aquatic foods, recreational use (primary and secondary contact with surface waters), and visual amenity of surface waters;
- Human health in non-use scenarios: this includes consideration of health risks that may arise without direct contact between humans and the groundwater, for example, exposure to volatile contaminants above groundwater contaminant plumes; and,
- Buildings and structures: this includes protection from groundwater contaminants that can degrade building materials through contact, for example, the weakening of building footings resulting from chemically aggressive groundwater.

Cultural and spiritual values that are associated with the environment, including groundwater, should also be protected. Cultural and spiritual values may include spiritual relationships, sacred sites, customary uses, the plants and animals associated with the water, drinking water supplies, and recreational activities. In managing groundwater contamination, it is generally considered that cultural and spiritual values will be protected where groundwater quality protects all other relevant environmental values on a site.

Based on a groundwater bore search conducted by DP (2013) in previous investigations, there were no registered bores located within a 500 m radius of the site.

An assessment of the applicability of groundwater environmental values for the site and off-site is provided in **Table 6-2** below.

Table 6-2 Assessment of Groundwater Environmental Values

Environmental Value		Relevance
Aquatic Ecosystems - Surface water ecosystems and groundwater ecosystems		The nearest down-gradient surface water ecosystem is inferred as the Georges River, located approximately 690 m east of the site. This environmental value applies to all natural waterways and should be assessed.
Human Uses	Potable Water	Potable water for the site will be supplied by municipal reticulated supply. The use of groundwater for potable uses is not registered within 500 m radius of the site, or within a down-gradient direction from the site. Potable water is not considered to be a relevant environmental value for the site.
	Agricultural Water supply (Irrigation and livestock watering)	There is no planned use of groundwater for agricultural purposes (irrigation and stock watering) at the site and the site is situated in an urbanised setting. The use of groundwater for agricultural uses is not registered within 500 m radius of the site, or within a down-gradient direction from the site. Agricultural water supply is not considered to be a relevant environmental value for the site.
	Industrial Water use	There is no planned use of groundwater for industrial purposes at the site. Groundwater off-site for industrial purposes may be used however its use would be assessed for specific industrial use. The use of groundwater for industrial uses is not registered within 500 m radius of the site, or within a down-gradient direction from the site. Industrial water supply is not considered to be a relevant environmental value for the site.
	Aquaculture / human consumption of Aquatic foods	There is no planned use of groundwater for aquaculture/human consumption of aquatic foods at the site. EI checked the NSW Department of Primary Industries Aquaculture Industry Directory 2016 for listings of aquaculture businesses in Liverpool and in neighbouring areas. The directory is not inclusive of all producers in NSW but does list businesses nominating to be listed. No businesses were listed for Liverpool or surrounding areas. The use of groundwater for aquaculture uses is not registered within 500 m radius of the site, or within a down-gradient direction from the site. Aquaculture water supply is not considered to be a relevant environmental value for the site.
	Recreational use (primary and secondary contact)	There is no planned use of groundwater for recreational use at the site. There are no bores located within a 500 m radius of the site identifying the use of groundwater for recreational (domestic) uses (i.e. in swimming pools, pumping groundwater for irrigation, car washing, etc.). Groundwater for recreational use is not considered to be a relevant environmental value.
	Visual amenity to surface waters	Given the distance of the Georges River from the site, this environmental value is not considered relevant to the site.
Human health in non-use scenarios		The potential for vapour exposure from groundwater, without direct contact with groundwater, may occur if groundwater is contaminated with volatile contaminants. This environmental value should be assessed.
Buildings and structures		Foundations may be in contact with groundwater. This environmental value should be assessed.

Based on the above assessment, the environmental values (REVs) to be further assessed are: Aquatic Ecosystems and Buildings and Structures.

For the relevant environmental values, the adopted GILs are summarised in **Table 6-3** below.

Table 6-3 Adopted Investigation Levels for Groundwater

Adopted Guidelines	Rationale
ANZG 2018, GILs for Fresh Waters; and NEPM, 2013 Groundwater HSLs.	**Groundwater Investigation Levels (GILs) for Fresh Water** ANZG 2018 provides GILs for typical, slightly-moderately disturbed aquatic ecosystems, Trigger Values (TVs) for the 95% level of protection of aquatic ecosystems; however, the 99% TVs were applied for the bio-accumulative metals *cadmium* and *mercury*. **Health-based Screening Levels (HSLs)** The NEPM 2013 groundwater HSLs for vapour intrusion were used to assess for potential human health impacts from residual vapours resulting from petroleum, BTEX and naphthalene impacts. The *HSL D*[1] thresholds for commercial/industrial sites were applied for groundwater.

Note 1 As the proposed development contains a communal basement car park and commercial properties occupying the ground floor, HSL-D was used as per *Schedule B1, Note 1, Table 1A(4)* (NEPM Schedule B1, 2013).

6.3.3 Soil Vapour

The soil vapour assessment criteria proposed for this project are outlined in **Table 6-4**. These were selected from available published guidelines that are endorsed by national or state regulatory authorities, with due consideration of the exposure scenario that is expected for various parts of the site, the likely exposure pathways, and the identified potential receptors.

Table 6-4 Adopted Investigation Levels for Soil Vapour

Adopted Guidelines	Rationale
NEPM, 2013 Soil Vapour HILs; and NEPM, 2013 Soil Vapour HSLs	**Soil Vapour Health-based Investigation Levels (HILs) for volatile organic chlorinated compounds** Soil vapour samples were analysed against NEPM 2013 HIL-B threshold for residential sites with minimal access to soils, as these areas will be under slabs. **Soil Vapour Health-based Screening Levels (HSLs) for vapour intrusion** Soil vapour samples were analysed against NEPM 2013 *HSL D*[1] thresholds for vapour intrusion for commercial/industrial site settings.

Note 1 As the proposed development contains a communal basement car park and commercial properties occupying the ground floor, HSL-D was used as per *Schedule B1, Note 1, Table 1A(5)* (NEPM Schedule B1, 2013).

6.4 Soil Investigation

Soil investigation works conducted at the site are described in **Table 6-5**. Test bore locations are illustrated in **Figure A.2**.

Table 6-5 Summary of Soil Investigation Methodology

Activity/Item	Details
Fieldwork	An intrusive investigation for soil sampling and analysis was conducted on 10 July, 2019.
Drilling Method & Investigation Depth	Test bores were drilled using a ute-mounted drill rig, fitted with solid flight augers. Borehole and monitoring well construction details are presented in the detailed logs attached in **Appendix E**. Final borehole depths were noted as: ‣ BH101: 5.5 mBGL ‣ BH102: 2.0 mBGL ‣ BH103: 2.0 mBGL ‣ BH104: 2.0 mBGL ‣ BH105: 2.0 mBGL ‣ BH106: 2.0 mBGL ‣ BH107: 2.0 mBGL ‣ BH108: 6.0 mBGL ‣ BH109: 2.0 mBGL ‣ BH110: 7.5 mBGL ‣ BH111: 1.5 mBGL ‣ BH112: 5.8 mBGL ‣ BH113: 1.5 mBGL
Soil Logging	Drilled soils were classified in the field with respect to lithological characteristics and evaluated on a qualitative basis for odour and visual signs of contamination. Soil classifications and descriptions were based on Unified Soil Classification System (USCS) and Australian Standard (AS) 4482.1-2005. Bore logs are presented in **Appendix E.**
Decontamination Procedures	Soil samples were collected using grab/dry methods and placed into laboratory-supplied, acid-washed, solvent-rinsed glass jars using dedicated nitrile gloves. Blind field duplicates were separated from the primary samples and placed into glass jars. A small amount of duplicate was collected from samples and placed into a zip-lock bag for Photo-ionisation Detector (PID) screening and asbestos analysis.
Sample Preservation	Samples were stored in chilled (ice brick-filled) chests, whilst on-site and in transit to the laboratory, which was performed under strict Chain-of-Custody (COC) conditions. Copies of the completed COC documentation (used to track sample movements) and laboratory Sample Receipt Advice (SRA) forms are provided in **Appendix H.**
Management of Soil Cuttings	Soil cuttings were used as backfill for completed boreholes.
Quality Control & Laboratory Analysis	A number of soil samples were submitted for analysis of previously-identified COPC by SGS Laboratories (SGS). QA/QC testing comprised intra-laboratory duplicates ('field duplicates') tested blind by SGS and an inter-laboratory field duplicate tested blind by Envirolab Services (Envirolab). All samples were transported under strict Chain-of-Custody (COC) conditions and COC certificates and laboratory sample receipt documentation were provided to EI for confirmation purposes, as discussed in **Section 7**.
Soil Vapour Screening	PID screening for potential VOCs within soil samples was completed during intrusive investigations. Moderate hydrocarbon odours were reported in samples collected from BH110, with weak hydrocarbon odours noted in BH112. Individual screening of samples ranged from 0.1–147.1 ppm.

6.5 Groundwater Investigation

The groundwater investigation works ate conducted at the site are described in **Table 6-6**. Monitoring well locations are illustrated in **Figure A.2**.

Table 6-6 Summary of Groundwater Investigation Methodology

Activity/Item	Details
Fieldwork	Groundwater monitoring wells were installed and developed on 10 July, 2019. Wells were subsequently developed on to remove any additional water and/or seepage following drilling on 18 July, 2019. Water level gauging, well purging, field testing and groundwater sampling was conducted on 26 July, 2019.
Well Construction	▪ On-site test bores were constructed to the following depths: ‣ BH101: 5.5 mBGL ‣ BH108: 5.5 mBGL ‣ BH110: 7.5 mBGL ‣ BH112: 5.8 mBGL The boreholes were drilled using a ute-mounted drill rig. Well construction details are tabulated in **Table 8-2** and documented in the bore logs presented in **Appendix E**. Well construction was in general accordance with the standards described in NUDLC 2012, and involved the following: ▪ 32 mm, Class 18 uPVC, threaded, machine-slotted screen and casing, with slotted intervals in shallow wells set to screen to at least 500 mm above the standing water level to allow sampling of phase-separated hydrocarbon product, if present; ▪ Base and top of each well was sealed with a uPVC cap; ▪ Annular, graded sand filter was used to approximately 300 mm above top of screen interval; ▪ Granular bentonite was applied above annular filter to seal the screened interval; ▪ Drill cuttings were used to backfill the bore annulus to just below ground level; and ▪ Surface completion comprised of a gatic cover.
Well Development	Well development was conducted for the well directly following installation, or within the one week of drilling to allow groundwater to flow into the monitoring well. This involved agitation within the full length of the water column using a dedicated, HDPE, disposable bailer, followed by removal of water and accumulated sediment. Well development was considered successful upon purging three times the well volume or until dry.
Well Survey (Elevation and location)	Well elevation has been estimated from the survey plan provided by the Client. (Ref. Burton & Field Surveying & Land Development, Ref: S2863/77762, dated 04/04/2018)
Well Gauging	Monitoring wells were gauged for standing water level (SWL, depth to groundwater) prior to well purging at the commencement of the GME on 26 July, 2019. Measured SWLs are shown in **Table 8-2**. Gauging was conducted with a water/oil interface probe.

Activity/Item	Details
Well Purging& Field Testing	Groundwater purging and sampling was conducted using a low-flow/minimal drawdown sampling method with a MicroPurge kit (MP15) and pump. The MicroPurge system incorporates a low density poly-ethylene (LDPE) pump bladder, and a Teflon-lined LDPE sample delivery tube. The system used for this investigation employed pressurised carbon dioxide gas to regulate groundwater flow. Pump pressure and pumping cycles were adjusted accordingly to regulate extraction flow rate, and to avoid causing excessive drawdown of water level during the sampling process. Field measurement of water quality parameters was conducted on purged groundwater with a water quality meter (Hanna Multi Parameter 9829) positioned within a sample jar. Groundwater parameters tested in the field were Dissolved Oxygen (DO), Electrical Conductivity (EC), Redox, Temperature and pH. The measured parameters were recorded onto a field data sheet (**Appendix F**), along with the purged water volume at the time of measurement. Total water volume purged and stabilised groundwater parameters are summarised in **Table 8-3.**
Decontamination Procedure	The water level probe, MicroPurge and HDPE bailers were washed in a solution of potable water and Decon 90 and then rinsed with potable water. All sample containers were supplied by the laboratory for the particular project and only opened once immediately prior to sampling. Ice bricks were used to cool samples to appropriate temperatures following sampling.
Sample Preservation	The following sample containers supplied by the laboratory were used to store groundwater samples: ▪ One, amber glass, acid-washed and solvent-rinsed bottle; ▪ Two, 40 ml amber glass vials, pre-preserved with dilute hydrochloric acid, Teflon-sealed; and ▪ One, 250 mL, HDPE bottle, pre-preserved with dilute nitric acid (1 mL). Samples collected for heavy metal analysis were field-filtered using 0.45 µm pore-size filters. All containers were filled with sample to the brim then capped and stored in ice-filled chests, until completion of the fieldwork and during sample transit to the laboratory.
Quality Control & Laboratory Analysis	All groundwater samples were submitted for analysis of previously-identified chemicals of concern by SGS Laboratories (SGS). QA/QC testing comprised testing of rinsate blank and trip blank samples. All samples were transported under strict Chain-of-Custody (COC) conditions. COC certificates and laboratory sample receipt documentation were provided to EI for confirmation purposes.
Sample Transport	After sampling, refrigerated sample chests were transported to SGS Australia Pty Ltd using strict Chain-of-Custody (COC) procedures. Inter-laboratory duplicate (ILD) samples were forwarded to Envirolab Services Pty Ltd (Envirolab) for QA/QC analysis. A Sample Receipt Advice (SRA) was provided by each laboratory to document sample condition upon receipt. Copies of SRA and COC certificates are presented in **Appendix H**.

6.6 Soil Vapour Investigation

Soil vapour (SV) investigation and sampling was conducted by sub-contracted soil vapour sampling specialists, SGS Pty Ltd (SGS), to quantify soil vapour concentrations in soils immediately below the concrete slab at selected sampling locations. Soil Vapour Monitoring Events (SVMEs) were carried out to understand potential vapour conditions at the targeted locations to provide an indication of potential VOC contamination in the subsurface as a result of dry cleaner located adjacent to the site. SV well locations are illustrated in **Figure A.2.** The investigation methodology is summarised in **Table 6-7** below.

Table 6-7 Summary of Soil Vapour Investigation Methodology

Activity/Item	Details
Fieldwork	Soil vapour monitoring pins (SV1-SV2) were installed and sampled by SGS Leeder Consulting on 18 July, 2019. This included the installation of passive soil vapour steel implants below the concrete slab at targeted locations.
Installation Procedure	Soil vapour pin installations were as follows: ▪ Drill a 5/8 inch (16 mm) diameter hole through the concrete slab and approximately 1 inch (25 mm) into the underlying soil to form a void. ▪ Removed the drill bit from the hole and brushed with bottle brush, whilst removing the loose cuttings with a vacuum. ▪ Placed the lower end of the vapour pin assembly into the drilled hole, followed by placing the small hole located in the handle of the installation/extraction tool over the vapour pin to protect the barb fitting. Finally, taped the vapour pin into place using a dead blow hammer. ▪ Waited 20 minutes or more for the sub-slab soil-gas conditions to re-equilibrate prior to sampling. ▪ Removed protective cap and connected sample tubing to the barb fitting of the vapour pin. ▪ Collected sub-slab soil gas sample.
Sampling Procedure	Teflon tubing from the sampling location was connected directly to the sampling equipment at each sampling location. SV samples for volatile organic compound (VOC) analysis were collected into 1.4L silonite canisters, each with a dedicated soil gas train. A backup sample was also collected onto a coconut shell carbon sorbent tube. A sampling flow rate of no more than 0.2 L/min was utilised for sample collection. This was regulated by the soil gas train. A detailed sampling methodology completed for the event is presented in **Appendix K.**
Leak Testing	Isopropyl alcohol was employed to evaluate potential ambient air draw down during sampling at shallow soil vapour locations. A shroud was set up around the sampling point, with a cloth soaked in concentrated isopropyl alcohol placed into the shroud. The COC attached in Appendix H presents field data pertaining to the shroud used during sampling at each sampling point. The analytical results attached in Appendix I indicate that the concentrations of Isopropanol were below 10 mg/m3 suggesting that no leaks were detected and the sampling was effective.
Decontamination Procedures	As each soil vapour pin employed dedicated sampling equipment, decontamination was unwarranted.

Activity/Item	Details
Sample Preservation	Each silonite canister was disconnected from its dedicated soil gas train and stored securely for transport. Sample canisters were transported with a vacuum of approximately -4"Hg to assess whether any leaks occurred during transport.
Quality Control & Laboratory Analysis	All SV samples were submitted for analysis via the USEPA TO-15 method. One trip blank sample was transported alongside the soil vapour samples to the laboratory for QA/QC purposes. After sampling, samples were transported to SGS-Leeder Consulting under Chain-of-Custody Conditions. The Chain-of-Custody was provided to EI documenting sample condition upon receipt at the analytical laboratory. A copy of the COC is presented in **Appendix H.**

7. DATA QUALITY ASSESSMENT

The assessment of data quality is defined as the scientific and statistical evaluation of environmental data to determine if the data meets the objectives for the project (US EPA, 2006). Data quality assessment included an evaluation of the compliance of the field sampling, field and laboratory duplicates and laboratory analytical procedures and an assessment of the accuracy and precision of these data from the laboratory quality control measurements. The findings of the data quality assessment in relation to the current investigation at the site are discussed in detail in **Appendix J**.

The QC measures generated from the field sampling and laboratory analytical program are summarised in **Table 7-1**.

Table 7-1 Quality Control Process

Data Quality	Control	Conformance [Yes, Part, No]	Report Sections
Preliminaries	Data Quality Objectives established	Yes	See **Section 5**
Field work	Suitable documentation of fieldwork observations including borehole logs, field notes.	Yes	See **Appendix E** and **Appendix F**
Sampling Plan	Use of relevant and appropriate sampling plan (density, type, and location)	Yes	See sample rationale
	All media sampled and duplicates collected	Yes	See **Table B.1** and **Appendix J**
	Use of approved and appropriate sampling methods (soil, groundwater, soil vapour)	Yes	See **Section 6**
	Selection of soil samples according to field PID readings (where VOCs are present)	Yes	See **Section 6**
	Preservation and storage of samples upon collection and during transport to the laboratory	Yes	See **Section 6**
	Appropriate Rinsate, Field and Trip Blanks taken	Yes	See **Appendix J**
	Completed field and analytical laboratory sample COC procedures and documentation	Yes	See **Appendix H** and **Appendix I**
Laboratory	Sample holding times within acceptable limits	Yes	See **Appendix J** and **Appendix K**
	Use of appropriate analytical procedures and NATA-accredited laboratories	Yes	See **Appendix J** and **Appendix K**
	LOR/PQL low enough to meet adopted criteria	Yes	See **Appendix J** and **Appendix K**
	Laboratory blanks	Yes	See **Appendix J** and **Appendix K**
	Laboratory duplicates	Yes	See **Appendix J** and **Appendix K**

Data Quality	Control	Conformance [Yes, Part, No]	Report Sections
	Matrix spike/matrix spike duplicates (MS/MSDs)	Yes	See **Appendix J** and **Appendix K**
	Surrogates (or System Monitoring Compounds)	Yes	See **Appendix J** and **Appendix K**
	Analytical results for replicated samples, including field and laboratory duplicates and inter-laboratory duplicates, expressed as Relative Percentage Difference (RPD)	Yes	See **Appendix J** and **Appendix K**
	Checking for the occurrence of apparently unusual or anomalous results, e.g. laboratory results that appear to be inconsistent with field observations or measurements	Yes	See **Appendix E** and **Appendix I**
Reporting	Report reviewed by senior staff to assess project meets desired quality, EPA guidelines and project outcomes.	Yes	See Report Distribution page at front of report.

7.1 Quality Overview

On the basis of the field and analytical data validation procedure employed, the overall quality of the analytical data produced for the site was considered to be of an acceptable standard for interpretive use and preparation of a conceptual site model (CSM).

8. RESULTS

8.1 Soil Investigation Results

8.1.1 Site Geology and Sub-surface Conditions

The general site geology encountered during the drilling of the soil investigation boreholes and installation of monitoring wells may be described as a layer of anthropogenic filling overlying residual clays and weathered sandstone bedrock. The geological information obtained during the investigation is summarised in **Table 8-1** and borehole logs from these works are presented in **Appendix C**.

Table 8-1 Generalised Subsurface Profile

Layer	Description	Minimum & maximum depth of layer (mBGL)
Pavement / Hardstand	Concrete / Asphalt	0.0 – 0.2
Fill	SAND (bedding sand)	0.1 – 0.25
	Silty CLAY	0.1 – 0.8
Residual Soil	Silty CLAY	0.5 – 3.4
Bedrock	SHALE	2.1 – 7.5 +

Note 1 **+** Denotes the material was detected at the termination depth.

8.1.2 Field Observations

Soil samples were obtained from bores at various depths ranging between 0.1 mBGL to 1.4-0.5 mBGL. All examined soil samples were evaluated on a qualitative basis for odour and visual signs of contamination (e.g. hydrocarbon odours, oil staining, petrochemical filming, asbestos fragments, ash, and charcoal) and the following observations were noted:

- Some sub-angular to angular gravels were reported within fill materials;
- Moderate hydrocarbon odours were reported in soil samples collected from BH110, with weak hydrocarbon odours noted during sampling at BH112;
- Evidence of ash or slag materials was not observed in any boreholes; and
- Photo-ionisation Detector (PID) analysis of soil samples ranged between 0.1 – 147.1 ppm. The highest recorded reading was located at BH110_1.1-1.2, which was within the vicinity of the service station and UST 1 (**Figure A.2**).

8.2 Groundwater Investigation Results

A single GME was conducted on 26 July, 2019. On this date, standing water levels (SWLs) were measured prior to well purging, and recorded with well purge volumes and field-based water test results. A summary well construction details is presented in **Table 8-2**.

Table 8-2 Monitoring Well Construction Details

Well ID	Top of casing (mBGL)	Ground Level RL(mAHD)	Bore Depth (mBGL)	Screen Interval (mBGL)	Lithology Screened
BH101	0.05	21.11	5.5	2.5 - 5.5	Shale
BH108	0.1	20.79	6.0	3.0 – 6.0	Shale
BH110	0.05	20.45	7.5	3.5 – 7.5	Shale
BH112	0.1	20.78	5.8	2.8 – 5.8	Shale

Note 1 mBGL – metres below ground level
Note 2 mAHD – metres relative to Australian Height Datum
Note 3 Ground level RLs have been extrapolated from the survey plan (Burton & Field Surveying & Land Development, Project No. S2863/77762, dated 4 April, 2019).

Water quality parameters tested in the field on groundwater sampled at four monitoring wells are tabulated in **Table 8-3**. Field sheets obtained of the portable water quality meters used are provided in **Appendix F,** with calibration documentation provided in **Appendix G**. Samples were also evaluated on the basis of odour and visual signs of contamination, with the following observations noted:

- Groundwater monitoring wells BH101 and BH108 were found to be dry during the groundwater monitoring event;
- Groundwater in all boreholes was noted to be clear, with low turbidity. No odours or sheens were observed within the groundwater samples;
- A slight petrol odour was observed in the general area when sampling groundwater at BH110, however no phase separated hydrocarbons were detected; and
- No olfactory or visual evidence of contamination were noted at any other monitoring well location.

Table 8-3 Groundwater Field Data

Sampling Point (date)	SWL[2]	RL TOC[3]	RWL[4]	Well Purge Volume[5]	DO[6]	pH[8]	EC[8]	Temp[9]	Red-Ox[10]	Odours / Visual observations
BH101	Dry	21.06	-	-	-	-	-	-	-	-
BH108	Dry	20.69	-	-	-	-	-	-	-	-
BH110	6.30	20.40	14.10	1.5	3.35	6.92	3581	18.11	208.0	Clear, low turbidity, no odour, no sheen.
BH112	2.25	20.68	18.43	1.5	3.46	7.85	4820	17.81	156.6	Clear, low turbidity, no odour, no sheen.
DP_BH2	6.56	21.10	14.54	1.5	4.96	6.98	2618	18.10	209.8	Clear, low turbidity, no odour, no sheen.
DP_BH4	6.70	20.40	13.70	1.5	3.50	7.05	3791	18.35	188.5	Clear, low turbidity, no odour, no sheen.

Note 1 The monitoring event took place on 26 July 2019. Well purging and field testing of groundwater was conducted on 18 July, 2019 (approximately one week prior to sampling), as water level recovery was slow due to the low hydraulic conductivity of the clayey aquifer. Field water quality parameters were tested on the same day as groundwater sampling. All field water quality measurements were tested and recorded onsite using the calibrated water meters detailed in **Appendix F.**
Note 2 SWL – Standing Water Level, measured in monitoring wells in metres below top of well casing (mBTOC) prior to well purging.
Note 3 RL (TOC) – Reduced Level, elevation at TOC in metres relative to Australian Height Datum (mAHD).
Note 4 RWL = Calculated groundwater level, relative to AHD (calculated as RL (TOC) – SWL).
Note 5 L – Litres (referring to volume of water purged from the well prior to groundwater sample collection.
Note 6 DO – Dissolved Oxygen – measured in units of milligrams per litre (mg/L).
Note 7 pH – Groundwater pH levels
Note 8 EC – Electrical Conductivity of the water sample in unites of micro-Siemens per centimetre (µS/cm).
Note 9 Temperature of groundwater recorded in degrees Celsius (°C)
Note 10 Redox – Oxidation and reduced potential. Redox reported in the above table has been adjusted relative to standard hydrogen electrode (by adding 205 mV to the field reading, as advised by the test equipment manufacturer.
Note 11 RLs have been extrapolated from the survey plan (Burton & Field Surveying & Land Development, Project No. S2863/77762, dated 4 April, 2019).
Note 12 Groundwater monitoring wells labelled DP_BH2 and DP_BH4 were installed by Douglass Partners during previous investigations. They were sampled due to monitoring wells installed nearby in this investigation being found dry.

8.2.1 Discussion of Field Water Quality Results

With reference to **Table 8-3**, the field water quality results indicated the following groundwater conditions:

- **Dissolved Oxygen:** Elevated dissolved oxygen levels (>1 mg/L) suggested influences from recharging waters, probably due to rainfall infiltration, at all locations. The measured DO levels also indicate an oxygen-rich (oxic) environment.
- **Electrical Conductivity:** In terms of water salinity, EC values were measured in groundwater ranging between 2,618 µS/cm (indicating brackish groundwater) to 4,820 µS/cm (indicating marginal groundwater).
- **pH levels:** Groundwater pH levels were generally neutral to slightly alkaline across the site, with levels ranging from 6.92 – 7.85 pH.
- **Temperature:** Groundwater temperatures ranged between 17.81 and 18.35 ^{o}C.

- **RedOx Potential:** Positive RedOx (also known as Oxidation-Reduction Potential, ORP) values were obtained at all sampling locations, which indicated that oxidising conditions prevail in groundwater and surface water across the site. As groundwater is a dynamic system, the groundwater ORP results provide a snapshot of RedOx conditions within the saturated zone at the time of the monitoring event, which were characterised as *oxidising*.

8.3 Laboratory Analytical Results

8.3.1 Soil Analytical Results

A summary of laboratory results showing test sample quantities, minimum/maximum analyte concentrations and samples found to exceed the SILs, is presented in **Table 8-4**. More detailed tabulations of results showing the tested concentrations for individual samples alongside the adopted soil criteria are presented in **Table B.2** at the end of this report. Completed documentation used to track soil sample movements and laboratory receipt (i.e. COC and SRA forms) are copied in **Appendix H** and all laboratory analytical reports for tested soil samples are presented in **Appendix I**.

Table 8-4 Summary of Soil Analytical Results

No. of primary samples	Analyte	Min Conc. (mg/kg)	Max Conc. (mg/kg)	Samples exceeding investigation levels
Heavy Metals				
20	Arsenic	3	13	None
20	Cadmium	<0.3	7.3	None
20	Chromium (Total)	6.4	26	None
20	Copper	15	650	None
20	Lead	9	520	None
20	Mercury	<0.05	0.17	None
20	Nickel	1.2	35	None
20	Zinc	17	950	None
PAHs				
20	Naphthalene	<0.1	1.7	None
20	Benzo(a)pyrene	<0.1	1.6	None
20	Carcinogenic PAHs (as B(a)P TEQ)	<0.3	2.4	None
20	Total PAH	<0.8	19	None
BTEX				
20	Benzene	<0.1	<0.1	None
20	Toluene	<0.1	<0.1	None
20	Ethyl benzene	<0.1	<0.1	None
20	Xylenes (Total)	<0.3	<0.3	None

No. of primary samples	Analyte	Min Conc. (mg/kg)	Max Conc. (mg/kg)	Samples exceeding investigation levels
TRHs				
20	F1 [1]	<25	280	None
20	F2 [2]	<25	160	None
20	F3 [3]	<90	170	None
20	F4 [4]	<120	170	None
Pesticides				
14	OCPs	<1	<1	None
14	OPPs	<1.7	<1.7	None
PCBs				
14	Total PCBs	<1	<1	None
Asbestos				
14	Asbestos	No asbestos detected	No asbestos detected	None

Note 1 To obtain F1, subtract the sum of BTEX concentrations from the C_6-C_{10} fraction.
Note 2 To obtain F2, subtract Naphthalene from the >C_{10}-C_{16} fraction.
Note 3 F3 – (C_{16}-C_{34}).
Note 4 F4 – (C_{34}-C_{40}).

8.3.2 Groundwater Analytical Results

A summary of laboratory results showing test sample quantities, maximum analyte concentrations and samples found to exceed the GILs, are presented in **Table 8-5**. More detailed tabulations of results showing the tested concentrations for individual samples alongside the adopted groundwater criteria are presented in **Appendix B**, **Table B.3**. Completed documentation used to track groundwater sample movements and laboratory receipt (i.e. COC and SRA forms) are copied in **Appendix H** and all laboratory analytical reports for tested groundwater samples are presented in **Appendix I**.

Table 8-5 Summary of Groundwater Analytical Results

No. of primary samples	Analyte	Min Conc. (µg/L)	Max Conc. (µg/L)	Samples exceeding investigation levels
Heavy Metals				
4	Aluminium	<5	99	ANZG – Fresh Water BH112 (99 µg/L)
4	Arsenic	1	4	None
4	Cadmium	<0.1	0.2	ANZG – Fresh Water BH110 (0.2 µg/L)
4	Chromium (Total)	<1	<1	None
4	Copper	<1	1	None
4	Lead	<1	2	None
4	Mercury	<0.1	<0.1	None
4	Nickel	2	21	ANZG – Fresh Water BH110 (14 µg/L) DP_BH2 (21 µg/L) DP_BH4 (19 µg/L)
4	Zinc	<5	15	ANZG – Fresh Water DP_BH2 (14 µg/L) DP_BH4 (15 µg/L)
PAHs				
4	Naphthalene	<0.1	<0.1	None
4	Benzo(a)pyrene	<0.1	<0.1	None
4	Total PAH	<1	<1	None
BTEX				
4	Benzene	<0.5	<0.5	None
4	Toluene	<0.5	<0.5	None
4	Ethyl benzene	<0.5	<0.5	None
4	Xylenes (Total)	<1.5	<1.5	None
TRHs				
4	F1 [1]	<50	<50	None
4	F2 [2]	<60	120	None
4	F3 [3]	<500	<500	None
4	F4 [4]	<500	<500	None

No. of primary samples	Analyte	Min Conc. (µg/L)	Max Conc. (µg/L)	Samples exceeding investigation levels
VOCs				
4	MtBE	<2	<2	None
4	Perchloroethylene-PCE	<0.5	<0.5	None
4	Trichloroethylene-TCE	<0.5	<0.5	None
4	cis-1,2-dichloroethene	<0.5	<0.5	None
4	Vinyl Chloride	<0.3	<0.3	None
4	VOC Total	<10	<10	None
Phenols				
4	Total Phenols	<100	<100	None

Note 1 To obtain F1, subtract the sum of BTEX concentrations from the C_6-C_{10} fraction.
Note 2 To obtain F2, subtract Naphthalene from the >C_{10}-C_{16} fraction.
Note 3 F3 – (C_{16}-C_{34}).
Note 4 F4 – (C_{34}-C_{40}).

8.3.3 Soil Vapour Analytical Results

Laboratory analytical results for soil vapour samples are summarised in **Table 8-6**, with a more detailed summary of comparison against the SVILs presented in **Appendix B**, **Table B.4**. Completed documentation used to track soil vapour sample movements and laboratory receipt (COC and SRA forms) are copied in **Appendix H**. Copies of the laboratory analytical reports are attached in **Appendix I**.

Table 8-6 Summary of Soil Vapour Analytical Results

No. of primary samples	Analyte	Min Conc. (µg/m^3)	Max Conc. (µg/m^3)	Samples exceeding investigation levels
Hydrocarbons				
2	F1 (TRH)	330	790	None
2	F2 (TRH)	<830	<920	None
2	Benzene	<2.5	3.7	None
2	Toluene	4.2	5.8	None
2	Ethylbenzene	<2.5	<2.7	None
2	o-xylene	<2.5	<2.7	None
2	m/p-xylene	<5.4	<6	None
VOCs				
2	Trichloroethene (TCE)	<3.7	<4.1	None
2	Tetrachloroethene (PCE)	89	91	None
2	1,1,1-Trichloroethane	<3.3	<3.7	None
2	cis-1,2-DCE	<3.3	<3.7	None
2	Vinyl Cloride	<1.7	<1.8	None
2	Freon 11	<6	95	None
2	2-Propanol	110	990	None
2	1,2,4-Trimethylbenzene	<3.6	4.1	None
2	Other VOC	ND [1]	ND	None

Note 1 To obtain F1, subtract the sum of BTEX concentrations from the C_6-C_{10} fraction.
Note 2 To obtain F2, subtract Naphthalene from the >C_{10}-C_{16} fraction.
Note 3 ND – No detection
Note 4 TCE – Trichloroethene
Note 5 PCE – Tetrachloroethene
Note 6 DCE – Dichloroethene

9. SITE CHARACTERISATION

9.1 Review of Conceptual Site Model

On the basis of investigation findings the CSM discussed in **Section 4** was considered to appropriately identify contamination sources, migration mechanisms and exposure pathways, as well as potential onsite and offsite receptors.

Previously known data gaps, as outlined in **Section 4.6** have largely been addressed. However, the following remaining data gaps will need to be addressed in subsequent investigation works:

- Potential presence of hazardous materials within the existing structures; and
- The quality of soils underneath existing buildings, as well as material directly below any UPSS and bowsers which could not be sampled due to safety and access restrictions.

9.2 Soil Characterisation

With reference to **Table 8-4** and **Table B.2**, concentrations of heavy metals, TRH, BTEX, PAH, pesticides, and PCBs were all reported below the adopted criteria.

Based on these results, EI consider there to be a low risk for widespread contamination across the site. Areas underneath current buildings and infrastructure, such as the hoists within the mechanical workshop will have to be analysed during supplementary investigations to confirm the absence of contamination.

9.3 Groundwater Characterisation

With reference to **Table 8-5** and **Table B.3**, concentrations of PAHs, BTEX, TRHs, VOCs and phenols were all reported below the adopted criteria.

Concentrations of heavy metals were also reported below the adopted criteria, with the exception of aluminium (BH112), cadmium (BH110), nickel (BH110, DP_BH2 and DP_BH4), and zinc (DP_BH2 and DP_BH4). Such metal exceedances are considered to be representative of background water quality, and not thought to represent a cause for environmental concern.

Based on these results, EI consider there to be a low risk for groundwater contamination across the broader site however further characterisation of the groundwater directly under any UPSS infrastructure may be required.

9.4 Soil Vapour Characterisation

With reference to **Table 8-6** and **Table B.4**, soil vapour concentrations of TRH, BTEX and VOCs were all reported below the corresponding IVILs.

Based on these results, EI consider there to be a low risk for soil vapour contamination within the vicinity of the adjacent dry cleaners at the subject site. There may still be a soil vapour risk near dip and fill points and surrounding USTs/UPSS, however, the removal of such infrastructure during remediation and bulk excavation of the site should mitigate these risks.

9.5 Asbestos Risk

Asbestos was not identified in fill from intrusive sampling at thirteen borehole locations. Although the presence of unidentified asbestos cannot be ruled out due to the investigation methodology, the risk of asbestos within soils is considered to be low to moderate. Due to the previous residential use, lack of boreholes under buildings and limitations to use test pits as part of the investigation, the presence of buried asbestos cannot be precluded.

10. CONCLUSIONS

The site located at 86-94 Castlereagh and 77-79 Bathurst Street, Liverpool NSW was the subject of a Detailed Site Investigation (DSI) that was conducted in order to assess the nature and degree of on-site contamination associated with current and former uses of the property. Based on the findings of this assessment it was concluded that:

Objectives

The main objectives of the assessment were to:

- Evaluate the potential for site contamination on the basis of historical land uses, anecdotal and documentary evidence of possible pollutant sources;
- To investigate the degree of any potential contamination by means of intrusive sampling and laboratory analysis, for relevant contaminants of concern; and
- Where site contamination is confirmed, provide data to assist in the selection and design of appropriate remedial options.

Findings

- A review of the previous environmental site investigations completed by DP indicated that:
  - Based on historical information, the site was occupied by low-density residential houses until 1979/1980, at which time 86 Castlereagh Street was redeveloped for use as a service station;
  - Several dip and fill points were observed on the service station of the site, revealing the presence of four USTs. These USTs/UPSSs (Underground Storage Tanks/Underground Petroleum Storage Systems) were identified in information sourced from a dangerous goods search in previous reports (DP, 2005), and were identified from approximately 1980. A fifth UST (waste oil tank) may be located in the vicinity of the mechanical workshop based on visual evidence during the site inspection;
- Soil sampling and analysis was conducted at thirteen (13) test bore locations:
  - The sub-surface layers comprised anthropogenic filling overlying residual clays and shale bedrock;
  - An assessment against the NEPM (2013) HIL-B/HSL-D investigation levels indicated that no soil samples exceeded the adopted criteria.
- Groundwater sampling and analysis was conducted at four (4) groundwater monitoring well locations, installed both up and down hydraulic gradient of the UPSS infrastructure. Groundwater sampling and analysis indicated that:
  - Two of the monitoring wells sampled were installed during previous investigations by Douglas Partners. This was due to two of the newly installed monitoring wells being noted as ‘dry’ during the groundwater monitoring event on 26 July, 2019.
  - Standing Water Level (SWL) was observed between 2.25 – 6.70 mBGL;
  - Groundwater was noted to flow hydraulically east towards the Georges River;
  - An assessment against the NEPM (2013) HSL D and ANZG (2018) *Fresh Water Criteria* indicated that heavy metals exceeded the adopted criteria in three monitoring wells for aluminium, cadmium, nickel and zinc. EI consider the exceedances to be

representative of background water quality, and not thought to represent a cause for environmental concern.

- Soil vapour sampling and analysis was conducted at two (2) test bore locations placed within the vicinity of the eastern site boundary, next to the dry cleaning business. Soil vapour sampling and analysis indicated that:
  - An assessment against the NEPM (2013) HIL-B/HSL-D investigation levels indicated that no soil vapour samples exceeded the adopted criteria. There may still be a soil vapour risk near dip and fill points and surrounding USTs/UPSS, however, the removal of such infrastructure during remediation and bulk excavation of the site should mitigate these risks.

Conclusions

Based on the findings of this investigation, and due to the presence of tanks and associated infrastructure, the site will need to be remediated in accordance with the POEO *Underground Petroleum Storage Systems Regulation* (2014) and associated guidelines (*UPSS Regulation, 2008).* EI conclude that the site can be made suitable for the proposed development, so long as recommendations detailed in **Section 11** are implemented.

11. RECOMMENDATIONS

Based on the findings of this DSI, the following recommendations will be required to be implemented before the site can be confirmed as suitable for the proposed development:

- Conduct a Hazardous Materials Survey (HMS) of current site buildings. EI recommend that a HMS is conducted prior to site demolition;
- A Remedial Action Plan (RAP) should be prepared in accordance with the following, prior to the commencement of site works as part of the proposed development:
  - NSW Office of Environment and Heritage (2011) Guidelines for consultants reporting on contaminated sites;
  - Protection of the Environment Operations (2014) Underground Petroleum Storage Systems Regulation; and
  - Department of Environment, Climate Change and Water (NSW) (2008) Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation.
- The RAP should provide details of the methodology and procedures required for effective site remediation, including:
  - Sampling analysis and quality plan (SAQP) for the validation of remediation activities performed on-site;
  - Design of supplementary investigations to close the data gaps identified during this investigation (**Section 9.1**). EI note that due to site constraints, the additional investigations and remediation works may be conducted after site demolition and following removal of UPSS when access to areas of environmental concern are made available;
  - Removal of UPSS and validation resulting excavations; this may require an additional round of groundwater monitoring may be required to further characterise the groundwater if the tanks are found to be in poor condition;
  - Waste classification assessment, in order to enable classification of surplus site soils to be excavated and disposed off-site during remediation works and material imported to the site, in accordance with the NSW EPA (2014) *Waste Classification Guidelines and Waste Regulations*;
  - Work health and safety considerations, and;
  - Contingency plan to address unexpected finds (such as additional tanks, contamination under UPSS infrastructure, vehicle hoists and buildings (e.g. soil staining, asbestos) and alternative remediation methods to deal with potential groundwater or vapour contamination under the UPSS infrastructure.
- Preparation of a final site validation report by a suitably qualified environmental consultant, certifying the site suitability of soils and groundwater for future proposed land uses.

12. STATEMENT OF LIMITATIONS

The findings presented in this report are the result of discrete and specific sampling methodologies used in accordance with best industry practices and standards. Due to the site-specific nature of soil sampling from point locations, it is considered likely that all variations in subsurface conditions across a site cannot be fully defined, no matter how comprehensive the field investigation program.

While normal assessments of data reliability have been made, EI assumes no responsibility or liability for errors in any data obtained from previous assessments conducted on site, regulatory agencies (e.g. Council, EPA), statements from sources outside of EI, or developments resulting from situations outside the scope of works of this project.

Despite all reasonable care and diligence, the ground conditions encountered and concentrations of contaminants measured may not be representative of conditions between the locations sampled and investigated. In addition, site characteristics may change at any time in response to variations in natural conditions, chemical reactions and other events, e.g. groundwater movement and or spillages of contaminating substances. These changes may occur subsequent to EI's investigations and assessment.

EI's assessment is necessarily based upon the result of the site investigation and the restricted program of surface and subsurface sampling, screening and chemical testing which was set out in the proposal. Neither EI, nor any other reputable consultant, can provide unqualified warranties nor does EI assume any liability for site conditions not observed or accessible during the time of the investigations.

This report was prepared for the use of Il Capitano Investments Pty Ltd and no responsibility is accepted for use of any part of this report in any other context or for any other purpose or by other third parties. This report does not purport to provide legal advice.

This report and associated documents remain the property of EI subject to payment of all fees due for this assessment. The report shall not be reproduced except in full and with prior written permission by EI.

REFERENCES

ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, Australian and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand, August, 2018.

Ahern C R, Stone, Y, and Blunden B (1998) *Acid Sulfate Soils Assessment Guidelines*, part of the ASS Manual, Acid Sulfate Soil Management Advisory Committee (ASSMAC), Wollongbar, NSW, Australia, 28 August 1998, 59 p.

Australian Standard (2005) Table E1 – *Minimum sampling points required for site characterisation*, in Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds, Standards Australia, AS 4482.1-2005, p45.

Australian Standard (2008) *The removal and disposal of underground petroleum storage tanks*, prepared by Committee ME-017, Flammable and Combustible Liquids, AS 4976-2008, 19 February 2008.

Chapman, G.A. and Murphy, C.L. (1989) Soil Landscapes of the Sydney 1:100 000 sheet, Soil Conservation Service of NSW, Sydney, September 1989.

DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination*, Dept. of Environment and Conservation, New South Wales, DEC 2007/144, June 2007.

DECCW (2008) *Guidelines for Implementing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2008*, Department of Environment, Climate Change and Water NSW, Revised as of September 2009.

DCP (2014) *Liverpool Development Control Plan 2008.*

DMR (1983) Sydney 1:100,000 Geological Series Sheet 9130 (Edition 1) *Geological Survey of New South Wales*, Department of Mineral Resources.

Douglass Partners (2005) *Preliminary Contamination Assessment, Corner Memorial Avenue & Castlereagh Street, Liverpool*. Project No. 43021, dated May 2005.

Douglass Partners (2013) *Detailed Site Investigation, Lots 10 and 11, Corner of Memorial Avenue and Castlereagh Street, Liverpool NSW*. Project No. 43021.01 Rev1, dated August 2013.

Douglass Partners (2018) *Preliminary Site Investigation, Proposed Memorial Avenue Mixed Use Development, 86-94 Castlereagh Street & 77-79 Bathurst Street, Liverpool*. Project No. 86567.00, dated November 2018.

Douglass Partners (2018) *Preliminary Geotechnical Investigation, Proposed Mixed Use Development, 86-94 Castlereagh Street & 77-79 Bathurst Street, Liverpool NSW*. Project No. 92327.01, dated December 2018.

EPA (1995) *Sampling Design Guidelines Environment Protection Authority of New South Wales*, Contaminated Sites Unit, EPA 95/59, September 1995.

EPA (2014) *Technical Note: Investigation of Service Station Sites*, April 2014.

EPA (2017) *Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme*, 3rd Edn. EPAP0269, October 2017.

LEP (2014) *Liverpool Local Environmental Plan (2008).*

Murphy CL (1997) *Acid Sulfate Soil Risk of the Prospect / Parramatta River Sheet Department of Land and Water Conservation*, Sydney, Second Edition. Supplied by the Sydney South Coast, Geographical Information Systems Unit.

Naylor SD, Chapman GA, Atkinson G, Murphy CL, Tulau MJ, Flewin TC, Milford HB and Morand DT (1998) *Guidelines for the Use of Acid Sulfate Soil Risk Maps*, Department of Land and Water Conservation, Sydney, Second Edition.

NEPM (2013) *Schedule B1 Guideline on Investigation Levels for Soil and Groundwater*, Schedule B2 Guideline on Site Characterisation and Schedule B4 Guideline on site-specific health risk assessments, National Environmental Protection (Assessment of Site Contamination) Measure 1999, National Environmental Protection Council, December 1999, Amendment 2013.

OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites*, NSW Office of Environment and Heritage (OEH), OEH 2011/0650, 23 p.

POEO (2014) *Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2014,* Current version as of 8 July 2015.

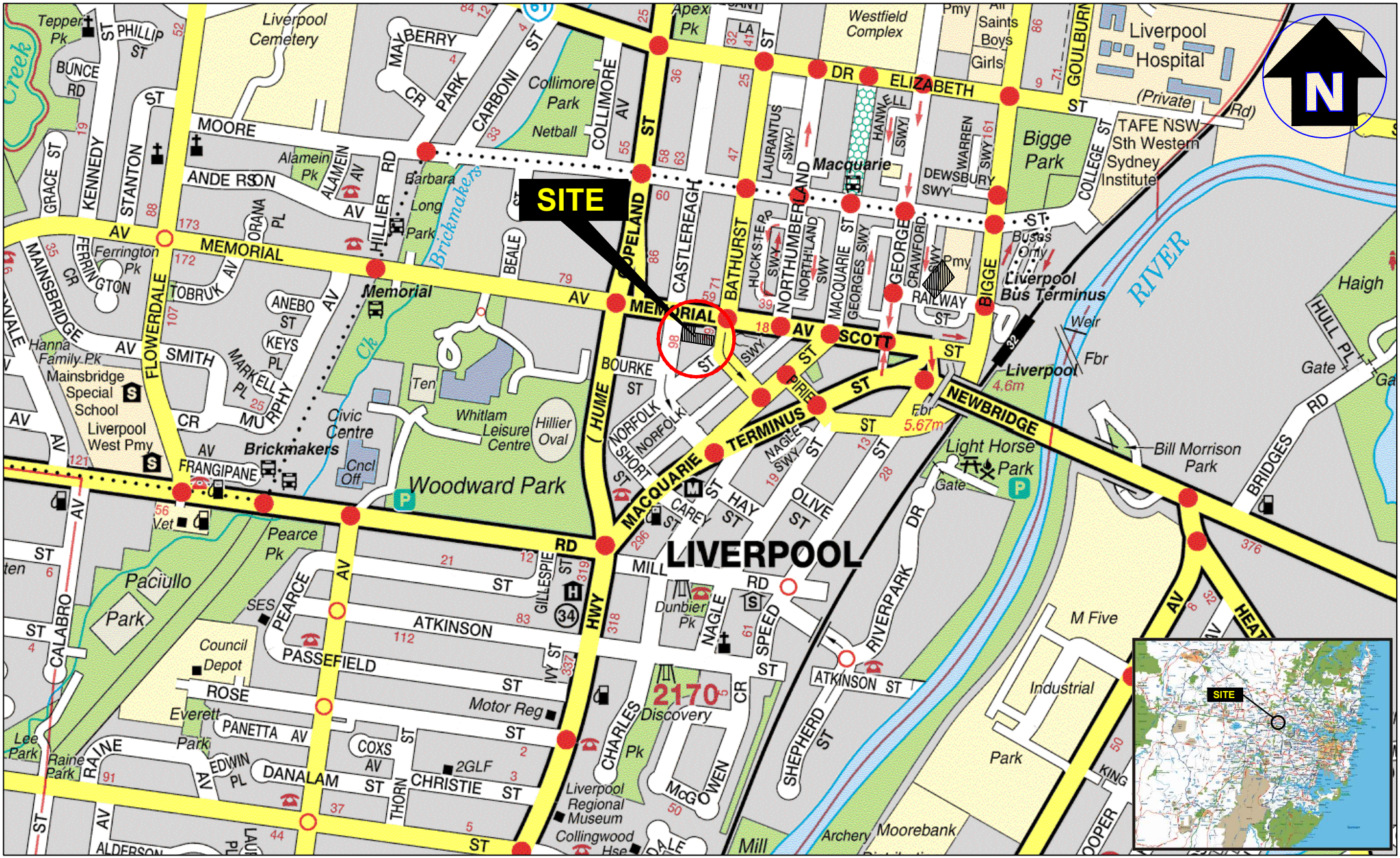
USEPA (2006) *Data Quality Assessment: A Reviewers Guide – EPA QA/G-9R. USEPA Office of Environmental Information*, EPA/240/B-06/002, February 2006.

ABBREVIATIONS

ABC	Ambient Background Concentration
ACL	Added Contaminant Limit
ACM	Asbestos-containing materials
AS	Australian Standard
ASS	Acid sulfate soils
ANZG	Australian and New Zealand and Australian State and Territory Governments
B(a)P	Benzo(a)Pyrene (a PAH compound), - B(a)P TEQ Toxicity Equivalent Quotient
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CBD	Central Business District
CLM	Contaminated Land Management
CSM	Conceptual Site Model
COC	Chain of Custody
COPC	Contaminants of Potential Concern
cVOCs	Chlorinated Volatile Organic Compounds (a sub-set of the VOC analysis suite)
DA	Development Application
DBYD	Dial before you dig
DEC	Department of Environment and Conservation, NSW (see OEH)
DECC	Department of Environment and Climate Change, NSW (see OEH)
DECCW	Department of Environment, Climate Change and Water, NSW (see OEH)
DA	Development Application
DO	Dissolved Oxygen
DP	Deposited Plan
DSI	Detailed Site Investigation
EC	Electrical Conductivity
Eh	Redox potential
EIL	Ecological Investigation Level
EPA	Environment Protection Authority
ESL	Ecological Screening Level
F1	TRH C_6 – C_{10} less sum of BTEX concentrations (Ref. NEPM 2013, Schedule B1)
F2	TRH >C_{10} – C_{16} less naphthalene (Ref. NEPM 2013, Schedule B1)
F3	TRH >C_{16} – C_{34} (Ref. NEPM 2013, Schedule B1)
F4	TRH >C_{34} – C_{40} (Ref. NEPM 2013, Schedule B1)
GIL	Groundwater Investigation Level
GME	Groundwater Monitoring Event
GPR	Ground Penetrating Radar
HIL	Health-based Investigation Level
HSL	Health-based Screening Level
km	Kilometres
LNAPL	Light, non-aqueous phase liquid (also referred to as PSH)
LOR	Limit Of Reporting of laboratory instruments (see PQL)
DNAPL	Dense, non-aqueous phase liquid
m	Metres
mAHD	Metres Australian Height Datum
mBGL	Metres Below Ground Level
mg/L	Milligrams per litre
µg/L	Micrograms per litre
mV	Millivolts
MW	Monitoring well
NATA	National Association of Testing Authorities, Australia

NEPC	National Environmental Protection Council
NEPM	National Environmental Protection Measure
NSW	New South Wales
OCP	Organochlorine pesticides
OPP	Organophosphorus pesticides
OEH	Office of Environment and Heritage, NSW (formerly DEC, DECC, DECCW)
PAHs	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PFAS	Per or Poly-Fluoroalkyl Substances
PFHxS	Perfluorohexane Sulfonate
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctane Sulfonate
PID	Photo-ionisation Detector
pH	Measure of the acidity or basicity of an aqueous solution
PSH	Phase-separated hydrocarbons (also referred to as LNAPL)
PQL	Practical Quantitation Limit (limit of detection for laboratory instruments)
PSI	Preliminary Site Investigation
QA/QC	Quality Assurance / Quality Control
RAP	Remediation Action Plan
SIL	Soil Investigation Level
SRA	Sample receipt advice (document confirming laboratory receipt of samples)
SWL	Standing Water Level
TCLP	Toxicity Characteristics Leaching Procedure
TDS	Total dissolved solids (a measure of water salinity)
TPH	Total Petroleum Hydrocarbons (superseded term equivalent to TRH)
TRH	Total Recoverable Hydrocarbons (non-specific analysis of organic compounds)
UCL	Upper Confidence Limit of the mean
UPSS	Underground Petroleum Storage System
US EPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds (specific organic compounds which are volatile)

Appendix A - Figures



eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9518 5088

Drawn:	L.C.
Approved:	J.H.
Date:	04-07-19
Scale:	Not To Scale

Il Capitano Investments Pty Ltd

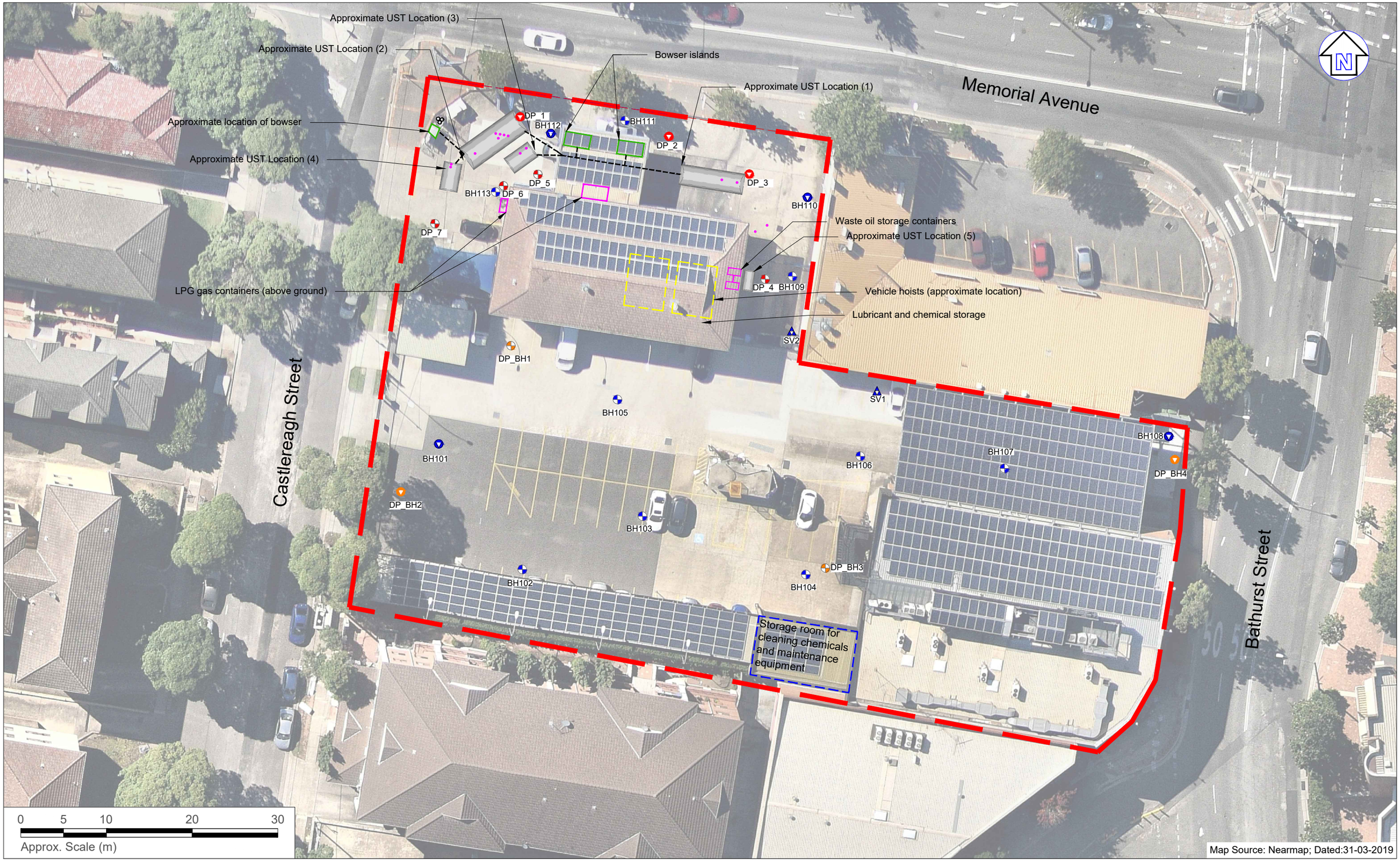
Detailed Site Investigation

86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool NSW

Site Locality Plan

Figure: 1

Project: E24273 E02_Rev0



LEGEND

- Approximate site boundary
- Approximate groundwater well location
- Approximate borehole location
- Approximate soil vapour sampling location
- Approximate location of storage container
- Approximate UST locations
  (1) 44 KL UST - ULP (2) 44 KL UST - E10 ULP (3) 10 KL UST - PULP (4) 12 KL UST - Diesel Fuel (5) 1,892L UST - Waste oil
- Approximate borehole location (DP, 2013)
- Approximate monitoring well location(DP, 2013)
- Approximate borehole location (DP, 2018)
- Approximate borehole location (DP, 2018)
- Approximate location of bowser
- Approximate location of tank vents as seen druing site inspection
- Approximate location of UST dip and fill points
- Approximate (inferred) location of UST infrastructure

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9518 5088

Drawn:	L.C.
Approved:	J.H.
Date:	04-07-19

Il Capitano Investments Pty Ltd
Detailed Site Investigation
86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool NSW

Sampling Location Plan

Figure: 2

Project: E24273 E02_Rev0

Appendix B - Tables

Table B.1 - Sample Register for 86-94 Castlereagh Street and 77-79 Bathurst Street, Liverpool NSW

Sample ID	Date	Scheduled Analysis #												Primary Laboratory	Secondary Laboratory
		Heavy Metals	TRH	BTEX	PAH	VOC	Phenols	EC	Hardness	Aluminium	TO-15 Suite	OCP / OPP / PCB	Asbestos	SGS Batch No.	Envirolab Batch No.
Detailed Site Investigation - EI, 2019															
Soils															
BH101_0.1-0.2	10/07/2019	X	X	X	X							X	X	SE195215	-
BH101_0.6-0.7		X	X	X	X							X	X		
BH102_0.2-0.3		X	X	X	X							X	X		
BH103_0.2-0.3		X	X	X	X							X	X		
BH104_0.3-0.4		X	X	X	X							X	X		
BH105_0.2-0.3		X	X	X	X							X	X		
BH106_0.2-0.3		X	X	X	X	X						X	X		
BH107_0.2-0.3		X	X	X	X							X	X		
BH107_1.4-1.5		X	X	X	X										
BH108_0.3-0.4		X	X	X	X							X	X		
BH109_0.2-0.3		X	X	X	X	X						X	X		
BH109_0.9-1.0		X	X	X	X										
BH110_0.2-0.3		X	X	X	X							X	X		
BH110_1.1-1.2		X	X	X	X										
BH111_0.2-0.3		X	X	X	X							X	X		
BH111_1.4-1.5		X	X	X	X										
BH112_0.2-0.3		X	X	X	X							X	X		
BH112_0.7-0.8		X	X	X	X										
BH113_0.2-0.3		X	X	X	X							X	X		
BH113_1.2-1.3		X	X	X	X										
QD1/QT1		X	X	X											221463
Groundwater															
BH110-1	26/07/2019	X	X	X	X	X	X	X	X	X				SE195782/A	-
BH112-1		X	X	X	X	X	X	X	X	X					
DP_BH2-1		X	X	X	X	X	X	X	X	X				SE195781/A	
DP_BH4-1		X	X	X	X	X	X	X	X	X					
GWQD1/GWQT1		X	X	X										SE195782	222960
Soil Vapour															
SV1	20/07/2019										X			M191355	-
SV2											X				
Field Duplicate															

eiaustralia
Contamination | Remediation | Geotechnical

Table B.2 - Summary of Soil Analytical Results - Detailed Site Investigation **E24273 - Liverpool**

Sample ID	Date	Heavy Metals								PAHs				BTEX				TRH				Pesticides		PCBs	Asbestos
		As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Carcinogenic PAHs (as B(a)P TEQ)	Benzo(a)pyrene	Total PAHs	Naphthalene	Benzene	Toluene	Ethylbenzene	Total Xylenes	F1	F2	F3	F4	OCPs	OPPs	Total	Presence / absence
Detailed Site Investigation (EI, 2019)																									
Fill Soils																									
BH101_0.1-0.2	10/7/2019	4	<0.3	6.4	25	10	<0.05	13	55	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH101_0.6-0.7		8	<0.3	16	16	68	0.17	8.3	190	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH102_0.2-0.3		6	<0.3	19	42	59	<0.05	35	140	0.4	0.2	3	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH103_0.2-0.3		4	<0.3	20	36	15	<0.05	22	45	0.3	0.2	2	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	170	170	<1	<1.7	<1	No
BH104_0.3-0.4		8	<0.3	18	71	250	0.1	7.7	300	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH105_0.2-0.3		13	0.3	18	54	130	0.1	16	190	1.2	0.8	9	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	90	<120	<1	<1.7	<1	No
BH106_0.2-0.3		8	7.3	15	650	520	0.1	23	950	0.4	0.2	2	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH107_0.2-0.3		7	<0.3	24	23	440	0.09	11	140	0.6	0.4	4	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH108_0.3-0.4		5	0.3	26	35	230	0.17	12	240	2.4	1.6	19	0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH109_0.2-0.3		8	<0.3	21	24	69	0.08	4.4	170	<0.3	0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH110_0.2-0.3		7	<0.3	18	18	56	<0.05	5.8	67	<0.3	<0.1	2	1.7	<0.1	<0.1	<0.1	<0.3	280	160	<90	<120	<1	<1.7	<1	No
BH111_0.2-0.3		6	0.3	14	33	82	0.12	13	130	<0.3	0.1	2	0.4	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH112_0.2-0.3		7	<0.3	21	17	23	<0.05	7.3	33	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
BH113_0.2-0.3		3	<0.3	14	20	73	<0.05	14	78	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	<1	<1.7	<1	No
Natural Soils																									
BH107_1.4-1.5	10/7/2019	9	<0.3	12	17	23	<0.05	1.4	21	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	N.A.	N.A.	N.A.	N.A.
BH109_0.9-1.0		9	<0.3	15	18	21	<0.05	1.2	22	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	N.A.	N.A.	N.A.	N.A.
BH110_1.1-1.2		8	<0.3	12	15	14	<0.05	2.2	17	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	N.A.	N.A.	N.A.	N.A.
BH111_1.4-1.5		8	<0.3	9.9	33	12	<0.05	7.7	54	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	N.A.	N.A.	N.A.	N.A.
BH112_0.7-0.8		10	<0.3	8.9	26	9	<0.05	6.2	45	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	N.A.	N.A.	N.A.	N.A.
BH113_1.2-1.3		6	<0.3	9.8	16	13	<0.05	3.5	22	<0.3	<0.1	<0.8	<0.1	<0.1	<0.1	<0.1	<0.3	<25	<25	<90	<120	N.A.	N.A.	N.A.	N.A.
Statistical Analysis																									
Maximum Concentration		13	7.3	26	650	520	0.17	35	950	2.4	1.6	19	1.7	0.1	0.1	0.1	0.3	280	160	170	170	1	1.7	1	NC
Mean		7.2	0.7	15.9	59.5	105.9	0.1	10.7	145	0.5	0.2	2.6	0.2	0.1	0.1	0.1	0.3	38	31.8	94	122.5	1	1.7	1	NC
SILs																									
HIL B - *Residential*		500	150	500 Cr (VI)	30,000	1,200	120	1,200	60,000	4		400										600		1	
HSL D - *Commercial / Industrial* [2]	Source depths (0 m to <1 m BGL)												NL	4	NL	NL	NL	310	NL						
	Source depths (1 m to <2 m BGL)												NL	6	NL	NL	NL	480	NL						
	Source depths (2 m to <4 m BGL)												NL	9	NL	NL	NL	NL	NL						
	Source depths (4m +)												NL	20	NL	NL	NL	NL	NL						
Management Limits – *Residential, parkland and public open space* Fine grained soil texture[1]																		800	1,000	3,500	10,000				
Asbestos contamination HSL – A&B *Residential* Bonded ACM (%w/w)																									0.01
Asbestos contamination HSL for Non Bonded / Friable Asbestos (%w/w)																									0.001

Notes: All results are recorded in mg/kg (unless otherwise stated)

Highlighted valuses indicate concentration exceeds Human Helath Based Soil Criteria

Highlighted indicates criteria exceeded

HIL B	NEPM 1999 Amendment 2013 'HIL B' Health Based Investigation Levels applicable for residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
HSL D	NEPM 1999 Amendement 2013 'HSL D' Health Based Investigation Levels applicable for commercial / industrial settings.
NA	'Not Analysed' i.e. the sample was not analysed.
NC	Not Calculated'
ND	'Not detected' i.e. all concentrations of the compounds within the analyte group were found to be below the laboratory limits of detection.
NL	'Not Limiting' - The soil vapour limit exceeds the soil concentration at which the pore water phase cannot dissolve any more of the individual chemical.
NR	No current published criterion.
1	Fine grained soil values were applied, based on the sub-surface material encountered during intrusive investigations (NEPM 1999 Amendement 2013, Table 1 B(7)).
2	Values applied for 'CLAY' soils were applied, based on the sub-surface material encountered during investigations (NEPM 1999 Amendement 2013, Table 1A(3)).
F1	To obtain F1 subtract the sum of BTEX concentrations from the C6-C10 fraction.
F2	To obtain F2 subtract Naphthalene from the >C10-C16 fraction.
F3	(>C16-C34)
F4	(>C34-C40)

Table B.3 – Summary of Groundwater Investigation Results **E24273 - Liverpool**

Sample Identification	Date	Heavy Metals									PAHs			BTEX					TRHs				VOCs							Phenols
		Al	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	Total PAHs	Benzo(a)pyrene	Naphthalene	Benzene	Toluene	Ethylbenzene	o-xylene	m/p-xylene	F1	F2	F3	F4	MtBE	Perchloroethylene-PCE	Trichloroethylene-TCE	cis-1,2-dichloroethene	Vinyl Chloride	VOC Total	Total
EI, 2019 - Detailed Site Investigation																														
BH110-1	26/07/2019	13	1	0.2	<1	<1	<1	<0.1	14	6	2	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<50	120	<500	<500	<2	<0.5	<0.5	<0.5	<0.3	<10	<100
BH112-1		99	2	<0.1	<1	1	<1	<0.1	2	<5	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<50	<60	<500	<500	<2	<0.5	<0.5	<0.5	<0.3	<10	<100
DP_BH2-1 [5]		<5	4	<0.1	<1	1	<1	<0.1	21	14	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<50	<60	<500	<500	<2	<0.5	<0.5	<0.5	<0.3	<10	<100
DP_BH4-1 [5]		6	1	0.2	<1	<1	2	<0.1	19	15	<1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.5	<1	<50	<60	<500	<500	<2	<0.5	<0.5	<0.5	<0.3	<10	<100
GILs																														
ANZG - *Fresh Water* [1]		55	24 (AsIII) 13 (AsV)	0.2	3.3 (CrIII) 1 (CrVI) [3]	1.4	3.4	0.6	11	8 [3]		0.2	16	950	180	80	350	275						70	330				320
HSL - D - *Commercial / Industrial* [2]													NL	5,000	NL	NL	NL		NL	NL	NL	NL							
WADER - *Non Potable Groundwater Use* [4]																							200							

Notes:

All values are µg/L unless stated otherwise

NL = Not Limiting

NA = 'Not Analysed' i.e. the sample was not analysed.

ND = Not Detected - i.e. concentration below the laboratory PQL

F1 To obtain F1 subtract the sum of BTEX concentrations from the C6-C10 fraction.

F2 To obtain F2 subtract naphthalene from the >C10-C16 fraction.

F3 (>C16-C34)

F4 (>C34-C40)

1 = NEPM (2013) Groundwater Investigation Levels for fresh water quality, based on ANZG (2018).

2 = NEPC (2013) Table 1A(4) Groundwater HSL D for vapour intrusion at the contaminant source depth in clay.

3 = Figure may not protect key species from chronic toxicity, refer to ANZG (2018) for further guidance.

4 = In the absence of criteria, guidelines for MtBE (Methyl-tert-butyl ether) was drawn from the Government of Western Australia Department of Environmental Regulation - Assessment and management of contaminated sites (Guidelines) - December 2014.

5 = Monitoring wells DP_BH2 and DP_BH4 were utilised by EI during groundwater sampling, however, were installed during previous investigations by Douglas Partners.

Highlighted indicates ecological criteria exceeded

Highlighted indicates criteria exceeded

eiaustralia

Table B.4 - Summary of Soil Vapour Results **E24273.E02 - Liverpool**

Sample Information				TRH		BTEX						VOCs								
Sample ID	Depth (mBGL)	PID (ppm)	Sampling date	F1	F2	Benzene	Toluene	Ethylbenzene	o-Xylenes	m&p-Xylenes	Naphthalene	Trichloroethene (TCE)	Tetrachloroethene (PCE)	1,1,1-TCA	cis-1,2-DCE	Vinyl Cloride	Freon 11	2-Propanol	1,2,4-Trimethylbenzene	Other VOC
EI, 2019 - Detailed Site Investigation																				
SV1	0.1	-	18/07/2019	330	<830	<2.5	5.8	<2.5	<2.5	<5.4	<8.7	<3.7	91	<3.3	<3.3	<1.7	17	990	4.1	ND
SV2	0.1	-		790	<920	3.7	4.2	<2.7	<2.7	<6	<9.6	<4.1	89	<3.7	<3.7	<1.8	<1.4	110	<3.6	ND
SV1 - Field Duplicate	0.1	-		250	<910	<2.7	5.1	<2.7	<2.7	<5.9	<9.6	<4.1	89	<3.6	<3.6	<1.8	19	200	6.4	ND
SV1 - Laboratory Duplicate	0.1	-	-	410	<1000	<3.1	5.1	<3.1	<3.1	<6.7	<11	<4.7	94	<4.1	<4.1	<2.1	16	1000	4	ND
SVILs																				
HIL B - *Residential - SV Criteria* [1]												2,000	2,000	60,000	20	30				
HSL D - *Commercial / Industrial SV Criteria* [2]				680,000	500,000	4,000	4,800,000	1,300,000	840,000		3,000									

Notes:

	All units are in µg/m^3
SV	Soil Vapour
ND	Not detected
1	Soil Vapour Criteria are the NEPM (2013) Interim soil vapour health investigation levels for Residential B, Ref. Schedule B1, Table 1A(2), unless otherwise indicated
2	NEPM (2013) Soil vapour health screening level (HSL D) for vapour intrusion in commercial/industrial, Ref. Schedule B1, Table 1A(5) for the 0 to <1m in sand (most conservative) concontamination source.

Highlighted value exceeds NEPM (2013) SV Criteria.

Highlighted value indicates criteria exceeded.

Appendix C – Proposed Development Plans

SCALE 1 : 100

0 1 2 3 4 5 10

(A) RIGHT OF WAY 2.5 WIDE & 0.31 WIDE VIDE DP 800326
(B) RIGHT OF WAY 2.5 WIDE & VARIABLE WIDTH VIDE DP 800326
(C) HEIGHT RESTRICTION ZONE LIMITED IN HEIGHT TO 23.7 (AHD)

(O) DIPPING POINTS AND ACCESS HOLES

AC ~ DENOTES AIRCON UNIT
MN ~ DENOTES MONITORING WELL

NOTES 1 :-
1) Bearings, Area & Distances are by Title and / or deeds only. No boundary investigation has been carried out.
2) Relationship of improvements to boundaries is diagrammatic only. Where offsets are critical they should be confirmed by further survey.
3) Contours shown depict the topography. Except at spot levels shown they do not necessarily represent the exact level at any particular point.
4) Services shown hereon have been determined from visual evidence only. Prior to any design, demolition, excavation or construction on site the relevant authority should be contacted to establish detailed location and depth.
5) These notes form an integral part of this plan & should not be separated.
6) Location of sewer subject to confirmation from Sydney Water or relevant authority.
7) The Symbols are not to scale and are indicative only
8) Tree dimensions are approximate only, shown as 15(spread) 0.5 (trunkØ) & 12(height).
9) Australian Height Datum (AHD) was established from SSM 154648, RL 20.656, Source - SCIMS Survey Mark Report.
10) The Sewer Location is interpreted from Hydra & is Approximate Only.

KEY

ET : Electric Turret	DP	: Downpipe	
LP : Light Pole	LIN	: Lintel	
PP : Power Pole	SIL	: Sewer Insp. Lid	
GM : Gas Meter	SMH	: Sewer Manhole	
HYD : Hydrant	SMS	: Sewer Maint. Shaft	
SV : Stop Valve	TEL	: Telecom Pit	
WC : Water Connection	PC	: Pram Crossing	
WM : Water Meter	VC	: Vehicle Crossing	
SWP : Stormwater Pit	DH&W	: DH&W:Drillhole & Wing	

(d) Denotes Door
(W) Denotes Window

RLs with suffix "T" are at top of window/door
RLs with suffix "S" are at sill of window/door
RLs with suffix "TA" are at top of awning
RLs with suffix "BA" are at sill of awning
RLs with suffix "TB" are at top of balcony

MEMORIAL AVE
CASTLEREAGH ST
Vehicular Crossing
IL ABT 18.25
750Ø
TK20.62
TK20.53
TK20.44
TK20.30
TK20.33
TK20.27
TK20.17
TK20.07
IL ABT 18.28
IL ABT 19.84
IL ABT 18.38
2 x 525Ø
TK20.03
TK20.81
TK20.96
TK20.89
GRATED DRAIN
150mm HIGH CONCRETE KERB
150mm HIGH
CONCRETE KERB
97°56'30"
45.505
44.295
TK20.59
TK20.49
TK21.03
TK21.06
7°36'40"
12.19
187°36'40"
TK20.81
TK20.91
20.94 Bollard
PUMP
Fill Valves
METAL AWNING
11
554.8m²
DP 7541
MW
Sign
GAS
SIGN
PH
PH
TK20.38
20.15
20.24
20.29
20.07
F4
BRICK SHOPS
100
DP 619991
SP 17781
APPROXIMATE SEWER LOCATION PLOTTED FROM SYDNEY WATER DIAGRAM
CONCRETE DRIVEWAY
Elec Pit
CONCRETE BALCONY
Gas Bottles
FL20.95
FL 20.79
2 STY BRICK RESIDENCE & SERVICE STATION
(tile roof)
No 86
Ridge 30.16
Ridge 30.18
27.38T 25.09S along
27.20T 26.00S
27.20T 26.21S
1st
27.19T 25.93S
27.19T 26.21S
Floor
27.18T 26.04S
23.78T 23.04S
23.98T 23.04S
23.94T 23.15S
23.95T 23.04S
Rain Water Tanks
AC
TAP
MOTOR
Switch
LP
Bollard
SEPARATION PIT
10
554.8m²
DP 7541
CONCRETE DRIVEWAY
METAL CARPORT
(conc under)
Top of Kerb
Btm of Kerb
Fence
Wall
Gas Valve
Brick
Pole
Elec S B
Ticket Box
Conc Driveway
Power Box 20.96
Bollard 21.00
Pit (Metal Lid) (Comm Lid Under)
Bitumen
Edge of
Pit (Metal Lid)
Pole
9
554.8m²
DP 7541
Grated Pit
Pit Inv 20.15
450ø Inv 20.24
750ø Inv 20.24
450ø Inv 20.19
Roof 20.20
Roof 20.18
Roof Line
SIL 20.81
BRICK BUILDING
(metal roof)
No 60
4
539.4m²
DP 800326
MGA

CAUTION 1 :
INFORMATION CONTAINED IN THIS PLAN IS THE COPYRIGHT OF BURTON AND FIELD PTY LIMITED. THE USE, DUPLICATION (WHETHER IN PART OR FULL) WITHOUT WRITTEN CONSENT OF BURTON AND FIELD PTY LIMITED CONSTITUTES AN INFRINGEMENT OF COPYRIGHT.

"Liability limited by a scheme approved under Professional Standards Legislation"

BURTON & FIELD
surveying & land development

All Correspondence to:
343 Hume Highway, Liverpool, N.S.W. 2170
P.O. Box 242 Liverpool, N.S.W. 1871
Tel: (02) 9602-1199 Fax: (02) 9821-2620
Email: survey@burtonandfield.com.au

Suite 202, 2 Pembroke Street Epping, N.S.W. 2121
P.O. Box 1150, Epping, N.S.W. 1710
Tel: (02) 9868-4660 Fax: (02) 9868-6035
Email: epping.reception@burtonandfield.com.au
Web: www.burtonandfield.com.au

REVISION

DATE: 04/04/2018
REF: S2863/77762
DESIGN:
DRAWN: JMK
CHECKED: BT

CLIENT: SAM SOFI
PROJECT: CONTOUR & DETAIL SURVEY FOR LOTS 7 to 11 IN DP 7541, LOT 4 IN DP 800326 & SP 38492, 86-94 CASTLEREAGH & 77-79 BATHURTS STs, LIVERPOOL
LGA: LIVERPOOL
COMP REF: J:\77762\....\77762_C
SIZE: A1

ISSUE: A
SHEET: 1 OF 4 SHEETS
DATUM: AHD
SCALE: 1:100

CASTLEREAGH ST

BENCH MARK
NAIL IN PATH
RL 21.20 (AHD)

8
554.8m²
DP 7541

7
554.8m²
DP 7541

5
1058m²
DP 800326
SP 38492

4
539.4
DP 800

97°56'20"
45.505

97°56'30"
44.215

277°56'20"
45.505

277°56'30"
38.805

7°36'40"
12.19

24.38

METAL CARPARK
(bitumen under)

CONC BUILDING

BRICK BUILDING

3 STY
BRICK UNITS
(tile roof)

2 STY
CONC BUILDING
(metal roof)
Nos 3-5

BALCONY

AWNING

Lot 1001
DP 869285
SP 56133

Lot 1002
DP 869285
SP 56345

MGA

NOTES 1 :-
1) Bearings, Area & Distances are by Title and / or deeds only.
No boundary investigation has been carried out.
2) Relationship of improvements to boundaries is diagrammatic only. Where offsets are critical they should be confirmed by further survey.
3) Contours shown depict the topography. Except at spot levels shown they do not necessarily represent the exact level at any particular point.
4) Services shown hereon have been determined from visual evidence only. Prior to any design, demolition, excavation or construction on site the relevant authority should be contacted to establish detailed location and depth.
5) These notes form an integral part of this plan & should not be separated.
6) Location of sewer subject to confirmation from Sydney Water or relevant authority.
7) The Symbols are not to scale and are indicative only
8) Tree dimensions are approximate only, shown as 15(spread) 0.5 (trunkØ) & 12(height).
9) Australian Height Datum (AHD) was established from SSM 154648, RL 20.656, Source - SCIMS Survey Mark Report.
10) The Sewer Location is interpreted from Hydra & is Approximate Only.

ⓓ Denotes Door
Ⓦ Denotes Window

RLs with suffix "T" are at top of window/door
RLs with suffix "S" are at sill of window/door
RLs with suffix "TA" are at top of awning
RLs with suffix "BA" are at sill of awning
RLs with suffix "TB" are at top of balcony

Ⓐ RIGHT OF WAY 2.5 WIDE & 0.31 WIDE VIDE DP 800326
Ⓑ RIGHT OF WAY 2.5 WIDE & VARIABLE WIDTH VIDE DP 800326
Ⓒ HEIGHT RESTRICTION ZONE LIMITED IN HEIGHT TO 23.7 (AHD)

ⓞ DIPPING POINTS AND ACCESS HOLES

AC ~ DENOTES AIRCON UNIT
MN ~ DENOTES MONITORING WELL

0 1 2 3 4 5 10
SCALE 1 : 100

KEY

ET : Electric Turret	ED	DP : Downpipe	
LP : Light Pole		LIN : Lintel	
PP : Power Pole		SIL : Sewer Insp. Lid	
GM : Gas Meter		SMH : Sewer Manhole	
HYD : Hydrant		SMS : Sewer Maint. Shaft	
SV : Stop Valve		TEL : Telecom Pit	
WC : Water Connection		PC : Pram Crossing	
WM : Water Meter	VC	VC : Vehicle Crossing	
SWP : Stormwater Pit		DH&W:Drillhole & Wing	

CAUTION 1 :
INFORMATION CONTAINED IN THIS PLAN IS THE COPYRIGHT OF BURTON AND FIELD PTY LIMITED. THE USE, DUPLICATION (WHETHER IN PART OR FULL) WITHOUT WRITTEN CONSENT OF BURTON AND FIELD PTY LIMITED CONSTITUTES AN INFRINGEMENT OF COPYRIGHT.

"Liability limited by a scheme approved under Professional Standards Legislation"

BURTON & FIELD
surveying & land development

All Correspondence to:
343 Hume Highway, Liverpool, N.S.W. 2170
P.O. Box 242 Liverpool, N.S.W. 1871
Tel: (02) 9602-1199 Fax: (02) 9821-2620
Email: survey@burtonandfield.com.au

Suite 202, 2 Pembroke Street Epping, N.S.W. 2121
P.O. Box 1150, Epping, N.S.W. 1710
Tel: (02) 9868-4660 Fax: (02) 9868-6035
Email: epping.reception@burtonandfield.com.au
Web: www.burtonandfield.com.au

REVISION

DATE: 04/04/2018
REF: S2863/77762
DESIGN:
DRAWN: JMK
CHECKED: BT

CLIENT: SAM SOFI
ISSUE: A

PROJECT: **CONTOUR & DETAIL SURVEY FOR LOTS 7 to 11 IN DP 7541, LOT 4 IN DP 800326 & SP 38492, 86-94 CASTLEREAGH & 77-79 BATHURTS STs, LIVERPOOL**
SHEET: 2
OF 4 SHEETS

LGA: LIVERPOOL
DATUM: AHD
SCALE: 1:100

COMP REF: J:\77762\....\77762_C
SIZE: A1

Ⓐ RIGHT OF WAY 2.5 WIDE & 0.31 WIDE VIDE DP 800326
Ⓑ RIGHT OF WAY 2.5 WIDE & VARIABLE WIDTH VIDE DP 800326
Ⓒ HEIGHT RESTRICTION ZONE LIMITED IN HEIGHT TO 23.7 (AHD)

APPROXIMATE SEWER LOCATION PLOTTED FROM SYDNEY WATER DIAGRAM

4
539.4m²
DP 800326

5
1058m²
DP 800326
SP 38492

Lot 1002
DP 869285
SP 56345

CONC BUILDING
(metal roof)
Nos 3-5

2 STY
BRICK BUILDING
(metal roof)
No 79

DISPLAY HOME

TIMBER DECK

BUILDING
(cantilever)

BRICK BUILDING

BALCONY

AWNING

BATHURST ST

NORFOLK ST

BENCH MARK
NAIL IN PATH
RL 20.52 (AHD)

MGA

0 1 2 3 4 5 10
SCALE 1 : 100

ⓓ Denotes Door
Ⓦ Denotes Window

RLs with suffix "T" are at top of window/door
RLs with suffix "S" are at sill of window/door
RLs with suffix "TA" are at top of awning
RLs with suffix "BA" are at sill of awning
RLs with suffix "TB" are at top of balcony

◎ DIPPING POINTS AND ACCESS HOLES

AC ~ DENOTES AIRCON UNIT
MN ~ DENOTES MONITORING WELL

KEY

ET : Electric Turret	DP	DP : Downpipe	
LP : Light Pole	LIN	LIN : Lintel	
PP : Power Pole	SIL	SIL : Sewer Insp. Lid	⊙
GM : Gas Meter	SMH	SMH : Sewer Manhole	⊙
HYD : Hydrant	SMS	SMS : Sewer Maint. Shaft	⊙
SV : Stop Valve	TEL	TEL : Telecom Pit	
WC : Water Connection	PC	PC : Pram Crossing	
WM : Water Meter	VC	VC : Vehicle Crossing	
SWP : Stormwater Pit	DH&W	DH&W:Drillhole & Wing	

NOTES 1 :-
1) Bearings, Area & Distances are by Title and / or deeds only.
No boundary investigation has been carried out.
2) Relationship of improvements to boundaries is diagrammatic only. Where offsets are critical they should be confirmed by further survey.
3) Contours shown depict the topography. Except at spot levels shown they do not necessarily represent the exact level at any particular point.
4) Services shown hereon have been determined from visual evidence only. Prior to any design, demolition, excavation or construction on site the relevant authority should be contacted to establish detailed location and depth.
5) These notes form an integral part of this plan & should not be separated.
6) Location of sewer subject to confirmation from Sydney Water or relevant authority.
7) The Symbols are not to scale and are indicative only
8) Tree dimensions are approximate only, shown as T5(spread) 0.5 (trunkØ) & 12(height).
9) Australian Height Datum (AHD) was established from SSM 154648, RL 20.656, Source - SCIMS Survey Mark Report.
10) The Sewer Location is interpreted from Hydra & is Approximate Only.

CAUTION 1 :
INFORMATION CONTAINED IN THIS PLAN IS THE COPYRIGHT OF BURTON AND FIELD PTY LIMITED. THE USE, DUPLICATION (WHETHER IN PART OR FULL) WITHOUT WRITTEN CONSENT OF BURTON AND FIELD PTY LIMITED CONSTITUTES AN INFRINGEMENT OF COPYRIGHT.

"Liability limited by a scheme approved under Professional Standards Legislation"

BURTON & FIELD
surveying & land development

All Correspondence to:
343 Hume Highway, Liverpool, N.S.W. 2170
P.O. Box 242 Liverpool, N.S.W. 1871
Tel: (02) 9602-1199 Fax: (02) 9821-2620
Email: survey@burtonandfield.com.au

Suite 202, 2 Pembroke Street Epping, N.S.W. 2121
P.O. Box 1150, Epping, N.S.W. 1710
Tel: (02) 9868-4660 Fax: (02) 9868-6035
Email: epping.reception@burtonandfield.com.au
Web: www.burtonandfield.com.au

REVISION

DATE: 04/04/2018
REF: S2863/77762
DESIGN:
DRAWN: JMK
CHECKED: BT

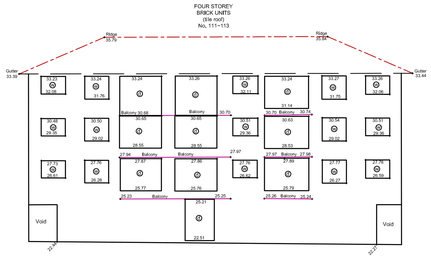
CLIENT: SAM SOFI
ISSUE: A

PROJECT: **CONTOUR & DETAIL SURVEY FOR LOTS 7 to 11 IN DP 7541, LOT 4 IN DP 800326 & SP 38492, 86-94 CASTLEREAGH & 77-79 BATHURTS STs, LIVERPOOL**
SHEET: 3
OF 4 SHEETS

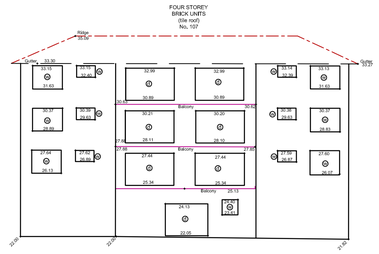
LGA: LIVERPOOL
DATUM: AHD
SCALE: 1:100

COMP REF: J:\77762\....\77762_C
SIZE: A1

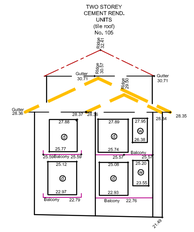
ⓓ Denotes Door
Ⓦ Denotes Window



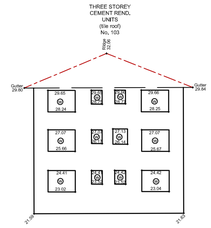
STREETSCAPE - EXISTING

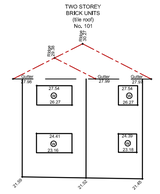


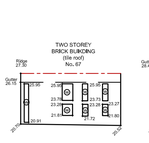
HOUSES ALONG

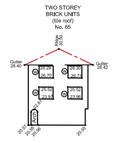


CASTLEREAGH STREET

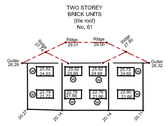






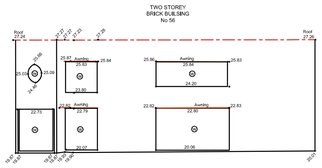


STREETSCAPE - EXISTING



HOUSES ALONG

MEMORIAL AVENUE



STREETSCAPE - EXISTING HOUSES ALONG

BATHURST STREET

NOT TO SCALE (see model)

CAUTION 1 :
INFORMATION CONTAINED IN THIS PLAN IS THE COPYRIGHT OF BURTON AND FIELD PTY LIMITED. THE USE, DUPLICATION (WHETHER IN PART OR FULL) WITHOUT WRITTEN CONSENT OF BURTON AND FIELD PTY LIMITED CONSTITUTES AN INFRINGEMENT OF COPYRIGHT.

"Liability limited by a scheme approved under Professional Standards Legislation"

BURTON & FIELD
surveying & land development

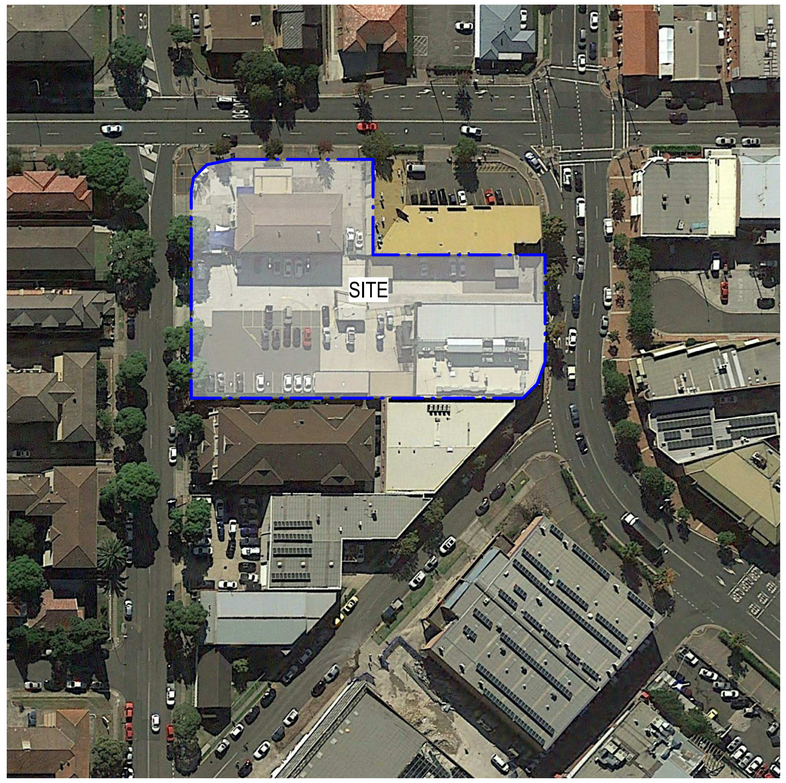
All Correspondence to:
343 Hume Highway, Liverpool, N.S.W. 2170
P.O. Box 242 Liverpool, N.S.W. 1871
Tel: (02) 9602-1199 Fax: (02) 9821-2620
Email: survey@burtonandfield.com.au

Suite 202, 2 Pembroke Street Epping, N.S.W. 2121
P.O. Box 1150, Epping, N.S.W. 1710
Tel: (02) 9868-4660 Fax: (02) 9868-6035
Email: epping.reception@burtonandfield.com.au
Web: www.burtonandfield.com.au

REVISION

DATE: 15/04/2018
REF: S2863/77762
DESIGN:
DRAWN: JMK
CHECKED: BT

CLIENT: SAM SOFI
ISSUE: A
PROJECT: **STREETSCAPE ALONG EXIXTING HOUSES FOR LOTS 7 to 11 IN DP 7541, LOT 4 IN DP 800326 & SP 38492, 86-94 CASTLEREAGH & 77-79 BATHURTS STs, LIVERPOOL**
SHEET: 4 OF 4 SHEETS
LGA: LIVERPOOL
DATUM: AHD
SCALE:
COMP REF: J:\77762\....\77762_C
SIZE: A1



DEVELOPMENT APPLICATION

MEMORIAL AVENUE, LIVERPOOL

77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170

DRAWING LIST

Sheet	Sheet Name	Revision
DA0002	PERSPECTIVE - AERIAL VIEW FROM NORTH	1
DA0003	PERSPECTIVE - BATHURST STREET VIEW	1
DA0004	PERSPECTIVE - MEMORIAL AVENUE VIEW	1
DA0005	PERSPECTIVE - PODIUM VIEW	1
DA1001	SITE PLAN	1
DA1002	NORTH ELEVATION STREETSCAPE	1
DA1003	EAST & WEST STREETSCAPES	1
DA2000	GROUND FLOOR PLAN	1
DA2001	BASEMENT 1	1
DA2002	BASEMENT 2	1
DA2003	BASEMENT 3	1
DA2010	BASEMENT 1 FUTURE PARKING CONNECTIVITY	1
DA2101	LEVEL 1 PLAN	1
DA2102	LEVEL 2 PLAN	1
DA2103	LEVEL 3 PLAN	1
DA2104	LEVEL 4 PLAN	1
DA2105	LEVEL 5 PLAN	1
DA2106	LEVEL 6 PLAN	1
DA2107	LEVEL 7 PLAN	1
DA2108	LEVEL 8 PLAN	1
DA2109	LEVELS 9-17 PLAN	1
DA2118	LEVELS 18-23 PLAN	1
DA2124	ROOF PLAN	1
DA3101	NORTH ELEVATION - MEMORIAL AVENUE	1
DA3102	WEST ELEVATION - CASTLEREAGH STREET	1
DA3103	SOUTH ELEVATION	1
DA3104	EAST ELEVATION - BATHURST STREET	1
DA3105	EAST AND WEST COURTYARD ELEVATIONS	1
DA3112	MATERIAL ELEVATION	1
DA3201	SECTION 1	1
DA3202	SECTION 2	1
DA3203	SECTION 3 AND 4	1
DA3204	RESTAURANT SECTION	1
DA4101	WALL SECTION 1	1
DA4102	WALL SECTION 2	1
DA5101	ADAPTABLE APARTMENT PLANS	1
DA8501	SHADOW DIAGRAMS - 21 JUNE	1
DA8511	SUN EYE VIEWS 1	1
DA8512	SUN EYE VIEWS 2	1
DA8513	SUN EYE VIEWS 3	1
DA8520	PROJECT SUMMARY	1
DA8521	96-98 CASTLEREAGH ST SOLAR ACCESS	1
DA8531	ADG SOLAR ACCESS ANALYSIS	1
DA8532	ADG NATURAL VENTILATION ANALYSIS	1
DA8533	ADG OPEN SPACE/DEEP SOIL	1
DA8534	GFA DIAGRAMS	1

APARTMENT MIX- TOWERS COMBINED

Occupancy	Count	Percentage
1B+1B	18	6.8%
1B+1S	10	3.8%
2B+2B	206	78.0%
3B+2B	30	11.4%

Grand total: 264

APARTMENT MIX- EAST TOWER

Occupancy	Count
1B+1B	18
1B+1S	8
2B+2B	53
3B+2B	13

Grand total: 92

APARTMENT MIX- WEST TOWER

Occupancy	Count
1B+1S	2
2B+2B	153
3B+2B	17

Grand total: 172

PARKING SCHEDULE

Level	Allocation	Count
BASEMENT 1	Residential	51
BASEMENT 1	Retail	12
BASEMENT 1	Visitor	27
BASEMENT 1: 90		
BASEMENT 2	Residential	112
BASEMENT 2: 112		
BASEMENT 3	Residential	116
BASEMENT 3: 116		
Grand total: 318		

AREA SCHEDULE - GFA

Level	Area
APARTMENT - EAST	
GROUND LEVEL	49 m²
LEVEL 1	751 m²
LEVEL 2	818 m²
LEVEL 3	819 m²
LEVEL 4	527 m²
LEVEL 5	527 m²
LEVEL 6	527 m²
LEVEL 7	527 m²
LEVEL 8	346 m²
LEVEL 9	346 m²
LEVEL 10	346 m²
LEVEL 11	346 m²
LEVEL 12	346 m²
LEVEL 13	346 m²
LEVEL 14	346 m²
LEVEL 15	346 m²
LEVEL 16	346 m²
LEVEL 17	346 m²
APARTMENT - EAST	8,001 m²
APARTMENT - WEST	
GROUND LEVEL	48 m²
LEVEL 1	316 m²
LEVEL 2	763 m²
LEVEL 3	763 m²
LEVEL 4	372 m²
LEVEL 5	663 m²
LEVEL 6	663 m²
LEVEL 7	719 m²
LEVEL 8	719 m²
LEVEL 9	719 m²
LEVEL 10	719 m²
LEVEL 11	719 m²
LEVEL 12	719 m²
LEVEL 13	719 m²
LEVEL 14	719 m²
LEVEL 15	719 m²
LEVEL 16	719 m²
LEVEL 17	719 m²
LEVEL 18	719 m²
LEVEL 19	719 m²
LEVEL 20	719 m²
LEVEL 21	719 m²
LEVEL 22	719 m²
LEVEL 23	719 m²
APARTMENT - WEST	15,818 m²
COMMERCIAL	
GROUND LEVEL	111 m²
COMMERCIAL	111 m²
GARBAGE	
GROUND LEVEL	34 m²
GROUND LEVEL	154 m²
GROUND LEVEL	26 m²
GARBAGE	214 m²
RETAIL	
GROUND LEVEL	402 m²
GROUND LEVEL	441 m²
GROUND LEVEL	562 m²
LEVEL 1	447 m²
RETAIL	1,853 m²
	25,998 m²

Basix Building Fabric Requirements (Memorial Avenue)

Element	Material Type	Detail
External walls	Concrete Block + R2.5 Insulation + PB	Light colour
Internal walls	Plasterboard on studs	Intra-tenancy walls
	Hebel + Plasterboad Hebel + R1.0 Insulation + Plasterboad (to corridor/lift/stairwell)	Inter-tenancy walls
Windows	ALM-002-01 A Aluminium B SG Clear (window size as in drawings)	NFRC Glazing System values: ⇒ U ≤ 6.70 and SHGC = 0.70 (± 5%)
	ALM-002-03 A Aluminium B SG High Solar Gain Low-E (window size as in drawings) **Modifying Units - Tower E:** 014, 024, 034, 173. **Tower W:** 231, 232, 233, 238.	NFRC Glazing System values: ⇒ U ≤ 5.40 and SHGC = 0.58 (± 5%)
	ALM-002-03 A Aluminium B SG High Solar Gain Low-E (All window height 1.8 meter except balcony window) **Modifying Units-Tower E:** 015, 025, 035, 042, 044, 052, 054, 062, 064, 072, 074, 082, 092, 102, 112, 122, 132, 142, 152, 162, 172, 174.	NFRC Glazing System values: ⇒ U ≤ 5.40 and SHGC = 0.58 (± 5%)
Skylights	NA	
Floor	Concrete slab	Tile (kitchen, living & wet)
	Concrete slab + R1.0 Insulation (to car park and outside air)	Carpet (bedrooms)
Ceiling	Plasterboard + R3.0 Insulation (Roof above) Plasterboard + R2.0 Insulation (below balcony)	Light colour
Roof	Concrete	

6.7 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address: 86 Memorial Avenue Liverpool, NSW 2170

www.nathers.gov.au

ABSA Australian Building Sustainability Association
Accreditation Period 2018-2019
Assessor Name Hamidul Islam
Assessor Number 100982
Assessor Signature
*BERS Assessments completed within the accreditation period are part of the ABSA quality audit system
This Accredited Assessor is qualified to use the NatHERS Accredited Software listed in the Nationwide House Energy Rating Scheme Code of Practice

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client: Il Capitano Investments Pty Ltd

Architect: AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project: MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title: COVER SHEET
Sheet Status: NOT FOR CONSTRUCTION

Scale | Drawing No. DA0000 | Issue 1

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

REF: C:\Users\CUO\Documents\18005_Master_gsx.rvt
Author
PLOTTED & CHECKED BY:
PLOT DATE & TIME: 19/02/2019 5:38:26 PM

Revisions				
No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C
Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
PERSPECTIVE - AERIAL VIEW FROM NORTH
Sheet Status
NOT FOR CONSTRUCTION

Scale | Drawing No. | Issue
DA0002 1

PLOT DATE & TIME: 19/02/2019 5:38:27 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

Revisions				
No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C
Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
PERSPECTIVE - BATHURST STREET VIEW
Sheet Status
NOT FOR CONSTRUCTION

Scale | Drawing No. | Issue
DA0003 1

PLOT DATE & TIME: 19/02/2019 5:08:29 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\CUO\Documents\18005_Master_pjax.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

Revisions				
No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C
Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
PERSPECTIVE - MEMORIAL AVENUE VIEW
Sheet Status
NOT FOR CONSTRUCTION

Scale

Drawing No.
DA0004

Issue
1

PLOT DATE & TIME: 19/02/2019 5:38:30 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

Revisions				
No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C
Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title
PERSPECTIVE -
PODIUM VIEW

Sheet Status
NOT FOR CONSTRUCTION

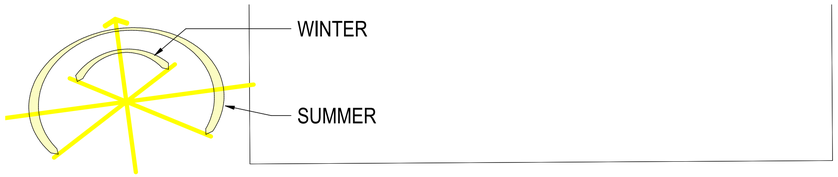
Scale

Drawing No. DA0005

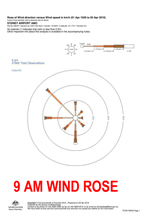
Issue 1

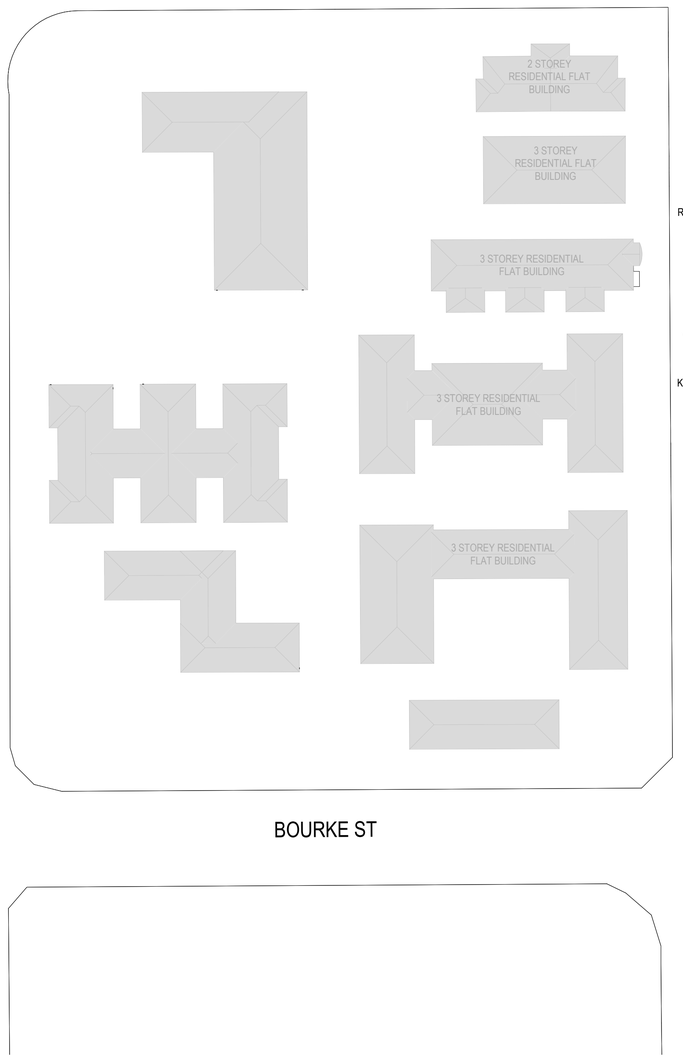
PLOT DATE & TIME: 19/02/2019 5:38:31 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

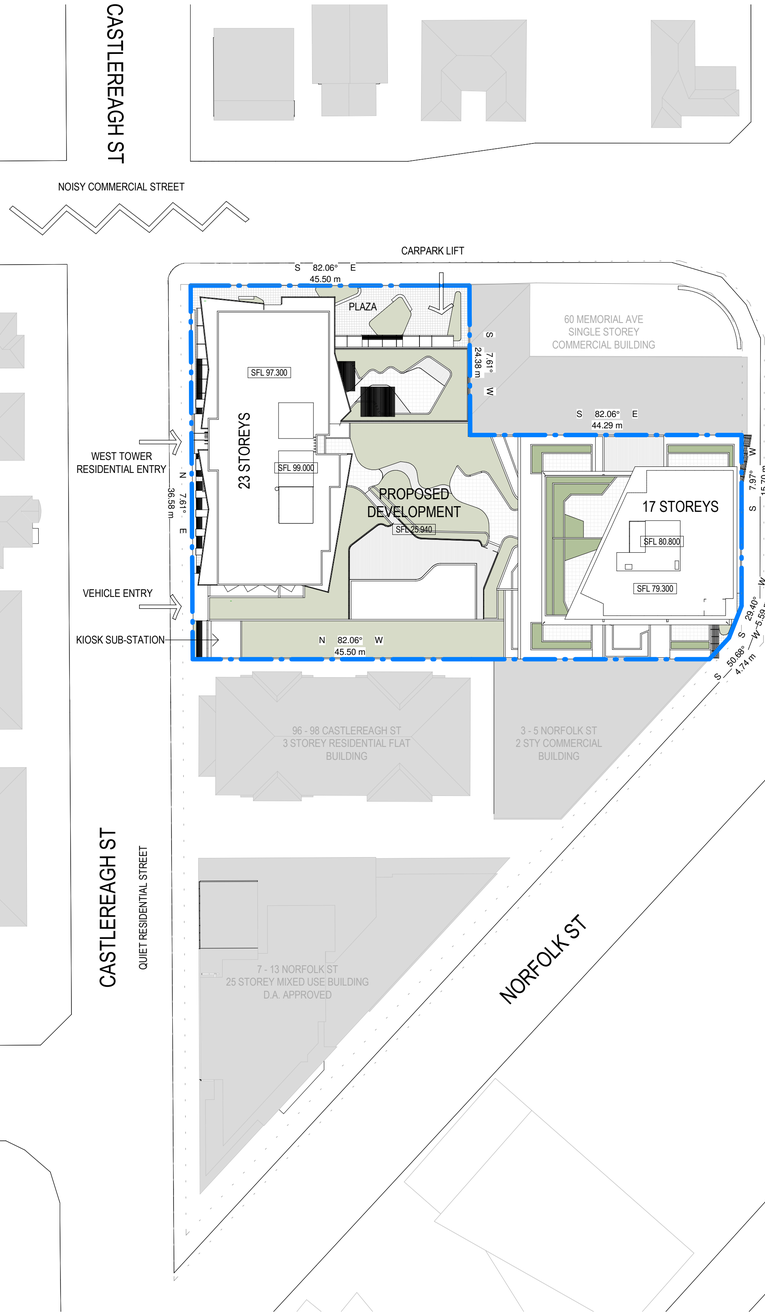
Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmitt in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



SOLAR ORIENTATION







Revisions				
No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
SITE PLAN
Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 500 @A1

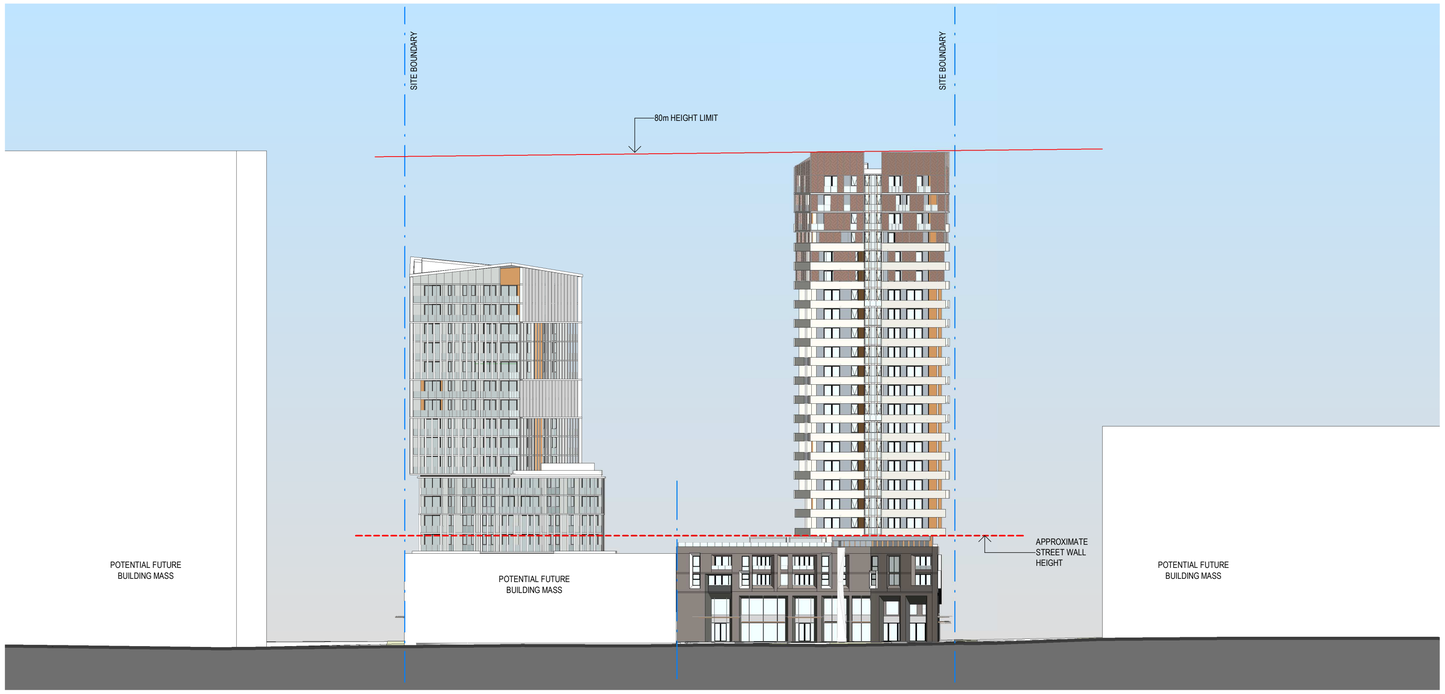
Drawing No.
DA1001

Issue
1

0 5 10 20 40 m

PLOT DATE & TIME: 19/02/2019 5:08:41 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\CLIO\Documents\18005_Master_gyo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



6.7 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

HERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to use NatHERS Accredited Software and has agreed to follow an Assessor Code of Practice

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
NORTH ELEVATION
STREETSCAPE

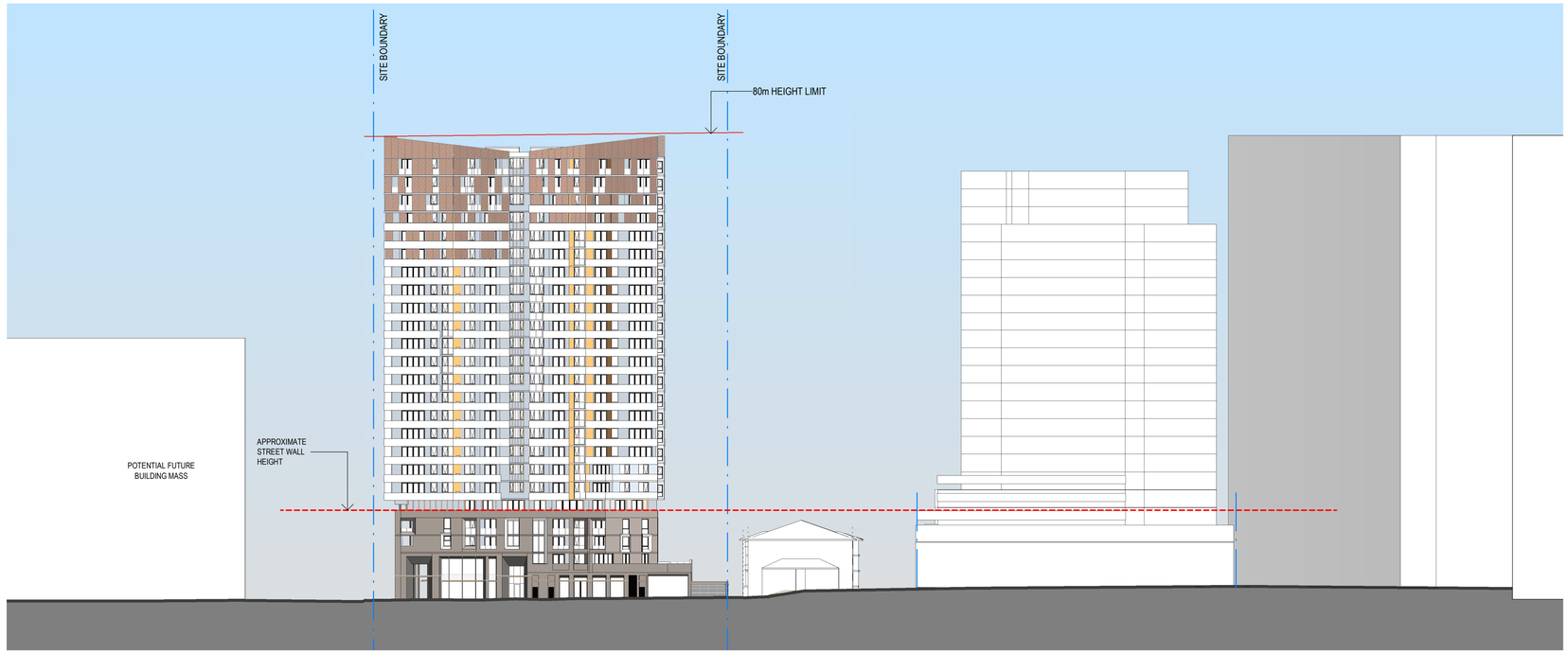
Sheet Status
NOT FOR CONSTRUCTION

Scale: 1 : 500 @A1
Drawing No.: DA1002
Issue: 1

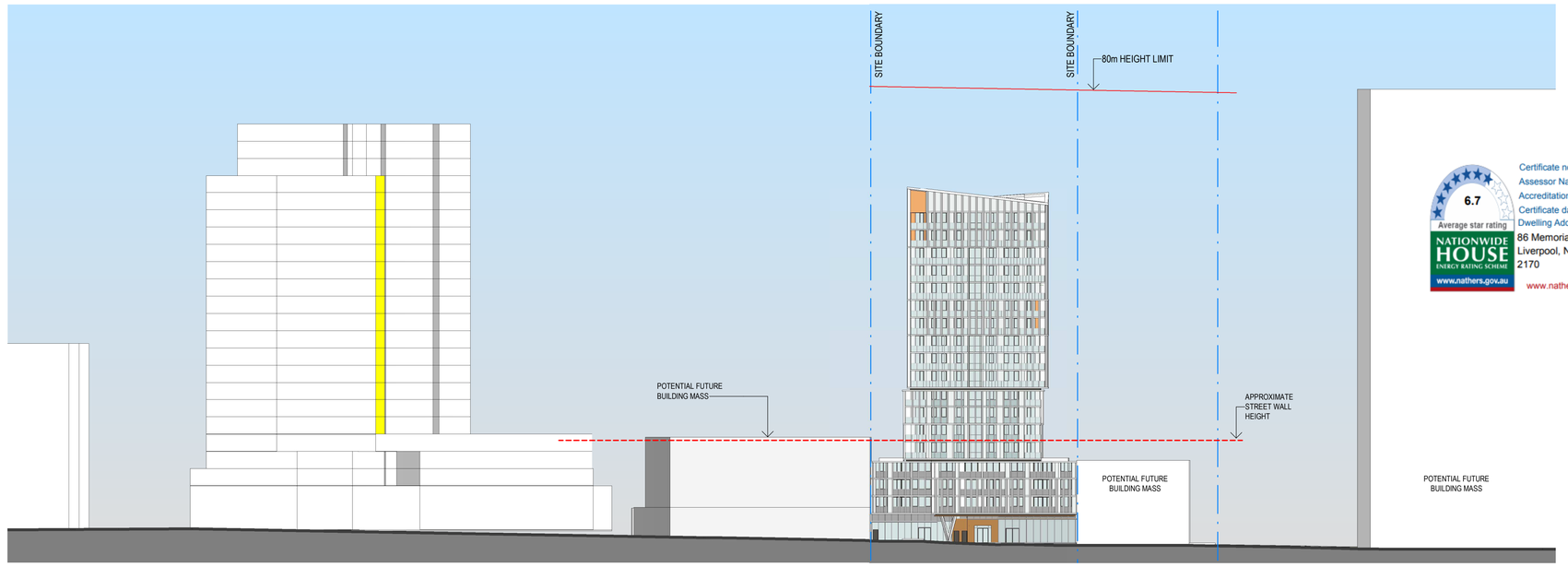
0 5 10 20 40 m

PLOT DATE & TIME: 19/02/2019 5:08:53 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\CLIO\Documents\18005_Master_pjac.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



2 WEST ELEVATION STREETSCAPE
1 : 500



1 NORFOLK STREET ELEVATION
1 : 500

6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA
Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

NOTE: Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified and registered with ABSA to undertake work in full accordance with Assessor Code of Practice

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C
Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
EAST & WEST STREETSCAPES

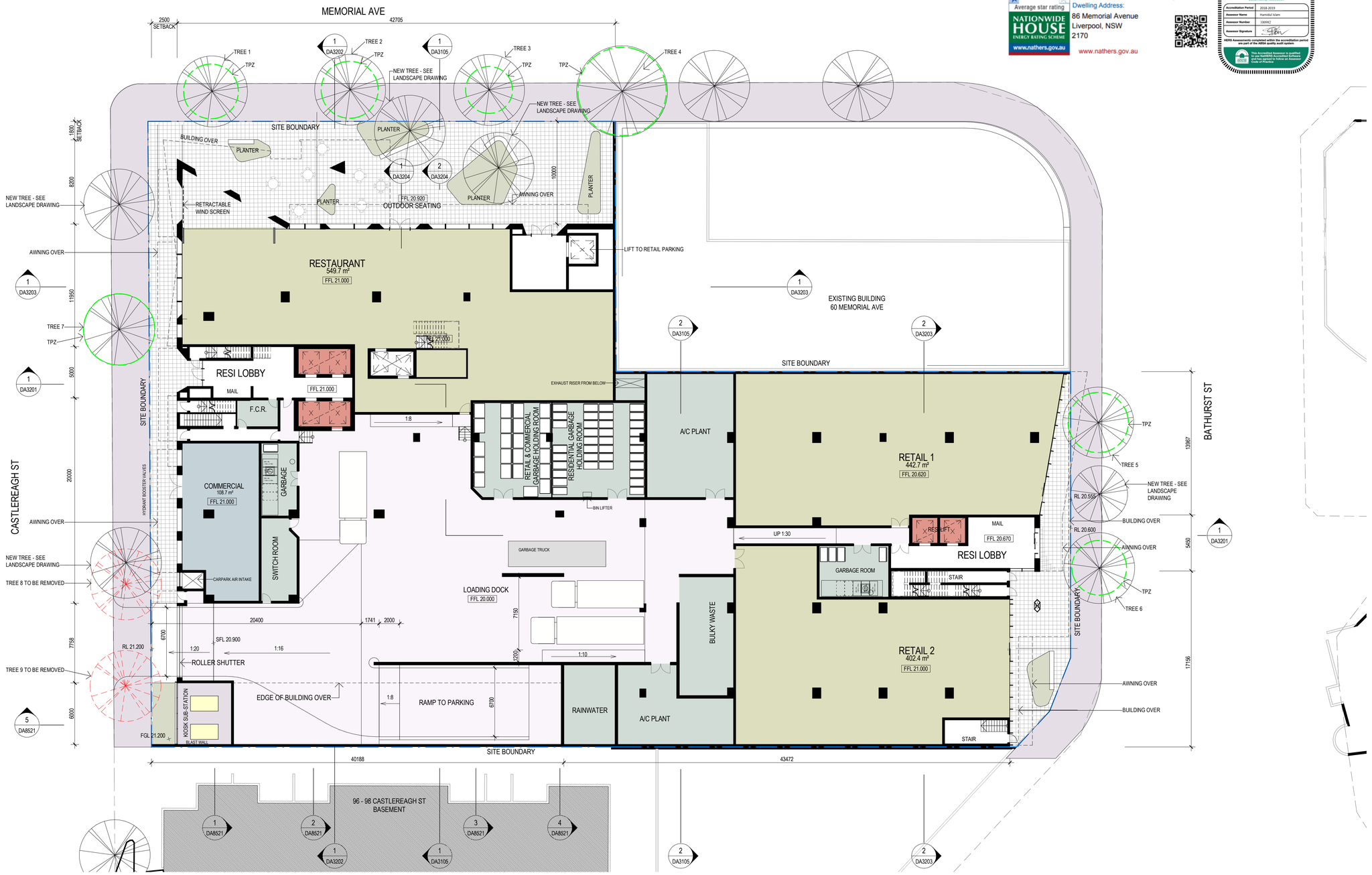
Sheet Status
NOT FOR CONSTRUCTION

Scale: 1 : 500 @A1
Drawing No.: DA1003
Issue: 1

0 5 10 20 40 m

PLOT DATE & TIME: 19/02/2019 5:39:04 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address: 86 Memorial Avenue Liverpool, NSW 2170
www.nathers.gov.au

6.7 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME www.nathers.gov.au

ABSA Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

HERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to use NatHERS Accredited Software that has been verified to meet an Assessor Code of Practice

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
II Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
GROUND FLOOR PLAN

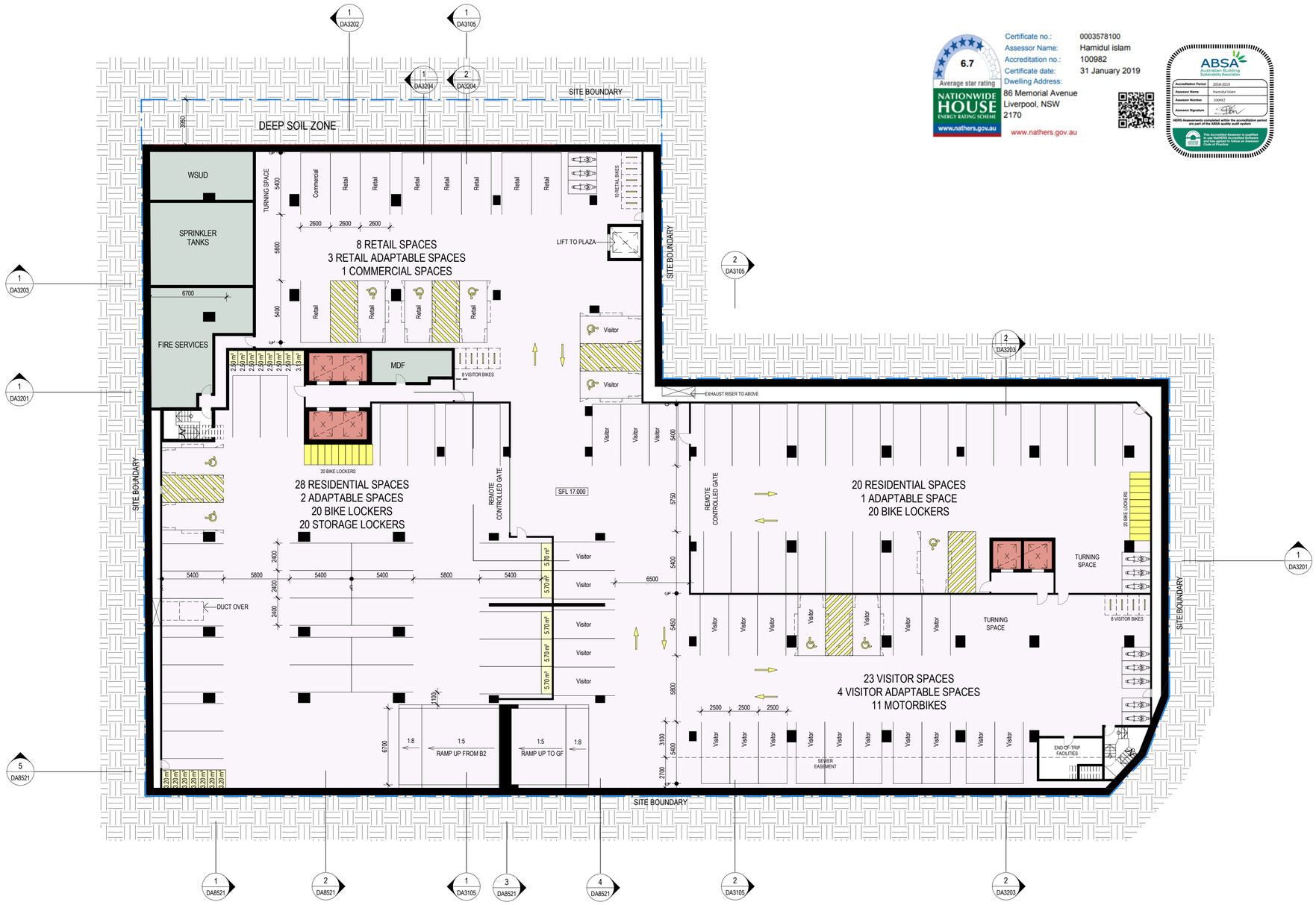
Sheet Status
NOT FOR CONSTRUCTION

Scale: 1 : 200 @A1
Drawing No.: DA2000
Issue: 1

0 2 4 8 16 m

PLOT DATE & TIME: 19/02/2019 5:39:07 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA
Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

HERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to use NatHERS Accredited Software and has agreed to follow an Assessor Code of Practice

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C
Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
BASEMENT 1

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

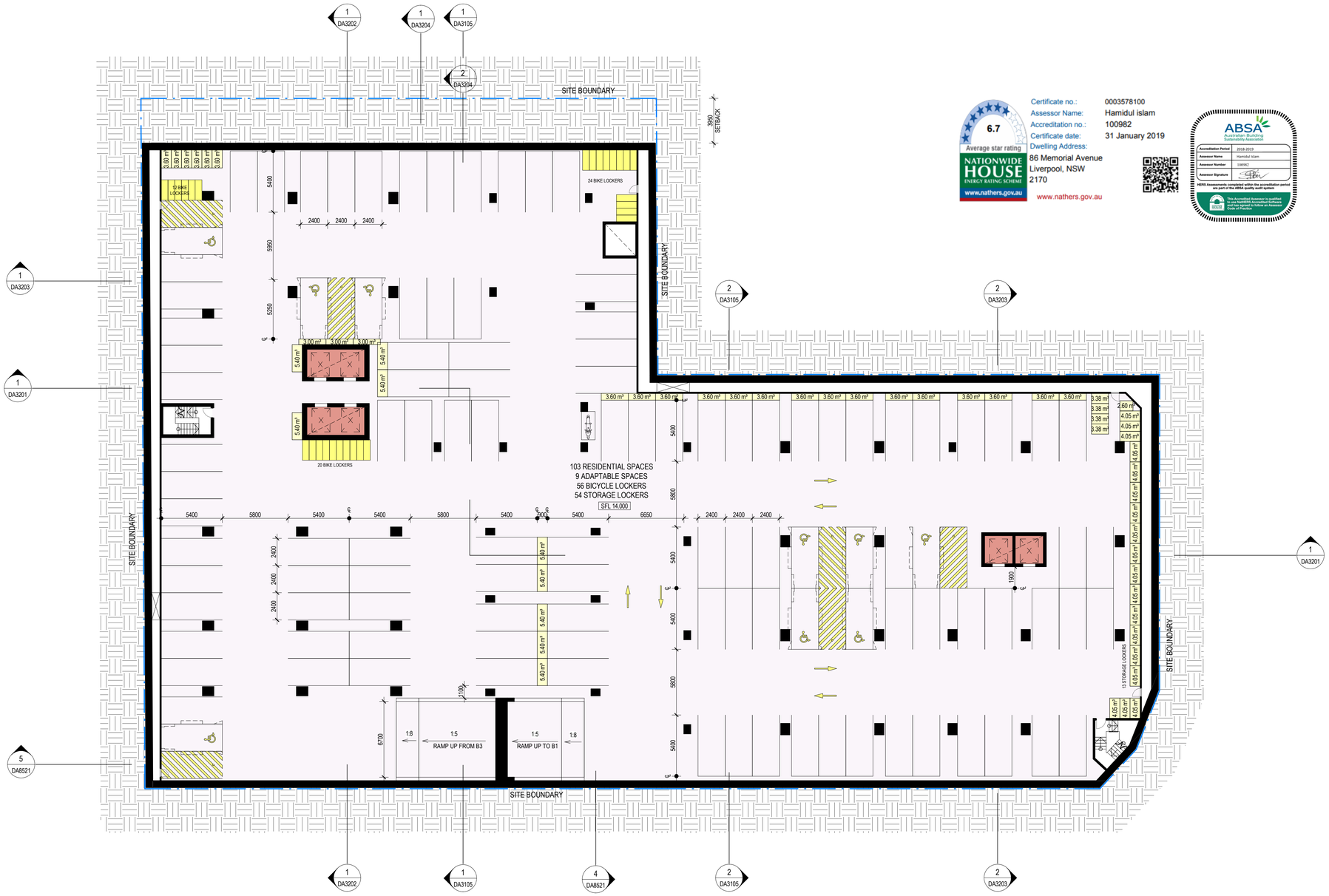
Drawing No.
DA2001

Issue
1

0 2 4 8 16 m

PLOT DATE & TIME: 19/02/2019 5:39:09 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA
Australian Building Sustainability Association
Accreditation Period 2018-2019
Assessor Name Hamidul Islam
Assessor Number 100982
Assessor Signature
NatHERS Assessments completed within the accreditation period are part of the ABSA quality audit system
This Accredited Assessor is qualified to use NatHERS Accredited Software and has agreed to follow an Assessor Quality Protocol

Revisions				
No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C
Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
BASEMENT 2

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

Drawing No.
DA2002

Issue
1

0 2 4 8 16 m

PLOT DATE & TIME: 19/02/2019 5:39:12 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA
Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

NERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to use NatHERS Accredited Software and has agreed to follow an Assessor Code of Practice

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title
BASEMENT 3

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

Drawing No.
DA2003

Issue
1

0 2 4 8 16 m

PLOT DATE & TIME: 19/02/2019 5:29:15 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
BASEMENT 1 FUTURE PARKING CONNECTIVITY

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

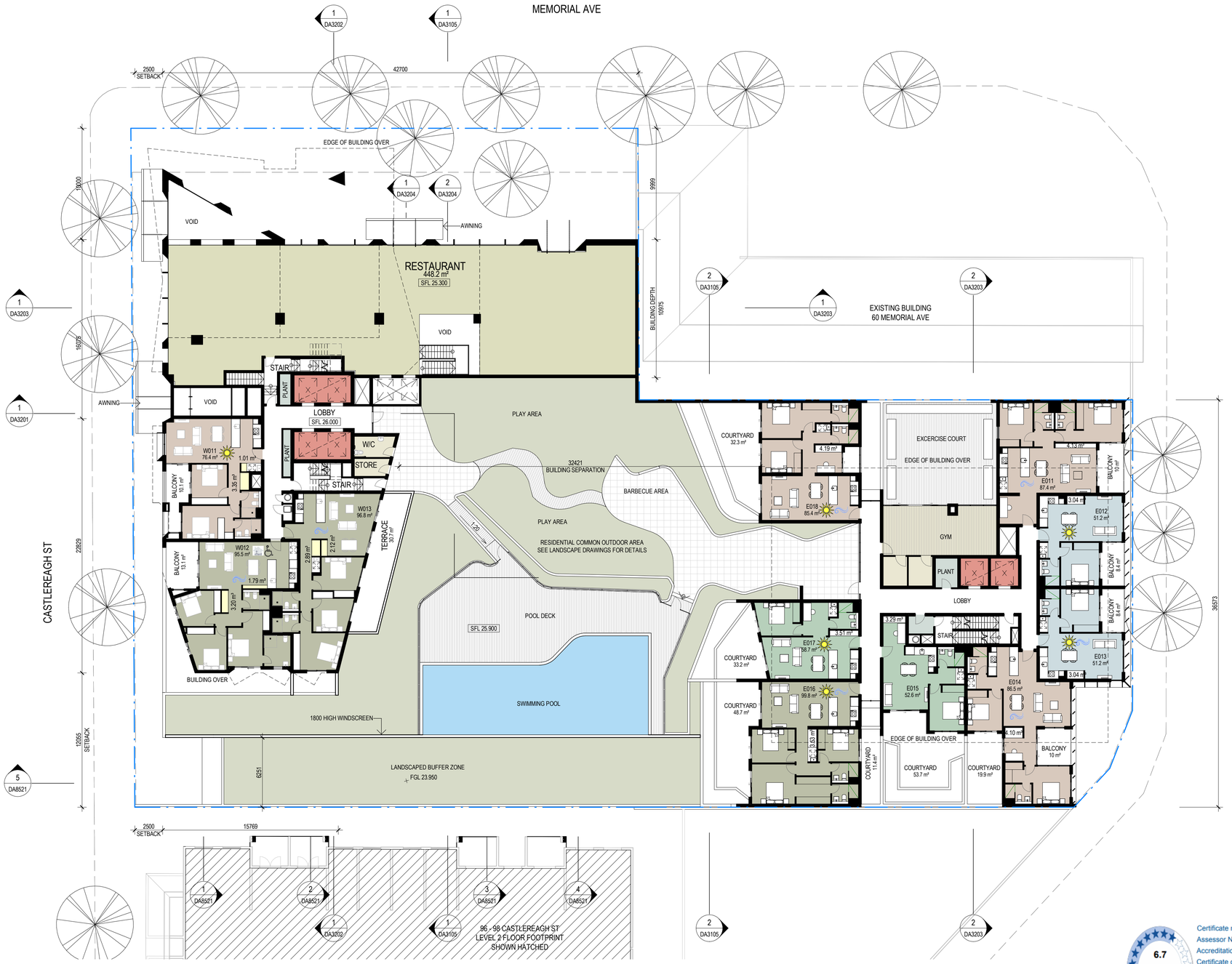
Drawing No.
DA2010

Issue
1

0 2 4 8 16 m

PLOT DATE & TIME: 19/02/2019 5:39:17 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\1805_Master_gsx.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmitt in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

HERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to undertake Nationwide House Energy Rating Scheme (NHERS) Assessments in accordance with the Code of Practice

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
LEVEL 1 PLAN

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

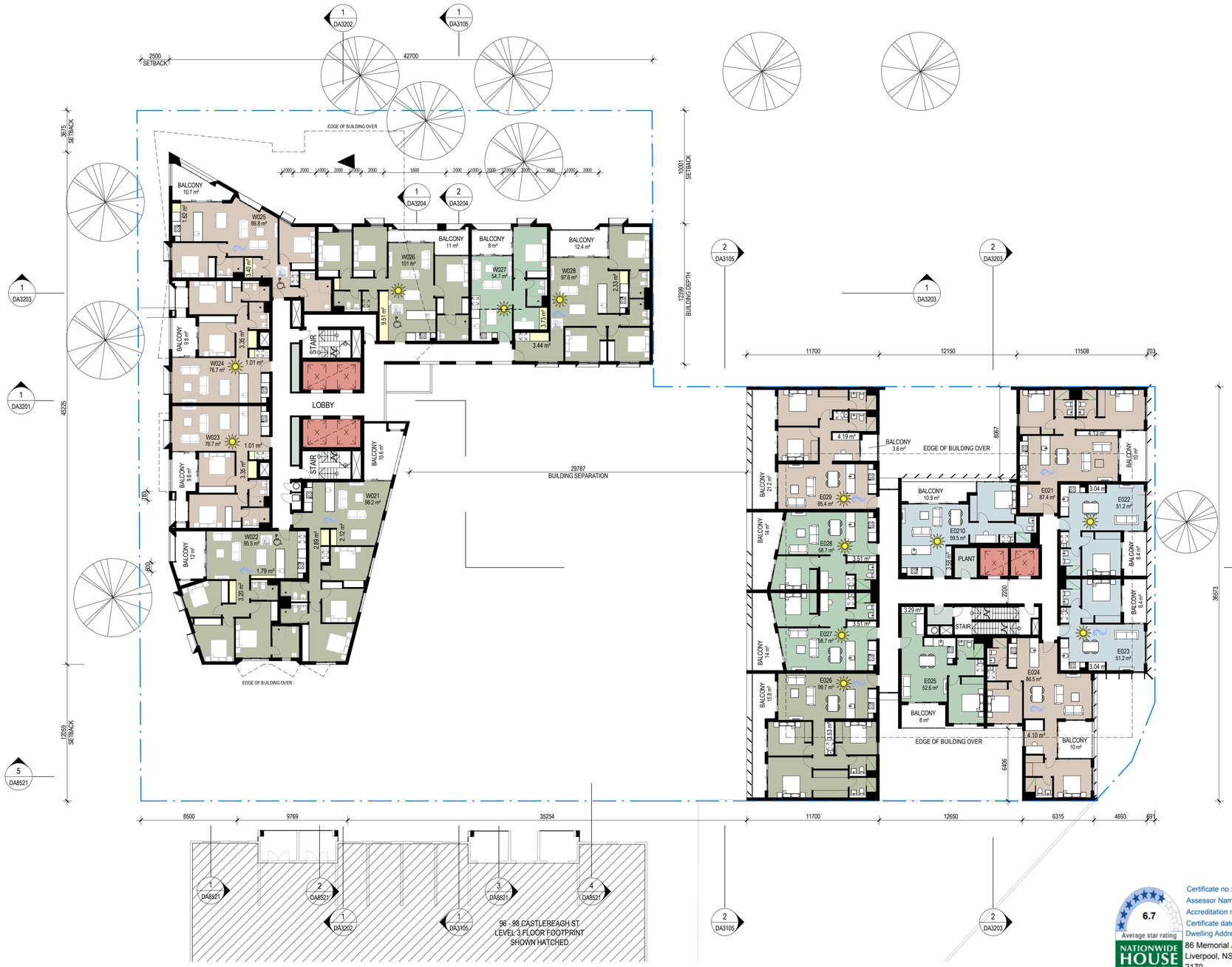
Drawing No.
DA2101

Issue
1

0 2 4 8 16 m

PLOT DATE & TIME: 19/02/2019 5:09:22 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address: 86 Memorial Avenue Liverpool, NSW 2170

www.nathers.gov.au

ABSA
Australian Building Sustainability Association
Accreditation Period 2018-2019
Assessor Name Hamidul Islam
Assessor Number 100982
Assessor Signature
HERS Assessments completed within the accreditation period are part of the ABSA quality audit system
This Accredited Assessor is qualified to use NatHERS Accredited Software and is authorised to follow an Assessor Code of Practice

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title
LEVEL 2 PLAN

Sheet Status
NOT FOR CONSTRUCTION

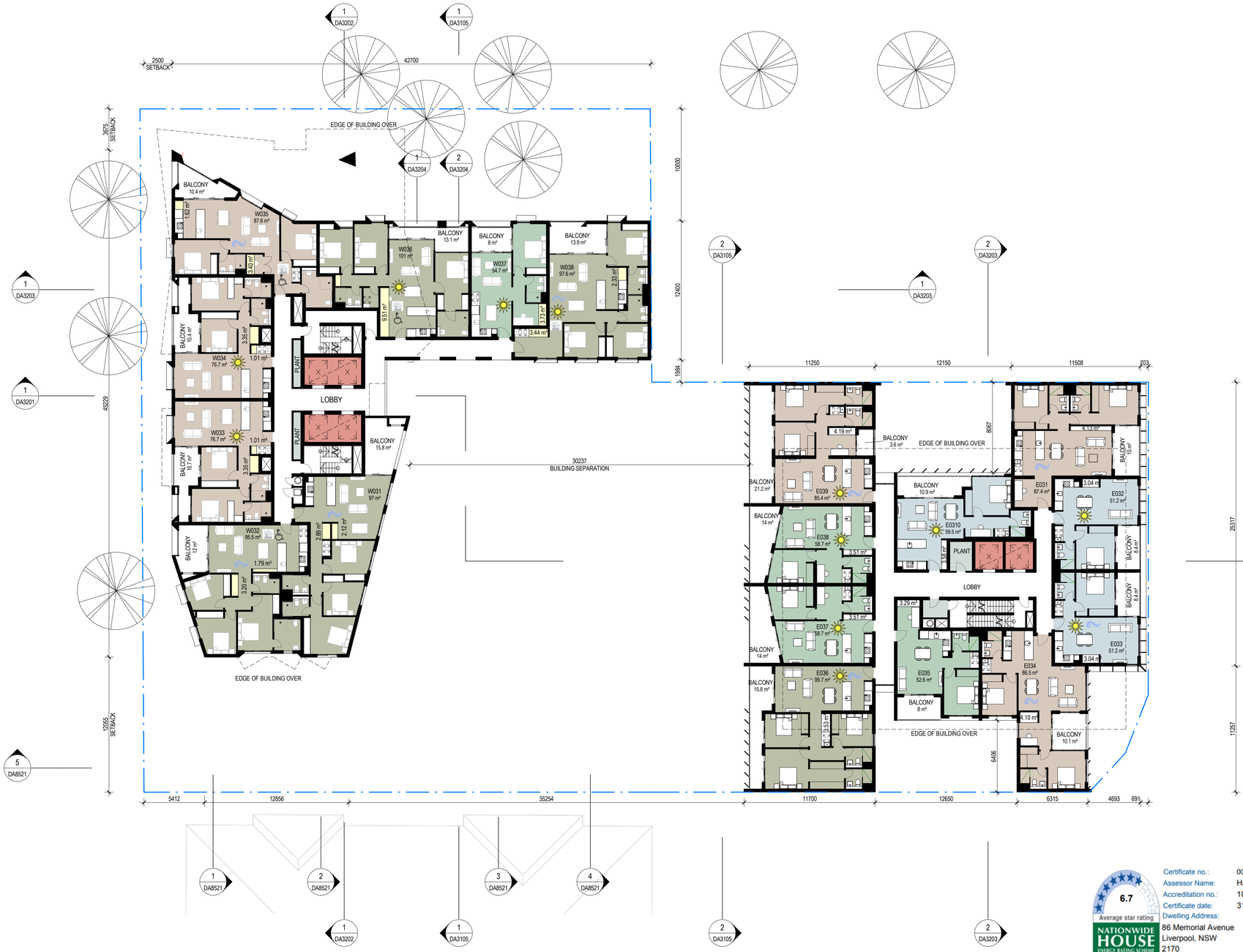
Scale
1 : 200 @A1

Drawing No.
DA2102

Issue
1

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

PLOT DATE & TIME: 19/02/2019 5:39:25 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\CLIO\Documents\18005_Master_gsm.rvt



6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA
Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

HERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to use NatHERS Accredited Software tools and is bound by the Terms of Assessor Code of Practice.

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key
N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C
ALLEN JACK+COTTIER
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
LEVEL 3 PLAN

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

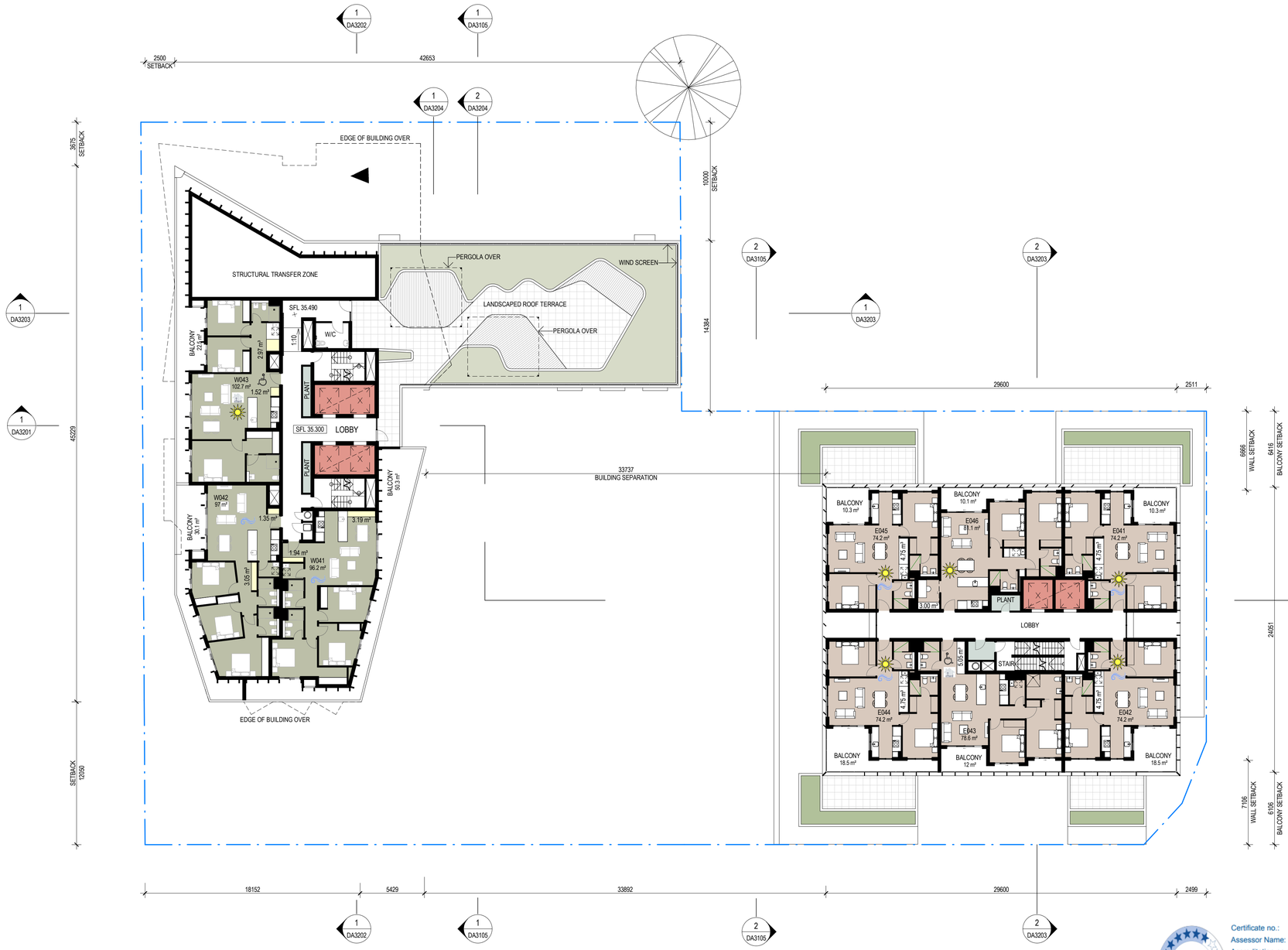
Drawing No.
DA2103

Issue
1

0 2 4 8 16 m

PLOT DATE & TIME: 19/02/2019 5:39:29 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

HERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to use Australian Architectural Software in accordance with the Scheme and Business Rules of Practice

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title
LEVEL 4 PLAN

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

Drawing No.
DA2104

Issue
1

0 2 4 8 16 m

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

PLOT DATE & TIME: 19/02/2019 5:39:23 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_gyx.rvt

	Revisions No. Date Description Ver App'd 1 22-02-19 ISSUED FOR D.A. SUBMISSION.	Key N	Client Il Capitano Investments Pty Ltd	Architect AJ+C Allen Jack+Cottier 79 Myrtle Street Chippendale NSW 2008 AUSTRALIA ph +61 2 9311 8222 fx +61 2 9311 8200 ABN 53 003 782 250	Project MEMORIAL AVENUE, LIVERPOOL 77-79 Bathurst Street & 86-94 Castlereagh Street LIVERPOOL NSW 2170 Proj. No. 18005	Drawing Title LEVEL 5 PLAN Sheet Status NOT FOR CONSTRUCTION	Scale 1 : 200 @A1 0 2 4 8 16 m	Drawing No. DA2105	Issue 1

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170
www.nathers.gov.au

6.7 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

ABSA Australian Building Sustainability Association

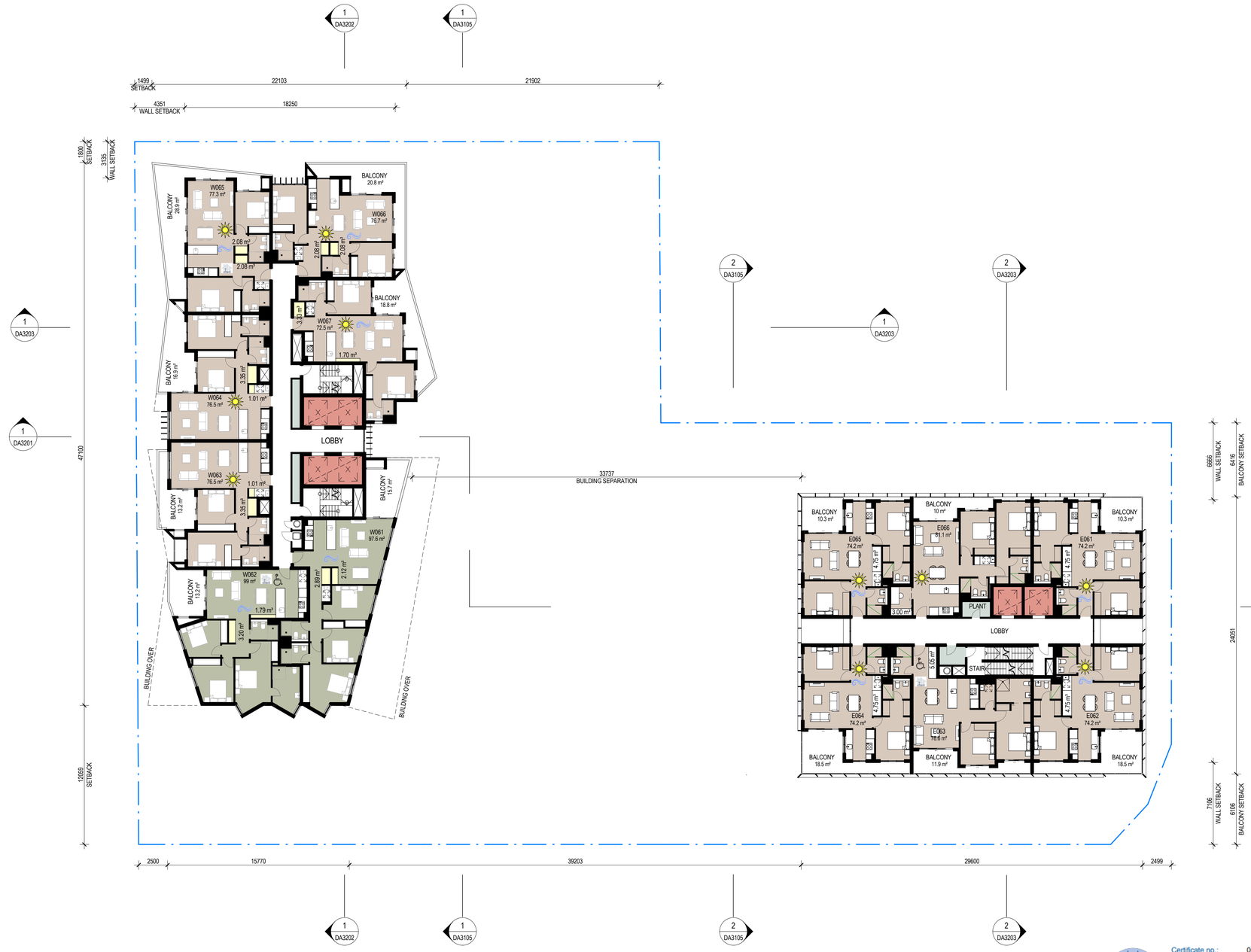
Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

HERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to use NatHERS Accredited Software and has agreed to follow an Assessor Code of Practice

REF: C:\Users\GUO\Documents\18005_Master_gso.rvt
PLOTTED & CHECKED BY: Author
PLOT DATE & TIME: 19/02/2019 5:29:27 PM

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100952
Assessor Signature	

HERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to use NatHERS Accredited Software and has agreed to follow an Assessor Code of Practice

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
LEVEL 6 PLAN

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

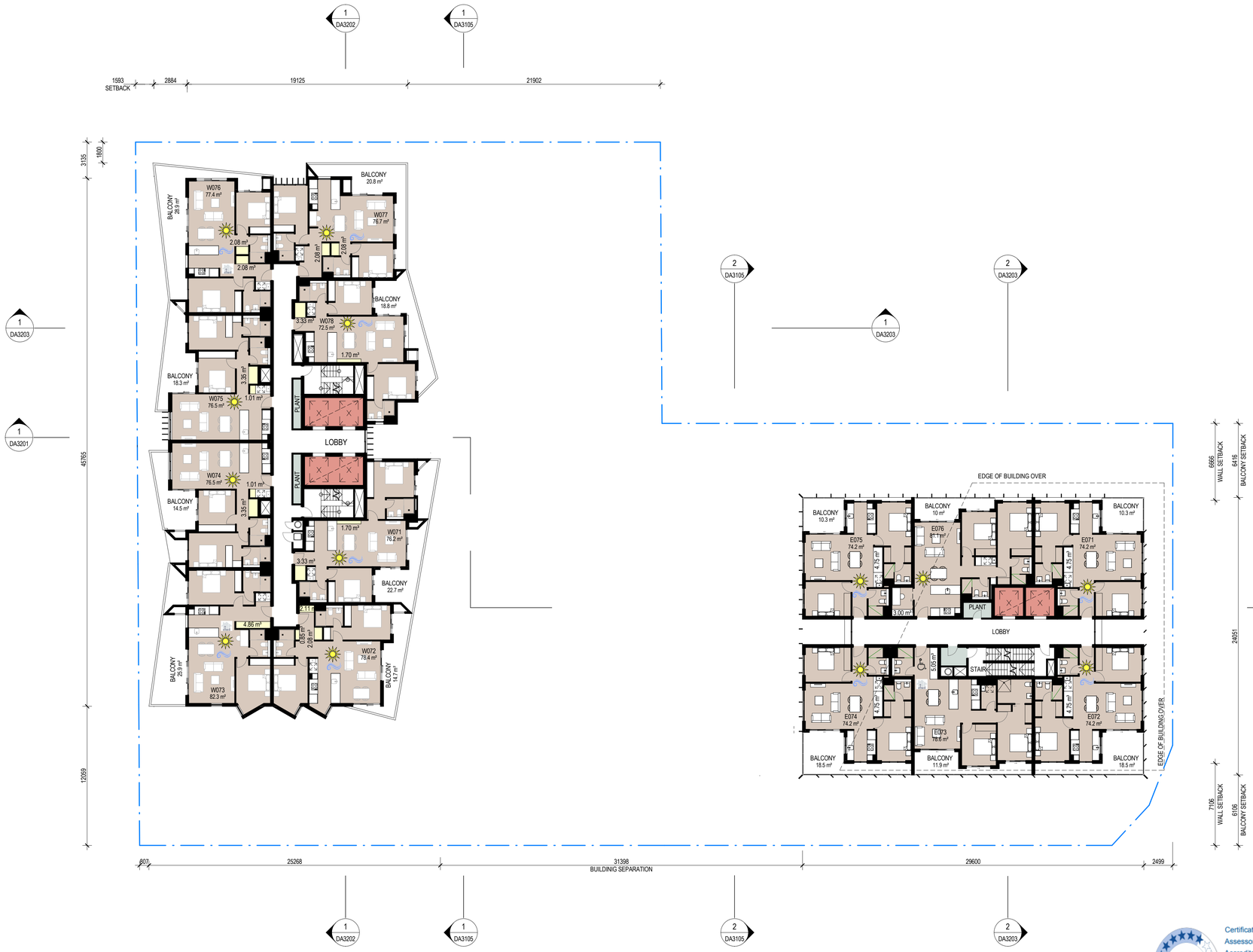
Drawing No.
DA2106

Issue
1

0 2 4 8 16 m

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

REF: C:\Users\GUO\Documents\18005_Master_gsx.rvt
PLOTTED & CHECKED BY: Author
PLOT DATE & TIME: 19/02/2019 5:39:42 PM



Certificate no.:	0003578100
Assessor Name:	Hamidul islam
Accreditation no.:	100982
Certificate date:	31 January 2019
Dwelling Address:	86 Memorial Avenue Liverpool, NSW 2170

6.7 Average star rating — NATIONWIDE HOUSE ENERGY RATING SCHEME — www.nathers.gov.au

www.nathers.gov.au

ABSA Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

NERS Assessments undertaken within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to use NatHERS Accredited Software and has agreed to follow an Assessor Code of Practice

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
LEVEL 7 PLAN

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

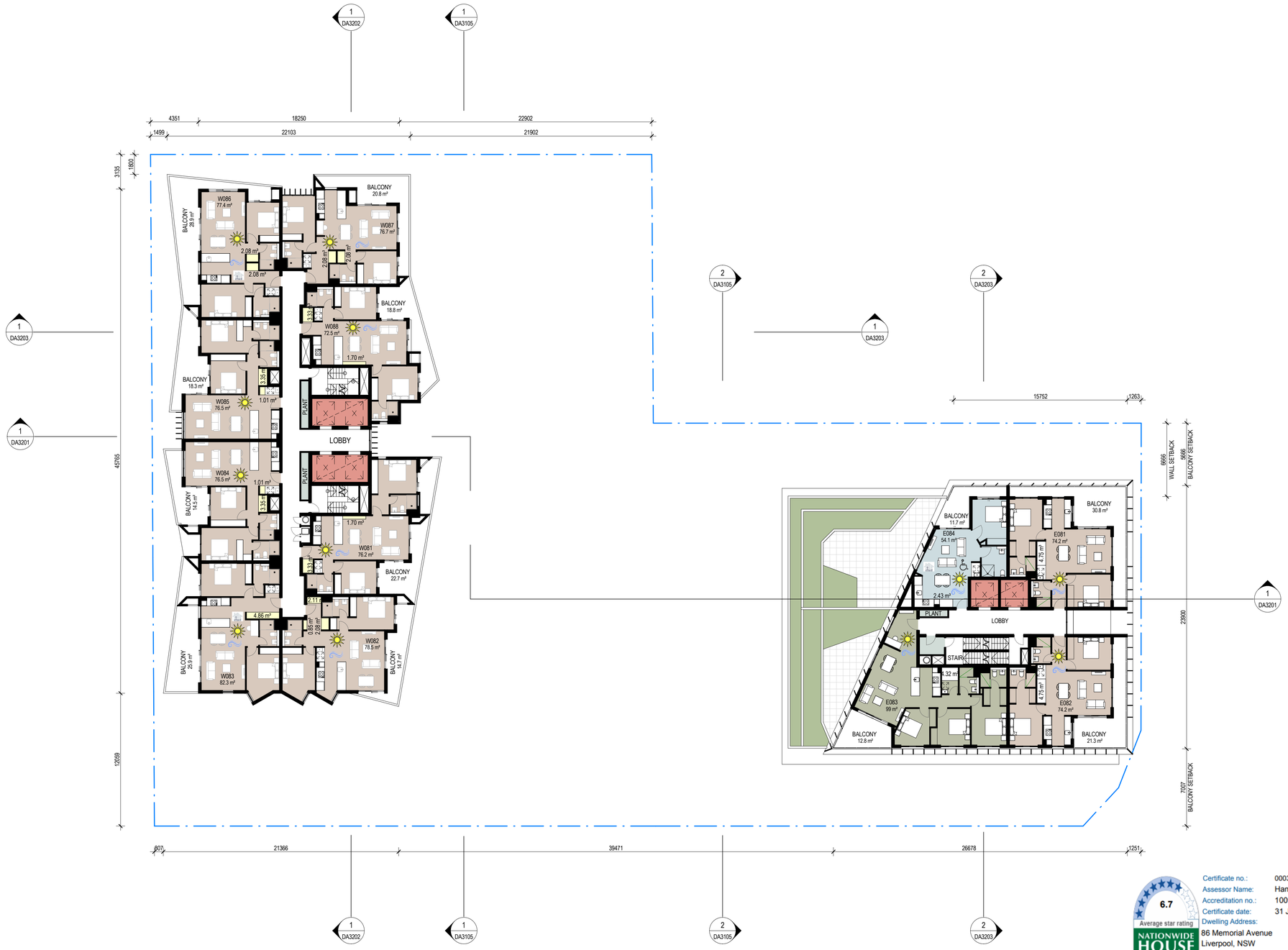
Drawing No.
DA2107

Issue
1

0 2 4 8 16 m

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

PLOT DATE & TIME: 19/02/2019 5:09:46 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt



Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

6.7 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

www.nathers.gov.au

ABSA Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

ABSA Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified and registered with ABSA and bound by the rules stated in Terms of Assessor Code of Practice

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
LEVEL 8 PLAN

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

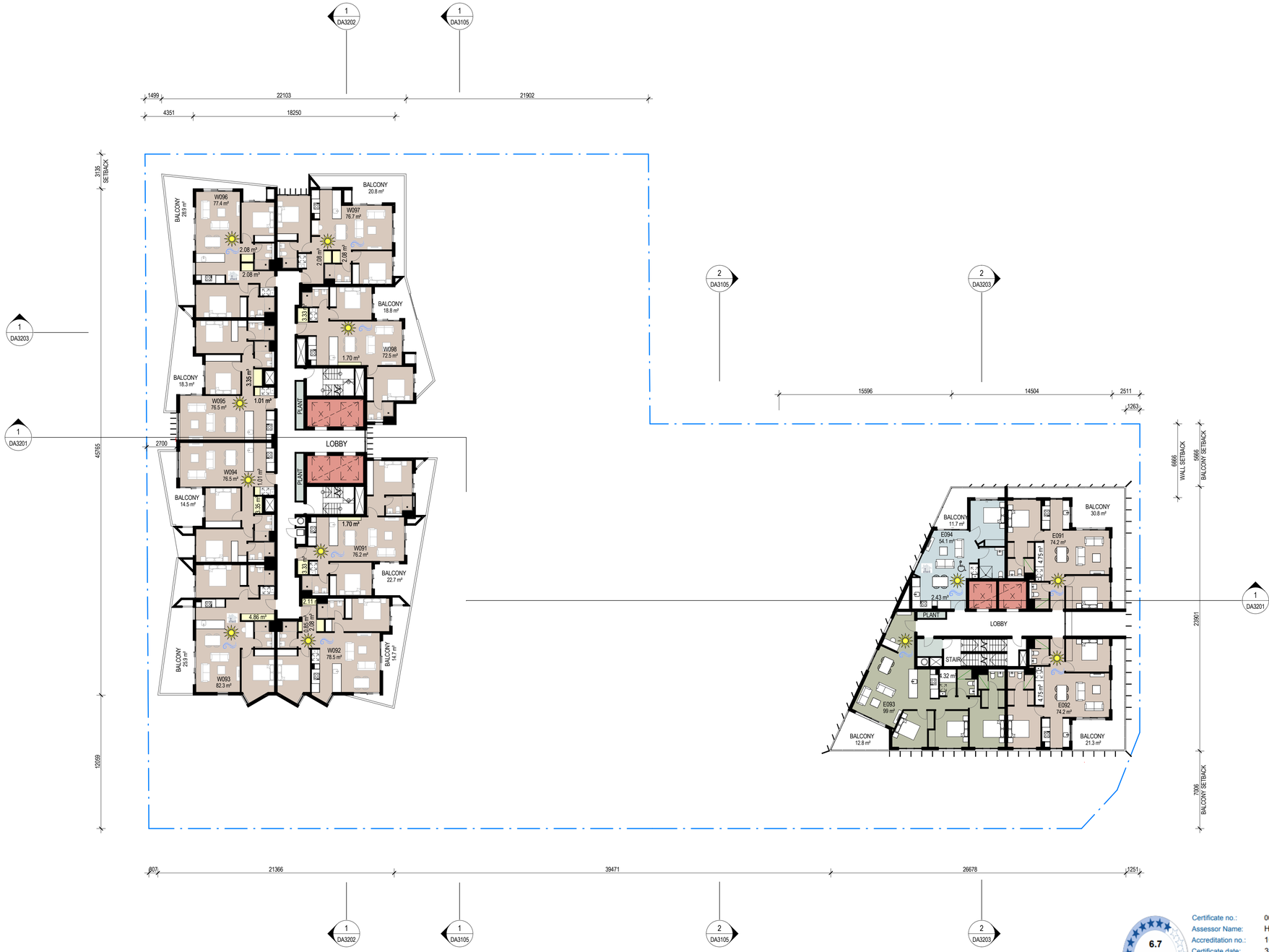
Drawing No.
DA2108

Issue
1

0 2 4 8 16 m

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

PLOT DATE & TIME: 19/02/2019 5:09:51 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt



6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

NERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to undertake NERS assessments in accordance with a National Technical Code of Practice

Revisions				
No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
LEVELS 9-17 PLAN

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

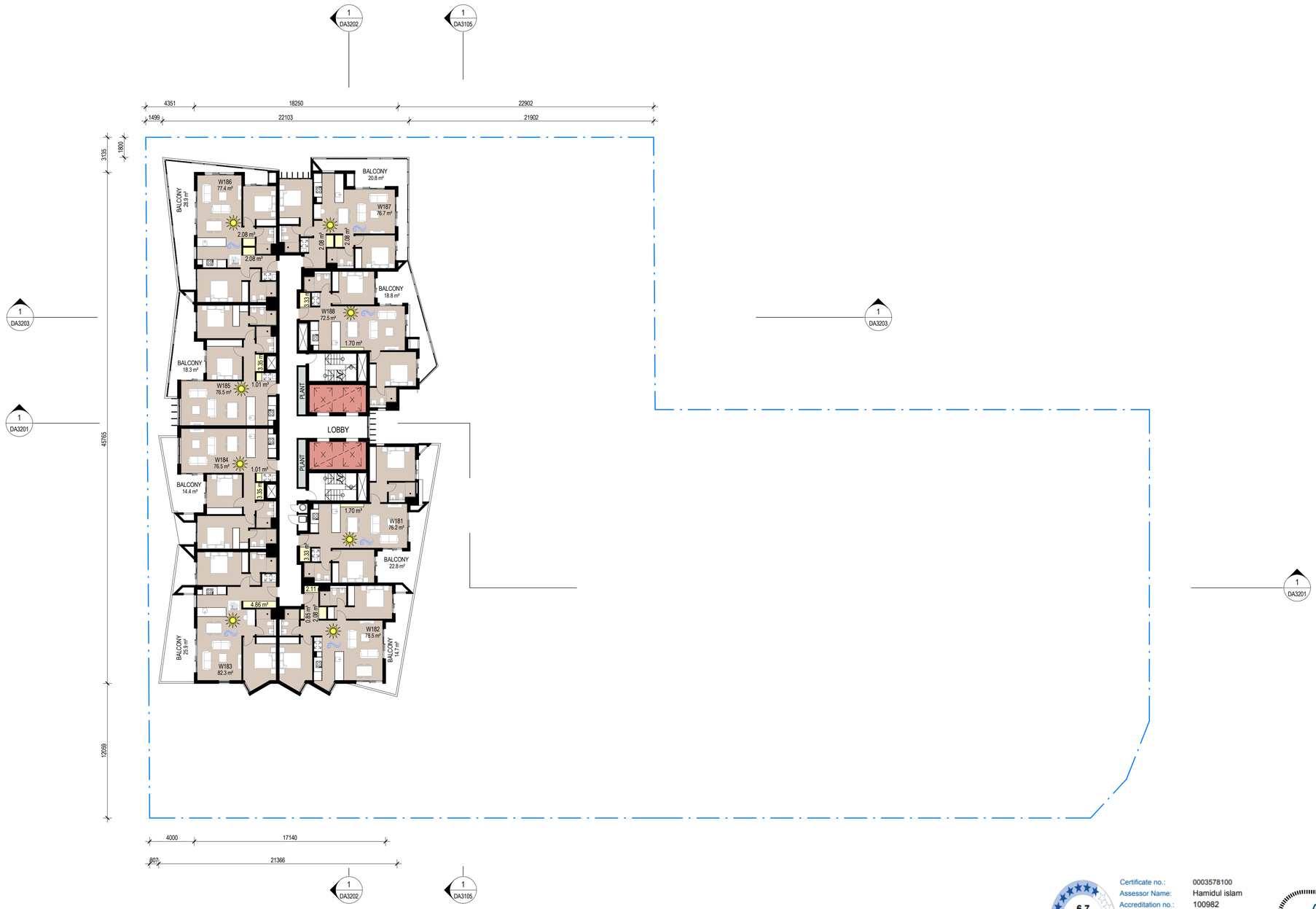
Drawing No.
DA2109

Issue
1

0 2 4 8 16 m

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

PLOT DATE & TIME: 19/02/2019 5:09:58 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt



6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA Australian Building Sustainability Association
Accreditation Period 2018-2019
Assessor Name Hamidul Islam
Assessor Number 100982
Assessor Signature
HERS Assessments completed within the accreditation period are part of the ABSA quality audit system
This Accredited Assessor is qualified under NATHERS Accreditation Scheme and has agreed to follow an Assessor Code of Practice.

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
LEVELS 18-23 PLAN

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

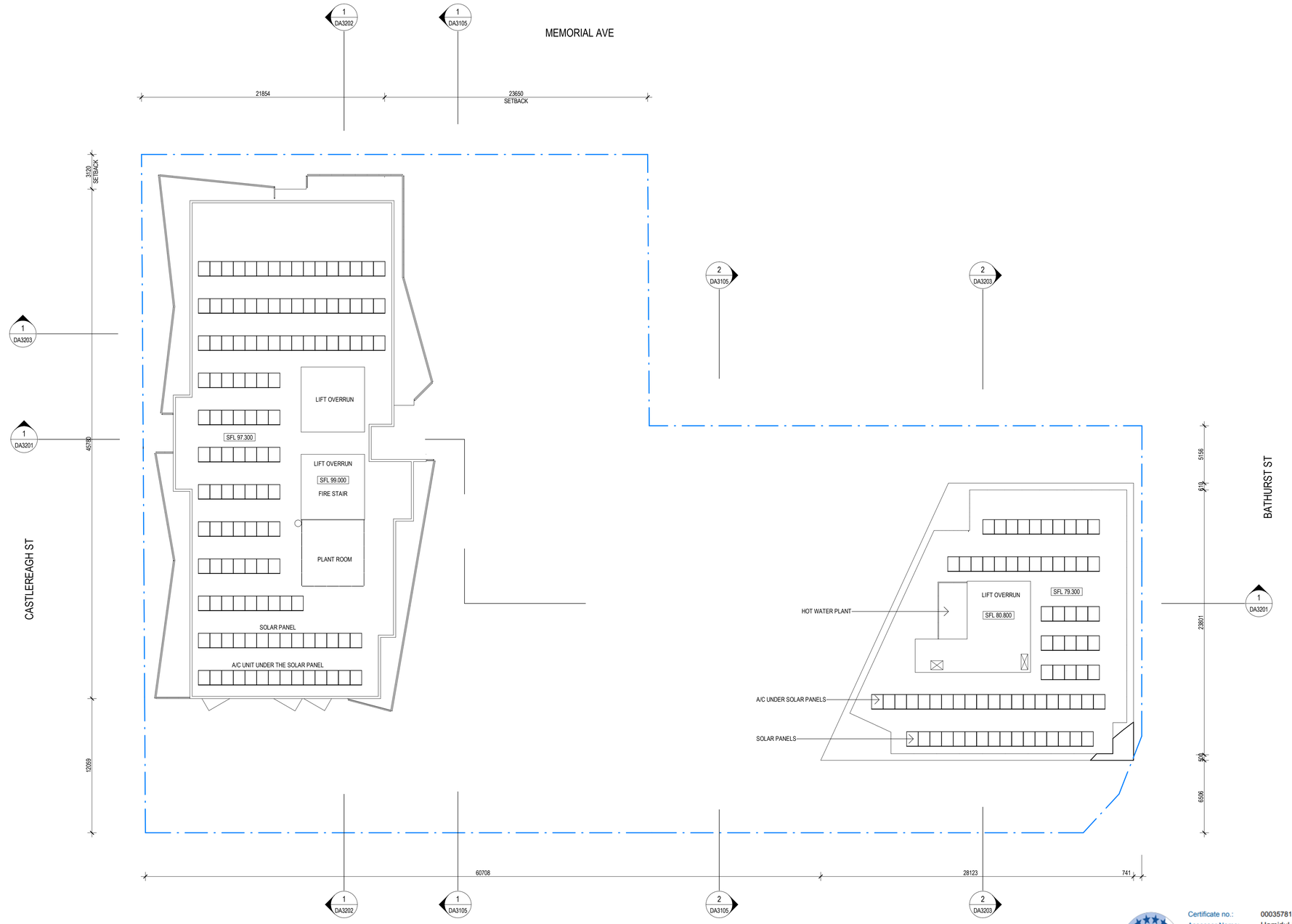
Drawing No.
DA2118

Issue
1

0 2 4 8 16 m

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

PLOT DATE & TIME: 19/02/2019 5:09:58 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt



6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170
www.nathers.gov.au

ABSA Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

NatHERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to use NatHERS Accredited Software and to fully follow the Assessors' Code of Practice

Revisions				
No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
ROOF PLAN

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

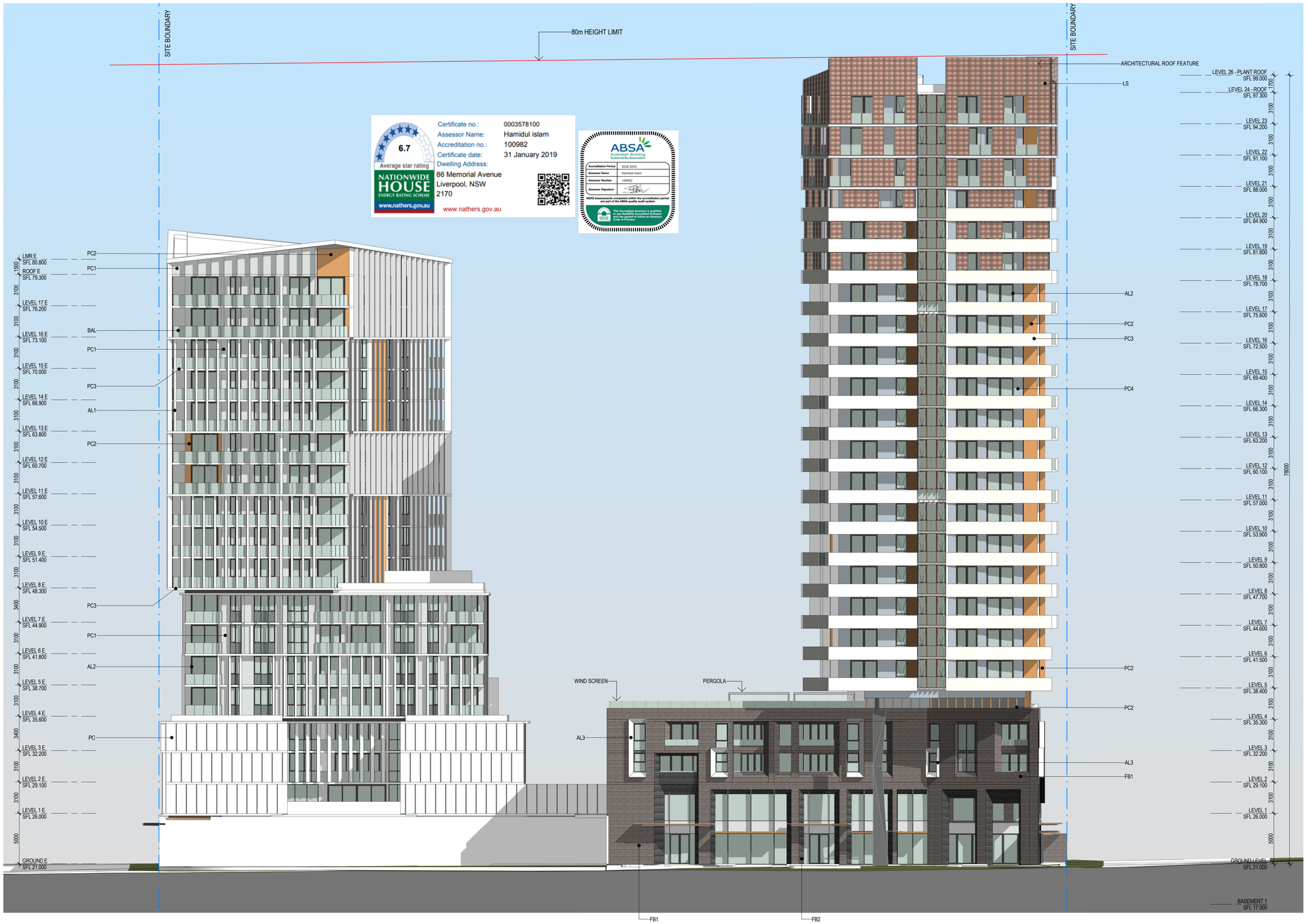
Drawing No.
DA2124

Issue
1

0 2 4 8 16 m

PLOT DATE & TIME: 19/02/2019 5:40:00 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



6.7 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170
www.nathers.gov.au

ABSA Australian Building Sustainability Association
Accreditation Period 2018-2019
Assessor Name Hamidul Islam
Assessor Number 100982
Assessor Signature
NERS Assessments completed within the accreditation period are part of the ABSA quality audit system
This Accredited Assessor is qualified to use NatHERS Accredited Software listed on Page 2 to follow an Assessor Quality Protocol

LS - DULUX GOLD TREASURE LOUVRE SCREENS

AL1 - DULUX DURALLOY CLASSIC PEARL WHITE ALUMINIUM WHITE FINS

AL2 - DULUX DURALLOY MONUMENT WINDOW AND DOOR FRAMES

AL3 - DULUX DURALLOY SHOJI WHITE BALCONY FRAMES

PC1 - DULUX MILTON MOON EXTERIOR WALL

PC2 - DULUX TUSCAN SUNSET BLADE WALLS TO BALCONIES

PC3 - DULUX SNOWY MOUNTAINS QUARTER BALCONY WALLS

PC4 - DULUX SILVER SLIDE EXTERIOR WALLS

FB1 - BOWRAL DRY PRESSED BOWRAL BLUE

FB2 - BURLESQUE CHARMING BLACK

PC - PRECAST CONCRETE PANEL WITH SHADOW LINE PAINTED PC3

BAL - GLASS BALUSTRADE

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client: Il Capitano Investments Pty Ltd

Architect: AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project: MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

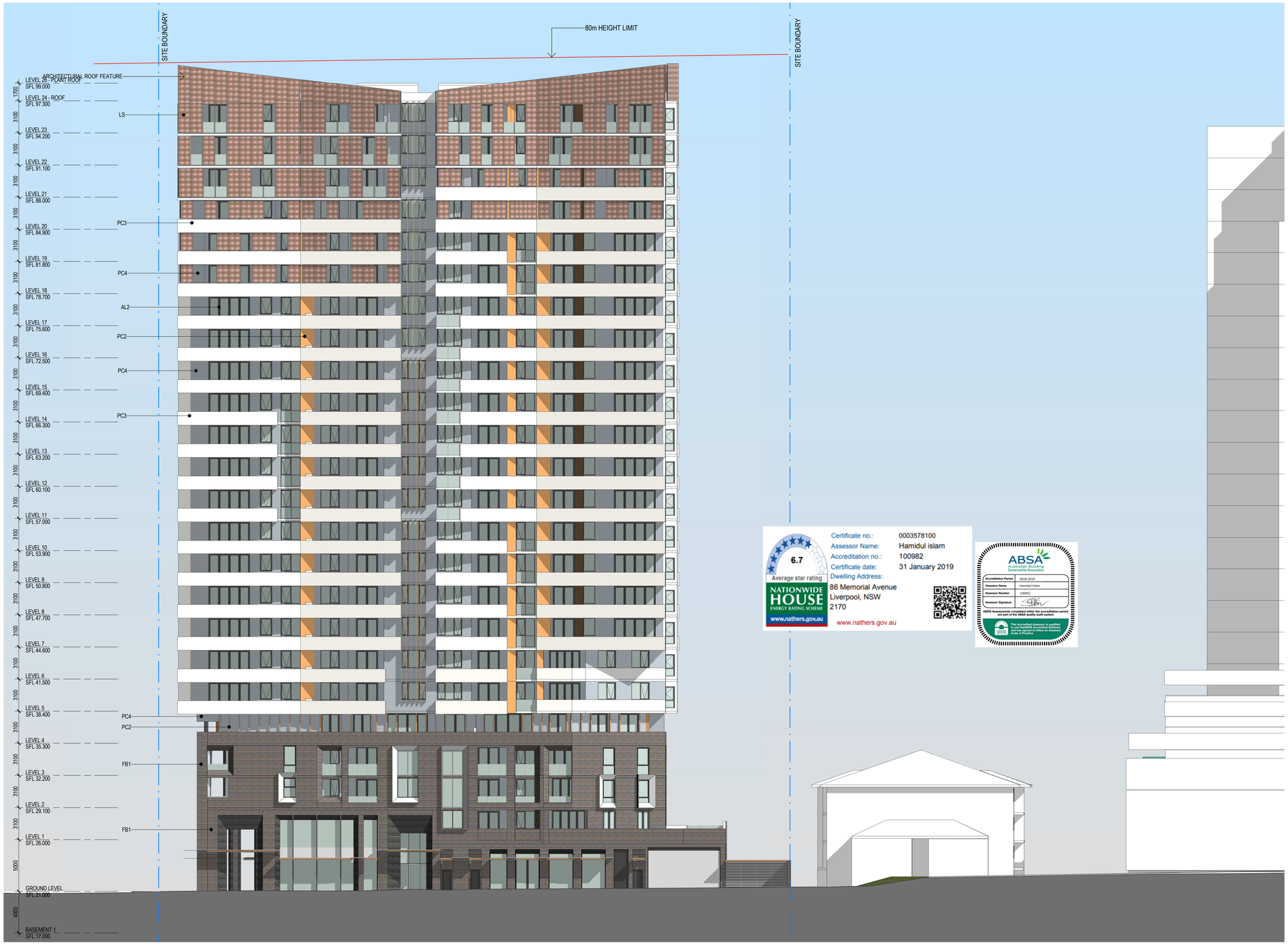
Drawing Title: NORTH ELEVATION - MEMORIAL AVENUE
Sheet Status: NOT FOR CONSTRUCTION

Scale: 1 : 200 @A1
Drawing No.: DA3101
Issue: 1

0 2 4 8 16 m

REF: C:\Users\GUO\Documents\18005_Master_gxa.rvt
PLOTTED & CHECKED BY: Author
PLOT DATE & TIME: 19/02/2019 5:40:54 PM

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmitt in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



6.7 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA
Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

HERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to use NatHERS Accredited Software in accordance with the Assessor Code of Practice

LS - DULUX GOLD TREASURE LOUVRE SCREENS

AL1 - DULUX DURALLOY CLASSIC PEARL WHITE ALUMINIUM WHITE FINS

AL2 - DULUX DURALLOY MONUMENT WINDOW AND DOOR FRAMES

AL3 - DULUX DURALLOY SHOJI WHITE BALCONY FRAMES

PC1 - DULUX MILTON MOON EXTERIOR WALL

PC2 - DULUX TUSCAN SUNSET BLADE WALLS TO BALCONIES

PC3 - DULUX SNOWY MOUNTAINS QUARTER BALCONY WALLS

PC4 - DULUX SILVER SLIDE EXTERIOR WALLS

FB1 - BOWRAL DRY PRESSED BOWRAL BLUE

FB2 - BURLESQUE CHARMING BLACK

PC - PRECAST CONCRETE PANEL WITH SHADOW LINE PAINTED PC3

BAL - GLASS BALUSTRADE

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
WEST ELEVATION - CASTLEREAGH STREET

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

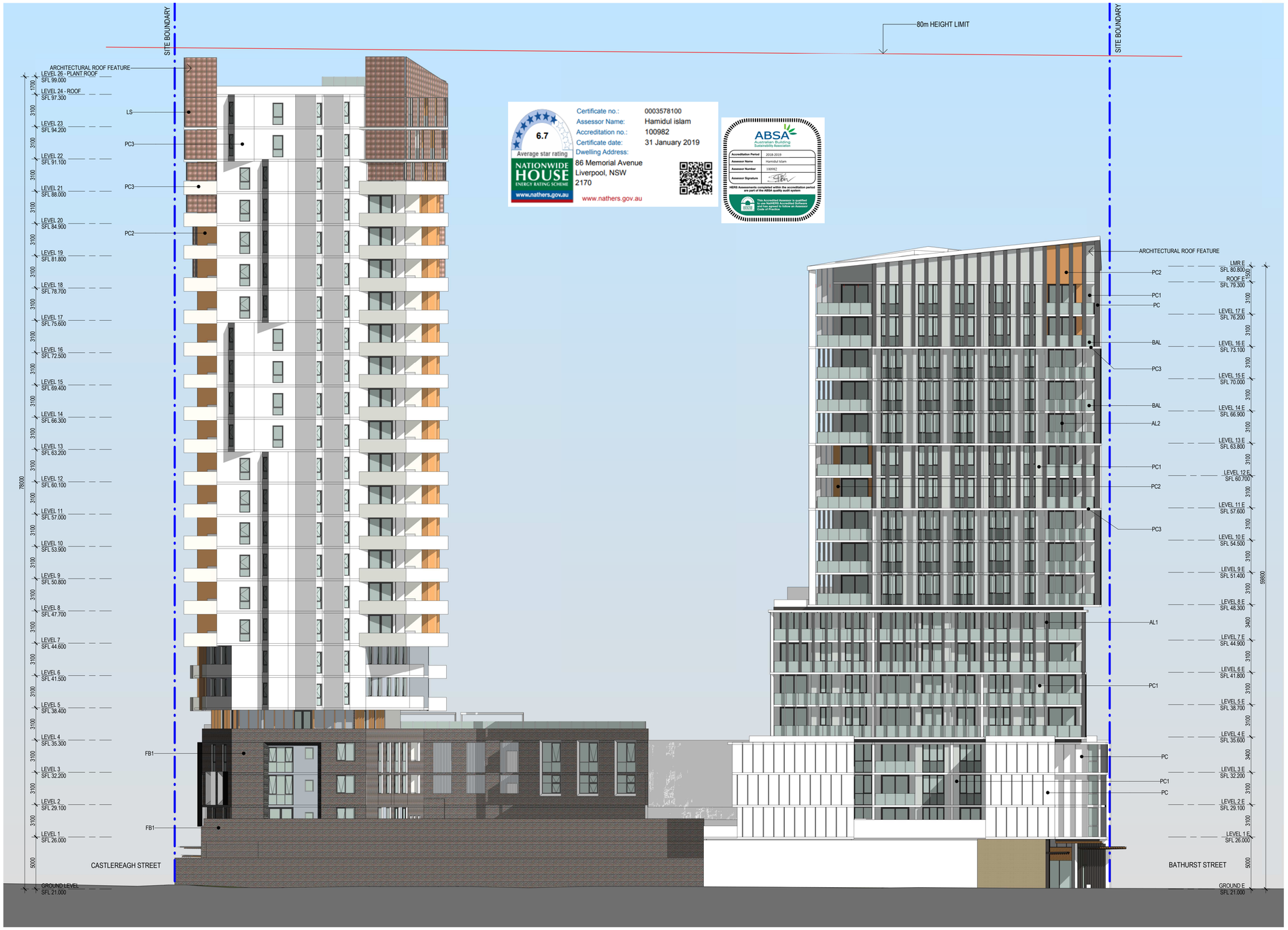
Drawing No.
DA3102

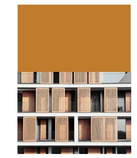
Issue
1

0 2 4 8 16 m

PLOT DATE & TIME: 19/02/2019 5:41:29 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\CLIO\Documents\18005_Master_gaxr.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661





LS - DULUX GOLD TREASURE LOUVRE SCREENS

AL1 - DULUX DURALLOY CLASSIC PEARL WHITE ALUMINIUM WHITE FINS

AL2 - DULUX DURALLOY MONUMENT WINDOW AND DOOR FRAMES

AL3 - DULUX DURALLOY SHOJI WHITE BALCONY FRAMES

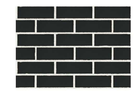
PC1 - DULUX MILTON MOON EXTERIOR WALL

PC2 - DULUX TUSCAN SUNSET BLADE WALLS TO BALCONIES

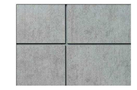
PC3 - DULUX SNOWY MOUNTAINS QUARTER BALCONY WALLS

PC4 - DULUX SILVER SLIDE EXTERIOR WALLS

FB1 - BOWRAL DRY PRESSED BOWRAL BLUE



FB2 - BURLESQUE CHARMING BLACK



PC - PRECAST CONCRETE PANEL WITH SHADOW LINE PAINTED PC3

BAL - GLASS BALUSTRADE

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
SOUTH ELEVATION

Sheet Status
NOT FOR CONSTRUCTION

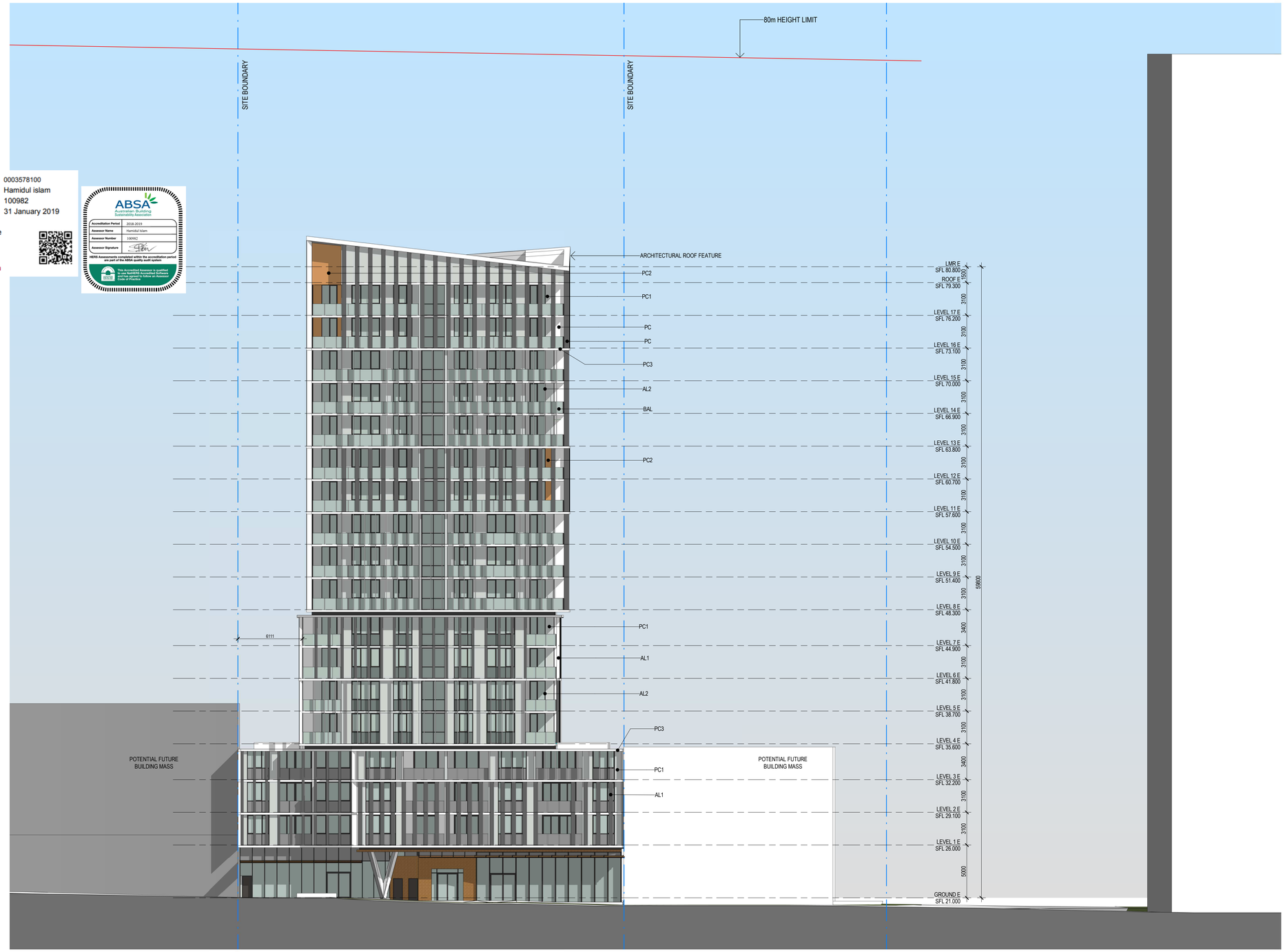
Scale
1 : 200 @A1

Drawing No. DA3103 Issue 1

0 2 4 8 16 m

PLOT DATE & TIME: 19/02/2019 5:42:19 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_gsx.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmitt in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA
Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

HERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to use NatHERS Accredited Software and has agreed to follow an Assessor Code of Practice

LS - DULUX GOLD TREASURE LOUVRE SCREENS

AL1 - DULUX DURALLOY CLASSIC PEARL WHITE ALUMINIUM WHITE FINS

AL2 - DULUX DURALLOY MONUMENT WINDOW AND DOOR FRAMES

AL3 - DULUX DURALLOY SHOJI WHITE BALCONY FRAMES

PC1 - DULUX MILTON MOON EXTERIOR WALL

PC2 - DULUX TUSCAN SUNSET BLADE WALLS TO BALCONIES

PC3 - DULUX SNOWY MOUNTAINS QUARTER BALCONY WALLS

PC4 - DULUX SILVER SLIDE EXTERIOR WALLS

FB1 - BOWRAL DRY PRESSED BOWRAL BLUE

FB2 - BURLESQUE CHARMING BLACK

PC - PRECAST CONCRETE PANEL WITH SHADOW LINE PAINTED PC3

BAL - GLASS BALUSTRADE

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
EAST ELEVATION - BATHURST STREET

Sheet Status
NOT FOR CONSTRUCTION

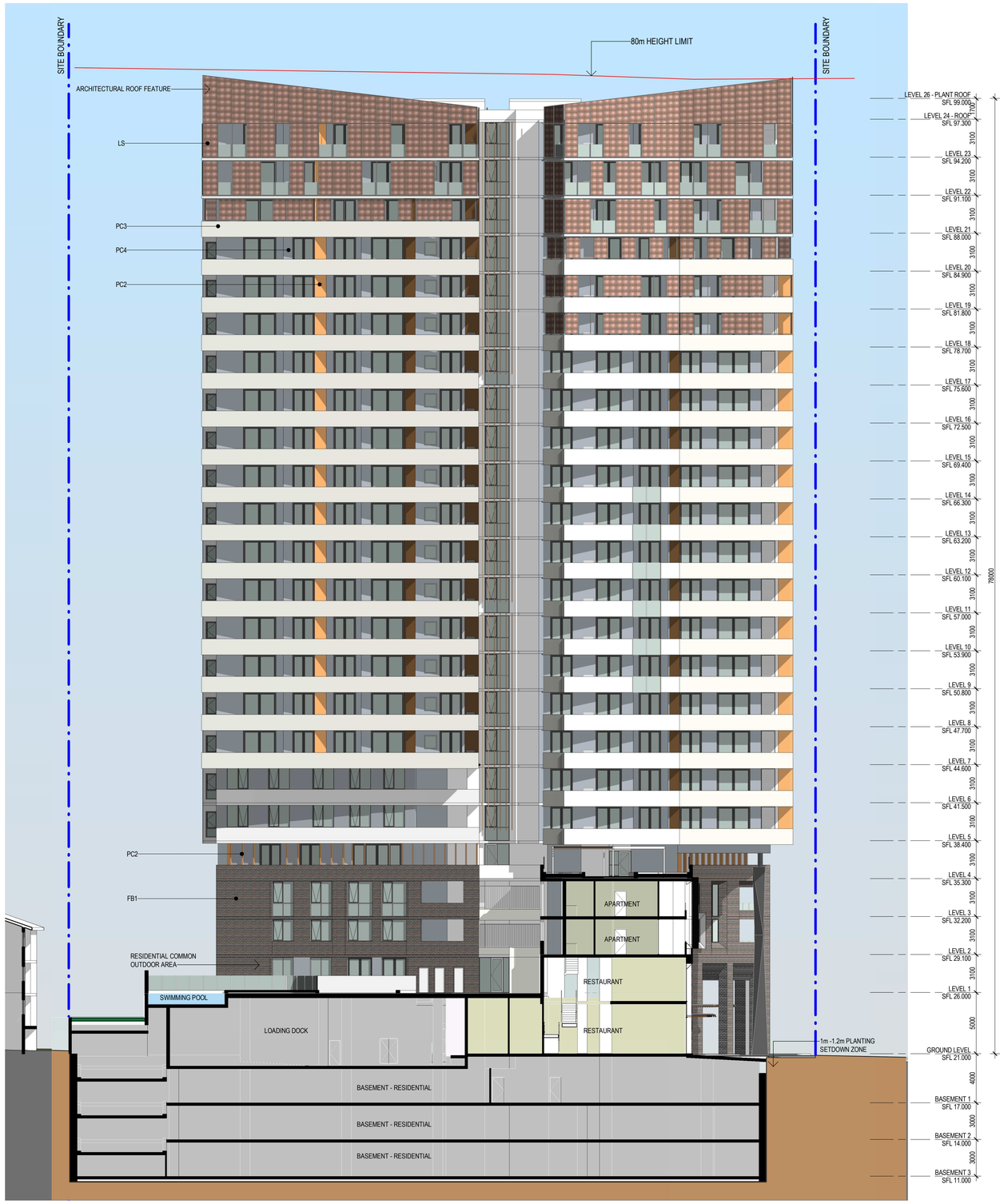
Scale
1 : 200 @A1

Drawing No. DA3104 Issue 1

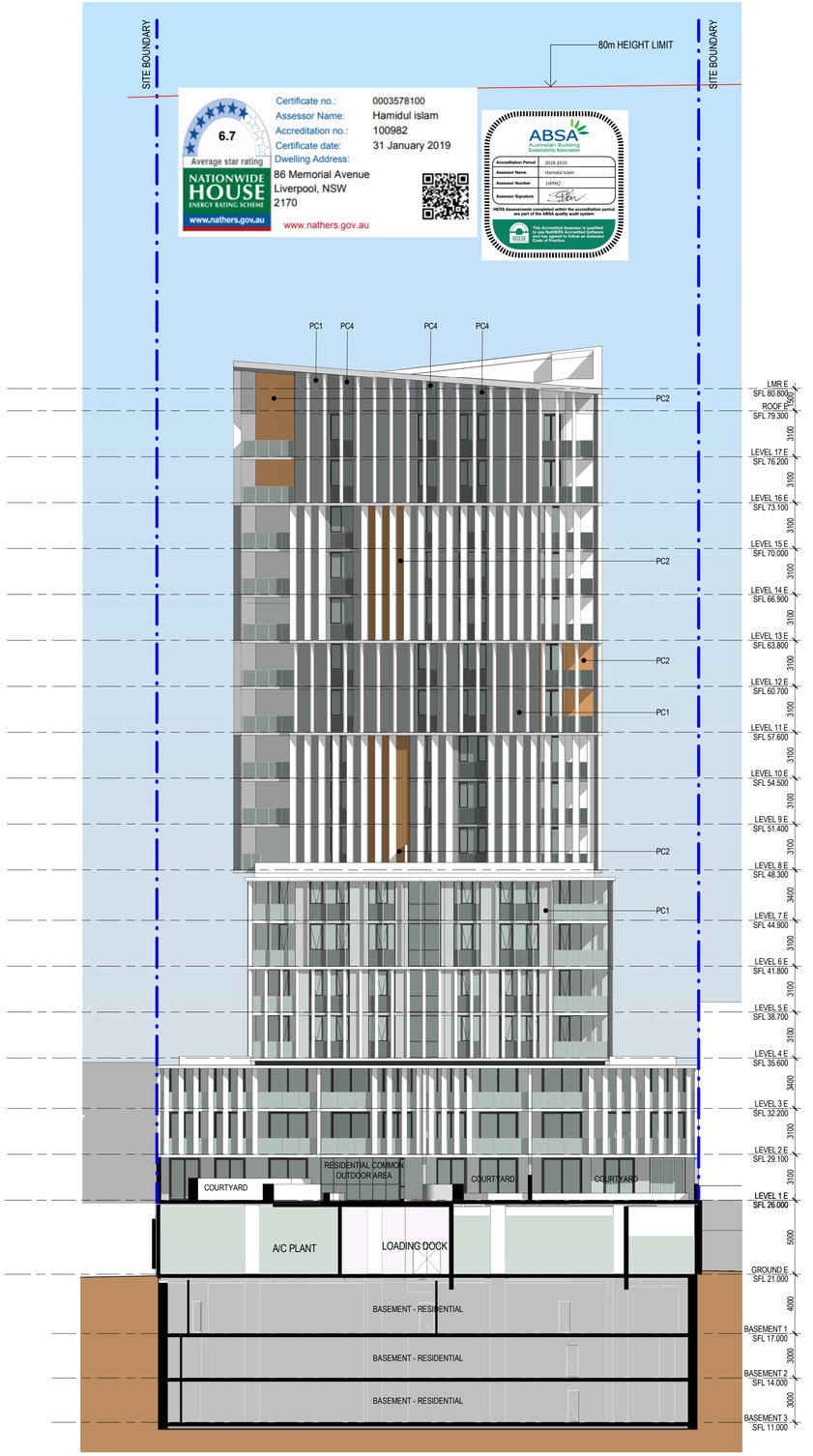
0 2 4 8 16 m

PLOT DATE & TIME: 19/02/2019 5:42:42 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmitt in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



1 EAST COURTYARD ELEVATION
1 : 200



2 WEST COURTYARD ELEVATION
1 : 200

Revisions			
No.	Date	Description	Ver App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.	

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C
Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
EAST AND WEST COURTYARD ELEVATIONS
Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

Drawing No. DA3105 Issue 1

0 2 4 8 16 m

PLOT DATE & TIME: 19/02/2019 5:43:41 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_gsx.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmitt in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA
Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

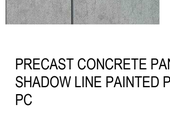
NERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to undertake assessments in accordance with the relevant Australian Standard and Code of Practice

PC1

DULUX MILTON MOON
- EXTERIOR WALL
PC1

BAL



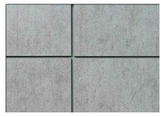
GLASS BALUSTRADE
BAL

AL1

DULUX DURALLOY
CLASSIC PEARL WHITE
- ALUMINIUM WHITE FINS
AL1

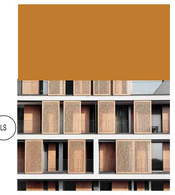
AL1

PC



PRECAST CONCRETE PANEL WITH
SHADOW LINE PAINTED PC3
PC

LS



DULUX GOLD TREASURE
-LOUVRE SCREENS
LS

AL2

DULUX DURALLOY MONUMENT
- WINDOW AND DOOR FRAMES
AL2

PC2

DULUX TUSCAN SUNSET
- BLADE WALLS TO BALCONIES
PC2

PC3

DULUX SNOWY MOUNTAINS
QUARTER
- BALCONY WALLS
PC3

PC4

DULUX SILVER SLIDE
- EXTERIOR WALLS
PC3

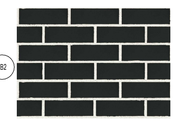
AL3

DULUX DURALLOY SHOJI WHITE
- BALCONY FRAMES
AL3

FB1

BOWRAL DRY PRESSED
BOWRAL BLUE
FB1

FB2



BURLESQUE
CHARMING BLACK - ENTRANCE
FB2

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
MATERIAL
ELEVATION
Sheet Status
NOT FOR CONSTRUCTION

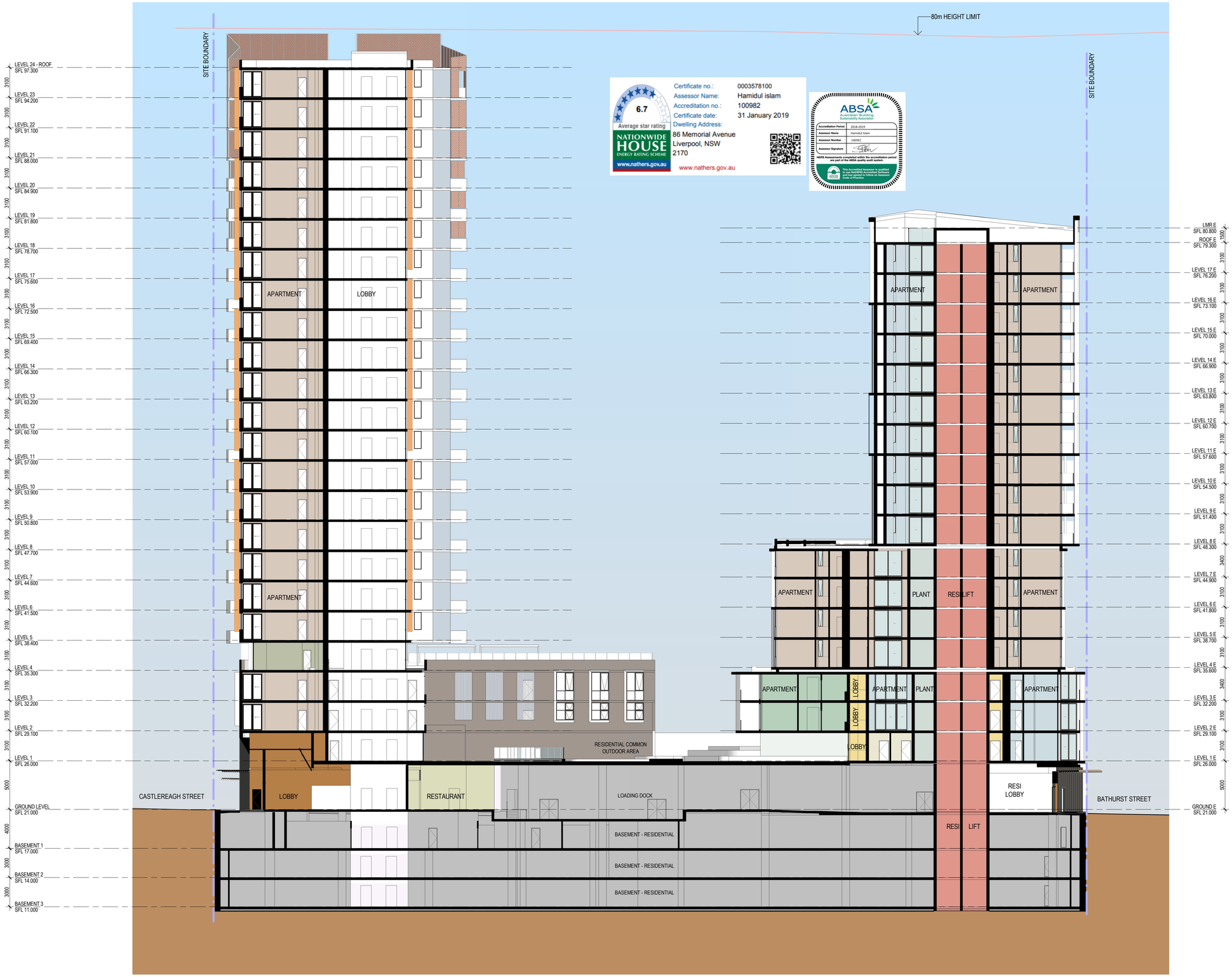
Scale
1 : 2 @A1

Drawing No.
DA3112

Issue
1

REF: C:\Users\GUO\Documents\18005_Master_gao.rvt
PLOTTED & CHECKED BY: Author
PLOT DATE & TIME: 19/02/2019 5:43:43 PM

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA
Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

HERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to use NatHERS Accredited Software as defined in the Nationwide House Energy Rating Scheme Code of Practice

Revisions				
No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C
Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

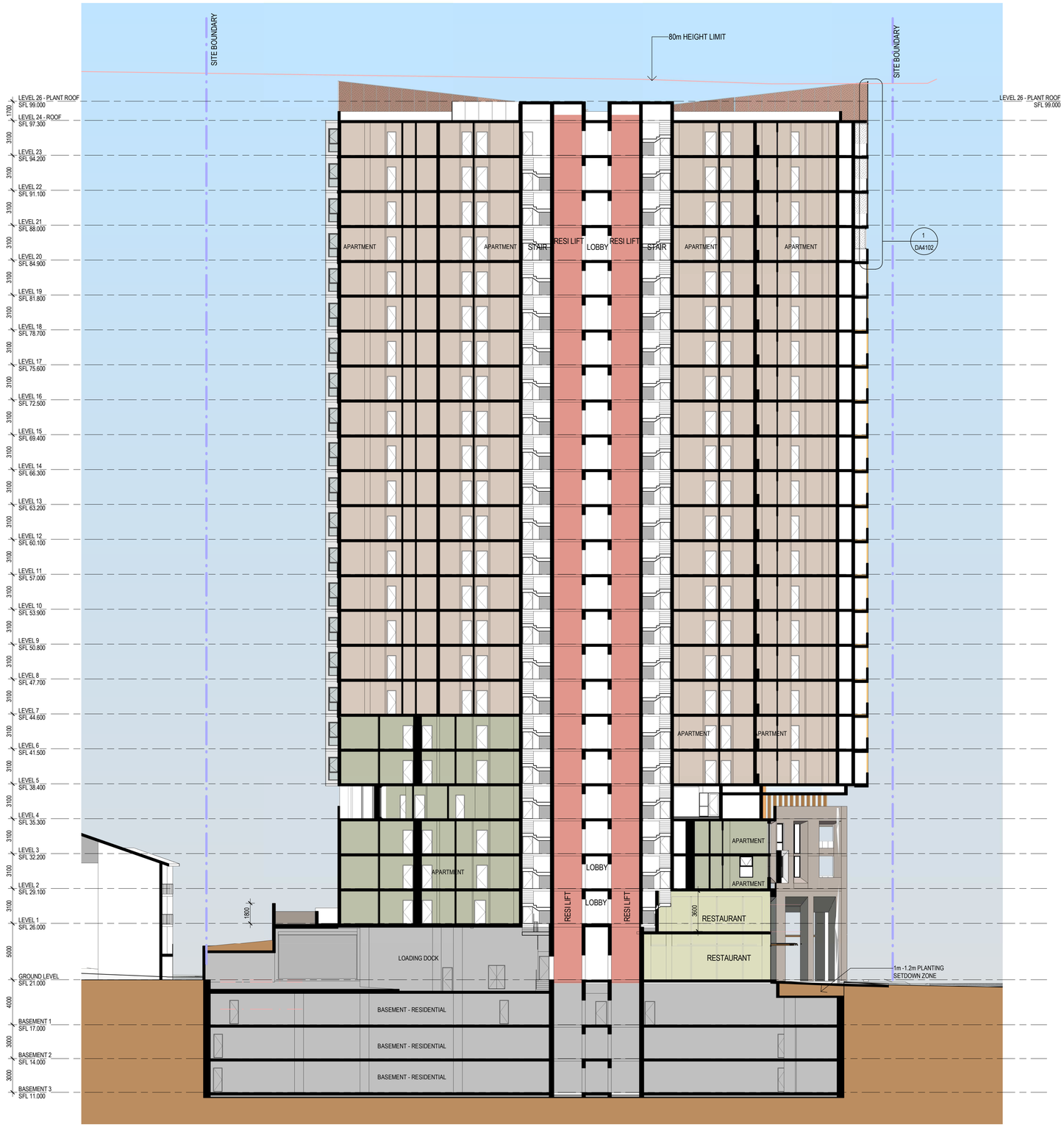
Drawing Title
SECTION 1
Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1
Drawing No.
DA3201
Issue
1

0 2 4 8 16 m

REF: C:\Users\GUO\Documents\18005_Master_guo.rvt
PLOTTED & CHECKED BY: Author
PLOT DATE & TIME: 19/02/2019 5:43:51 PM

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA
Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

NERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to perform NERS assessments and has agreed to follow an Assessor Code of Practice

Revisions				
No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
SECTION 2

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

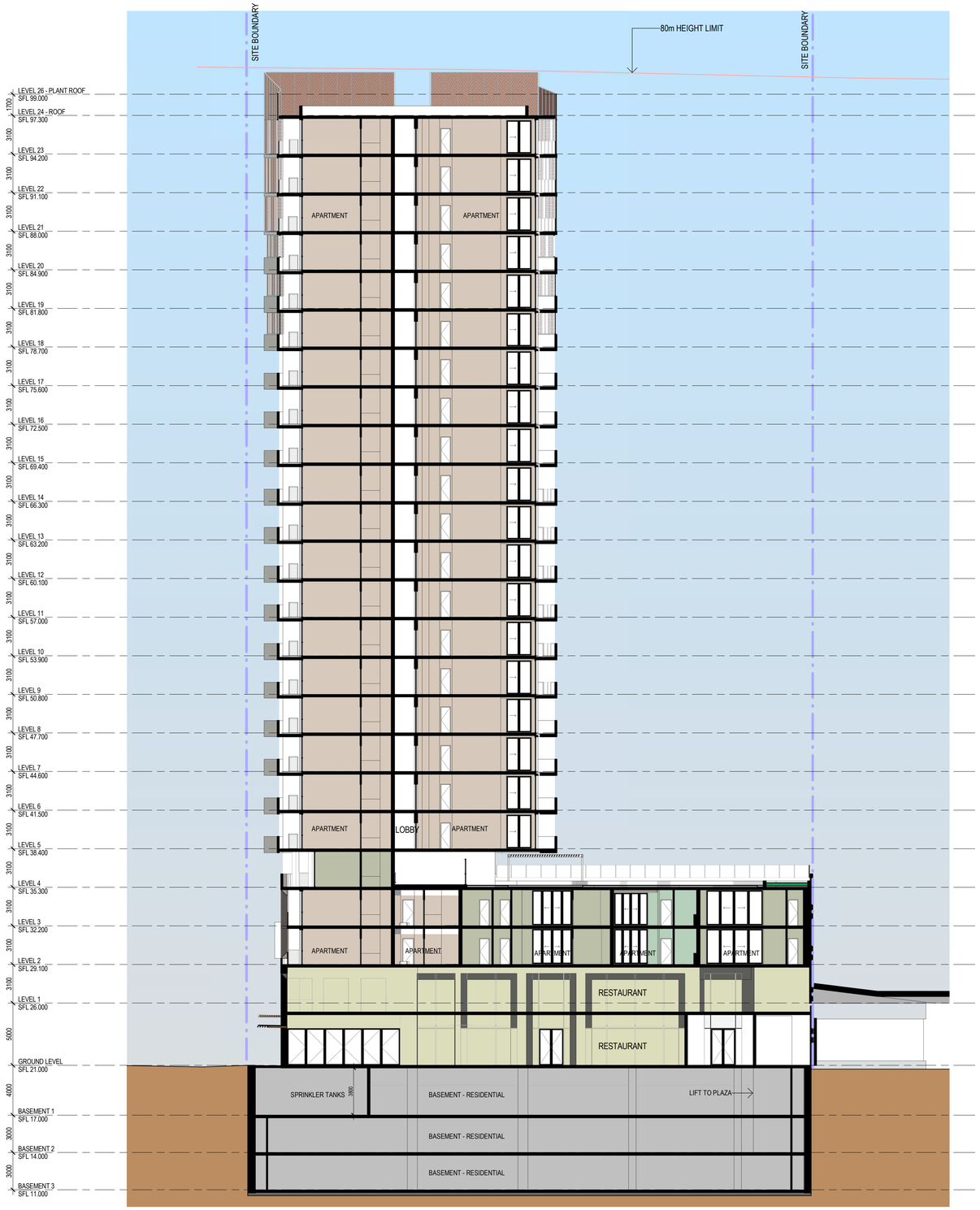
Drawing No.
DA3202

Issue
1

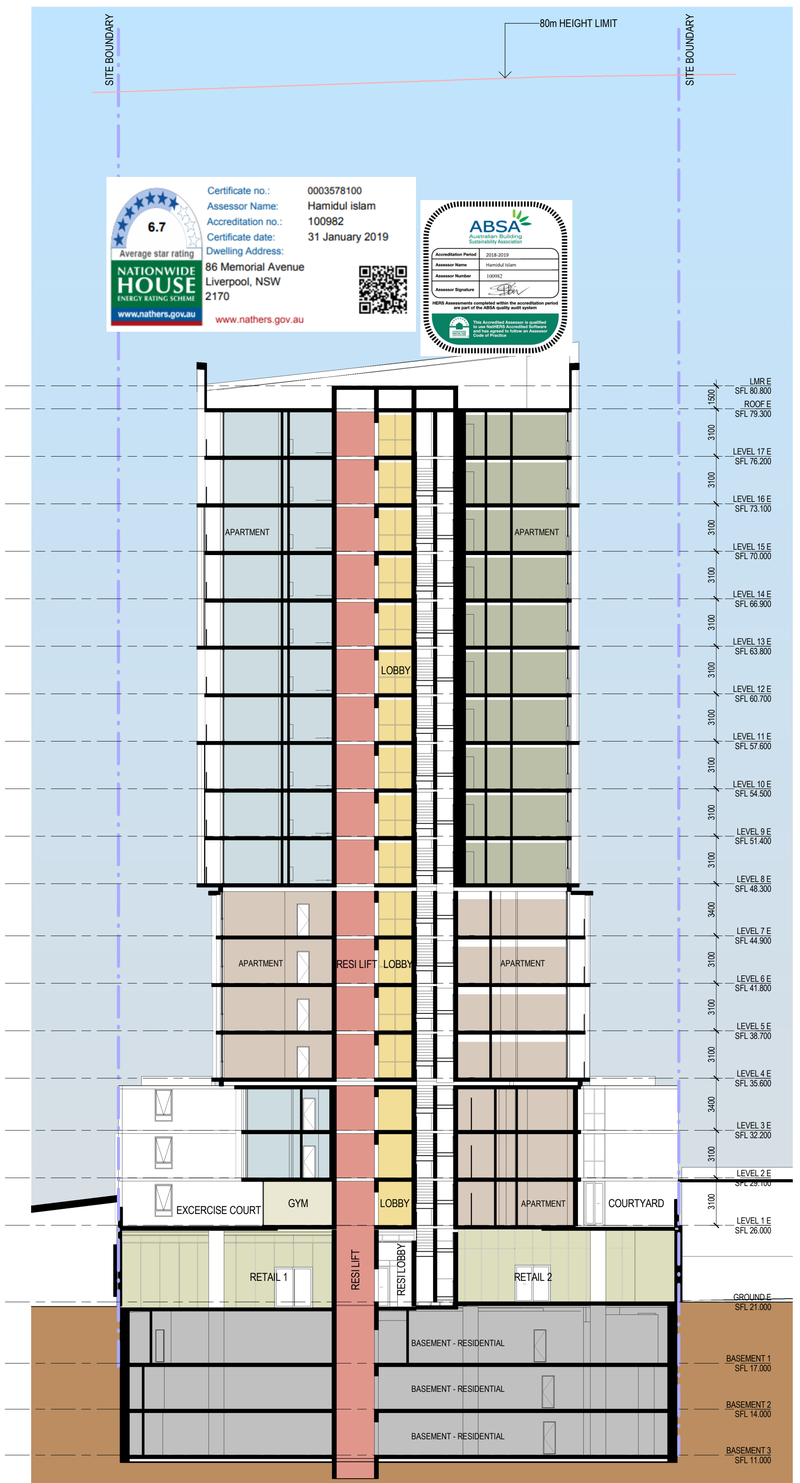
0 2 4 8 16 m

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

PLOT DATE & TIME: 19/02/2019 5:43:09 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\DJO\Documents\18005_Master_djo.rvt



1 SECTION 3 DA
1 : 200



2 SECTION 4 DA
1 : 200

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
SECTION 3 AND 4

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

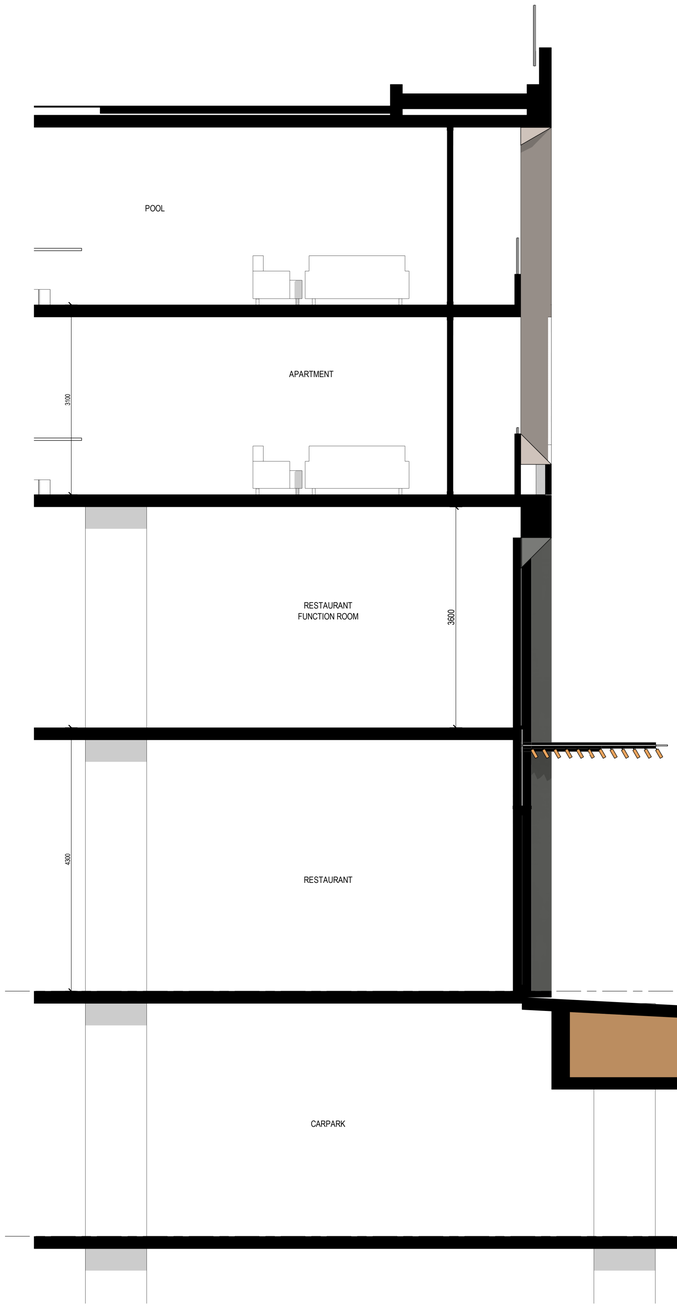
Drawing No.
DA3203

Issue
1

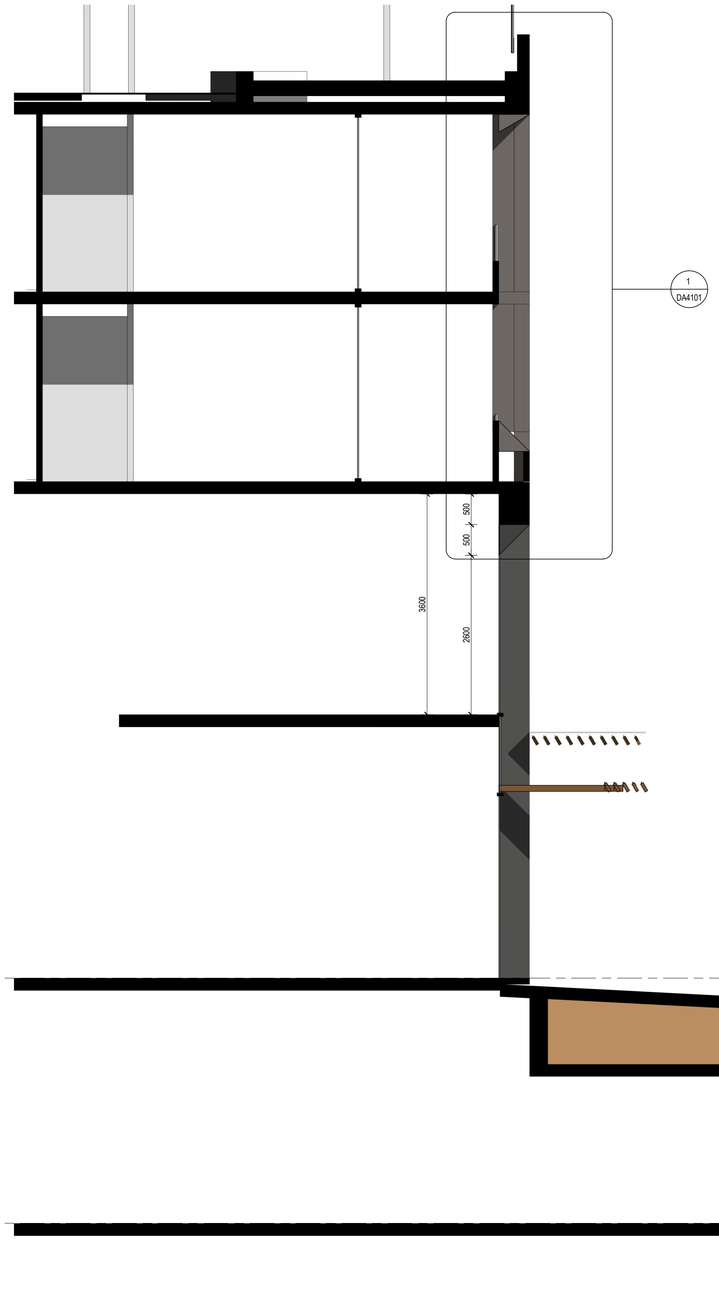
0 2 4 8 16 m

PLOT DATE & TIME: 19/02/2019 5:44:07 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



1 Section through restaurant entry
1 : 50



2 Section through restaurant opening
1 : 50

6.7 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA Australian Building Sustainability Association
Accreditation Period 2018-2019
Assessor Name Hamidul Islam
Assessor Number 100982
Assessor Signature
NatHERS Assessments completed within the accreditation period are part of the ABSA quality audit system
This Accredited Assessor is certified to use NatHERS Accreditation Scheme and has agreed to follow an Assessor Code of Practice

Revisions				
No.	Date	Description	Ver	App'd
1	XXXXXX	SECOND ISSUE		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
RESTAURANT
SECTION

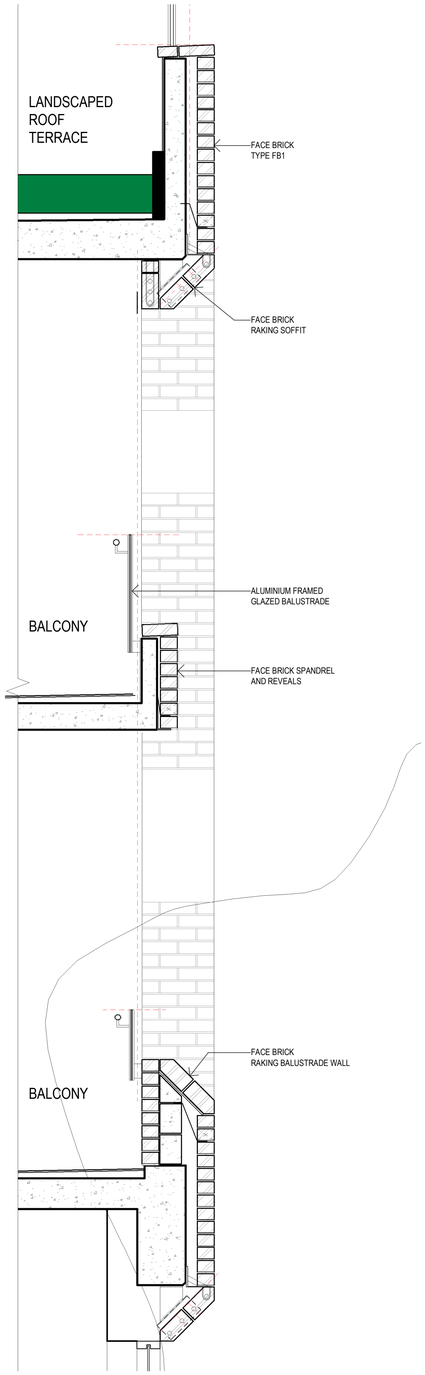
Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 50 @A1

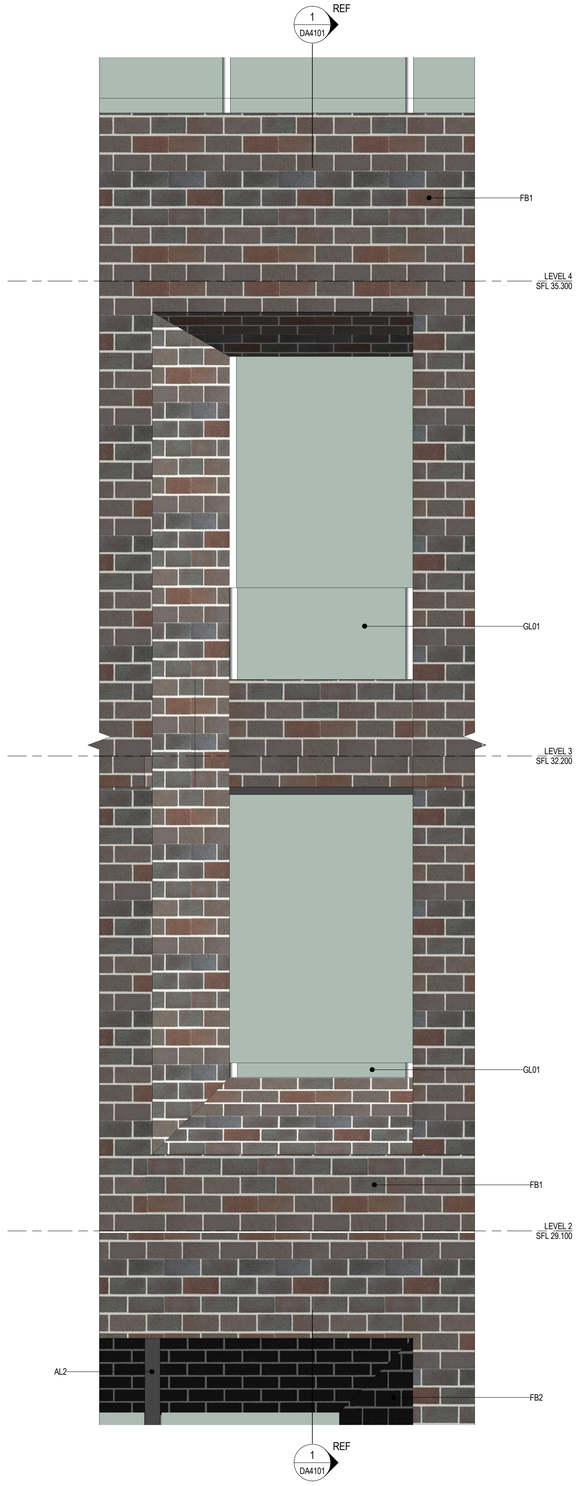
Drawing No. | Issue
DA3204 1

PLOT DATE & TIME: 19/02/2019 5:44:10 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

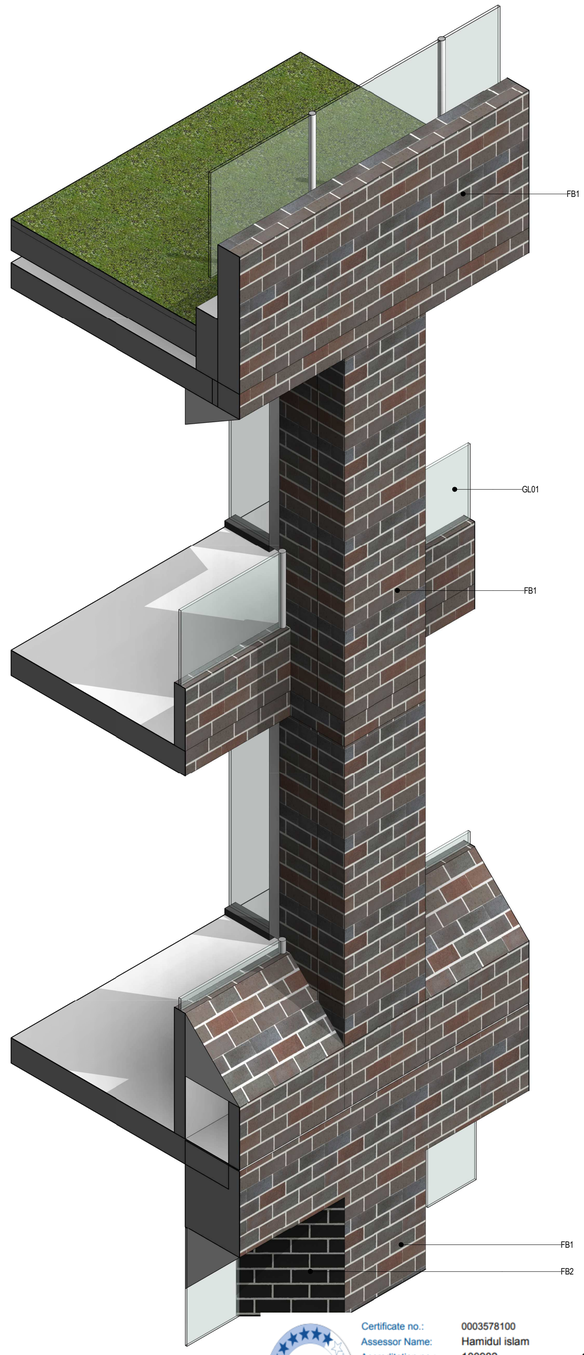
Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



1 SECTION - BALCONY / WINDOW SURROUND
NORTH & WEST FAÇADE - PODIUM LEVELS 1 : 20



2 ELEVATION - BALCONY / WINDOW SURROUND
NORTH & WEST FAÇADE - PODIUM LEVELS 1 : 20



3 3D - BALCONY / WINDOW SURROUND

LS - DULUX GOLD TREASURE LOUVRE SCREENS

AL1 - DULUX DURALLOY CLASSIC PEARL WHITE ALUMINIUM WHITE FINS

AL2 - DULUX DURALLOY MONUMENT WINDOW AND DOOR FRAMES

AL3 - DULUX DURALLOY SHOJI WHITE BALCONY FRAMES

PC1 - DULUX MILTON MOON EXTERIOR WALL

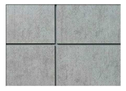
PC2 - DULUX TUSCAN SUNSET BLADE WALLS TO BALCONIES

PC3 - DULUX SNOWY MOUNTAINS QUARTER BALCONY WALLS

PC4 - DULUX SILVER SLIDE EXTERIOR WALLS

FB1 - BOWRAL DRY PRESSED BOWRAL BLUE

FB2 - BURLESQUE CHARMING BLACK



PC - PRECAST CONCRETE PANEL WITH SHADOW LINE PAINTED PC3

BAL - GLASS BALUSTRADE

6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170
www.nathers.gov.au

ABSA
Australian Building Sustainability Association

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

HERS Assessments completed within the accreditation period are part of the ABSA quality audit system

This Accredited Assessor is qualified to use NatHERS Accredited Software to undertake NatHERS Home as Assessor Method Assessments

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C
Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
WALL SECTION 1

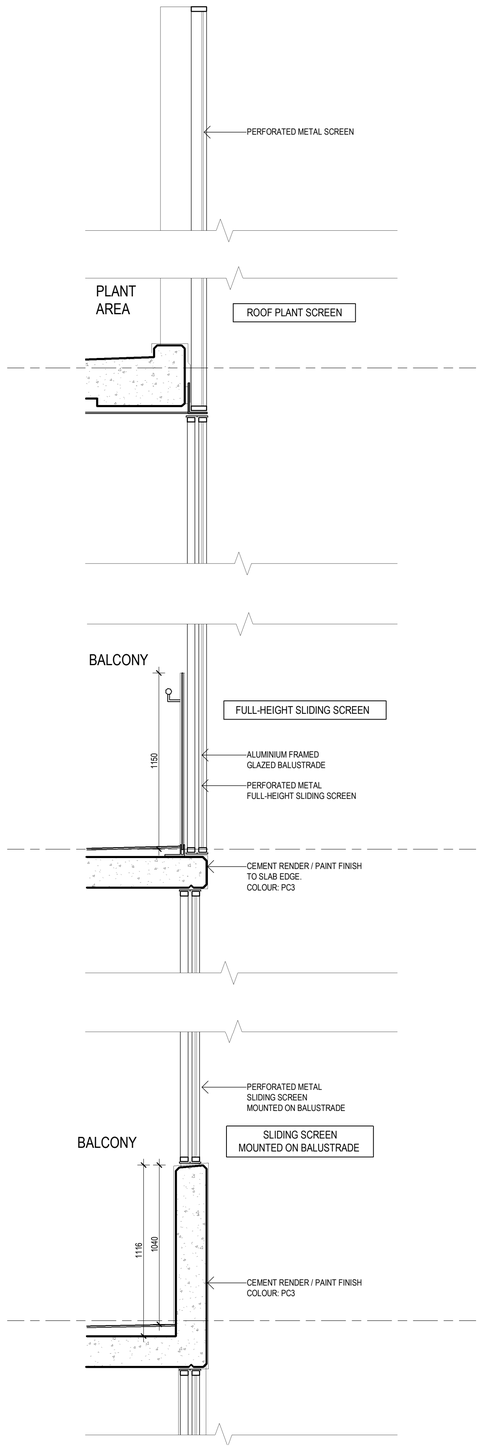
Sheet Status
NOT FOR CONSTRUCTION

Scale
0 200 400 800 1600 mm

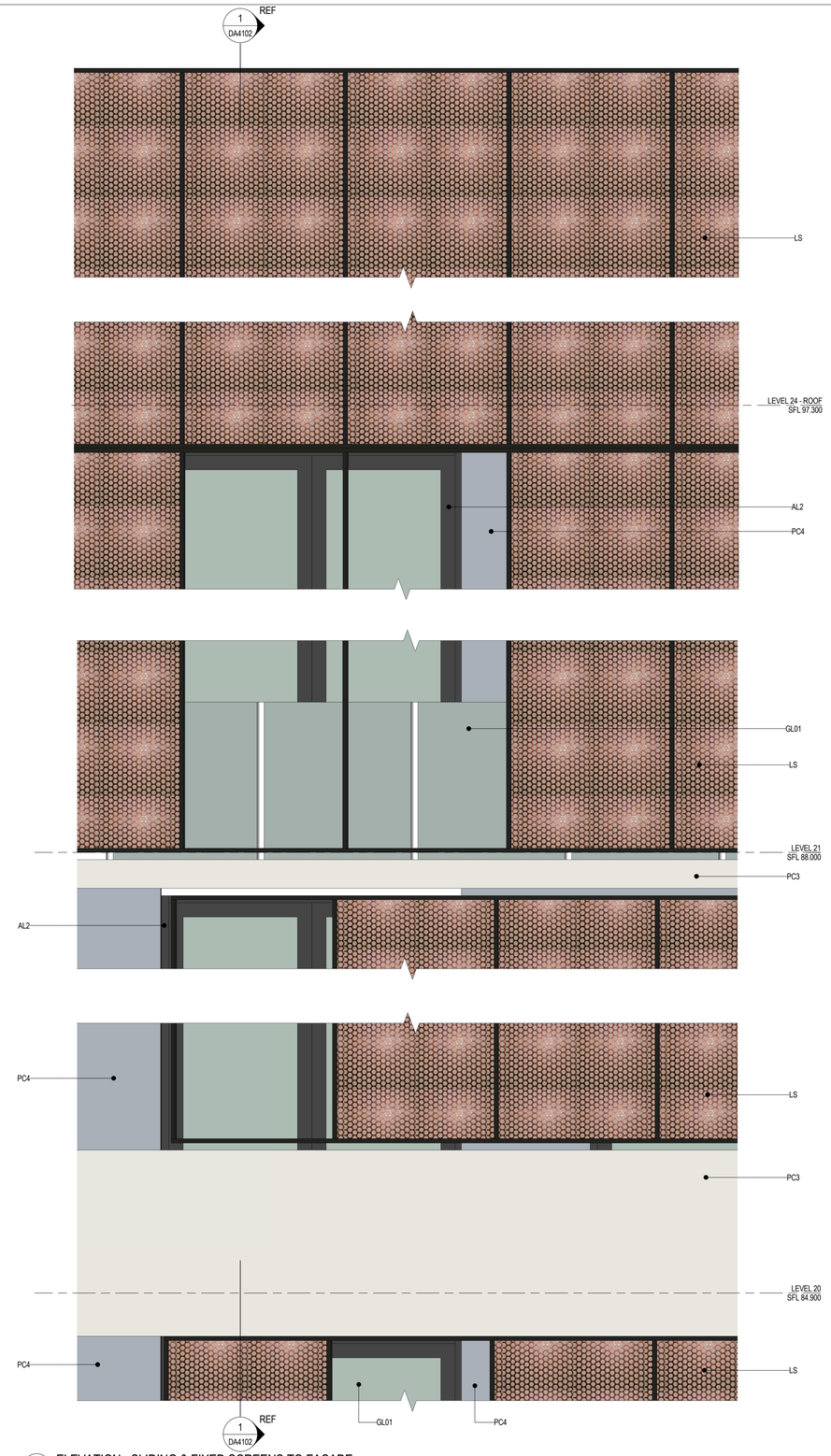
Drawing No. DA4101 Issue 1

PLOT DATE & TIME: 19/02/2019 5:44:48 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

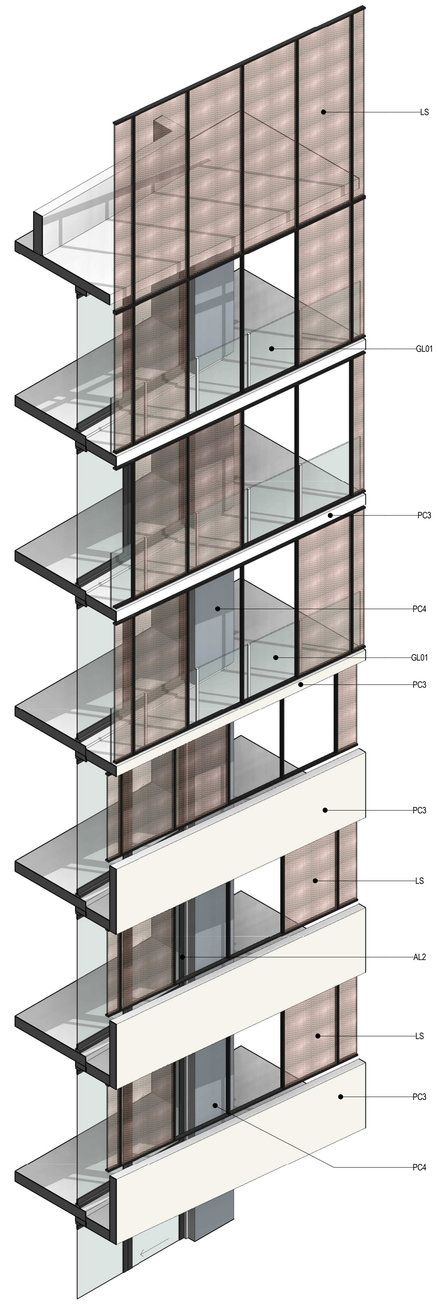
Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



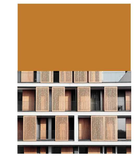
1 SECTION - SLIDING & FIXED SCREENS TO FAÇADE
TOWER LEVELS WHERE SHOWN 1 : 20



2 ELEVATION - SLIDING & FIXED SCREENS TO FAÇADE
TOWER LEVELS WHERE SHOWN 1 : 20



3 3D - SLIDING & FIXED SCREENS TO FAÇADE


LS - DULUX GOLD TREASURE LOUVRE SCREENS

AL1 - DULUX DURALLOY CLASSIC PEARL WHITE ALUMINIUM WHITE FINS

AL2 - DULUX DURALLOY MONUMENT WINDOW AND DOOR FRAMES

AL3 - DULUX DURALLOY SHOJI WHITE BALCONY FRAMES

PC1 - DULUX MILTON MOON EXTERIOR WALL

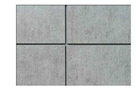
PC2 - DULUX TUSCAN SUNSET BLADE WALLS TO BALCONIES

PC3 - DULUX SNOWY MOUNTAINS QUARTER BALCONY WALLS

PC4 - DULUX SILVER SLIDE EXTERIOR WALLS

FB1 - BOWRAL DRY PRESSED BOWRAL BLUE

FB2 - BURLESQUE CHARMING BLACK


PC - PRECAST CONCRETE PANEL WITH SHADOW LINE PAINTED PC3

BAL - GLASS BALUSTRADE

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address: 86 Memorial Avenue Liverpool, NSW 2170
6.7 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Revisions

No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key
N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
WALL SECTION 2

Sheet Status
NOT FOR CONSTRUCTION

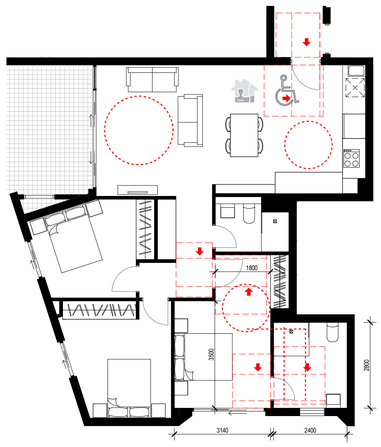
Scale
0 200 400 800 1600 mm

Drawing No. DA4102 Issue 1

REF: C:\Users\DUO\Documents\18005_Master_guo.rvt
PLOTTED & CHECKED BY: Author
PLOT DATE & TIME: 18/02/2019 5:45:15 PM

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmitt in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

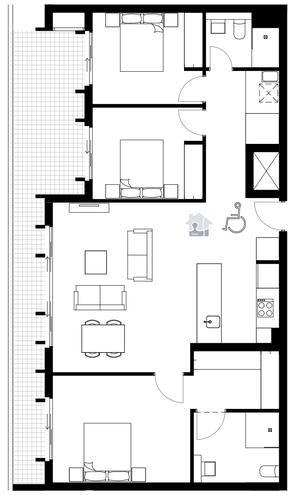
1 ADAPTABLE 1 PRE - ADAPTATION
1 : 100



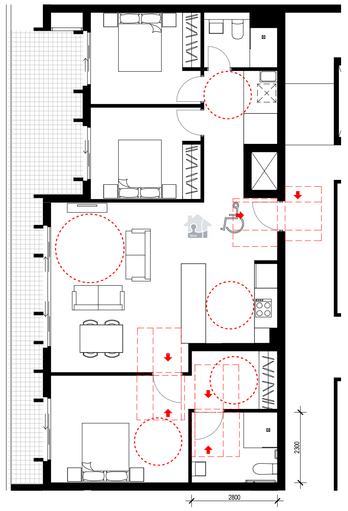
2 ADAPTABLE 1 POST - ADAPTATION
1 : 100

Number	Level
W012	LEVEL 1
W022	LEVEL 2
W032	LEVEL 3
W052	LEVEL 5
W062	LEVEL 6

TOTAL: 5



3 ADAPTABLE 2 PRE - ADAPTATION
1 : 100

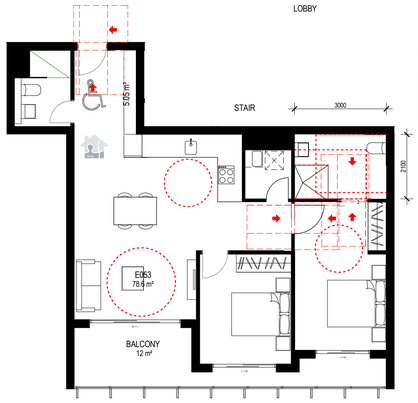


4 ADAPTABLE 2 POST - ADAPTATION
1 : 100

Number	Level
W043	LEVEL 4

TOTAL: 1

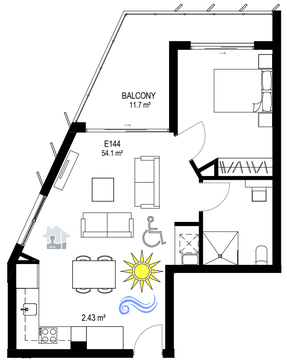
5 ADAPTABLE 3 PRE - ADAPTATION
1 : 100



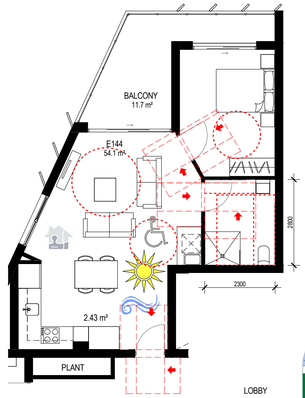
6 ADAPTABLE 3 POST - ADAPTATION
1 : 100

Number	Level
E043	LEVEL 4 E
E053	LEVEL 5 E
E063	LEVEL 6 E
E073	LEVEL 7 E

TOTAL: 4



7 ADAPTABLE 4 PRE - ADAPTATION
1 : 100

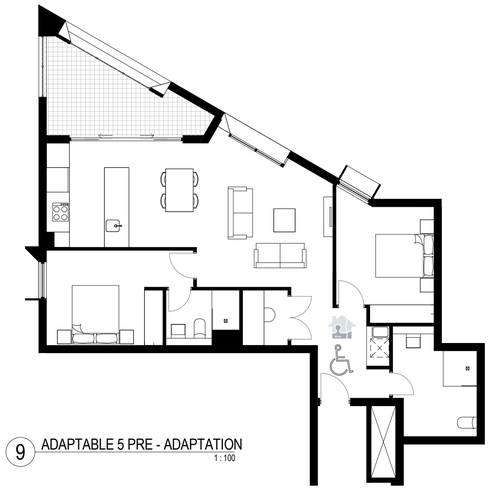


8 ADAPTABLE 4 POST - ADAPTATION
1 : 100

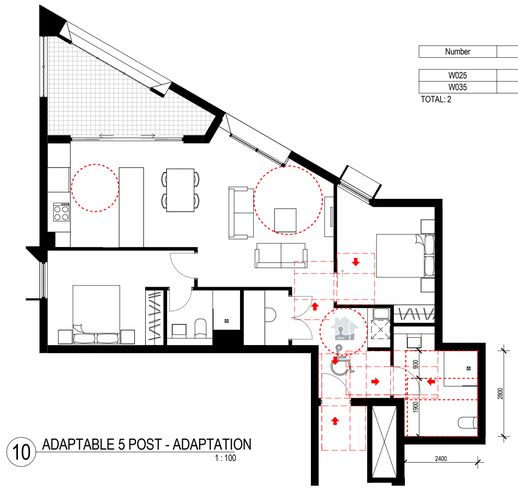
Number	Level
E084	LEVEL 8 E
E094	LEVEL 9 E
E104	LEVEL 10 E
E114	LEVEL 11 E
E124	LEVEL 12 E
E134	LEVEL 13 E
E144	LEVEL 14 E
E154	LEVEL 15 E
E164	LEVEL 16 E
E174	LEVEL 17 E

TOTAL: 10

Certificate no.: 0003578100
Assessor Name: Hamidul Islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address: 86 Memorial Avenue Liverpool, NSW 2170
www.nathers.gov.au



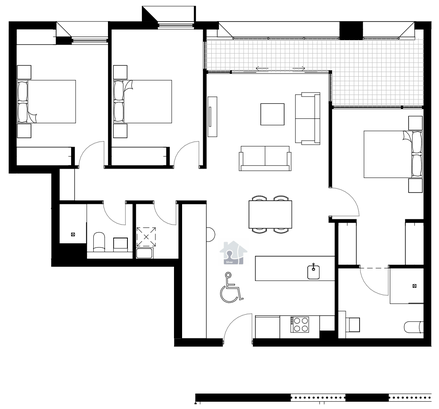
9 ADAPTABLE 5 PRE - ADAPTATION
1 : 100



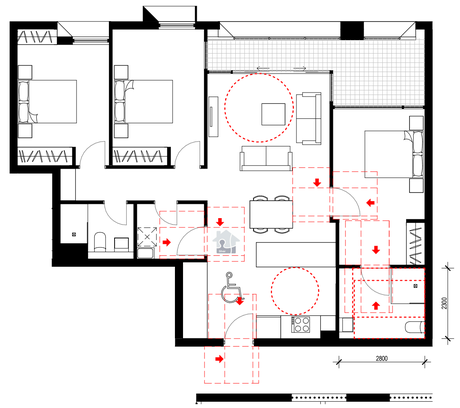
10 ADAPTABLE 5 POST - ADAPTATION
1 : 100

Number	Level
W025	LEVEL 2
W035	LEVEL 3

TOTAL: 2



11 ADAPTABLE 6 PRE - ADAPTATION
1 : 100



12 ADAPTABLE 6 POST - ADAPTATION
1 : 100

Number	Level
W026	LEVEL 2
W036	LEVEL 3

TOTAL: 2

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
ADAPTABLE APARTMENT PLANS

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 100 @A1

Drawing No.
DA5101

Issue
1

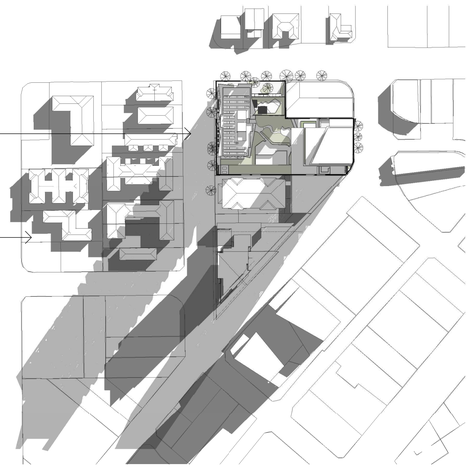
0 1 2 4 8 m

REF: C:\Users\GUO\Documents\18005_Master_guo.rvt
PLOTTED & CHECKED BY: Author
PLOT DATE & TIME: 19/02/2019 5:45:23 PM

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmitt in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

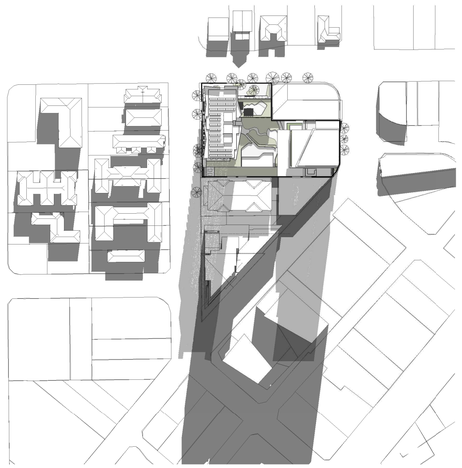
OLD SHADOW IN DARK GREY

NEW SHADOW IN LIGHT GREY

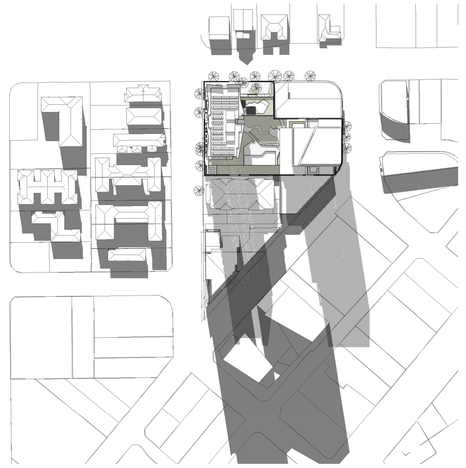


1 Shadow 0900 — 1 : 2000

2 Shadow 1000 — 1 : 2000

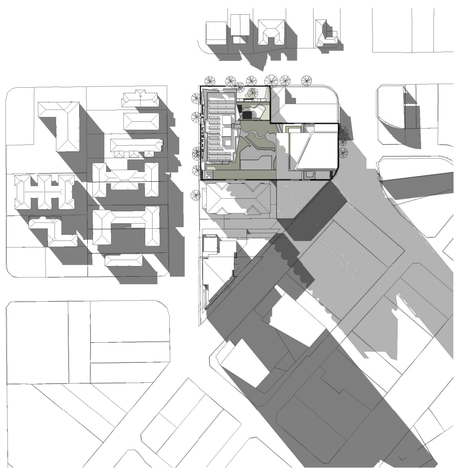


3 Shadow 1100 — 1 : 2000

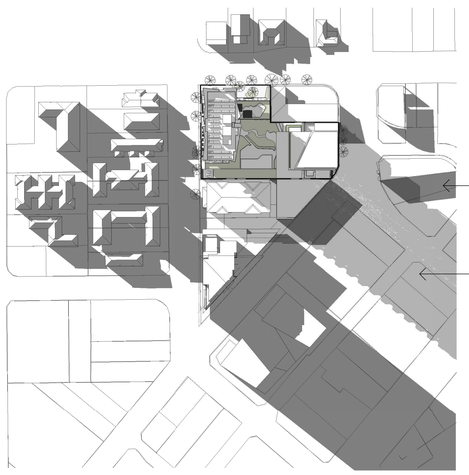


4 Shadow 1200 — 1 : 2000

5 Shadow 1300 — 1 : 2000



6 Shadow 1400 — 1 : 2000



OLD SHADOW IN DARK GREY

NEW SHADOW IN LIGHT GREY

7 Shadow 1500 — 1 : 2000

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address: 86 Memorial Avenue Liverpool, NSW 2170

www.nathers.gov.au

Revisions			
No.	Date	Description	Ver App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.	

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title
SHADOW DIAGRAMS
- 21 JUNE

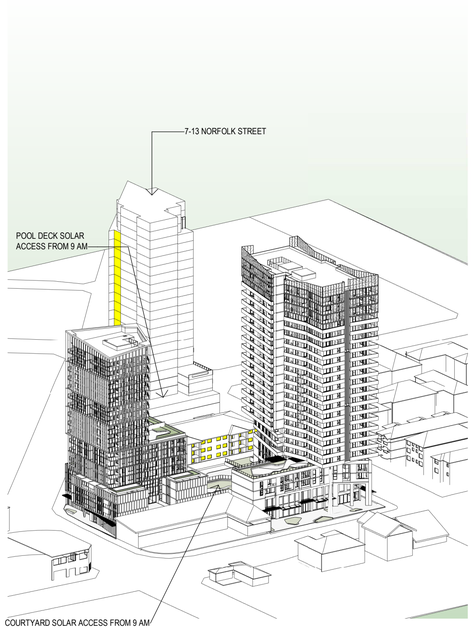
Sheet Status
NOT FOR CONSTRUCTION

Scale: 1 : 2000 @A1
Drawing No.: DA8501
Issue: 1

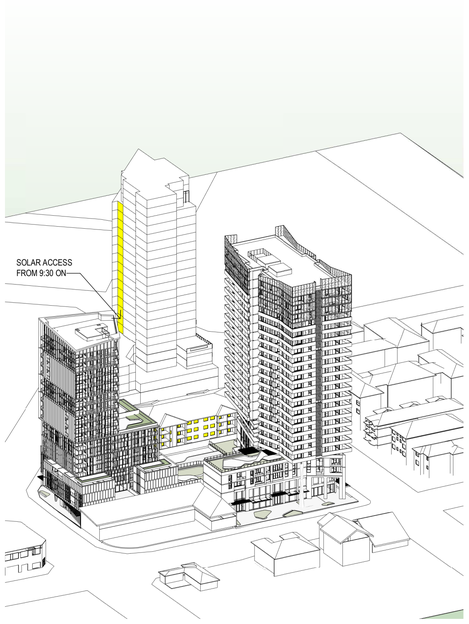
0 20 40 80 160 m

PLOT DATE & TIME: 19/02/2019 5:46:46 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

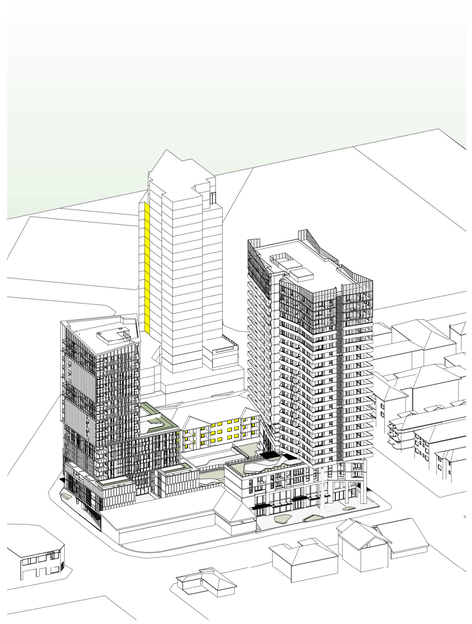
Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



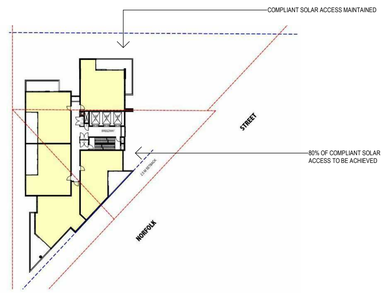
1 21 JUNE 0900 AM - SUN EYE VIEW DA



2 21 JUNE 0930 AM - SUN EYE VIEW DA

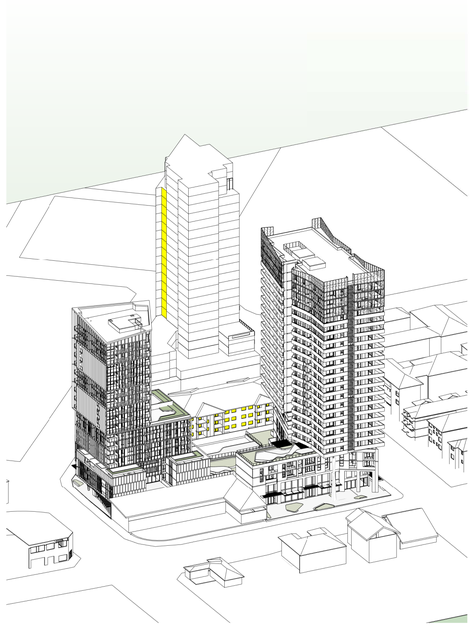


3 21 JUNE 0935 AM - SUN EYE VIEW DA

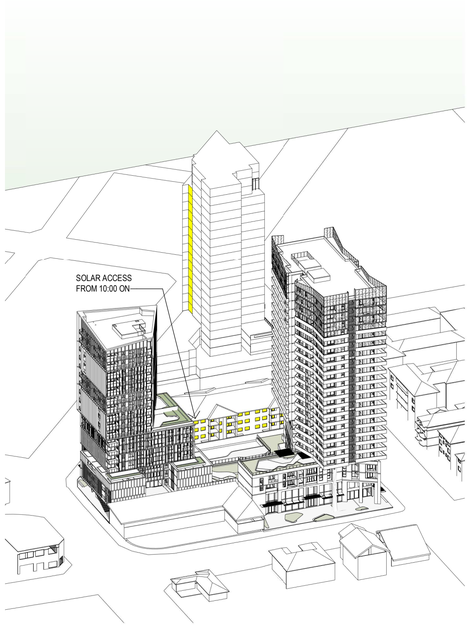


SEPP65 - TYPICAL SOLAR ACCESS (LEVEL 9-21)

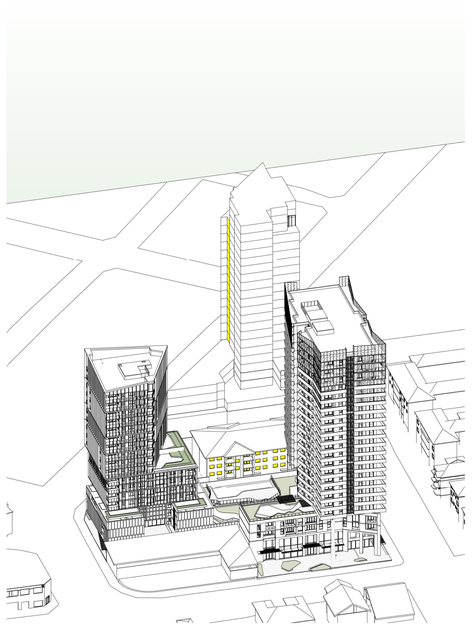
7-13 NORFOLK STREET SEPP65 SOLAR ACCESS



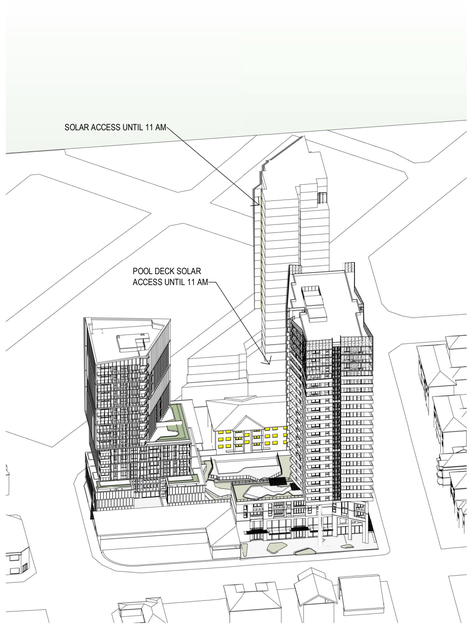
4 21 JUNE 0940 AM - SUN EYE VIEW DA



5 21 JUNE 1000 AM - SUN EYE VIEW DA



6 JUNE 22 1030 AM - SUN EYE VIEW DA



7 JUNE 22 1100 AM - SUN EYE VIEW DA

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address: 66 Memorial Avenue Liverpool, NSW 2170
www.nathers.gov.au

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
SUN EYE VIEWS 1

Sheet Status
NOT FOR CONSTRUCTION

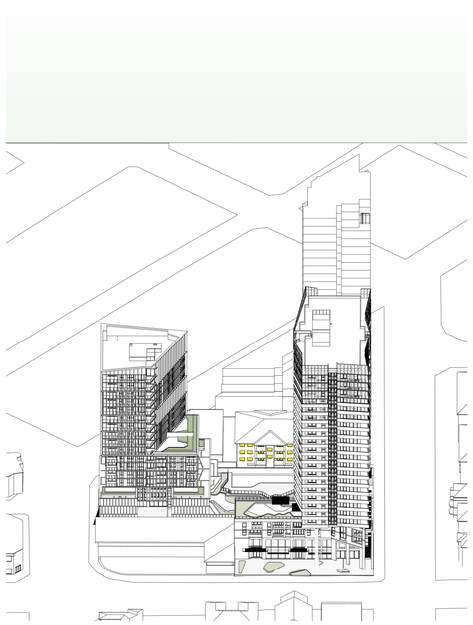
Scale

Drawing No. DA8511

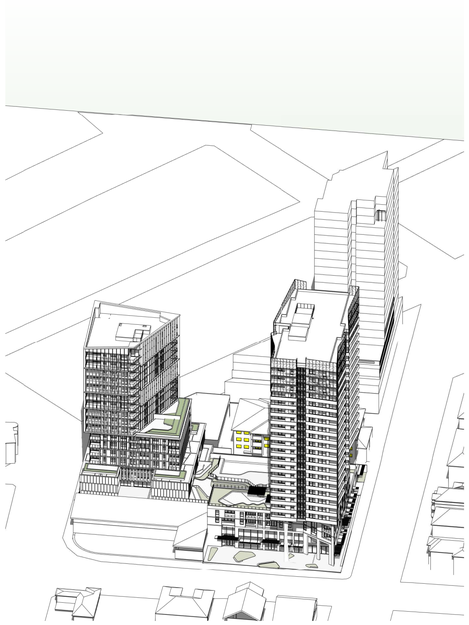
Issue 1

PLOT DATE & TIME: 19/02/2019 5:47:58 PM
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt
PLOTTED & CHECKED BY: Author

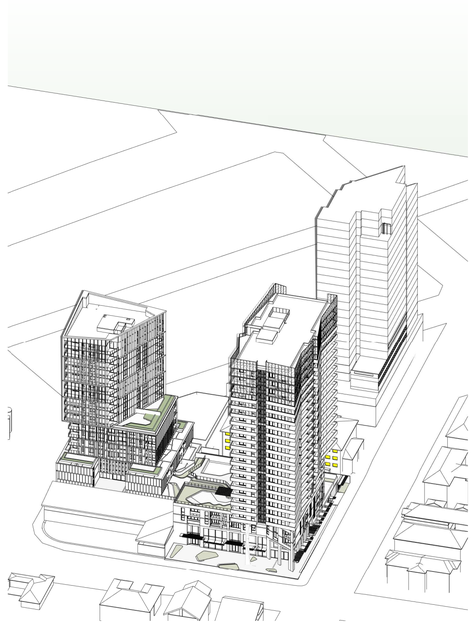
Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



1 JUNE 22 1130 AM - SUN EYE VIEW DA

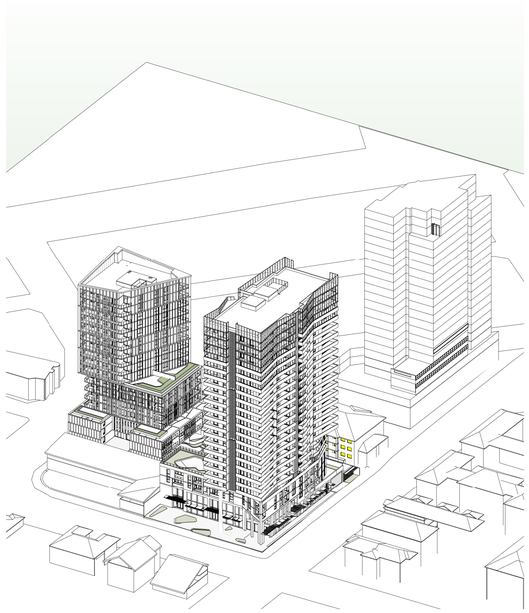


2 JUNE 22 1200 PM - SUN EYE VIEW DA

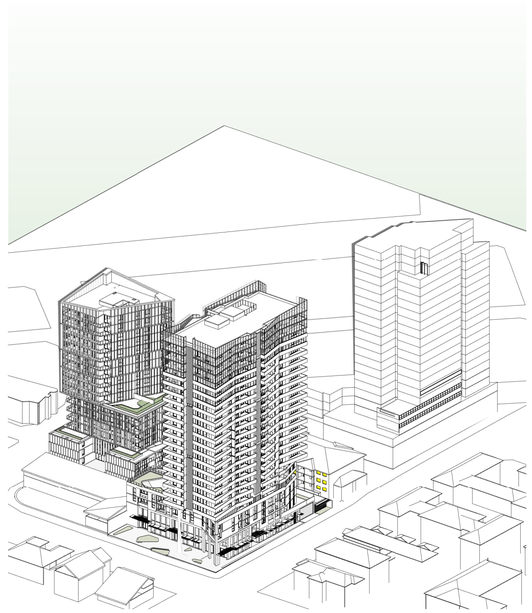


3 JUNE 22 1230 AM - SUN EYE VIEW DA

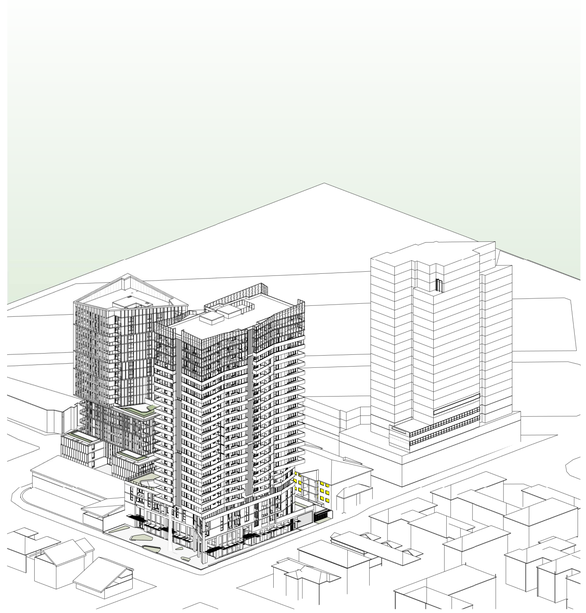
4 JUNE 22 1300 PM - SUN EYE VIEW DA



5 JUNE 22 1330 PM - SUN EYE VIEW DA



6 JUNE 22 1400 PM - SUN EYE VIEW DA



7 JUNE 22 1430 PM - SUN EYE VIEW DA

6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul Islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address:
86 Memorial Avenue
Liverpool, NSW
2170

www.nathers.gov.au

ABSA Sustainability Assessor

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

100% Sustainability accredited online. No pre-qualifications required. Only ABSA accredited assessors are authorised to issue ABSA certificates.

Revisions			
No.	Date	Description	Ver App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.	

Key

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C
Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
SUN EYE VIEWS 2

Sheet Status
NOT FOR CONSTRUCTION

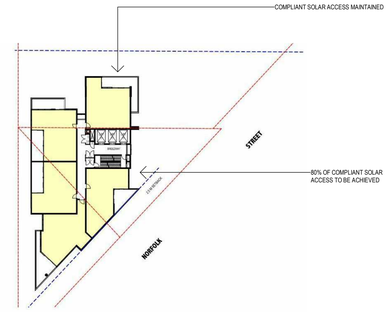
Scale
@A1

Drawing No.
DA8512

Issue
1

PLOT DATE & TIME: 19/02/2019 5:49:21 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

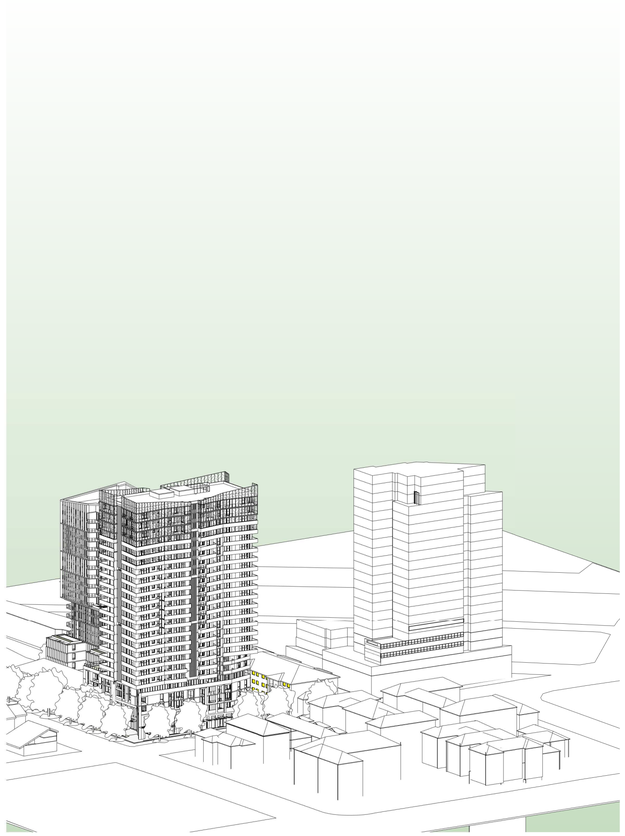
Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



SEPP65 - TYPICAL SOLAR ACCESS (LEVEL 9-21)

7-13 NORFOLK STREET SEPP65 SOLAR ACCESS

1 21 JUNE 1500 PM - SUN EYE VIEW DA



2 21 JUNE 1530 PM - SUN EYE VIEW DA

3 21 JUNE 1600 PM - SUN EYE VIEW DA

6.7 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address: 86 Memorial Avenue Liverpool, NSW 2170

www.nathers.gov.au

ABSA Australian Building Sustainability Assessment
Accreditation Number: 2018 2019
Assessor Name: Hamidul Islam
Assessor Number: 100982
Assessor Signature:
This Commitment Statement is provided for an ABSA Assessor who is a Registered Assessor Examiner with the Australian Building Sustainability Association

Revisions			
No.	Date	Description	Ver App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.	

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
SUN EYE VIEWS 3

Sheet Status
NOT FOR CONSTRUCTION

Scale
@A1

Drawing No.
DA8513

Issue
1

PLOT DATE & TIME: 19/02/2019 5:50:00 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

APARTMENT SCHEDULE - WEST DA

Number	Occupancy	Area	Balcony Area	Aspect	Adaptable	Livable Housing	Apt Storage Volume	Cross Ventilated	Solar Access
LEVEL 1									
W011	2B+2B	76.4 m²	10.5 m²	West	No		4.40 m³		Yes
W012	3B+2B	95.5 m²	48.5 m²	West	Yes	Yes	4.20 m³	Yes	
W013	3B+2B	96.8 m²	37.6 m²	East	No		5.10 m³	Yes	
LEVEL 2									
W021	3B+2B	98.2 m²	15.8 m²	East	No		5.00 m³	Yes	
W022	3B+2B	95.5 m²	11.0 m²	West	Yes	Yes	5.20 m³	Yes	
W023	2B+2B	76.7 m²	10.3 m²	West	No		4.40 m³		Yes
W024	2B+2B	76.7 m²	10.0 m²	West	No		4.40 m³		Yes
W025	2B+2B	86.8 m²	10.7 m²	North	Yes	Yes	5.00 m³	Yes	
W026	3B+2B	101.0 m²	13.2 m²	North	Yes	Yes	11.20 m³		Yes
W027	1B+1S	54.7 m²	8.9 m²	North	No		3.70 m³		Yes
W028	3B+2B	97.6 m²	12.4 m²	North	No	Yes	5.80 m³	Yes	Yes
LEVEL 3									
W031	3B+2B	97.0 m²	15.8 m²	East	No		5.00 m³	Yes	
W032	3B+2B	95.5 m²	10.9 m²	West	Yes	Yes	5.20 m³	Yes	
W033	2B+2B	76.7 m²	10.6 m²	West	No		4.40 m³		Yes
W034	2B+2B	76.7 m²	10.0 m²	West	No		4.40 m³		Yes
W035	2B+2B	87.6 m²	10.4 m²	North	Yes	Yes	5.00 m³	Yes	
W036	3B+2B	101.0 m²	10.0 m²	North	Yes	Yes	8.20 m³		Yes
W037	1B+1S	54.7 m²	7.7 m²	North	No		3.70 m³		Yes
W038	3B+2B	97.6 m²	13.9 m²	North	No	Yes	5.77 m³	Yes	Yes
LEVEL 4									
W041	3B+2B	96.2 m²	51.1 m²	East	No		5.13 m³	Yes	
W042	3B+2B	97.0 m²	31.2 m²	West	No		4.40 m³	Yes	
W043	3B+2B	102.7 m²	23.9 m²	West	Yes	Yes	4.49 m³		Yes
LEVEL 5									
W051	3B+2B	97.6 m²	15.9 m²	East	No		5.00 m³	Yes	
W052	3B+2B	99.0 m²	13.2 m²	West	Yes	Yes	5.20 m³	Yes	
W053	2B+2B	76.5 m²	12.6 m²	West	No		4.30 m³		Yes
W054	2B+2B	76.5 m²	16.3 m²	West	No		4.30 m³		Yes
W055	2B+2B	77.3 m²	28.3 m²	West	No	Yes	4.10 m³	Yes	Yes
W056	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W057	2B+2B	72.5 m²	17.8 m²	East	No		5.00 m³	Yes	Yes
LEVEL 6									
W061	3B+2B	97.6 m²	15.9 m²	East	No		5.00 m³	Yes	
W062	3B+2B	99.0 m²	12.1 m²	West	Yes	Yes	5.20 m³	Yes	
W063	2B+2B	76.5 m²	13.2 m²	West	No		4.30 m³		Yes
W064	2B+2B	76.5 m²	16.9 m²	West	No		4.30 m³		Yes
W065	2B+2B	77.3 m²	28.3 m²	West	No	Yes	4.10 m³	Yes	Yes
W066	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W067	2B+2B	72.5 m²	17.8 m²	East	No		5.00 m³	Yes	Yes
LEVEL 7									
W071	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W072	2B+2B	78.4 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W073	2B+2B	82.3 m²	25.9 m²	West	No	Yes	4.90 m³	Yes	Yes
W074	2B+2B	76.5 m²	14.5 m²	West	No		4.36 m³		Yes
W075	2B+2B	76.5 m²	18.3 m²	West	No		4.36 m³		Yes
W076	2B+2B	77.4 m²	28.3 m²	North	No	Yes	4.10 m³	Yes	Yes
W077	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W078	2B+2B	72.5 m²	17.8 m²	East	No		5.00 m³	Yes	Yes
LEVEL 8									
W081	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W082	2B+2B	78.5 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W083	2B+2B	82.3 m²	25.9 m²	West	No	Yes	4.90 m³	Yes	Yes
W084	2B+2B	76.5 m²	14.5 m²	West	No		4.36 m³		Yes
W085	2B+2B	76.5 m²	18.3 m²	West	No		4.36 m³		Yes
W086	2B+2B	77.4 m²	28.3 m²	North	No	Yes	4.10 m³	Yes	Yes
W087	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W088	2B+2B	72.5 m²	17.1 m²	East	No		5.00 m³	Yes	Yes
LEVEL 9									
W091	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W092	2B+2B	78.5 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W093	2B+2B	82.3 m²	25.9 m²	West	No	Yes	4.90 m³	Yes	Yes
W094	2B+2B	76.5 m²	14.5 m²	West	No		4.36 m³		Yes
W095	2B+2B	76.5 m²	18.3 m²	West	No		4.36 m³		Yes
W096	2B+2B	77.4 m²	28.3 m²	North	No	Yes	4.10 m³	Yes	Yes
W097	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W098	2B+2B	72.5 m²	17.8 m²	East	No		5.00 m³	Yes	Yes
LEVEL 10									
W101	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W102	2B+2B	78.5 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W103	2B+2B	82.3 m²	25.9 m²	West	No	Yes	4.90 m³	Yes	Yes
W104	2B+2B	76.5 m²	14.5 m²	West	No		4.36 m³		Yes
W105	2B+2B	76.5 m²	18.3 m²	West	No		4.36 m³		Yes
W106	2B+2B	77.4 m²	28.3 m²	North	No	Yes	4.10 m³	Yes	Yes
W107	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W108	2B+2B	72.5 m²	17.8 m²	East	No		5.00 m³	Yes	Yes
LEVEL 11									
W111	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W112	2B+2B	78.5 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W113	2B+2B	82.3 m²	29.2 m²	West	No	Yes	4.90 m³	Yes	Yes
W114	2B+2B	76.5 m²	14.7 m²	West	No		4.36 m³		Yes
W115	2B+2B	76.5 m²	18.3 m²	West	No		4.36 m³		Yes
W116	2B+2B	77.4 m²	24.8 m²	North	No	Yes	4.10 m³	Yes	Yes
W117	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W118	2B+2B	72.5 m²	17.8 m²	East	No		5.00 m³	Yes	Yes
LEVEL 12									
W121	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W122	2B+2B	78.5 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W123	2B+2B	82.3 m²	29.2 m²	West	No	Yes	4.90 m³	Yes	Yes
W124	2B+2B	76.5 m²	14.7 m²	West	No		4.36 m³		Yes
W125	2B+2B	76.5 m²	18.3 m²	West	No		4.36 m³		Yes
W126	2B+2B	77.4 m²	24.8 m²	North	No	Yes	4.10 m³	Yes	Yes
W127	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W128	2B+2B	72.5 m²	17.8 m²	East	No		5.00 m³	Yes	Yes
LEVEL 13									
W131	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W132	2B+2B	78.5 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W133	2B+2B	82.2 m²	29.2 m²	West	No	Yes	4.90 m³	Yes	Yes
W134	2B+2B	76.5 m²	14.7 m²	West	No		4.36 m³		Yes
W135	2B+2B	76.5 m²	18.3 m²	West	No		4.36 m³		Yes
W136	2B+2B	77.4 m²	24.8 m²	North	No	Yes	4.10 m³	Yes	Yes
W137	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W138	2B+2B	72.5 m²	17.8 m²	East	No		5.00 m³	Yes	Yes

APARTMENT SCHEDULE - WEST DA

Number	Occupancy	Area	Balcony Area	Aspect	Adaptable	Livable Housing	Apt Storage Volume	Cross Ventilated	Solar Access
LEVEL 14									
W141	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W142	2B+2B	78.5 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W143	2B+2B	82.2 m²	29.2 m²	West	No	Yes	4.90 m³	Yes	Yes
W144	2B+2B	76.5 m²	14.7 m²	West	No		4.36 m³		Yes
W145	2B+2B	76.5 m²	18.3 m²	West	No		4.36 m³		Yes
W146	2B+2B	77.4 m²	24.8 m²	North	No	Yes	4.10 m³	Yes	Yes
W147	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W148	2B+2B	72.5 m²	17.1 m²	East	No		5.00 m³	Yes	Yes
LEVEL 15									
W151	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W152	2B+2B	78.5 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W153	2B+2B	82.2 m²	29.2 m²	West	No	Yes	4.90 m³	Yes	Yes
W154	2B+2B	76.5 m²	14.7 m²	West	No		4.36 m³		Yes
W155	2B+2B	76.5 m²	18.3 m²	West	No		4.36 m³		Yes
W156	2B+2B	77.4 m²	28.3 m²	North	No	Yes	4.10 m³	Yes	Yes
W157	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W158	2B+2B	72.5 m²	17.8 m²	East	No		5.00 m³	Yes	Yes
LEVEL 16									
W161	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W162	2B+2B	78.5 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W163	2B+2B	82.2 m²	29.2 m²	West	No	Yes	4.90 m³	Yes	Yes
W164	2B+2B	76.5 m²	14.7 m²	West	No		4.36 m³		Yes
W165	2B+2B	76.5 m²	18.3 m²	West	No		4.36 m³		Yes
W166	2B+2B	77.4 m²	28.3 m²	North	No	Yes	4.10 m³	Yes	Yes
W167	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W168	2B+2B	72.5 m²	17.8 m²	East	No		5.00 m³	Yes	Yes
LEVEL 17									
W171	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W172	2B+2B	78.5 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W173	2B+2B	82.3 m²	29.2 m²	West	No	Yes	4.90 m³	Yes	Yes
W174	2B+2B	76.5 m²	14.7 m²	West	No		4.36 m³		Yes
W175	2B+2B	76.5 m²	18.3 m²	West	No		4.36 m³		Yes
W176	2B+2B	77.4 m²	28.3 m²	North	No	Yes	4.10 m³	Yes	Yes
W177	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W178	2B+2B	72.5 m²	17.8 m²	East	No		5.00 m³	Yes	Yes
LEVEL 18									
W181	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W182	2B+2B	78.5 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W183	2B+2B	82.3 m²	25.9 m²	West	No	Yes	4.90 m³	Yes	Yes
W184	2B+2B	76.5 m²	14.4 m²	West	No		4.36 m³		Yes
W185	2B+2B	76.5 m²	18.3 m²	West	No		4.36 m³		Yes
W186	2B+2B	77.4 m²	28.3 m²	North	No	Yes	4.10 m³	Yes	Yes
W187	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W188	2B+2B	72.5 m²	17.8 m²	East	No		5.00 m³	Yes	Yes
LEVEL 19									
W191	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W192	2B+2B	78.5 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W193	2B+2B	82.3 m²	25.9 m²	West	No	Yes	4.90 m³	Yes	Yes
W194	2B+2B	76.5 m²	14.4 m²	West	No		4.36 m³		Yes
W195	2B+2B	76.5 m²	18.3 m²	West	No		4.36 m³		Yes
W196	2B+2B	77.4 m²	28.3 m²	North	No	Yes	4.10 m³	Yes	Yes
W197	2B+2B	76.7 m²	20.8 m²	North	No		4.10 m³	Yes	Yes
W198	2B+2B	72.5 m²	17.8 m²	East	No		5.00 m³	Yes	Yes
LEVEL 20									
W201	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W202	2B+2B	78.5 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W203	2B+2B	82.3 m²	29.2 m²	West	No	Yes	4.90 m³	Yes	Yes
W204	2B+2B	76.5 m²	14.5 m²	West	No		4.36 m³		Yes
W205	2B+2B	76.5 m²	18.3 m²	West	No		4.36 m³		Yes
W206	2B+2B	77.4 m²	28.3 m²	North	No	Yes	4.10 m³	Yes	Yes
W207	2B+2B	76.7 m²	21.3 m²	North	No		4.10 m³	Yes	Yes
W208	2B+2B	72.5 m²	17.8 m²	East	No		5.00 m³	Yes	Yes
LEVEL 21									
W211	2B+2B	76.2 m²	22.0 m²	East	No		5.00 m³	Yes	Yes
W212	2B+2B	78.5 m²	14.7 m²	East	No		5.00 m³	Yes	Yes
W213	2B+2B	82.3 m²	25.9 m²	West	No	Yes	4.90 m³	Yes	Yes
W214	2B+2B	76.5 m²	14.5 m²	West	No		4.36 m³		Yes
W215	2B+2B	76.5 m²	18.5 m²	West	No		4.36 m³		Yes
W216	2B+2B	77.4 m²	28.9 m²	North	No	Yes	4.10 m³	Yes	Yes
W217	2B+2B	76.7 m²	21.7 m²	North	No		4.10 m³	Yes	Yes
W218	2B+2B	72.5 m²	18.1 m²	East	No		5.00 m³	Yes	Yes
LEVEL 22									
W221	2B+2B	76.2 m²	22.4 m²	East	No		5.00 m³	Yes	Yes
W222	2B+2B	78.5 m²	15.0 m²	East	No		5.00 m³	Yes	Yes
W223	2B+2B	82.2 m²	26.2 m²	West	No	Yes	4.90 m³	Yes	Yes
W224	2B+2B	76.5 m²	19.3 m²	West	No		4.36 m³		Yes
W225	2B+2B	76.5 m²	18.5 m²	West	No		4.36 m³		Yes
W226	2B+2B	77.4 m²	28.9 m²	North	No	Yes	4.10 m³	Yes	Yes
W227	2B+2B	76.7 m²	21.7 m²	North	No		4.10 m³	Yes	Yes
W228	2B+2B	72.5 m²	18.1 m²	East	No		5.00 m³	Yes	Yes
LEVEL 23									
W231	2B+2B	76.2 m²	22.4 m²	East	No		5.00 m³	Yes	Yes
W232	2B+2B	78.5 m²	15.0 m²	East	No		5.00 m³	Yes	Yes
W233	2B+2B	82.2 m²	26.2 m²	West	No	Yes	4.90 m³	Yes	Yes
W234	2B+2B	76.5 m²	19.3 m²	West	No		4.36 m³		Yes
W235	2B+2B	76.5 m²	18.5 m²	West	No		4.36 m³		Yes
W236	2B+2B	77.4 m²	28.9 m²	North	No	Yes	4.10 m³	Yes	Yes
W237	2B+2B	76.7 m²	21.7 m²	North	No		4.10 m³	Yes	Yes
W238	2B+2B	72.5 m²	18.1 m²	East	No		5.00 m³	Yes	Yes
Grand total: 172		13,372.5 m²	3,423.7 m²						

	10	48	124	158
PERCENTAGE	5.2%	27.9%	72.1%	91.8%

APARTMENT SCHEDULE- EAST

Number	Occupancy	Area	Balcony Area	Aspect	Adaptable	Livable Housing	Apt Storage Volume	Cross Ventilated	Solar Access
LEVEL 1 E									
E011	2B+2B	87 m²	10 m²	East	No		4.10 m³	Yes	
E012	1B+1B	51 m²	8 m²	East	No		3.02 m³		Yes
E013	1B+1B	51 m²	9 m²	East	No		3.02 m³	Yes	Yes
E014	2B+2B	87 m²	30 m²	East	No		4.10 m³	Yes	
E015	1B+1S	53 m²	54 m²	South	No		3.29 m³		
E016	3B+2B	100 m²	60 m²	West	No		3.53 m³	Yes	
E017	1B+1S	59 m²	33 m²	West	No		3.51 m³		
E018	2B+2B	85 m²	32 m²	West	No		3.89 m³	Yes	
LEVEL 2 E									
E021	2B+2B	87 m²	11 m²	East	No		4.25 m³	Yes	
E022	1B+1B	51 m²	8 m²	East	No		3.05 m³		Yes
E023	1B+1B	51 m²	8 m²	East	No		3.02 m³	Yes	Yes
E024	2B+2B	87 m²	10 m²	East	No		4.10 m³	Yes	
E025	1B+1S	53 m²	8 m²	South	No		3.29 m³		
E026	3B+2B	100 m²	18 m²	West	No		3.53 m³	Yes	
E027	1B+1S	59 m²	13 m²	West	No		3.51 m³		
E028	1B+1S	59 m²	13 m²	West	No		3.51 m³		
E029	2B+2B	85 m²	27 m²	West	No		4.20 m³	Yes	
E0210	1B+1B	59 m²	11 m²	North	No		3.78 m³		Yes
LEVEL 3 E									
E031	2B+2B	87 m²	11 m²	East	No		4.25 m³	Yes	
E032	1B+1B	51 m²	8 m²	East	No		3.05 m³		Yes
E033	1B+1B	51 m²	8 m²	East	No		3.02 m³	Yes	Yes
E034	2B+2B	87 m²	10 m²	East	No		4.10 m³	Yes	
E035	1B+1S	53 m²	8 m²	South	No		3.29 m³		
E036	3B+2B	100 m²	18 m²	West	No		3.53 m³	Yes	
E037	1B+1S	59 m²	13 m²	West	No		3.51 m³		
E038	1B+1S	59 m²	13 m²	West	No		3.51 m³		
E039	2B+2B	85 m²	27 m²	West	No		4.20 m³	Yes	
E0310	1B+1B	59 m²	11 m²	North	No		3.78 m³		Yes
LEVEL 4 E									
E041	2B+2B	74 m²	10 m²	North	No		4.75 m³	Yes	Yes
E042	2B+2B	74 m²	18 m²	East	No		4.75 m³	Yes	Yes
E043	2B+2B	79 m²	12 m²	South	Yes	Yes	3.90 m³		
E044	2B+2B	74 m²	18 m²	West	No		4.75 m³	Yes	Yes
E045	2B+2B	74 m²	10 m²	North	No		4.75 m³	Yes	Yes
E046	2B+2B	81 m²	10 m²	North	No		4.80 m³		Yes
LEVEL 5 E									
E051	2B+2B	74 m²	10 m²	North	No		4.75 m³	Yes	Yes
E052	2B+2B	74 m²	18 m²	East	No		4.75 m³	Yes	Yes
E053	2B+2B	79 m²	12 m²	South	Yes	Yes	3.90 m³		
E054	2B+2B	74 m²	18 m²	West	No		4.75 m³	Yes	Yes
E055	2B+2B	74 m²	10 m²	North	No		4.75 m³	Yes	Yes
E056	2B+2B	81 m²	10 m²	North	No		4.80 m³		Yes
LEVEL 6 E									
E061	2B+2B	74 m²	10 m²	North	No		4.75 m³	Yes	Yes
E062	2B+2B	74 m²	18 m²	East	No		4.75 m³	Yes	Yes
E063	2B+2B	79 m²	12 m²	South	Yes	Yes	3.90 m³		
E064	2B+2B	74 m²	18 m²	West	No		4.75 m³	Yes	Yes
E065	2B+2B	74 m²	10 m²	North	No		4.75 m³	Yes	Yes
E066	2B+2B	81 m²	10 m²	North	No		4.80 m³		Yes
LEVEL 7 E									
E071	2B+2B	74 m²	10 m²	North	No		4.75 m³	Yes	Yes
E072	2B+2B	74 m²	18 m²	East	No		4.75 m³	Yes	Yes
E073	2B+2B	79 m²	12 m²	South	Yes	Yes	3.90 m³		
E074	2B+2B	74 m²	18 m²	West	No		4.75 m³	Yes	Yes
E075	2B+2B	74 m²	10 m²	North	No		4.75 m³	Yes	Yes
E076	2B+2B	81 m²	10 m²	North	No		4.80 m³		Yes
LEVEL 8 E									
E081	2B+2B	74 m²	30 m²	North	No		4.75 m³	Yes	Yes
E082	2B+2B	74 m²	21 m²	East	No		4.75 m³	Yes	Yes
E083	3B+2B	99 m²	13 m²	West	No		4.32 m³	Yes	Yes
E084	1B+1B	54 m²	11 m²	North	Yes	Yes	2.40 m³	Yes	Yes
LEVEL 9 E									
E091	2B+2B	74 m²	30 m²	North	No		4.75 m³	Yes	Yes
E092	2B+2B	74 m²	21 m²	East	No		4.75 m³	Yes	Yes
E093	3B+2B	99 m²	13 m²	West	No		4.32 m³	Yes	Yes
E094	1B+1B	54 m²	11 m²	North	Yes	Yes	2.40 m³	Yes	Yes
LEVEL 10 E									
E101	2B+2B	74 m²	30 m²	North	No		4.75 m³	Yes	Yes
E102	2B+2B	74 m²	21 m²	East	No		4.75 m³	Yes	Yes
E103	3B+2B	99 m²	13 m²	West	No		4.32 m³	Yes	Yes
E104	1B+1B	54 m²	11 m²	North	Yes	Yes	2.40 m³	Yes	Yes
LEVEL 11 E									
E111	2B+2B	74 m²	30 m²	North	No		4.75 m³	Yes	Yes
E112	2B+2B	74 m²	21 m²	East	No		4.75 m³	Yes	Yes
E113	3B+2B	99 m²	13 m²	West	No		4.32 m³	Yes	Yes
E114	1B+1B	54 m²	11 m²	North	Yes	Yes	2.40 m³	Yes	Yes
LEVEL 12 E									
E121	2B+2B	74 m²	30 m²	North	No		4.75 m³	Yes	Yes
E122	2B+2B	74 m²	21 m²	East	No		4.75 m³	Yes	Yes
E123	3B+2B	99 m²	13 m²	West	No		4.32 m³	Yes	Yes
E124	1B+1B	54 m²	11 m²	North	Yes	Yes	2.40 m³	Yes	Yes
LEVEL 13 E									
E131	2B+2B	74 m²	30 m²	North	No		4.75 m³	Yes	Yes
E132	2B+2B	74 m²	21 m²	East	No		4.75 m³	Yes	Yes
E133	3B+2B	99 m²	13 m²	West	No		4.32 m³	Yes	Yes
E134	1B+1B	54 m²	11 m²	North	Yes	Yes	2.40 m³	Yes	Yes
LEVEL 14 E									
E141	2B+2B	74 m²	30 m²	North	No		4.75 m³	Yes	Yes
E142	2B+2B	74 m²	21 m²	East	No		4.75 m³	Yes	Yes
E143	3B+2B	99 m²	13 m²	West	No		4.32 m³	Yes	Yes
E144	1B+1B	54 m²	11 m²	North	Yes	Yes	2.40 m³	Yes	Yes
LEVEL 15 E									
E151	2B+2B	74 m²	30 m²	North	No		4.75 m³	Yes	Yes
E152	2B+2B	74 m²	21 m²	East	No		4.75 m³	Yes	Yes
E153	3B+2B	99 m²	13 m²	West	No		4.32 m³	Yes	Yes
E154	1B+1B	54 m²	11 m²	North	Yes	Yes	2.40 m³	Yes	Yes
LEVEL 16 E									
E161	2B+2B	74 m²	30 m²	North	No		4.75 m³	Yes	Yes
E162	2B+2B	74 m²	21 m²	East	No		4.75 m³	Yes	Yes
E163	3B+2B	99 m²	13 m²	West	No		4.32 m³	Yes	Yes
E164	1B+1B	54 m²	11 m²	North	Yes	Yes	2.40 m³	Yes	Yes
LEVEL 17 E									
E171	2B+2B	74 m²	30 m²	North	No		4.75 m³	Yes	Yes
E172	2B+2B	74 m²	21 m²	East	No		4.75 m³	Yes	Yes
E173	3B+2B	99 m²	13 m²	West	No		4.32 m³	Yes	Yes
E174	1B+1B	54 m²	11 m²	North	Yes	Yes	2.40 m³	Yes	Yes
Grand total: 92									

	14	14		71	68
PERCENTAGE	15.2%	15.2%		76.1%	73.9%
GRAND TOTAL - 264	24	62		194	226
PERCENTAGE	9%	23.5%		73.5%	85.6%

APARTMENT MIX- WEST TOWER

Occupancy	Count
1B+1S	2
2B+2B	153
3B+2B	17

Grand total: 172

APARTMENT MIX- EAST TOWER

Occupancy	Count
1B+1B	18
1B+1S	8
2B+2B	53
3B+2B	13

Grand total: 92

APARTMENT MIX- TOWERS COMBINED

Occupancy	Count	Percentage
1B+1B	18	6.8%
1B+1S	10	3.8%
2B+2B	206	78.0%
3B+2B	30	11.4%

Grand total: 264

AREA SCHEDULE - GFA

Level	Area
APARTMENT - EAST	
GROUND LEVEL	49 m²
LEVEL 1	751 m²
LEVEL 2	818 m²
LEVEL 3	819 m²
LEVEL 4	527 m²
LEVEL 5	527 m²
LEVEL 6	527 m²
LEVEL 7	527 m²
LEVEL 8	346 m²
LEVEL 9	346 m²
LEVEL 10	346 m²
LEVEL 11	346 m²
LEVEL 12	346 m²
LEVEL 13	346 m²
LEVEL 14	346 m²
LEVEL 15	346 m²
LEVEL 16	346 m²
LEVEL 17	346 m²
APARTMENT - EAST	8,001 m²
APARTMENT - WEST	
GROUND LEVEL	48 m²
LEVEL 1	316 m²
LEVEL 2	763 m²
LEVEL 3	763 m²
LEVEL 4	372 m²
LEVEL 5	663 m²
LEVEL 6	663 m²
LEVEL 7	719 m²
LEVEL 8	719 m²
LEVEL 9	719 m²
LEVEL 10	719 m²
LEVEL 11	719 m²
LEVEL 12	719 m²
LEVEL 13	719 m²
LEVEL 14	719 m²
LEVEL 15	719 m²
LEVEL 16	719 m²
LEVEL 17	719 m²
LEVEL 18	719 m²
LEVEL 19	719 m²
LEVEL 20	719 m²
LEVEL 21	719 m²
LEVEL 22	719 m²
LEVEL 23	719 m²
APARTMENT - WEST	15,818 m²
COMMERCIAL	
GROUND LEVEL	111 m²
COMMERCIAL	111 m²
GARBAGE	
GROUND LEVEL	34 m²
GROUND LEVEL	154 m²
GROUND LEVEL	26 m²
GARBAGE	214 m²
RETAIL	
GROUND LEVEL	402 m²
GROUND LEVEL	441 m²
GROUND LEVEL	562 m²
LEVEL 1	447 m²
RETAIL	1,853 m²
	25,998 m²

SITE AREA : 4,333m2
FSR : 6.0:1

PARKING SCHEDULE

Level	Allocation	Count
BASEMENT 1	Residential	51
BASEMENT 1	Retail	12
BASEMENT 1	Visitor	27

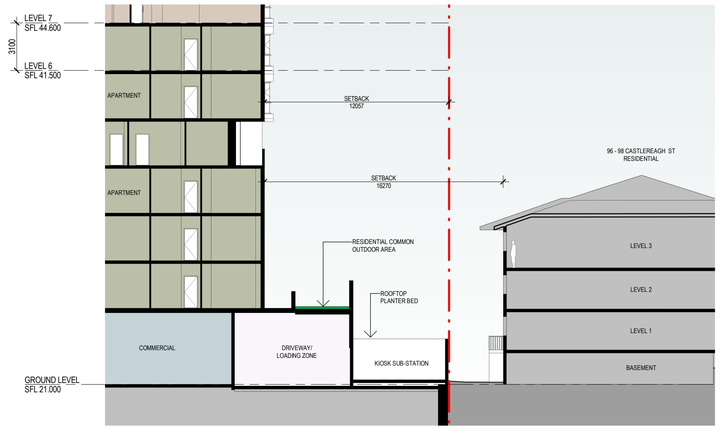
BASEMENT 1: 90

BASEMENT 2	Residential	112

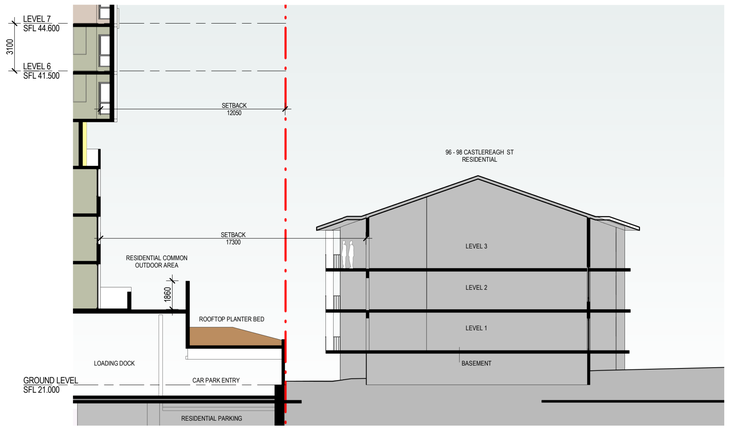
BASEMENT 2: 112

BASEMENT 3	Residential	116

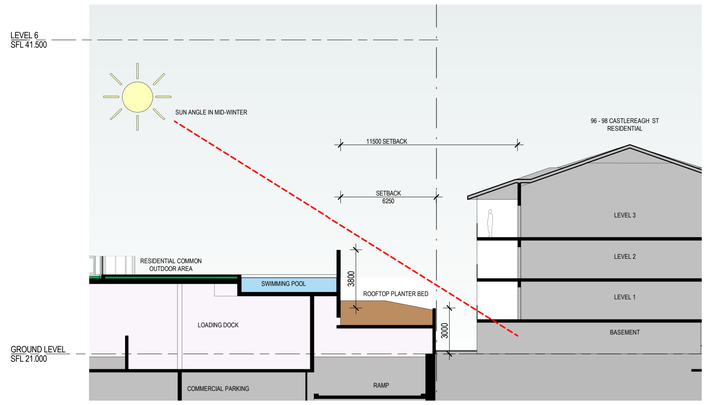
BASEMENT 3:



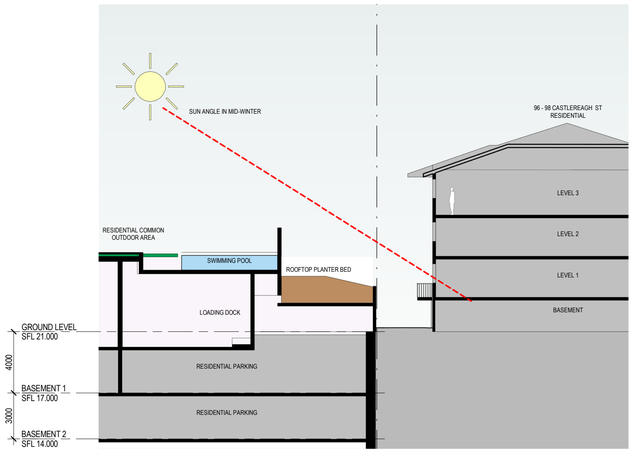
1 CROSS SECTION WEST TOWER 1
SHOWING 96-98 CASTLEREAGH ST & DRIVEWAY
1 : 200



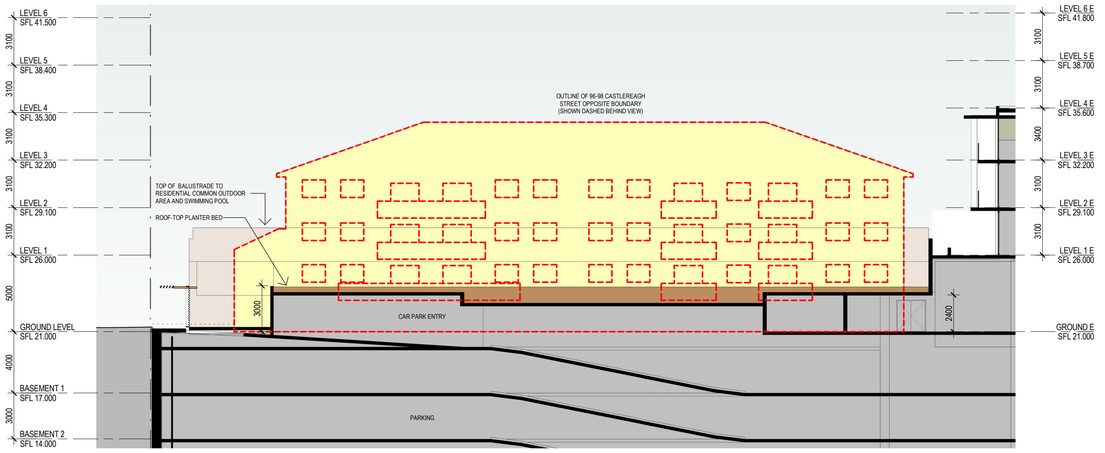
2 CROSS SECTION WEST TOWER 2
SHOWING 96-98 CASTLEREAGH ST & LOADING DOCK
1 : 200



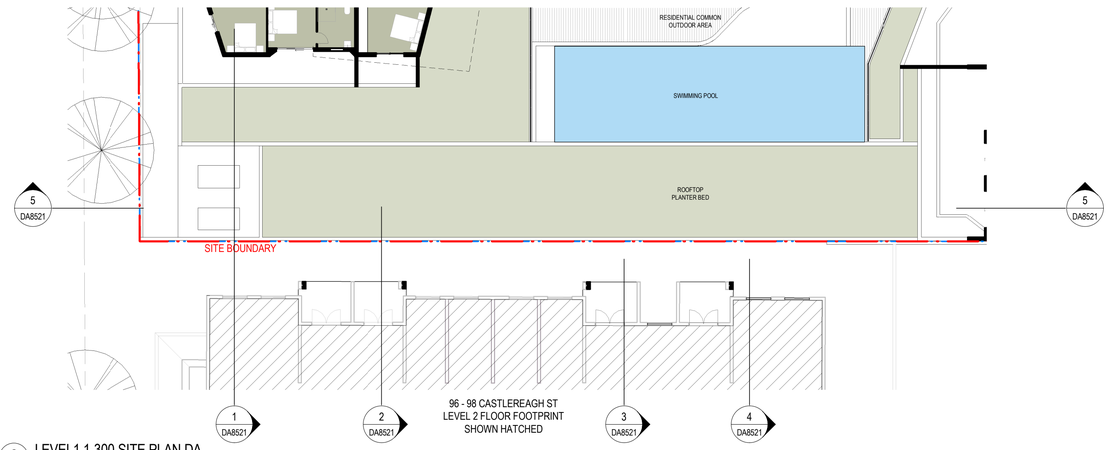
3 CROSS SECTION WEST TOWER 3
SHOWING 96-98 CASTLEREAGH ST & RESIDENT COMMON OUTDOOR AREA
1 : 200



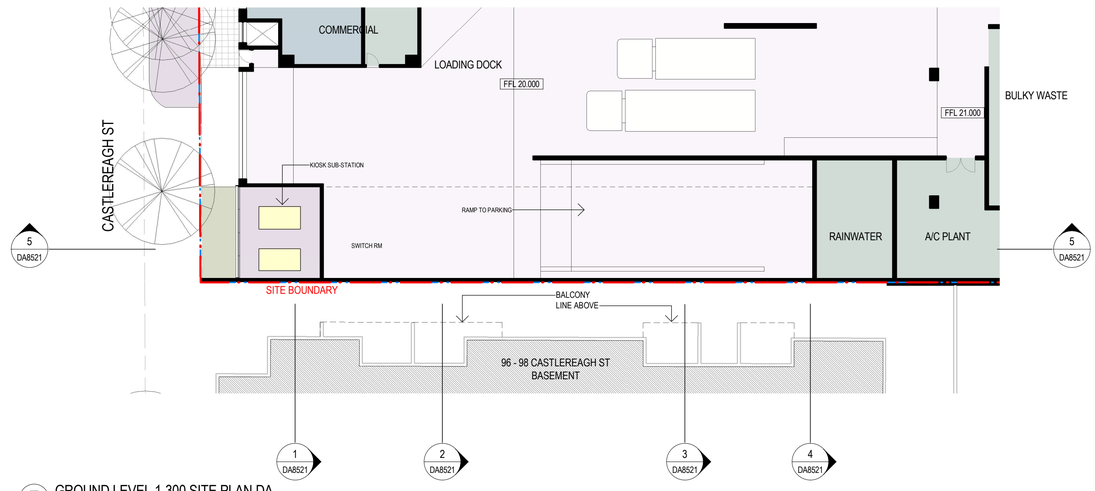
4 CROSS SECTION WEST TOWER 4
SHOWING 96-98 CASTLEREAGH ST & RESIDENT COMMON OUTDOOR AREA
1 : 200



5 SECTION THROUGH CAR PARK ENTRY
SHOWING ELEVATION OF 96-98 CASTLEREAGH ST
1 : 200



6 LEVEL1 1-300 SITE PLAN DA
1 : 200



7 GROUND LEVEL 1-300 SITE PLAN DA
1 : 200

6.7
Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address: 86 Memorial Avenue Liverpool, NSW 2170

www.nathers.gov.au

ABSA Assessor Scheme

Accreditation Period	2018-2019
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

ABSA Assessment is conducted within the accreditation period and part of the ABSA quality audit system

This Accredited Assessor is a qualified Energy Rating Assessor who has undertaken training and is familiar with the Nationwide House Energy Rating Scheme (NatHERS)

Revisions

No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C
Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title
96-98 CASTLEREAGH ST SOLAR ACCESS

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 200 @A1

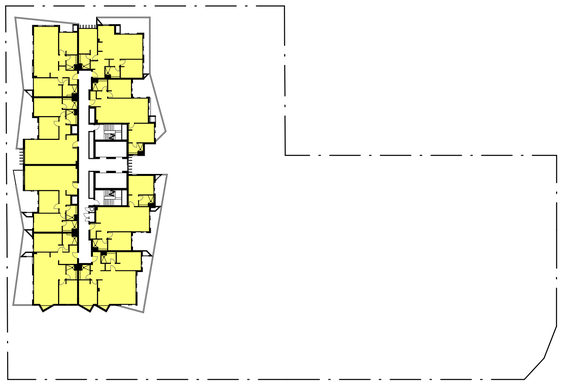
Drawing No.
DA8521

Issue
1

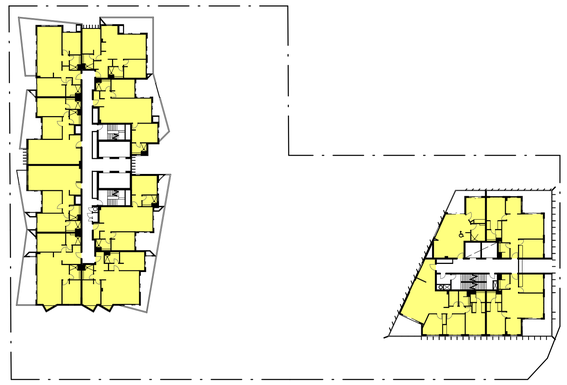
0 2 4 8 16 m

PLOT DATE & TIME: 19/02/2019 5:50:16 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

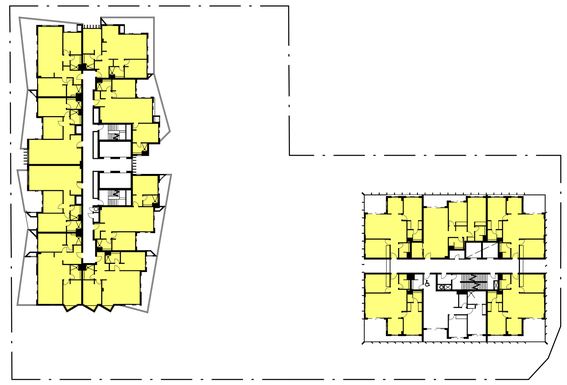
Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



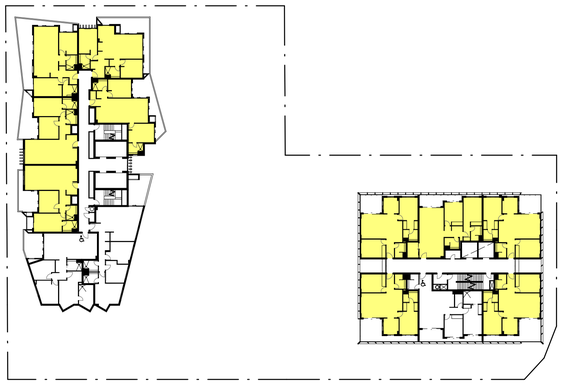
9 LEVELS 18-23 Solar
1 : 500



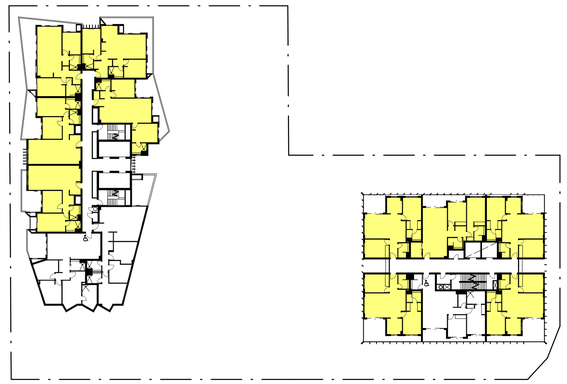
8 LEVELS 8-17 Solar
1 : 500



7 LEVEL 07 Solar
1 : 500



6 LEVEL 06 Solar
1 : 500

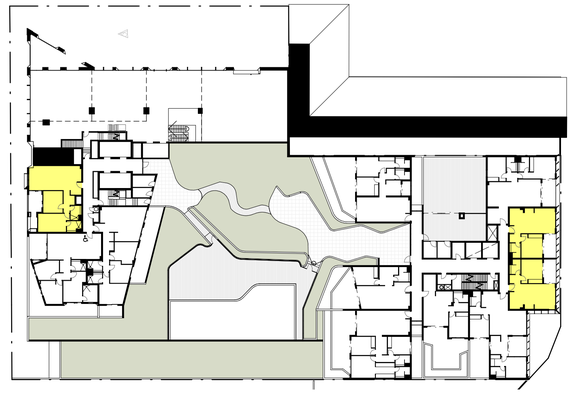


5 LEVEL 05 Solar
1 : 500

4 LEVEL 04 Solar
1 : 500

3 LEVEL 03 Solar
1 : 500

2 LEVEL 02 Solar
1 : 500



1 LEVEL 01 Solar
1 : 500

WEST TOWER	158
EAST TOWER	68
TOTAL	226
PERCENTAGE	85%

6.7 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address: 86 Memorial Avenue Liverpool, NSW 2170

www.nathers.gov.au

ABSA Accredited Assessor
Accreditation Number: 0008 2035
Assessor Name: Hamidul Islam
Assessor Number: 100982
Assessor Signature:
Note: Assessment is accepted under the accreditation scheme and part of the ABSA quality audit system

This Accredited Assessor is a current member of ABSA and has undertaken to comply with the relevant Code of Conduct

Revisions

No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
ADG SOLAR ACCESS ANALYSIS

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 500 @A1

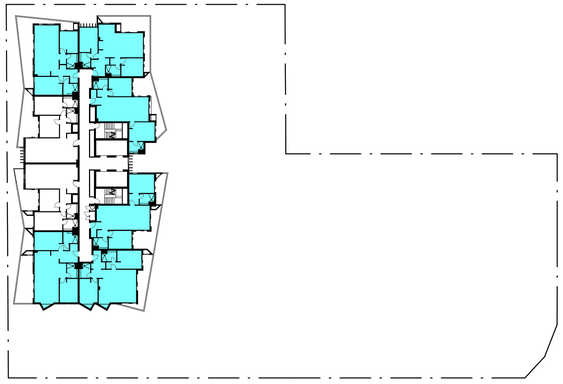
Drawing No.
DA8531

Issue
1

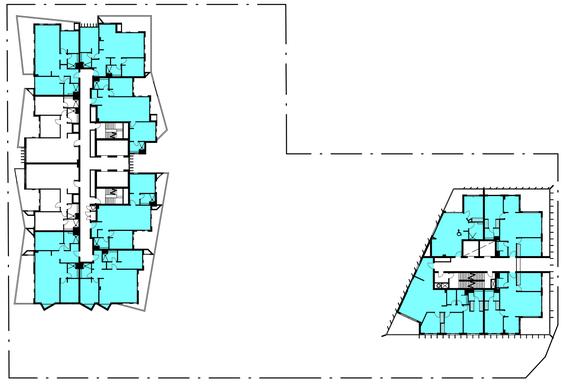
0 5 10 20 40 m

PLOT DATE & TIME: 19/02/2019 5:50:31 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

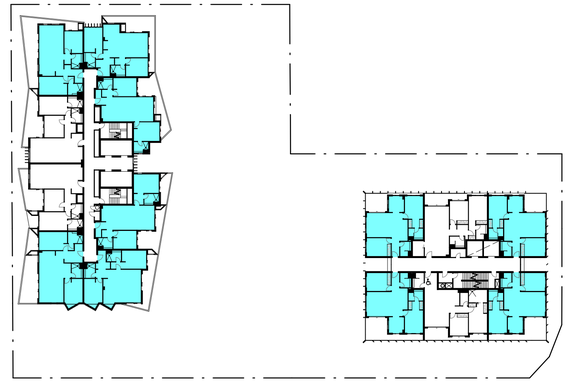
Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



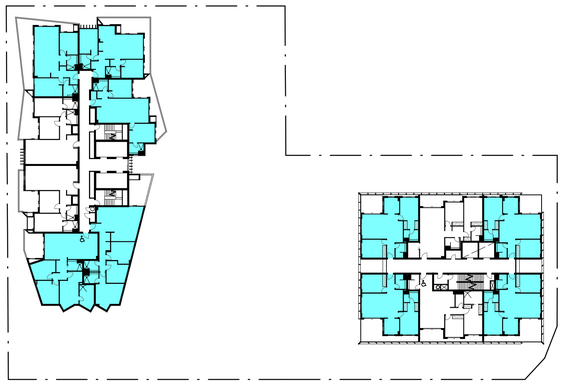
9 LEVELS 18-23 Cross-Ventilation
1 : 500



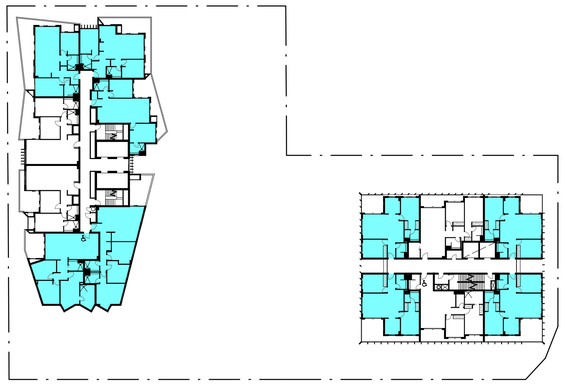
8 LEVELS 8-17 Cross-Ventilation
1 : 500



7 LEVEL 07 Cross-Ventilation
1 : 500



6 LEVEL 06 Cross-Ventilation
1 : 500

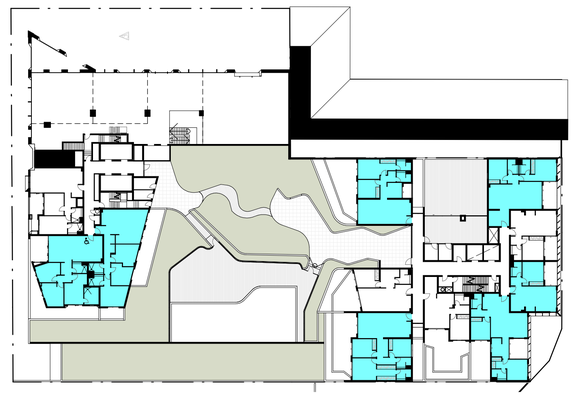


5 LEVEL 05 Cross-Ventilation
1 : 500

4 LEVEL 04 Cross-Ventilation
1 : 500

3 LEVEL 03 Cross-Ventilation
1 : 500

2 LEVEL 02 Cross-Ventilation
1 : 500



1 LEVEL 01 Cross-Ventilation
1 : 500

WEST TOWER	124
EAST TOWER	71
TOTAL	194
PERCENTAGE	73.5%

6.7 Average star rating NATIONWIDE HOUSE ENERGY RATING SCHEME www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul Islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address: 86 Memorial Avenue Liverpool, NSW 2170

www.nathers.gov.au

ABSA Australian Building Sustainability Assessor

Accreditation Number	20-000-0000
Assessor Name	Hamidul Islam
Assessor Number	100982
Assessor Signature	

ABSA has accepted no responsibility for the accuracy, completeness or suitability of any information contained herein. Use of any information contained herein is entirely at the user's own risk and under no circumstances will ABSA be liable for any loss or damage arising from or in connection with the use of any information contained herein.

Any Accredited Assessor is entitled to carry out work for which they are not accredited under the Scheme. Users should verify the competency of any Assessor they intend to engage.

Revisions

No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title
ADG NATURAL VENTILATION ANALYSIS

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 500 @A1

Drawing No.
DA8532

Issue
1

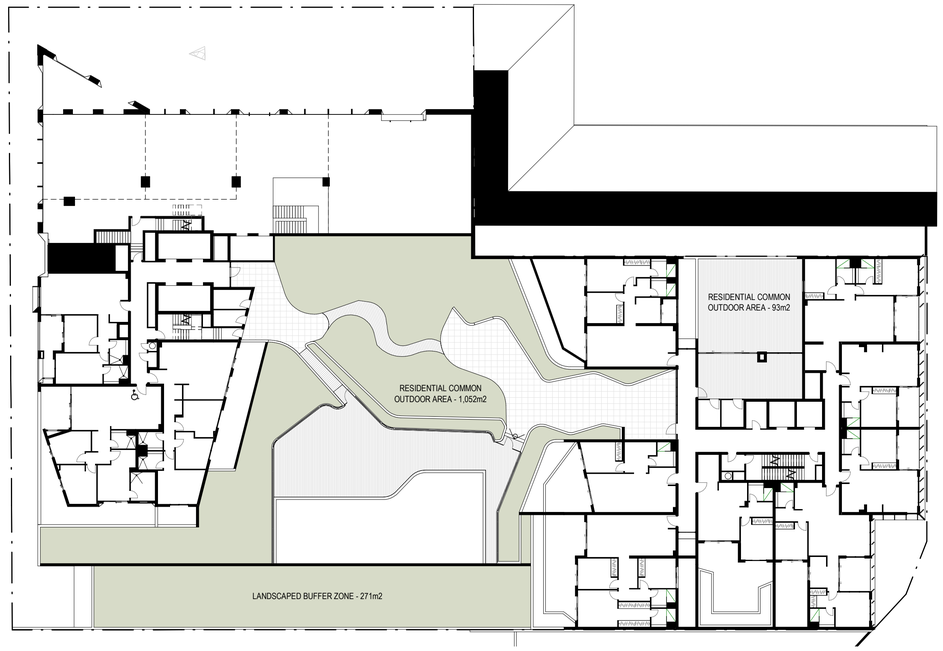
0 5 10 20 40 m

REF: C:\Users\CUO\Documents\18005_Master_pjac.rvt
PLOTTED & CHECKED BY: Author
PLOT DATE & TIME: 19/02/2019 5:50:39 PM

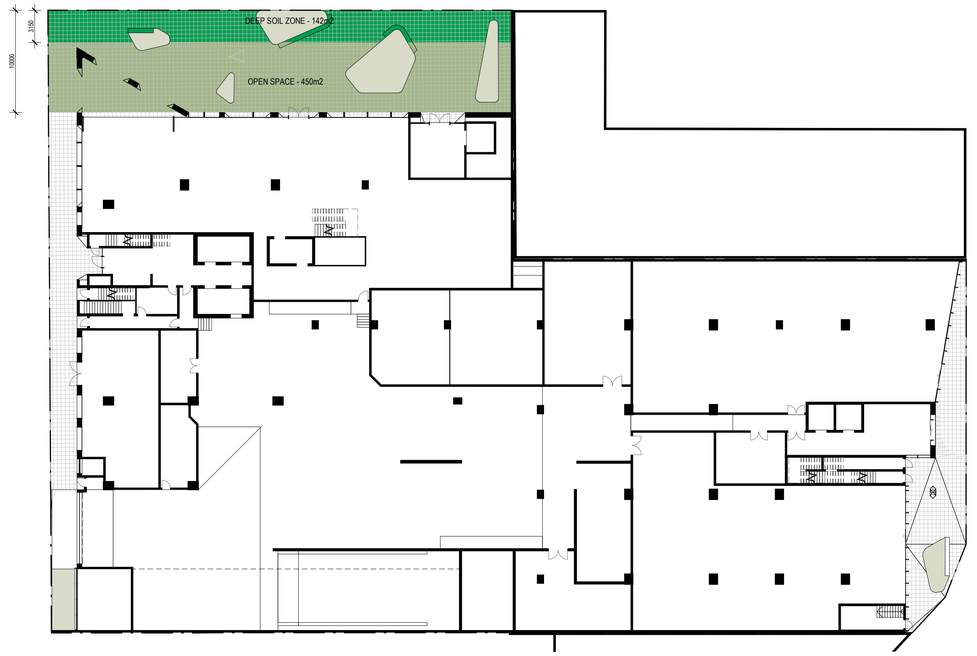
Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

3 LEVEL 04 OPEN SPACE/DEEP SOIL
1 : 300

SITE AREA	4,333m2	
DEEP SOIL PLANTING	142m2	3.2%
PUBLIC OPEN SPACE	450m2	10.3%
COMMUNAL OPEN SPACE	1,355m2	31.3%
LANDSCAPE BUFFER	271m2	6.2%



2 LEVEL 01 OPEN SPACE/DEEP SOIL
1 : 300



1 GROUND LEVEL OPEN SPACE/DEEP SOIL
1 : 300

6.7 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au

Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address: 86 Memorial Avenue Liverpool, NSW 2170

www.nathers.gov.au

ABSA Assessor Number
Accreditation Period: 2018-2020
Assessor Name: Hamidul Islam
Assessor Number: 100982
Assessor Signature:
Where this assessment is completed within the accreditation period set out in the NSW quality audit system

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170
Proj. No. 18005

Drawing Title
ADG OPEN SPACE/DEEP SOIL

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 300 @A1

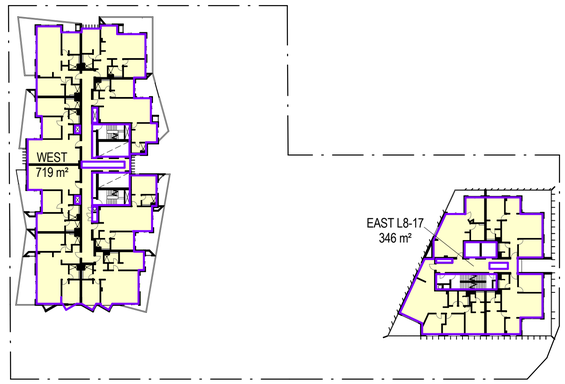
Drawing No.
DA8533

Issue
1

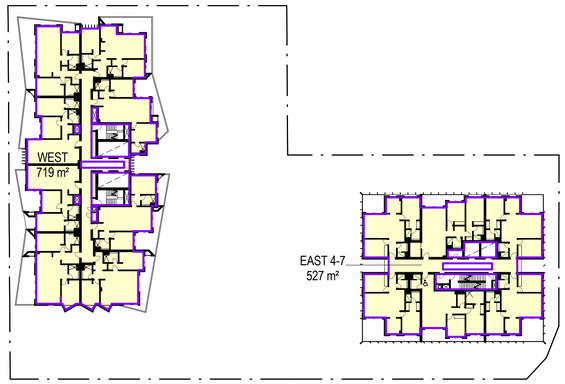
0 3 6 12 24 m

REF: C:\Users\GUO\Documents\18005_Master_gxo.rvt
PLOTTED & CHECKED BY: Author
PLOT DATE & TIME: 19/02/2019 5:05:43 PM

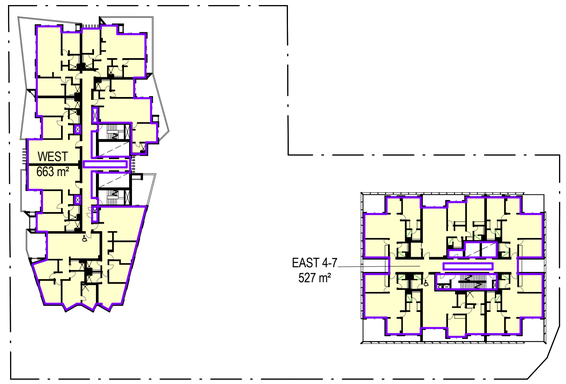
Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661



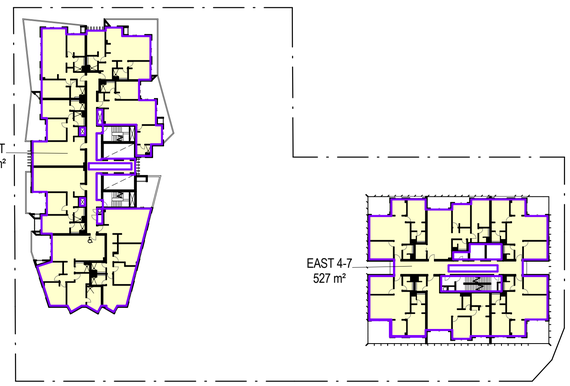
9 LEVELS 8-23
1 : 500



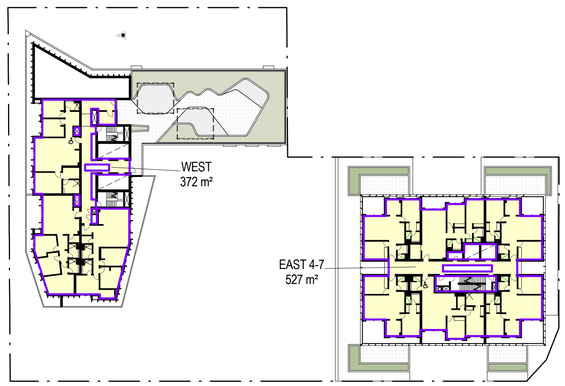
8 LEVEL 7
1 : 500



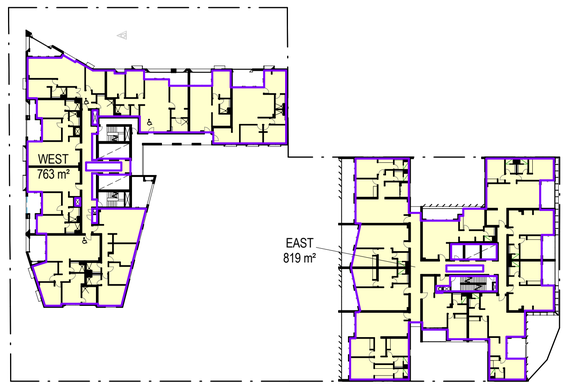
7 LEVEL 6
1 : 500



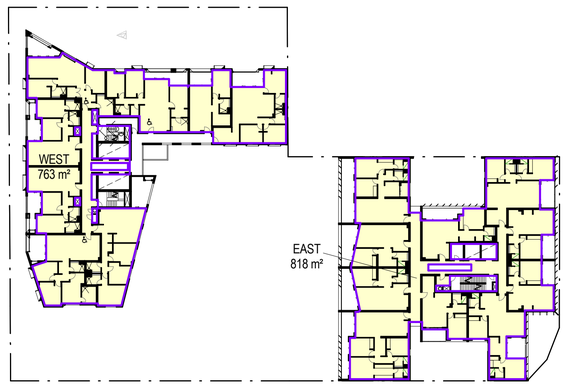
6 LEVEL 5
1 : 500



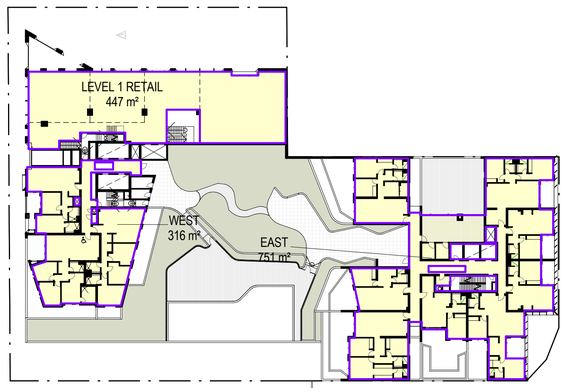
5 LEVEL 4
1 : 500



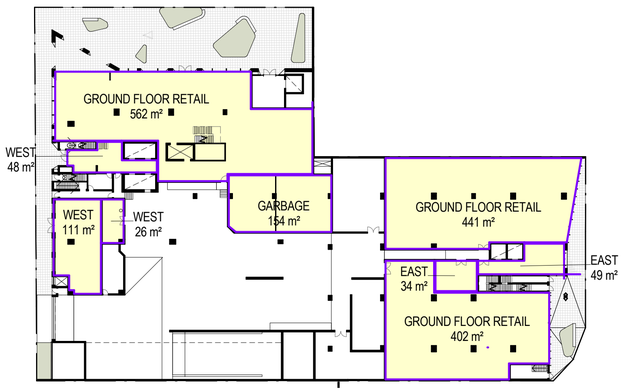
4 LEVEL 3
1 : 500



3 LEVEL 2
1 : 500



2 LEVEL 1
1 : 500



1 GROUND LEVEL
1 : 500

AREA SCHEDULE - GFA

Level	Area
APARTMENT - EAST	
GROUND LEVEL	49 m²
LEVEL 1	751 m²
LEVEL 2	818 m²
LEVEL 3	819 m²
LEVEL 4	527 m²
LEVEL 5	527 m²
LEVEL 6	527 m²
LEVEL 7	527 m²
LEVEL 8	346 m²
LEVEL 9	346 m²
LEVEL 10	346 m²
LEVEL 11	346 m²
LEVEL 12	346 m²
LEVEL 13	346 m²
LEVEL 14	346 m²
LEVEL 15	346 m²
LEVEL 16	346 m²
LEVEL 17	346 m²
APARTMENT - EAST	8,001 m²
APARTMENT - WEST	
GROUND LEVEL	48 m²
LEVEL 1	316 m²
LEVEL 2	763 m²
LEVEL 3	763 m²
LEVEL 4	372 m²
LEVEL 5	663 m²
LEVEL 6	663 m²
LEVEL 7	719 m²
LEVEL 8	719 m²
LEVEL 9	719 m²
LEVEL 10	719 m²
LEVEL 11	719 m²
LEVEL 12	719 m²
LEVEL 13	719 m²
LEVEL 14	719 m²
LEVEL 15	719 m²
LEVEL 16	719 m²
LEVEL 17	719 m²
LEVEL 18	719 m²
LEVEL 19	719 m²
LEVEL 20	719 m²
LEVEL 21	719 m²
LEVEL 22	719 m²
LEVEL 23	719 m²
APARTMENT - WEST	15,818 m²
COMMERCIAL	
GROUND LEVEL	111 m²
COMMERCIAL	111 m²
GARBAGE	
GROUND LEVEL	34 m²
GROUND LEVEL	154 m²
GROUND LEVEL	26 m²
GARBAGE	214 m²
RETAIL	
GROUND LEVEL	402 m²
GROUND LEVEL	441 m²
GROUND LEVEL	562 m²
LEVEL 1	447 m²
RETAIL	1,853 m²
	25,998 m²

SITE AREA : 4,333m2
TARGET GFA : 25,998m2

PROPOSED GFA : 25,998m2
FSR: 6.0 : 1

6.7 Average star rating
NATIONWIDE HOUSE ENERGY RATING SCHEME
www.nathers.gov.au
Certificate no.: 0003578100
Assessor Name: Hamidul islam
Accreditation no.: 100982
Certificate date: 31 January 2019
Dwelling Address: 86 Memorial Avenue Liverpool, NSW 2170
www.nathers.gov.au
ABSA Australian Building Sustainability Assessor
Accreditation Period 2018-2019
Assessor Name Hamidul Islam
Assessor Number 100982
Assessor Signature
ABSA Assessments undertaken by this accreditation holder are part of the ABSA quality audit system
This Accredited Assessor is qualified to undertake assessments in accordance with the requirements of the relevant scheme and legislation

Revisions No.	Date	Description	Ver	App'd
1	22-02-19	ISSUED FOR D.A. SUBMISSION.		

Key

N

Client
Il Capitano Investments Pty Ltd

Architect
AJ+C Allen Jack+Cottier
79 Myrtle Street Chippendale NSW 2008 AUSTRALIA
ph +61 2 9311 8222 fx +61 2 9311 8200
ABN 53 003 782 250

Project
MEMORIAL AVENUE, LIVERPOOL
77-79 Bathurst Street &
86-94 Castlereagh Street
LIVERPOOL NSW 2170

Proj. No. 18005

Drawing Title
GFA DIAGRAMS

Sheet Status
NOT FOR CONSTRUCTION

Scale
1 : 500 @A1

Drawing No.
DA8534

Issue
1

0 5 10 20 40 m

PLOT DATE & TIME: 18/02/2019 6:14:21 PM
PLOTTED & CHECKED BY: Author
REF: C:\Users\GUO\Documents\18005_Master_guo.rvt

Do not scale drawings. Use figured dimensions only. Check & verify levels and dimensions on site prior to the commencement of any work, the preparation of shop drawings or the fabrication of components. This drawing is the copyright of Allen Jack + Cottier Architects and is protected under the Copyright Act 1968. Do not alter, reproduce or transmit in any form, or by any means without the express permission of Allen Jack + Cottier Architects. Nominated Architects: Michael Heenan 5264, Peter Ireland 6661

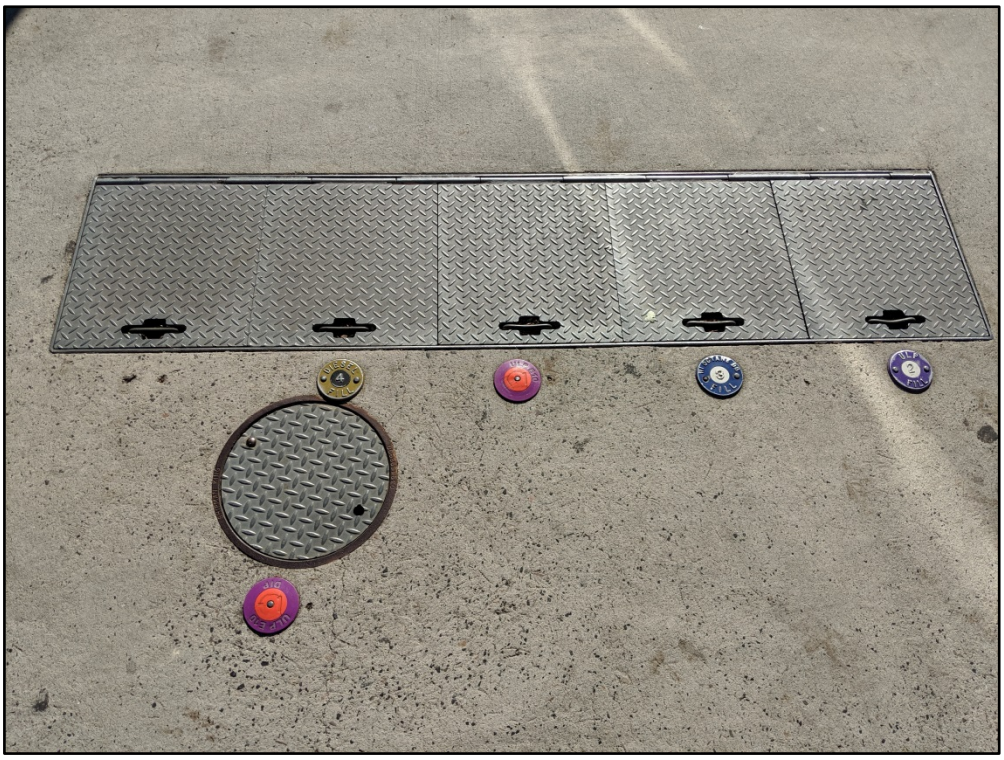
Appendix D – Site Photographs

Photograph 1: View facing west, looking across the car park facility of 90-94 Castlereagh Street, Liverpool.

Photograph 2: View facing east, looking across the car park facility of 90-94 Castlereagh Street, Liverpool.

Photograph 3: View looking west across the service station of 86-88 Castlereagh Street.

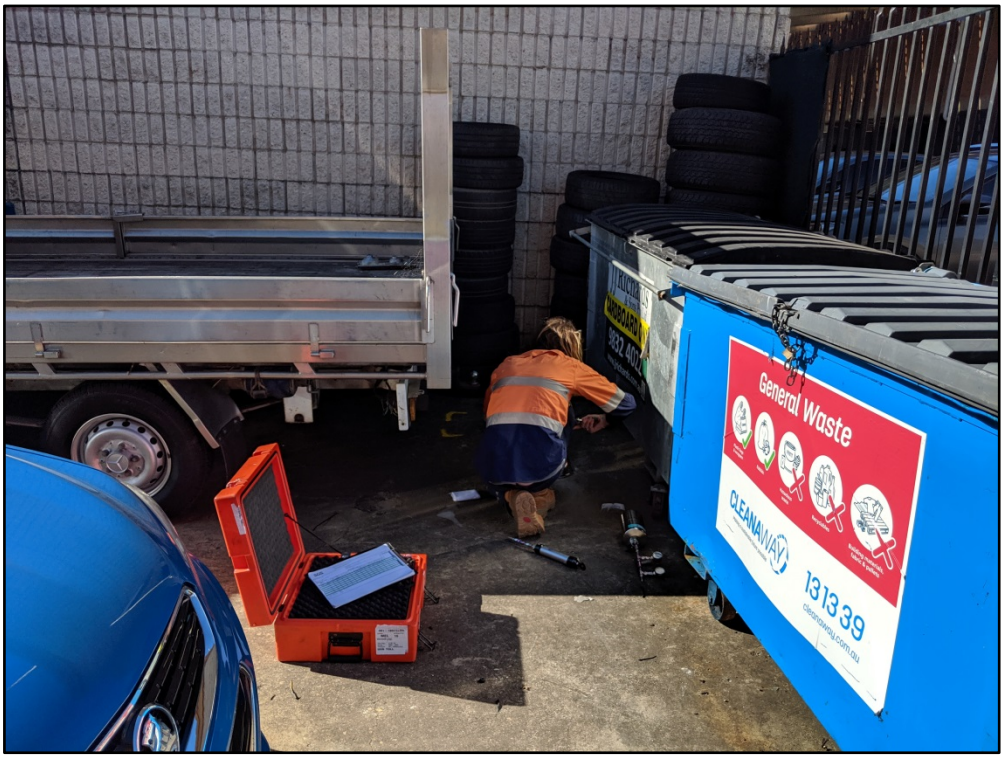
Photograph 4: View looking at the mechanical workshop of the service station, from Memorial Avenue.



Photograph 5: Various dip and fill points located in the western portion of the service station.

Photograph 6: View looking east across the service station of 86-88 Castlereagh Street, Liverpool.

Photograph 7: Waste oil storage tanks, located within the mechanical workshop.



Photograph 8: Installation and sampling of soil vapour pins on-site by SGS personnel.

Appendix E – Borehole Logs

BOREHOLE: BH101

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool, NSW			Date Started	10/7/19
Position	Refer to Figure 2			Date Completed	10/7/19
Job No.	E24273.E02	Contractor	HartGeo Pty Ltd	Logged	JH
Client	Il Capitano Investments Pty Ltd	Drill Rig	Ute-mounted Drilling Rig		
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
AD/T	-	GWNE	0	0.10				-	ASPHALT: 0.1m thick.	-		BH101
				0.30	BH101_0.1-0.2 ES 0.10-0.20 m PID=0.4			-	FILL: Silty CLAY; low to medium plasticity, soft, light brown, with fine to medium, sub-angular to angular gravels, trace root fibres and brick fines, no odour.			
								-	FILL: Silty CLAY; medium to high plasticity, soft, dark grey, with fine to medium, sub-angular to angular gravels and brick fines, no odour.			
				0.80	BH101_0.6-0.7 ES 0.60-0.70 m PID=0.3			CH	Silty CLAY: high plasticity, firm to stiff, pale red, with trace fine, sub-angular to angular ironstone gravels, no odour.			
			1	1.20					From 1.2m, pale red, with pale yellow banding			
				1.70	BH101_1.4-1.5 ES 1.40-1.50 m PID=0.9				From 1.7m, pale cream colour with trace pale red.	M	-	
			2									
			3									
				3.40				-	SHALE: highly to distinctly weathered, pale brown to light brown, no odour,			
			4	4.20					From 4.2m, distinctly weathered.			
			5	5.50					Hole Terminated at 5.50 m Target depth reached.			
			6									
			7									
			8									

Gatic Cover
Cuttings
Bentonite
50mm uPVC Casing
50mm uPVC Screen
Sand

This borehole log should be read in conjunction with Environmental Investigations Australia's accompanying standard notes.

EIA LIB 1.03.GLB Log IS AU BOREHOLE 3 E24273.E02.GPJ <<DrawingFile>> 02/08/2019 12:21 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: EIA 1.03 2014-07-05 Prj: EIA 1.03 2014-07-05

BOREHOLE: BH102

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool, NSW			Date Started	10/7/19
Position	Refer to Figure 2			Date Completed	10/7/19
Job No.	E24273.E02	Contractor	HartGeo Pty Ltd	Logged	JH
Client	Il Capitano Investments Pty Ltd	Drill Rig	Ute-mounted Drilling Rig		
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	-	GWNE	0.0	0.20				-	ASPHALT: 0.2m thick.	-		ROAD SURFACE
					BH102_0.2-0.3 ES 0.20-0.30 m PID=0.7			-	FILL: Silty CLAY; medium to high plasticity, soft to firm, brown, with fine to medium, sub-angular to angular gravels, no odour.			FILL
			0.5	0.50				CH	Silty CLAY: high plasticity, firm to stiff, pale red, with trace fine, sub-angular to angular ironstone gravels, no odour.	M	-	RESIDUAL SOIL
					BH102_0.7-0.8 ES 0.70-0.80 m PID=0.6							
			1.0									
			1.5	1.50					From 1.5m, colour is pale cream to pale red with pale yellow banding.			
				2.00								
			2.0						Hole Terminated at 2.00 m Target depth reached.			
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

This borehole log should be read in conjunction with Environmental Investigations Australia's accompanying standard notes.

EIA LIB 1.03.GLB Log IS AU BOREHOLE 3 E24273.E02.GPJ <<DrawingFile>> 02/08/2019 12:21 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: EIA 1.03 2014-07-05 Prj: EIA 1.03 2014-07-05

BOREHOLE: BH103

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool, NSW			Date Started	10/7/19
Position	Refer to Figure 2			Date Completed	10/7/19
Job No.	E24273.E02	Contractor	HartGeo Pty Ltd	Logged	JH
Client	Il Capitano Investments Pty Ltd	Drill Rig	Ute-mounted Drilling Rig		
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0					-	ASPHALT: 0.2m thick.	-		ROAD SURFACE
				0.20								
AD/T	-	GWNE	0.5		BH103_0.2-0.3 ES 0.20-0.30 m PID=3.6			-	FILL: Sandy CLAY; low plasticity, soft, brown, with fine to medium grained sands, fine to medium, sub-angular to angular gravels also evident, no odour.			FILL
				0.60								
			1.0		BH103_1.1-1.2 ES 1.10-1.20 m PID=1.2			CH	Silty CLAY: high plasticity, firm to stiff, pale red, with trace fine, sub-angular to angular ironstone gravels, no odour.	M	-	RESIDUAL SOIL
			1.5									
				2.00								
			2.0						Hole Terminated at 2.00 m Target depth reached.			
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

This borehole log should be read in conjunction with Environmental Investigations Australia's accompanying standard notes.

EIA LIB 1.03.GLB Log IS AU BOREHOLE 3 E24273.E02.GPJ <<DrawingFile>> 02/08/2019 12:21 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: EIA 1.03 2014-07-05 Prj: EIA 1.03 2014-07-05

BOREHOLE: BH104

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool, NSW			Date Started	10/7/19
Position	Refer to Figure 2			Date Completed	10/7/19
Job No.	E24273.E02	Contractor	HartGeo Pty Ltd	Logged	JH
Client	Il Capitano Investments Pty Ltd	Drill Rig	Ute-mounted Drilling Rig		
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	-	GWNE	0.0	0.15				-	CONCRETE: 0.15m thick.	-		CONCRETE HARDSTAND
				0.25				-	FILL: SAND; fine to coarse grained, pale brown, no odour.	M	-	FILL
				0.50	BH104_0.3-0.4 ES 0.30-0.40 m PID=0.6			-	FILL: Silty CLAY; medium to high plasticity, firm, brown, with traces of fine to medium, sub-angular to angular gravels, traces of glass fragments also evident, no odour.			
			0.5					CH	Silty CLAY: high plasticity, firm to stiff, pale red, with trace fine, sub-angular to angular ironstone gravels, no odour.			RESIDUAL SOIL
					BH104_0.8-0.9 ES 0.80-0.90 m PID=1.2							
			1.0									
				1.50					From 1.5m, colour pale cream and pale red.			
			1.5									
				2.00								
			2.0						Hole Terminated at 2.00 m Target depth reached.			
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

This borehole log should be read in conjunction with Environmental Investigations Australia's accompanying standard notes.

EIA LIB 1.03.GLB Log IS AU BOREHOLE 3 E24273.E02.GPJ <<DrawingFile>> 02/08/2019 12:21 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: EIA 1.03 2014-07-05 Prj: EIA 1.03 2014-07-05

BOREHOLE: BH105

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool, NSW			Date Started	10/7/19
Position	Refer to Figure 2			Date Completed	10/7/19
Job No.	E24273.E02	Contractor	HartGeo Pty Ltd	Logged	JH
Client	Il Capitano Investments Pty Ltd	Drill Rig	Ute-mounted Drilling Rig		
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	-	GWNE	0.0	0.20				-	CONCRETE: 0.2m thick.	-		CONCRETE HARDSTAND
					BH105_0.2-0.3 ES 0.20-0.30 m PID=0.2			-	FILL: Silty CLAY; low to medium plasticity, soft, brown, with fine to medium, sub-angular to angular gravels, traces of fine to medium grained sands evident, no odour.			FILL
			0.5	0.50				CH	Silty CLAY: high plasticity, firm to stiff, pale red, with trace fine, sub-angular to angular ironstone gravels, no odour.	M	-	RESIDUAL SOIL
			1.0									
			1.5	1.50	BH105_1.4-1.5 ES 1.40-1.50 m PID=0.7				From 1.5m, colour pale cream with trace pale red and pale yellow banding.			
			2.0	2.00					Hole Terminated at 2.00 m Target depth reached.			
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

This borehole log should be read in conjunction with Environmental Investigations Australia's accompanying standard notes.

EIA LIB 1.03.GLB Log IS AU BOREHOLE 3 E24273.E02.GPJ <<DrawingFile>> 02/08/2019 12:21 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: EIA 1.03 2014-07-05 Prj: EIA 1.03 2014-07-05

BOREHOLE: BH106

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool, NSW			Date Started	10/7/19
Position	Refer to Figure 2			Date Completed	10/7/19
Job No.	E24273.E02	Contractor	HartGeo Pty Ltd	Logged	JH
Client	Il Capitano Investments Pty Ltd	Drill Rig	Ute-mounted Drilling Rig		
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	-	GWNE	0.0	0.10				-	CONCRETE: 0.1m thick.	-		CONCRETE HARDSTAND
					BH106_0.2-0.3 ES 0.20-0.30 m PID=0.7			-	FILL: Silty CLAY; low to medium plasticity, soft, brown, with fine to medium, sub-angular to angular gravels, traces of fine to medium grained sands evident, no odour.			FILL
			0.5	0.80	BH106_0.7-0.8 ES 0.70-0.80 m PID=0.4			CH	Silty CLAY: high plasticity, firm to stiff, pale red, with trace fine, sub-angular to angular ironstone gravels, no odour.	M	-	RESIDUAL SOIL
			1.0		BH106_1.1-1.2 ES 1.10-1.20 m PID=0.1							
			1.5	1.50					From 1.5m, colour pale red and pale grey with trace pale yellow.			
			2.0	2.00					Hole Terminated at 2.00 m Target depth reached.			
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

This borehole log should be read in conjunction with Environmental Investigations Australia's accompanying standard notes.

EIA LIB 1.03.GLB Log IS AU BOREHOLE 3 E24273.E02.GPJ <<DrawingFile>> 02/08/2019 12:21 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: EIA 1.03 2014-07-05 Prj: EIA 1.03 2014-07-05

BOREHOLE: BH107

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool, NSW			Date Started	10/7/19
Position	Refer to Figure 2			Date Completed	10/7/19
Job No.	E24273.E02	Contractor	HartGeo Pty Ltd	Logged	JH
Client	Il Capitano Investments Pty Ltd	Drill Rig	Ute-mounted Drilling Rig		
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	-	GWNE	0.0	0.10				-	CONCRETE: 0.1m thick.	-		CONCRETE HARDSTAND
					BH107_0.2-0.3 ES 0.20-0.30 m PID=0.4			-	FILL: Silty CLAY; low to medium plasticity, soft, brown, with fine to medium, sub-angular to angular gravels, traces of fine to medium grained sands evident, no odour.			FILL
				0.40				-	FLIL: Silty CLAY; medium plasticity, soft to firm, dark grey to brown, with traces of fine to medium, sub-angular to angular gravels, no odour.			
			0.5		BH107_0.6-0.7 ES 0.60-0.70 m PID=0.5							
				0.80				CH	Silty CLAY: high plasticity, firm to stiff, pale red, with trace fine, sub-angular to angular ironstone gravels, no odour.	M	-	RESIDUAL SOIL
			1.0						From 1.2m, colour pale red to pale grey.			
				1.20								
				1.50	BH107_1.4-1.5 ES 1.40-1.50 m PID=0.4				From 1.5m, colour pale red and pale grey with trace pale yellow.			
			1.5									
				2.00								
			2.0						Hole Terminated at 2.00 m Target depth reached.			
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

This borehole log should be read in conjunction with Environmental Investigations Australia's accompanying standard notes.

EIA LIB 1.03.GLB Log IS AU BOREHOLE 3 E24273.E02.GPJ <<DrawingFile>> 02/08/2019 12:21 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: EIA 1.03 2014-07-05 Prj: EIA 1.03 2014-07-05

BOREHOLE: BH108

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool, NSW			Date Started	10/7/19
Position	Refer to Figure 2			Date Completed	10/7/19
Job No.	E24273.E02	Contractor	HartGeo Pty Ltd	Logged	JH
Client	Il Capitano Investments Pty Ltd	Drill Rig	Ute-mounted Drilling Rig		
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
AD/T	-	GWNE	0	0.20				-	CONCRETE: 0.2m thick.	-		BH108
					BH108_0.3-0.4 ES 0.30-0.40 m PID=0.9			MHS	Sandy SILT; fines of low plasticity, brown, with fine to medium grained sands, traces of fine to medium, sub-angular to angular gravels and root fibres evident, no odour.			
				0.80								
			1		BH108_0.9-1.0 ES 0.90-1.00 m PID=1.4			CH	Silty CLAY: high plasticity, firm to stiff, pale red, with trace fine, sub-angular to angular ironstone gravels, no odour.			
				1.40					From 1.4m, colour pale red to pale grey.			
			2	2.10				-	SHALE; extremely to highly weathered, pale brown, no odour.	M	-	
			3									
			4	3.90					From 3.9m, distinctly weathered.			
			5									
			6	6.00					Hole Terminated at 6.00 m Target depth reached.			
			7									
			8									

Gatic Cover
Cuttings
Bentonite
50mm uPVC Casing
50mm uPVC Screen
Sand

This borehole log should be read in conjunction with Environmental Investigations Australia's accompanying standard notes.

EIA LIB 1.03.GLB Log IS AU BOREHOLE 3 E24273.E02.GPJ <<DrawingFile>> 02/08/2019 12:21 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: EIA 1.03 2014-07-05 Prj: EIA 1.03 2014-07-05

BOREHOLE: BH109

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool, NSW			Date Started	10/7/19
Position	Refer to Figure 2			Date Completed	10/7/19
Job No.	E24273.E02	Contractor	HartGeo Pty Ltd	Logged	JH
Client	Il Capitano Investments Pty Ltd	Drill Rig	Ute-mounted Drilling Rig		
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	-	GWNE	0.0	0.10				-	CONCRETE: 0.1m thick.	-		CONCRETE HARDSTAND
				0.20				-	FILL: SAND; fine to coarse grained, pale brown, no odour.			FILL
					BH109_0.2-0.3 ES 0.20-0.30 m PID=2.6			-	FILL: Silty CLAY; medium to high plasticity, soft to firm, brown, with fine to medium, sub-angular to angular gravels, no odour.			
			0.5	0.80				CH	Silty CLAY: high plasticity, firm to stiff, pale red, with trace fine, sub-angular to angular ironstone gravels, no odour.			RESIDUAL SOIL
					BH109_0.9-1.0 ES 0.90-1.00 m PID=1.0					M	-	
			1.0									
			1.5	2.00								
			2.0						Hole Terminated at 2.00 m Target depth reached.			
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

This borehole log should be read in conjunction with Environmental Investigations Australia's accompanying standard notes.

EIA LIB 1.03.GLB Log IS AU BOREHOLE 3 E24273.E02.GPJ <<DrawingFile>> 02/08/2019 12:21 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: EIA 1.03 2014-07-05 Prj: EIA 1.03 2014-07-05

BOREHOLE: BH110

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool, NSW			Date Started	10/7/19
Position	Refer to Figure 2			Date Completed	10/7/19
Job No.	E24273.E02	Contractor	HartGeo Pty Ltd	Logged	JH
Client	Il Capitano Investments Pty Ltd	Drill Rig	Ute-mounted Drilling Rig		
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
AD/T	-	▽	0	0.15	BH110_0.2-0.3 ES 0.20-0.30 m PID=45.0			-	CONCRETE: 0.15m thick.	-	-	BH110
				0.50				-	FILL: Silty SAND; fine to medium grained, brown to dark brown, with fine to medium, sub-angular to angular gravels, cobble sized terracotta fragments and trace root fibres evident, moderate hydrocarbon odour noted.			
				0.80	BH110_0.6-0.7 ES 0.60-0.70 m PID=45.0			CH	Silty CLAY: medium to high plasticity, stiff, dark grey with pale brown and traces of pale red, moderate hydrocarbon odour noted.			
			1		BH110_1.1-1.2 ES 1.10-1.20 m PID=147.1			CH	Silty CLAY; high plasticity, stiff to very stiff, pale red with pale grey, with traces of fine to medium, sub-angular to angular ironstone gravels, moderate hydrocarbon odour noted.			
			2	2.40				-	SHALE; extremely to highly weathered, pale brown, no odour			
			3	3.50					From 3.5m, distinctly weathered.	M	-	
			4	4.00					From 4.0m, very slow progress.			
			5									
			6									
			7	7.50					Hole Terminated at 7.50 m Target depth reached.			
			8									

Gatic Cover
Cuttings
Bentonite
50mm uPVC Casing
50mm uPVC Screen
Sand

This borehole log should be read in conjunction with Environmental Investigations Australia's accompanying standard notes.

EIA LIB 1.03.GLB Log IS AU BOREHOLE 3 E24273.E02.GPJ <<DrawingFile>> 02/08/2019 12:21 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: EIA 1.03 2014-07-05 Prj: EIA 1.03 2014-07-05

BOREHOLE: BH111

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool, NSW			Date Started	10/7/19
Position	Refer to Figure 2			Date Completed	10/7/19
Job No.	E24273.E02	Contractor	HartGeo Pty Ltd	Logged	JH
Client	II Capitano Investments Pty Ltd	Drill Rig	Ute-mounted Drilling Rig		
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0	0.10				-	CONCRETE: 0.1m thick.	-		CONCRETE HARDSTAND
				0.20				-	FILL: SAND; fine to coarse grained, pale brown, no odour.			FILL
AD/T	-	GWNE	0.5	0.60	BH111_0.2-0.3 ES 0.20-0.30 m PID=4.2				FILL: Silty CLAY; medium plasticity, firm, dark brown to dark grey, with fine to medium grained sands, fine to medium, sub-angular to angular gravels evident, no odour.	M	-	RESIDUAL SOIL
			1.0		BH111_0.7-0.8 ES 0.70-0.80 m PID=7.3			CH	Silty CLAY: high plasticity, firm to stiff, pale red, with trace fine, sub-angular to angular ironstone gravels, no odour.			
				1.20					From 1.2m, colour pale red with pale cream to pale grey.			
			1.5	1.50	BH111_1.4-1.5 ES 1.40-1.50 m PID=14.9				Hole Terminated at 1.50 m Target depth reached.			
			2.0									
			2.5									
			3.0									
			3.5									
			4.0									
			4.5									
			5.0									

This borehole log should be read in conjunction with Environmental Investigations Australia's accompanying standard notes.

EIA LIB 1.03.GLB Log IS AU BOREHOLE 3 E24273.E02.GPJ <<DrawingFile>> 02/08/2019 12:22 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: EIA 1.03 2014-07-05 Prj: EIA 1.03 2014-07-05

BOREHOLE: BH112

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool, NSW			Date Started	10/7/19
Position	Refer to Figure 2			Date Completed	10/7/19
Job No.	E24273.E02	Contractor	HartGeo Pty Ltd	Logged	JH
Client	Il Capitano Investments Pty Ltd	Drill Rig	Ute-mounted Drilling Rig		
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	PIEZOMETER DETAILS ID / Static Water Level
AD/T	-	GWNE	0	0.10				-	CONCRETE: 0.1m thick.	-		BH112
				0.20				-	FILL: SAND; fine to coarse grained, pale brown, weak hydrocarbon odour noted.			Gatic Cover
				0.40	BH112_0.2-0.3 ES 0.20-0.30 m PID=4.1			CH	FILL: Silty CLAY; medium plasticity, firm, dark brown to dark grey, with fine to medium grained sands, fine to medium, sub-angular to angular gravels evident, weak hydrocarbon odour noted.			
					BH112_0.7-0.8 ES 0.70-0.80 m PID=2.8				Silty CLAY: high plasticity, firm to stiff, pale red, with trace fine, sub-angular to angular ironstone gravels, weak hydrocarbon odour noted.			Cuttings
			1	1.20					From 1.2m, colour pale brown to pale cream and pale grey, no odour.			
			2	2.20				-	SHALE; extremely weathered, pale brown, no odour.			Bentonite
				2.70					From 2.7m, moderately weathered.			50mm uPVC Casing
			3	3.00					From 3m, distinctly weathered.	M	-	50mm uPVC Screen
				3.20					From 3.2m, very slow progress.			
			4									Sand
			5	5.80								
			6						Hole Terminated at 5.80 m Target depth reached.			
			7									
			8									

This borehole log should be read in conjunction with Environmental Investigations Australia's accompanying standard notes.

EIA LIB 1.03.GLB Log IS AU BOREHOLE 3 E24273.E02.GPJ <<DrawingFile>> 02/08/2019 12:22 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: EIA 1.03 2014-07-05 Prj: EIA 1.03 2014-07-05

BOREHOLE: BH113

eiaustralia
Contamination | Remediation | Geotechnical

Project	Detailed Site Investigation			Sheet	1 OF 1
Location	86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool, NSW			Date Started	10/7/19
Position	Refer to Figure 2			Date Completed	10/7/19
Job No.	E24273.E02	Contractor	HartGeo Pty Ltd	Logged	JH
Client	II Capitano Investments Pty Ltd	Drill Rig	Ute-mounted Drilling Rig		
		Inclination	-90°		

Drilling					Sampling		Field Material Description					
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	-	GWNE	0	0.10				-	CONCRETE: 0.1m thick.	-		CONCRETE HARDSTAND
				0.20				-	FILL: SAND; fine to coarse grained, pale brown, with weak hydrocarbon odour.			FILL
				0.40	BH113_0.2-0.3 ES 0.20-0.30 m PID=0.9			CH	FILL: Silty CLAY; medium plasticity, firm, dark brown to dark grey, with fine to medium grained sands, fine to medium, sub-angular to angular gravels evident, no odour.	M	-	RESIDUAL SOIL
			1	1.20					Silty CLAY: high plasticity, firm to stiff, pale red, with trace fine, sub-angular to angular ironstone gravels, no odour.			
				1.50	BH113_1.2-1.3 ES 1.20-1.30 m PID=2.2				From 1.2m, colour pale brown to pale grey and cream.			
									Hole Terminated at 1.50 m Target depth reached.			
			2									
			3									
			4									
			5									
			6									
			7									
			8									
			9									
			10									

This borehole log should be read in conjunction with Environmental Investigations Australia's accompanying standard notes.

EIA LIB 1.03.GLB Log IS AU BOREHOLE 3 E24273.E02.GPJ <<DrawingFile>> 02/08/2019 12:22 10.0.000 Datgel Lab and In Situ Tool - DGD | Lib: EIA 1.03 2014-07-05 Prj: EIA 1.03 2014-07-05

Appendix F – Field Data Sheets

Site Inspection Card - General

Form OP 005b (Rev 1)

EI Australia
Suite 6.01, 55 Miller Street
PYRMONT, NSW, 2009
ABN 42 909 129 957
E service@eiaustralia.com.au
W www.eiaustralia.com.au
T 02 9516 0722

Project Number:	E24273.E02	Sheet: 1 of 1	Date: 26/7/19
Project Name:	DSI	Time at ARRIVAL: 9:00 (am)/pm	
Client Contact:	Walter	Time at DEPARTURE: 11:30 (am)/pm	
Site Address/Location:	Liverpool.		
Climatic Conditions:	Fine		

Completed Works (Describe site conditions, stage of works, relevant environmental conditions) (Take photos)

GME for 4 wells. (BH110M, BH112M, GW101, GW102)
BH101M and BH108M were dry. Sample collected from GW101 and GW102 installed by other consultant previously.

Comments / Issues / Conclusions / Further Testing Required / Actions to be Undertaken / Timing of Actions:

Name: Lanye	Signed:

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address: 86-94 Castlereagh & 77-79 Bathurst St, Liverpool.	Job Number: E24273
Client: IL Capitano Investment	Date: 26.7.19
Field Staff: LM	Sampling Location ID BH110M
Well Location:	Round No: 1

MEDIUM ☒Groundwater ☐Surface Water ☐Stormwater ☐Other:

SAMPLING POINT INFO

Well Installation Date: 10.7.19	Stick up / down (m): -0.1 (+ above ground - below ground)
Initial Well Depth (mBTOC): 7.4	Screen Interval (mBTOC): 4.4-7.4
Previous Sampling Date:	Previous SWL (mBTOC):

PID READINGS

PID Headspace (ppm):	PID Background (ppm):
PID Breathing Space (ppm):	

PRE PURGE

Total Well Depth (mBTOC): 7.4	Well Head Condition: Good
SWL (mBTOC): 6.3	Water Column (m): 1.1

PHASE SEPARATED HYDROCARBONS (PSH)

Depth to PSH (mBTOC):	PSH Visually Confirmed (Bailer):
PSH Thickness (mm):	

PURGE AND SAMPLE

Sampling Method ☒Bladder ☐Peristaltic ☐Submersible ☐Other:

Depth of Pump Inlet (mBTOC): 6.9	Fill Timer: 5
Pump Pressure Regulator (psi): 125	Discharge Timer: 10
Weather Conditions: Fine	Cycle: CD/N4
Pump on time: 9:35	Pump off time: 9:50

WATER QUALITY PARAMETERS

Probe Make and Model:	Bump Test Date and Time:

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
9:40	0.5	6.35	18.05	3512	2.6	3.75	6.98	clear, low, no, no
9:42			18.10	3512	2.81	3.61	6.91	
9:44	1.0	6.41	18.11	3568	2.83	3.60	6.92	
9:46			18.10	3571	2.86	3.47	6.91	
9:48	1.5	6.55	18.11	3581	2.96	3.35	6.92	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

GWQTD1, GWQTB1, GWQTS1, GWQR1

SIGNATURE:

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address: 86-94 Castlereagh & Bathurst St. Liverpool	Job Number: E24273
Client: 11 Capitano Investment	Date: 26.7.19
Field Staff: LM	Sampling Location ID MW11/2M
Well Location:	Round No:

MEDIUM ☒Groundwater ☐Surface Water ☐Stormwater ☐Other:

SAMPLING POINT INFO

Well Installation Date: 10.7.19	Stick up / down (m): 0.0 (+ above ground - below ground)
Initial Well Depth (mBTOC): 5.8	Screen Interval (mBTOC): 2.8-5.8
Previous Sampling Date:	Previous SWL (mBTOC):

PID READINGS

PID Headspace (ppm):	PID Background (ppm):
PID Breathing Space (ppm):	

PRE PURGE

Total Well Depth (mBTOC): 5.8	Well Head Condition: Good
SWL (mBTOC): 2.25	Water Column (m): 3.55

PHASE SEPARATED HYDROCARBONS (PSH)

Depth to PSH (mBTOC):	PSH Visually Confirmed (Bailer):
PSH Thickness (mm):	

PURGE AND SAMPLE

Sampling Method ☒Bladder ☐Peristaltic ☐Submersible ☐Other:

Depth of Pump Inlet (mBTOC): 5.3	Fill Timer: 5
Pump Pressure Regulator (psi): 125	Discharge Timer: 10
Weather Conditions: Fine	Cycle: CPM 4
Pump on time: 9:08	Pump off time: 9:30

WATER QUALITY PARAMETERS

Probe Make and Model:	Bump Test Date and Time:

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
9:20	0.5	2.28	17.85	4774	-44.9	3.55	7.98	clear, low, no, no.
9:22			17.81	4615	-32.8	3.41	7.95	
9:24	1.0	2.35	17.82	4705	-40.3	3.42	7.91	
9:26			17.82	4815	-42.5	3.44	7.90	
9:28	1.5	2.45	17.81	4820	-48.4	3.46	7.85	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

GW QT1

SIGNATURE:

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address: 86-94 Castlereagh and 77-79 Bathurst St, Liverpool	Job Number: E24273
Client: Il Capitano Investments	Date: 26.7.19
Field Staff: CY	Sampling Location ID: GW101
Well Location:	Round No: 1

MEDIUM ☒Groundwater ☐Surface Water ☐Stormwater ☐Other:

SAMPLING POINT INFO

Well Installation Date:	Stick up / down (m): -0.13 (+ above ground - below ground)
Initial Well Depth (mBTOC):	Screen Interval (mBTOC):
Previous Sampling Date:	Previous SWL (mBTOC):

PID READINGS

PID Headspace (ppm):	PID Background (ppm):
PID Breathing Space (ppm):	

PRE PURGE

Total Well Depth (mBTOC): 7.45	Well Head Condition: Good
SWL (mBTOC): 6.56	Water Column (m): 0.89

PHASE SEPARATED HYDROCARBONS (PSH)

Depth to PSH (mBTOC):	PSH Visually Confirmed (Bailer):
PSH Thickness (mm):	

PURGE AND SAMPLE

Sampling Method ☒Bladder ☐Peristaltic ☐Submersible ☐Other:

Depth of Pump Inlet (mBTOC):	Fill Timer: 5
Pump Pressure Regulator (psi): 125	Discharge Timer: 10
Weather Conditions: Fine	Cycle: CPM 4
Pump on time: 10:00	Pump off time: 10:15

WATER QUALITY PARAMETERS

Probe Make and Model:	Bump Test Date and Time:

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
10:05	0.5	6.68	18.15	2517	4.2	4.89	6.97	clear, low, no, no.
10:07			18.01	2601	4.5	5.01	6.91	
10:09	1.0	6.73	18.01	2615	4.55	5.11	6.93	
10:11			18.05	2620	4.71	4.81	6.95	
10:13	1.5	6.81	18.10	2618	4.75	4.96	6.98	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

SIGNATURE:

WATER SAMPLING FIELD SHEET

eiaustralia

Site Address: 86-94 Castlereagh, 77-79 Bathurst St, Liverpool	Job Number: E24273
Client: Capitaland Investment	Date: 26.7.19
Field Staff: VY	Sampling Location ID: GW102
Well Location:	Round No: 1

MEDIUM ☒Groundwater ☐Surface Water ☐Stormwater ☐Other:

SAMPLING POINT INFO

Well Installation Date:	Stick up / down (m): -0.1 (+ above ground - below ground)
Initial Well Depth (mBTOC):	Screen Interval (mBTOC):
Previous Sampling Date:	Previous SWL (mBTOC):

PID READINGS

PID Headspace (ppm):	PID Background (ppm):
PID Breathing Space (ppm):	

PRE PURGE

Total Well Depth (mBTOC): 9.9	Well Head Condition: Good
SWL (mBTOC): 6.7	Water Column (m): 3.3

PHASE SEPARATED HYDROCARBONS (PSH)

Depth to PSH (mBTOC):	PSH Visually Confirmed (Bailer):
PSH Thickness (mm):	

PURGE AND SAMPLE

Sampling Method ☒Bladder ☐Peristaltic ☐Submersible ☐Other:

Depth of Pump Inlet (mBTOC): 4.85	Fill Timer: 5
Pump Pressure Regulator (psi): 125	Discharge Timer: 10
Weather Conditions: Fine	Cycle: CP/M4
Pump on time: 10:25	Pump off time:

WATER QUALITY PARAMETERS

Probe Make and Model: | Bump Test Date and Time:

Time	Volume (L)	SWL (mbtoc)	Temp (°C)	EC (µS/cm)	Redox (mV)	DO (mg/L)	pH (units)	Comments (colour, turbidity, odour, sheen etc.)
10:27	0.5	0.75	18.57	38.73	-18.8	3.93	7.28	Clear, low, no, no
10:29			18.85	3910	-17.8	3.88	7.19	
10:31	1.0	6.85	18.46	3901	-17.1	3.85	7.09	
10:33			18.41	3895	-17.0	3.81	7.06	
10:35	1.5	6.98	18.35	3791	-16.5	3.80	7.05	
Stabilisation range: 3 consecutive readings			±0.2°C	±3%	±20mV	±10%	±0.2	

OTHER COMMENTS/OBSERVATIONS:

SIGNATURE:

Appendix G – Calibration Documentation

EI Australia
Suite 6.01, 55 Miller Street
PYRMONT, NSW, 2009

ABN 33 102 449 507
E service@eiaustralia.com.au
W www.eiaustralia.com.au
T 02 9516 0722

CALIBRATION CERTIFICATE FOR PHOTO IONISATION DETECTOR

Instrument: Mini RAE 3000

Serial Number: 592-906667 - EI **PID02** ☑ **OR** 592-901345 - EI **PID03** ☐

Instrument Conditions: 6000.

Calibration gas species: Isobutylene.

Calibration gas concentration: 100 ppm

Gas bottle number: Lot 846344 cyl: 23.

This PID has been calibrated to Isobutylene gas with the span concentration displayed as

101 ppm at 100 ppm span setting (allowable range +/-10ppm from span setting).

The PID is initially zero calibrated in fresh air.

Remaining gas in bottle: 7250 psi (if reading is <250 psi, notify Equipment Manager to arrange new gas bottle order)

The above detector was calibrated in accordance with manufacturer's specifications.

Signed: Joel Tehinger

Date: 10/07/19

Time: 0730 am.

eiaustralia
Contamination | Remediation | Geotechnical

Water Quality Meter Calibration Log

Instrument: EI WQM 005 (Hanna Multi Parameter 98194 – Serial no. 02510017991)

Room Temperature: 22.0 C°

Sensor (Unit of measure)	Standard Solutions Used (Item Code / Name)	Solution Batch Number	Temperature Adjusted Calibration Solution Value	Instrument Reading	
				Initial	Post Calibration
DO Saturation (%)	Ambient Air	N/A	100 %	116.7%	99.9%
	Sodium metabi sulfite soln	BCBT5821	0%	0.0	0.0
Temperature (°C)	Thermometer	N/A	22.1	22.42	22.10
Conductivity (µs/cm)	HI7031	3778	1413	742	1413
	HI 7030	3646	12880	7432	12870
pH	HI7007	3623	7.01	6.96	6.96
	HI7004	3442	4.01	4.20	4.15
	HI7010	3726	10.01	9.59	10.06
ORP (mV)	HI7021	8752	240mV	233.7	240.0

Calibrated by: N.L

Calibration Date:
26-7-14

Next Calibration Due:
26-8-14

Notes:

DO membrane and soln replaced

Appendix H – Chain of Custody and Sample Receipt Forms

source: [Untitled].pdf page: 13 SGS Ref: SE195215_COC

Sheet 1 of 3

Site: 86-94 CASTLEREAGH ST AND 77-79 BATHURST ST, LIVERPOOL NSW

Project No: E24273.E02

Laboratory: SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS	MOLD			TCLP HM [B] / PAH
BH101 0.1-0.2	1	JAR ZLB	10-07-19			✓		✓														
BH101 0.6-0.7	2					✓		✓														
BH101 1.4-1.5						✓													✓			
BH102 0.2-0.3	3					✓		✓														
BH102 0.7-0.8						✓													✓			
BH103 0.2-0.3	4					✓		✓														
BH103 1.1-1.2						✓													✓			
BH104 0.3-0.4	5					✓		✓														
BH104 0.8-0.9						✓													✓			
BH105 0.2-0.3	6					✓		✓														
BH105 1.4-1.5						✓													✓			
BH106 0.2-0.3	7					✓		✓				✓										

Container Type:
J= solvent washed, acid rinsed, Teflon sealed, glass jar
S= solvent washed, acid rinsed glass bottle
P= natural HDPE plastic bottle
VC= glass vial, Teflon Septum
ZLB = Zip-Lock Bag

Comments

HM [A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / TDU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND
- [x] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other_____

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (SGS):
Print: JOEL HEININGER	Print: Suba
Signature:	Signature:
Date: 11.07.19	Date: 11/07/19 @ 3:20

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

Sampler's Comments:

SGS EHS Alexandria Laboratory
SE195215 COC
Received: 11-Jul-2019

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

Sheet 2 of 3

Site: 86-94 CASTLEREAGH ST, AND 77-79 BATHURST ST, LIVERPOOL NSW

Project No: E24273. E02

Laboratory: SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS	HOLD.			TCLP HM [B] / PAH
BH106 – 0.7-0.8		JAR ZLB	10-07-19			✓														✓			
BH106 – 1.1-1.2		↓	↓			✓														✓			
BH107 – 0.2-0.3	8					✓		✓															
BH107 – 0.6-0.7						✓														✓			
BH107 – 1.4-1.5	9					✓			✓														
BH108 – 0.3-0.4	10					✓		✓															
BH108 – 0.9-1.0						✓														✓			
BH109 – 0.2-0.3	11					✓		✓				✓											
BH109 – 0.9-1.0	12					✓			✓														
BH110 – 0.2-0.3	13					✓		✓															
BH110 – 0.6-0.7						✓														✓			
BH110 – 1.1-1.2	14	↓	↓			✓			✓														

Comments

HM [A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / TDU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND

- [x] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other_____

Container Type:
J= solvent washed, acid rinsed, Teflon sealed, glass jar
S= solvent washed, acid rinsed glass bottle
P= natural HDPE plastic bottle
VC= glass vial, Teflon Septum
ZLB = Zip-Lock Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (SGS):
Print: JOEL HEININGER	Print: Suba
Signature:	Signature:
Date: 11.07.19	Date: 11/07/19 @ 3.20

Sampler's Comments:

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

Sheet 3 of 3

Site: 86-94 CASTLEREAGH ST, AND 77-79 BATHURST ST, LIVERPOOL NSW

Project No: E24273. E02

Laboratory: SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM[A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM[A] /TRH/BTEX/PAHs	HM[A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS	HOLD.			TCLP HM[B] / PAH
BH111_0.2-0.3	15	JAR ZLB	10.07.19			/		/														
BH111_0.7-0.8						/														/		
BH111_1.4-1.5	16					/			/													
BH112_0.2-0.3	17					/		/														
BH112_0.7-0.8	18					/			/													
BH113_0.2-0.3	19					/		/														
BH113_1.2-1.3	20					/			/													
QD1	21	JAR				/				/												
QR1	22	VIALS BOTTLES			/	/				/												
QTS1	23	VIAL	HAB Preserved			/					/											
QTB1	24	VIAL				/					/											

Comments

HM[A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM[B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / TDU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND

- [x] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other_____

Container Type:
J= solvent washed, acid rinsed,Teflon sealed, glass jar
S= solvent washed, acid rinsed glass bottle
P= natural HDPE plastic bottle
VC= glass vial, Teflon Septum
ZLB = Zip-Lock Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (SGS):
Print: JOEL HEININGER	Print: Suba
Signature:	Signature:
Date: 11.07.19	Date: 11/07/19 @ 3:20

Sampler's Comments:

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

SAMPLE RECEIPT ADVICE

SE195215

CLIENT DETAILS

Contact	Joel Heininger
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	joel.heininger@eiaustralia.com.au
Project	**E24273.E02 Castlereagh&Bathurst Liverpoo**
Order Number	**E24273.E02**
Samples	24

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 11/7/2019
Report Due	Thu 18/7/2019
SGS Reference	**SE195215**

SUBMISSION DETAILS

This is to confirm that 24 samples were received on Thursday 11/7/2019. Results are expected to be ready by COB Thursday 18/7/2019. Please quote SGS reference SE195215 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	23 Soil, 1 Water
Date documentation received	11/7/2019	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	6.2°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

11 soil sample has been placed on hold as no tests have been assigned for it. This sample will not be processed.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

SAMPLE RECEIPT ADVICE

SE195215

CLIENT DETAILS

Client EI AUSTRALIA

Project E24273.E02 Castlereagh&Bathurst Liverpoo

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Total Recoverable Elements in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	BH101-0.1-0.2	29	14	26	11	7	10	12	8
002	BH101-0.6-0.7	29	14	26	11	7	10	12	8
003	BH102-0.2-0.3	29	14	26	11	7	10	12	8
004	BH103-0.2-0.3	29	14	26	11	7	10	12	8
005	BH104-0.3-0.4	29	14	26	11	7	10	12	8
006	BH105-0.2-0.3	29	14	26	11	7	10	12	8
007	BH106-0.2-0.3	29	14	26	11	7	10	82	8
008	BH107-0.2-0.3	29	14	26	11	7	10	12	8
009	BH107-1.4-1.5	-	-	26	-	7	10	12	8
010	BH108-0.3-0.4	29	14	26	11	7	10	12	8
011	BH109-0.2-0.3	29	14	26	11	7	10	82	8
012	BH109-0.9-1.0	-	-	26	-	7	10	12	8
013	BH110-0.2-0.3	29	14	26	11	7	10	12	8
014	BH110-1.1-1.2	-	-	26	-	7	10	12	8
015	BH111-0.2-0.3	29	14	26	11	7	10	12	8
016	BH111-1.4-1.5	-	-	26	-	7	10	12	8
017	BH112-0.2-0.3	29	14	26	11	7	10	12	8
018	BH112-0.7-0.8	-	-	26	-	7	10	12	8
019	BH113-0.2-0.3	29	14	26	11	7	10	12	8
020	BH113-1.2-1.3	-	-	26	-	7	10	12	8
021	QD1	-	-	-	-	7	10	12	8
023	QTS1	-	-	-	-	-	-	12	-
024	QTB1	-	-	-	-	-	-	12	-

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE195215

CLIENT DETAILS

Client EI AUSTRALIA

Project E24273.E02 Castlereagh&Bathurst Liverpoo

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content
001	BH101-0.1-0.2	2	1	1
002	BH101-0.6-0.7	2	1	1
003	BH102-0.2-0.3	2	1	1
004	BH103-0.2-0.3	2	1	1
005	BH104-0.3-0.4	2	1	1
006	BH105-0.2-0.3	2	1	1
007	BH106-0.2-0.3	2	1	1
008	BH107-0.2-0.3	2	1	1
009	BH107-1.4-1.5	-	1	1
010	BH108-0.3-0.4	2	1	1
011	BH109-0.2-0.3	2	1	1
012	BH109-0.9-1.0	-	1	1
013	BH110-0.2-0.3	2	1	1
014	BH110-1.1-1.2	-	1	1
015	BH111-0.2-0.3	2	1	1
016	BH111-1.4-1.5	-	1	1
017	BH112-0.2-0.3	2	1	1
018	BH112-0.7-0.8	-	1	1
019	BH113-0.2-0.3	2	1	1
020	BH113-1.2-1.3	-	1	1
021	QD1	-	1	1
024	QTB1	-	-	1

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE195215

CLIENT DETAILS

Client EI AUSTRALIA

Project E24273.E02 Castlereagh&Bathurst Liverpoo

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
022	QR1	1	7	10	12	8

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

source: [Untitled].pdf page: 1 SGS Ref: SE195781_COC

Sheet 1 of 1

Site: 86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool

Project No: E24273

Laboratory: SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	TRH/BTEX/Lead	TRH/BTEX	PAHs	VOCs	Asbestos	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	sPOCAS				TCLP PAHs	TCLP HM [A]	TCLP HM [B]
GW101	1	S,P×2,VOX2	26/7/19		X				X					X										
GW102	2	S,P×2,VOX2	26/7/19		X				X					X										

Comments

HM [A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

SGS EHS Alexandria Laboratory
SE195781 COC
Received: 26 – Jul – 2019

LABORATORY TURNAROUND
- [x] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other_____

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Sampler's Comments:

Container Type:
J= solvent washed, acid rinsed, Teflon sealed, glass jaR
S= solvent washed, acid rinsed glass bottle
P= natural HDPE plastic bottle
VC= glass vial, Teflon Septum
ZLB = Zip-Lock Bag

Sampler's Name (EI): Lan Ye
Print
Signature
Date 26/7/19

Received by (SGS):
Print Bernel Jiri
Signature
Date 26/7/19 3:25

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street, PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

Yin, Emily (Sydney)

From: Joel Heininger - ElAustralia <joel.heininger@eiaustralia.com.au>
Sent: Wednesday, 31 July 2019 4:33 PM
To: AU.Environmental.Sydney (Sydney)
Cc: AU.SampleReceipt.Sydney (Sydney); Emmanuel Woelders - ElAustralia
Subject: [EXTERNAL] RE: SGS Sample Receipt Advice (Ref: E24273 Castlereagh & Bathurst Liverpool, Lab Ref: SE195781)

*** WARNING: this message is from an EXTERNAL SENDER. Please be cautious, particularly with links and attachments. ***

Dear SGS Team,

Could I please get samples on this COC re-labelled as per the following:

-GW101 to be relabelled as DP_BH2-1
-GW102 to be relabelled as DP_BH4-1

If you have any queries please do not hesitate to contact me.

Kind regards,

Joel Heininger | Environmental Engineer

E: joel.heininger@eiaustralia.com.au
T: 02 9516 0722 M: 0413 493 535
Head Office: Suite 6.01, 55 Miller Street, Pyrmont, NSW 2009
Wollongong: Suite 101, Level 1, 1 Burelli Street, Wollongong, NSW 2500 www.eiaustralia.com.au

El Australia is a proud member of the Australian Contaminated Land Consultants Association and the Australian Geomechanics Society.

CONFIDENTIALITY - This email contains confidential and privileged information.
If you are not the intended recipient, our apologies - please destroy it and notify us so that we can appropriately re-address it.
Disclosure, copying, distribution or use of the contents of this email is strictly prohibited.

Please consider the environment before printing this email.

-----Original Message-----
From: AU.Samplereceipt.Sydney@SGS.com [mailto:AU.Samplereceipt.Sydney@SGS.com]
Sent: Friday, 26 July 2019 6:04 PM
To: Lan Ye - ElAustralia; Laboratory Results - ElAustralia
Subject: SGS Sample Receipt Advice (Ref: E24273 Castlereagh & Bathurst Liverpool, Lab Ref: SE195781)

Dear Lan Ye,

Please be advised we have received samples for analysis as detailed in the attached documentation.

Best regards,
SGS Alexandria Sample Administration Team

SAMPLE RECEIPT ADVICE

SE195781

CLIENT DETAILS

Contact	Lan Ye
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	Lan.ye@eiaustralia.com.au
Project	**E24273 Castlereagh & Bathurst Liverpool**
Order Number	**E24273**
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Fri 26/7/2019
Report Due	Fri 2/8/2019
SGS Reference	**SE195781**

SUBMISSION DETAILS

This is to confirm that 2 samples were received on Friday 26/7/2019. Results are expected to be ready by COB Friday 2/8/2019. Please quote SGS reference SE195781 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	2 Water
Date documentation received	26/7/2019	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	12.6°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

SAMPLE RECEIPT ADVICE

SE195781

CLIENT DETAILS

Client EI AUSTRALIA

Project E24273 Castlereagh & Bathurst Liverpool

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	PAH (Polynuclear Aromatic Hydrocarbons) in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	DP_BH2-1	1	22	7	10	78	7
002	DP_BH4-1	1	22	7	10	78	7

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

source: [Untitled].pdf page: 1 SGS Ref: SE195781A_COC

Yin, Emily (Sydney)

From: Joel Heininger - ElAustralia <joel.heininger@eiaustralia.com.au>
Sent: Thursday, 1 August 2019 9:50 AM
To: AU.Environmental.Sydney (Sydney)
Cc: AU.SampleReceipt.Sydney (Sydney); Emmanuel Woelders - ElAustralia; Lan Ye - ElAustralia
Subject: [EXTERNAL] RE: SGS Sample Receipt Advice (Ref: E24273 Castlereagh & Bathurst Liverpool, Lab Ref: SE195781)

*** WARNING: this message is from an EXTERNAL SENDER. Please be cautious, particularly with links and attachments. ***

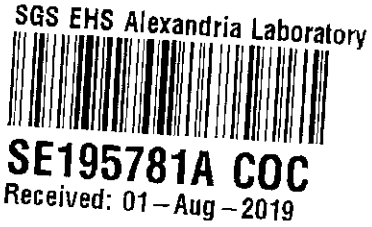
Dear SGS Team,

Further to the below, could I please get some additional analysis conducted on samples please?
Could samples GW101 (relabelled as DP_BH2-1) & GW102 (relabelled as DP_BH4-1) be analysed for:

-EC
-pH
-Hardness
-Aluminium
-Phenols

If any of the above cannot be completed, or is out of holding time please let me know.

Kind regards,



Joel Heininger | Environmental Engineer

E: joel.heininger@eiaustralia.com.au
T: 02 9516 0722 M: 0413 493 535
Head Office: Suite 6.01, 55 Miller Street, Pyrmont, NSW 2009
Wollongong: Suite 101, Level 1, 1 Burelli Street, Wollongong, NSW 2500 www.eiaustralia.com.au

El Australia is a proud member of the Australian Contaminated Land Consultants Association and the Australian Geomechanics Society.

CONFIDENTIALITY - This email contains confidential and privileged information.
If you are not the intended recipient, our apologies - please destroy it and notify us so that we can appropriately re-address it.
Disclosure, copying, distribution or use of the contents of this email is strictly prohibited.

Please consider the environment before printing this email.

-----Original Message-----
From: Joel Heininger - ElAustralia
Sent: Wednesday, 31 July 2019 4:33 PM
To: 'AU.Environmental.Sydney (Sydney)'
Cc: 'AU.Samplereceipt.Sydney@SGS.com'; Emmanuel Woelders - ElAustralia
Subject: RE: SGS Sample Receipt Advice (Ref: E24273 Castlereagh & Bathurst Liverpool, Lab Ref: SE195781)

Dear SGS Team,

Yin, Emily (Sydney)

From: AU.Environmental.Sydney (Sydney)
Sent: Thursday, 1 August 2019 11:06 AM
To: AU.SampleReceipt.Sydney (Sydney)
Subject: FW: [EXTERNAL] RE: SGS Sample Receipt Advice (Ref: E24273 Castlereagh & Bathurst Liverpool, Lab Ref: SE195781)

Hi

Here's Joel's message - there are a couple of things in this email you make sure all of it is action

Hi Paul,

Thank you for your email.
Please proceed on 72hr TAT with:

-EC
-Hardness
-Aluminium
-Phenols

Could you also please replicate this for samples in job SE195781.

Regards,

Paul Harley
Environment, Health & Safety
Client Manager

Phone: +61 (0)2 8594 0400
Direct: +61 (0)2 8594 0449
Mobile: +61 (0)4 0797 2867

-----Original Message-----
From: Joel Heininger - EIAustralia <joel.heininger@eiaustralia.com.au>
Sent: Thursday, 1 August 2019 9:50 AM
To: AU.Environmental.Sydney (Sydney) <AU.Environmental.Sydney@sgs.com>
Cc: AU.SampleReceipt.Sydney (Sydney) <AU.SampleReceipt.Sydney@sgs.com>; Emmanuel Woelders - EIAustralia <emmanuel.woelders@eiaustralia.com.au>; Lan Ye - EIAustralia <lan.ye@eiaustralia.com.au>
Subject: [EXTERNAL] RE: SGS Sample Receipt Advice (Ref: E24273 Castlereagh & Bathurst Liverpool, Lab Ref: SE195781)

*** WARNING: this message is from an EXTERNAL SENDER. Please be cautious, particularly with links and attachments. ***

Dear SGS Team,

Further to the below, could I please get some additional analysis conducted on samples please?
Could samples GW101 (relabelled as DP_BH2-1) & GW102 (relabelled as DP_BH4-1) be analysed for:
-EC

SAMPLE RECEIPT ADVICE

SE195781A

CLIENT DETAILS

Contact	Joel Heininger
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	joel.heininger@eiaustralia.com.au
Project	**E24273 Castlereagh&Bathurst Liverpool-Ad**
Order Number	**E24273**
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 1/8/2019
Report Due	Tue 6/8/2019
SGS Reference	**SE195781A**

SUBMISSION DETAILS

This is to confirm that 2 samples were received on Thursday 1/8/2019. Results are expected to be ready by COB Tuesday 6/8/2019. Please quote SGS reference SE195781A when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	2 Water
Date documentation received	1/8/19@9:50am	Type of documentation received	Email
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	12.6°C	Sufficient sample for analysis	Yes
Turnaround time requested	Three Days		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

SAMPLE RECEIPT ADVICE

SE195781A

CLIENT DETAILS

Client EI AUSTRALIA

Project E24273 Castlereagh&Bathurst Liverpool-Ad

SUMMARY OF ANALYSIS

No.	Sample ID	Conductivity and TDS by Calculation - Water	Metals in Water (Dissolved) by ICPOES	Total Phenolics in Water	Trace Metals (Dissolved) in Water by ICPMS
001	DP_BH2-1	1	3	1	1
002	DP_BH4-1	1	3	1	1

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

source: [Untitled]_20190726063439O0.pdf page: 3 SGS Ref: SE195782_COC

Sheet 1 of 1

Site: 86-94 Castlereagh and 77-79 Bathurst Streets, Liverpool

Project No: E24273

Laboratory: SGS Australia
Unit 16, 33 Maddox Street,
ALEXANDRIA NSW 2015
P: 02 8594 0400 F: 02 8594 0499

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	Sample Matrix: WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	Analysis: HM [A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM [A] /TRH/BTEX/PAHs	HM [A] /TRH/BTEX	TRH/BTEX/Lead	TRH/BTEX	PAHs	VOCs	Asbestos	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	sPOCAS	TCLP PAHs	TCLP HM [A]	TCLP HM [B]
BH110M		S, PX2, VOX2	26/7/19	1	X				X					X							
BH112M		↓	↓	2	↓				X					X							
GWQD1		↓	↓	3	↓					X											
GWQR1		S, VCX2	↓	4	↓					X											
GWQTS1		VC	Lab prepared	5	↓							X									
GWQTB1		VC	↓	6	↓							X									

Comments

HM [A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM [B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

SGS EHS Alexandria Laboratory
SE195782 COC
Received: 26 – Jul – 2019

LABORATORY TURNAROUND
- [x] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other_____

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Sampler's Comments:

Container Type:
J= solvent washed, acid rinsed, Teflon sealed, glass jaR
S= solvent washed, acid rinsed glass bottle
P= natural HDPE plastic bottle
VC= glass vial, Teflon Septum
ZLB = Zip-Lock Bag

Sampler's Name (EI):	Received by (SGS):
Print: Lan Ye	Print: Bernel Jiri
Signature:	Signature:
Date: 26/7/19	Date: 26/7/19

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street, PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

SAMPLE RECEIPT ADVICE

SE195782

CLIENT DETAILS

Contact	Lan Ye
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	Lan.ye@eiaustralia.com.au
Project	**E24273 86-94 Castlereagh & 77-79 Bathurs**
Order Number	**E24273**
Samples	6

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Fri 26/7/2019
Report Due	Fri 2/8/2019
SGS Reference	**SE195782**

SUBMISSION DETAILS

This is to confirm that 6 samples were received on Friday 26/7/2019. Results are expected to be ready by COB Friday 2/8/2019. Please quote SGS reference SE195782 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	6 Water
Date documentation received	26/7/2019	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	12.6°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

SAMPLE RECEIPT ADVICE

SE195782

CLIENT DETAILS

Client EI AUSTRALIA

Project E24273 86-94 Castlereagh & 77-79 Bathurs

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury (dissolved) in Water	PAH (Polynuclear Aromatic Hydrocarbons) in Water	Trace Metals (Dissolved) in Water by ICPMS	TRH (Total Recoverable Hydrocarbons) in Water	VOCs in Water	Volatile Petroleum Hydrocarbons in Water
001	BH110M	1	22	7	10	78	7
002	BH112M	1	22	7	10	78	7
003	GWQD1	1	-	7	10	11	7
004	GWQR1	1	-	7	10	11	7
005	GWQTS1	-	-	-	-	11	-
006	GWQTB1	-	-	-	-	11	-

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

source: [Untitled]_20190801005040000.pdf page: 1 SGS Ref: SE195782A_COC

Yin, Emily (Sydney)

From: Joel Heininger - ElAustralia <joel.heininger@eiaustralia.com.au>
Sent: Thursday, 1 August 2019 9:46 AM
To: AU.SampleReceipt.Sydney (Sydney)
Cc: AU.Environmental.Sydney (Sydney); Lan Ye - ElAustralia; Emmanuel Woelders - ElAustralia
Subject: [EXTERNAL] RE: SGS Sample Receipt Advice (Ref: E24273 86-94 Castlereagh & 77-79 Bathurs, Lab Ref: SE195782)

*** WARNING: this message is from an EXTERNAL SENDER. Please be cautious, particularly with links and attachments. ***

Dear SGS Team,

SGS EHS Alexandria Laboratory
SE195782A COC
Received: 01 – Aug – 2019

Could I please get some additional analysis conducted on samples please?
Could samples BH110M & BH112M be analysed for:

- -EC
- -pH
- -Hardness
- -Aluminium
- -Phenols

If any of the above cannot be completed, or is out of holding time please let me know.

Kind regards,

Joel Heininger | Environmental Engineer

E: joel.heininger@eiaustralia.com.au
T: 02 9516 0722 M: 0413 493 535
Head Office: Suite 6.01, 55 Miller Street, Pyrmont, NSW 2009
Wollongong: Suite 101, Level 1, 1 Burelli Street, Wollongong, NSW 2500 www.eiaustralia.com.au

El Australia is a proud member of the Australian Contaminated Land Consultants Association and the Australian Geomechanics Society.

CONFIDENTIALITY - This email contains confidential and privileged information.
If you are not the intended recipient, our apologies - please destroy it and notify us so that we can appropriately re-address it.
Disclosure, copying, distribution or use of the contents of this email is strictly prohibited.

Please consider the environment before printing this email.

-----Original Message-----
From: AU.Samplereceipt.Sydney@SGS.com [mailto:AU.Samplereceipt.Sydney@SGS.com]
Sent: Friday, 26 July 2019 6:23 PM
To: Lan Ye - ElAustralia; Laboratory Results - ElAustralia
Subject: SGS Sample Receipt Advice (Ref: E24273 86-94 Castlereagh & 77-79 Bathurs, Lab Ref: SE195782)

Dear Lan Ye,

Please be advised we have received samples for analysis as detailed in the attached documentation.

Yin, Emily (Sydney)

From: AU.Environmental.Sydney (Sydney)
Sent: Thursday, 1 August 2019 11:06 AM
To: AU.SampleReceipt.Sydney (Sydney)
Subject: FW: [EXTERNAL] RE: SGS Sample Receipt Advice (Ref: E24273 Castlereagh & Bathurst Liverpool, Lab Ref: SE195781)

Hi

Here's Joel's message - there are a couple of things in this email you make sure all of it is action

Hi Paul,

Thank you for your email.
Please proceed on 72hr TAT with:

-EC
-Hardness
-Aluminium
-Phenols

Could you also please replicate this for samples in job SE195781.

Regards,

Paul Harley
Environment, Health & Safety
Client Manager

Phone: +61 (0)2 8594 0400
Direct: +61 (0)2 8594 0449
Mobile: +61 (0)4 0797 2867

-----Original Message-----
From: Joel Heininger - EIAustralia <joel.heininger@eiaustralia.com.au>
Sent: Thursday, 1 August 2019 9:50 AM
To: AU.Environmental.Sydney (Sydney) <AU.Environmental.Sydney@sgs.com>
Cc: AU.SampleReceipt.Sydney (Sydney) <AU.SampleReceipt.Sydney@sgs.com>; Emmanuel Woelders - EIAustralia <emmanuel.woelders@eiaustralia.com.au>; Lan Ye - EIAustralia <lan.ye@eiaustralia.com.au>
Subject: [EXTERNAL] RE: SGS Sample Receipt Advice (Ref: E24273 Castlereagh & Bathurst Liverpool, Lab Ref: SE195781)

*** WARNING: this message is from an EXTERNAL SENDER. Please be cautious, particularly with links and attachments. ***

Dear SGS Team,

Further to the below, could I please get some additional analysis conducted on samples please?
Could samples GW101 (relabelled as DP_BH2-1) & GW102 (relabelled as DP_BH4-1) be analysed for:
-EC

SAMPLE RECEIPT ADVICE

SE195782A

CLIENT DETAILS

Contact	Joel Heininger
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	joel.heininger@eiaustralia.com.au
Project	**E24273 Castlereagh&Bathurst Liverpool-Ad**
Order Number	**E24273**
Samples	6

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 1/8/2019
Report Due	Tue 6/8/2019
SGS Reference	**SE195782A**

SUBMISSION DETAILS

This is to confirm that 6 samples were received on Thursday 1/8/2019. Results are expected to be ready by COB Tuesday 6/8/2019. Please quote SGS reference SE195782A when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	2 Water
Date documentation received	1/8/19@9:46am	Type of documentation received	Email
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	12.6°C	Sufficient sample for analysis	Yes
Turnaround time requested	Three Days		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

SAMPLE RECEIPT ADVICE

SE195782A

CLIENT DETAILS

Client EI AUSTRALIA

Project E24273 Castlereagh&Bathurst Liverpool-Ad

SUMMARY OF ANALYSIS

No.	Sample ID	Conductivity and TDS by Calculation - Water	Metals in Water (Dissolved) by ICPOES	Total Phenolics in Water	Trace Metals (Dissolved) in Water by ICPMS
001	BH110M	1	3	1	1
002	BH112M	1	3	1	1

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

Sheet _____ of _____

Site: 86 - 94 CASTLEREAGH ST AND 77 - 79 BATHURST ST, LIVERPOOL

Project No: E24273. E02

Laboratory: Envirolab Services
12 Ashley Street,
CHATSWOOD NSW 2067
P: 02 9910 6200

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	HM[A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM[A] /TRH/BTEX/PAHs	HM[A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS				TCLP HM[B] / PAH
QT 1	1	JAR	10-07-19			✓				✓													

ENVIROLAB

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 221463

Date Received: 11/07/19

Time Received: 15:11

Received by: SB

Temp: Cool/Ambient

Cooling: Ice/Icepack

Security: Intact/Broken/None

Comments

HM[A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM[B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / TDU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND

- [x] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other_____

Container Type:
J= solvent washed, acid rinsed,Teflon sealed, glass jar
S= solvent washed, acid rinsed glass bottle
P= natural HDPE plastic bottle
VC= glass vial, Teflon Septum
ZLB = Zip-Lock Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Sampler's Name (EI):	Received by (Envirolab)
Print: JOEL HEININGER	Print: S. Bolton
Signature:	Signature:
Date: 10-07-19	Date: 11/07/19

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

Report with EI Waste Classification Table ☐

Sampler's Comments:

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

Sheet 1 of 1

Site: 86-94 Castlereagh St and 77-79 Bathurst Street, Liverpool

Project No: E24273

Laboratory: Envirolab Services
12 Ashley Street,
CHATSWOOD NSW 2067
P: 02 9910 6200

Sample ID	Laboratory ID	Container Type	Sampling Date	Sampling Time	WATER	SOIL	OTHERS (i.e. Fibro, Paint, etc.)	HM[A] /TRH/BTEX/PAHs OCP/OP/PCB/Asbestos	HM[A] /TRH/BTEX/PAHs	HM[A] /TRH/BTEX	BTEX	VOCs	Asbestos	Asbestos Quantification	pH / CEC (cation exchange)	pH / EC (electrical conductivity)	Dewatering Suite	sPOCAS	PFAS				TCLP HM[B] / PAH
GW QT1	(1)	S, P x2, VOx2	26/7/19		X					X									—	—			

ENVIROLAB GROUP

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 222900
Date Received: 1/8/2019
Time Received: 15:35
Received by: EL
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

Comments

HM[A]
Arsenic
Cadmium
Chromium
Copper
Lead
Mercury
Nickel
Zinc

HM[B]
Arsenic
Cadmium
Chromium
Lead
Mercury
Nickel

Dewatering Suite
pH & EC
TDS / TDU
Hardness
Total Cyanide
Metals (Al, As, Cd, Cr, Cu, Pb, Hg, Ni, Zn)
TRH (F1, F2, F3, F4)
BTEX
PAH
Total Phenol

LABORATORY TURNAROUND

- [x] Standard
- [ ] 24 Hours
- [ ] 48 Hours
- [ ] 72 Hours
- [ ] Other_____

Container Type:
J= solvent washed, acid rinsed,Teflon sealed, glass jar
S= solvent washed, acid rinsed glass bottle
P= natural HDPE plastic bottle
VC= glass vial, Teflon Septum
ZLB = Zip-Lock Bag

Investigator: I attest that these samples were collected in accordance with standard EI field sampling procedures.

Report with EI Waste Classification Table ☐

Sampler's Name (EI):	Received by (Envirolab)
Print: Lan Fe	Print: EL
Signature:	Signature:
Date: 1/8/19	Date: 1/8/2019 1535

Sampler's Comments:

IMPORTANT:
Please e-mail laboratory results to: lab@eiaustralia.com.au

eiaustralia
Contamination | Remediation | Geotechnical
Suite 6.01, 55 Miller Street,
PYRMONT NSW 2009
Ph: 9516 0722
lab@eiaustralia.com.au

TO-15 Canister Chain of Custody Record

Dispatch samples to: Unit 10/585 Blackburn Road, Notting Hill, Victoria 3168, Australia

Attn: Sample Reception - Contact Ph: +613 9574 3311
Email: au.samplereceipt.melbourne@sgs.com

CLIENT NAME: EI Australia
CLIENT ADDRESS: Sydney
ABN:
CONTACT: Emmanuel Woelders
SAMPLED BY: MO
PROJECT REF: Liverpool

CONTACT PHONE No: 0499 594 989
CONTACT FAX No:
RESULTS REQUIRED BY: Standard TAT
EMAIL ADDRESS: Emmanuel.woelders@eiaustralia.com.au
LAB QUOTE NUMBER:
PURCHASE ORDER NUMBER:

Client Sample ID (Field Location)	Canister #	Back up Carbon Tube #	Soil Gas Train/ Mass Flow Controller #	Purge Volume	Leak Test Passed	PID	Vacuum	Carbon Tube Sample Volume	Date of Collection	Collection Time		Canister Pressure/Vacuum		Analysis Requested				
										Time on	Time Off	Inital	Final	TO-15	TO-17	TO-3		
SV1	4217	718414	0008	100mL	✓	–	-2"Hg	500mL	18-7-19	1007	1017	-30"Hg	-6"Hg	X				
SV1-DUP	3696	718111	0022	100mL	✓	–	-1"Hg	500mL	18-7-19	1018	1025	-28"Hg	-4"Hg	X				
SV2	4216	718413	0003	100mL	✓	–	0"Hg	500mL	18-7-19	1036	1043	-30"Hg	-4"Hg	X				
PLANK	–	618354	–	–	–	–	–	–	18-7-19	–	–	-0	-0			X		
SHROUD	–	618353	–	–	–	–	–	50mL	18-7-19	–	–	–	–		X			

RELEASED BY: (Name) Mitchell Dady (Signature) (Date / Time) 18-7-19 1430

RECEIVED BY: (Name) ALBERT (Signature) (Date / Time) 22/7/19 9.55

Notes: Ambient hydrocarbon odour from neighbouring service station

EI Australia

Fri 19/07/2019 10:46 AM

To:AU.SampleReceipt.Melbourne (Melbourne) <Au.samplereceipt.melbourne@sgs.com>; Saunder, Narelle (Melbourne) <Narelle.Saunder@sgs.com>; Srivastava, Vasundhra (Melbourne) <Vasundhra.Srivastava@sgs.com>;

Hi Guys,

I just had a call from EI Australia to make the following changes to the analysis for the Gymea and Liverpool jobs. The changes are as follows;

Gymea – TRH and BTEX only, No TO-17

Liverpool – TO-15 and TRH BTEX

Cheers,

Mitchell Duley
Environment, Health and Safety
Senior Environmental Scientist

SGS Australia PTY LTD
33 Maddox Street,
Alexandria NSW 2015

Mobile: +61 (0)407 772 827
Email: mitchell.duley@sgs.com

Appendix I – Laboratory Analytical Reports

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS		LABORATORY DETAILS	
Contact	Joel Heininger	Manager	Huong Crawford
Client	EI AUSTRALIA	Laboratory	SGS Alexandria Environmental
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009	Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	61 2 95160722	Telephone	+61 2 8594 0400
Facsimile	(Not specified)	Facsimile	+61 2 8594 0499
Email	joel.heininger@eiaustralia.com.au	Email	au.environmental.sydney@sgs.com
Project	**E24273.E02 Castlereagh&Bathurst Liverpoo**	SGS Reference	**SE195215 R0**
Order Number	**E24273.E02**	Date Received	11 Jul 2019
Samples	24	Date Reported	19 Jul 2019

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all soil samples using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin .

SIGNATORIES

Akheeqar Beniameen
Chemist

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.001 Soil 10 Jul 2019 BH101-0.1-0.2	SE195215.002 Soil 10 Jul 2019 BH101-0.6-0.7	SE195215.003 Soil 10 Jul 2019 BH102-0.2-0.3	SE195215.004 Soil 10 Jul 2019 BH103-0.2-0.3
VOC's in Soil Method: AN433 Tested: 15/7/2019							
Fumigants							
2,2-dichloropropane	mg/kg	0.1		-	-	-	-
1,2-dichloropropane	mg/kg	0.1		-	-	-	-
cis-1,3-dichloropropene	mg/kg	0.1		-	-	-	-
trans-1,3-dichloropropene	mg/kg	0.1		-	-	-	-
1,2-dibromoethane (EDB)	mg/kg	0.1		-	-	-	-
Halogenated Aliphatics							
Dichlorodifluoromethane (CFC-12)	mg/kg	1		-	-	-	-
Chloromethane	mg/kg	1		-	-	-	-
Vinyl chloride (Chloroethene)	mg/kg	0.1		-	-	-	-
Bromomethane	mg/kg	1		-	-	-	-
Chloroethane	mg/kg	1		-	-	-	-
Trichlorofluoromethane	mg/kg	1		-	-	-	-
Iodomethane	mg/kg	5		-	-	-	-
1,1-dichloroethene	mg/kg	0.1		-	-	-	-
Dichloromethane (Methylene chloride)	mg/kg	0.5		-	-	-	-
Allyl chloride	mg/kg	0.1		-	-	-	-
trans-1,2-dichloroethene	mg/kg	0.1		-	-	-	-
1,1-dichloroethane	mg/kg	0.1		-	-	-	-
cis-1,2-dichloroethene	mg/kg	0.1		-	-	-	-
Bromochloromethane	mg/kg	0.1		-	-	-	-
1,2-dichloroethane	mg/kg	0.1		-	-	-	-
1,1,1-trichloroethane	mg/kg	0.1		-	-	-	-
1,1-dichloropropene	mg/kg	0.1		-	-	-	-
Carbon tetrachloride	mg/kg	0.1		-	-	-	-
Dibromomethane	mg/kg	0.1		-	-	-	-
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1		-	-	-	-
1,1,2-trichloroethane	mg/kg	0.1		-	-	-	-
1,3-dichloropropane	mg/kg	0.1		-	-	-	-
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1		-	-	-	-
1,1,1,2-tetrachloroethane	mg/kg	0.1		-	-	-	-
cis-1,4-dichloro-2-butene	mg/kg	1		-	-	-	-
1,1,2,2-tetrachloroethane	mg/kg	0.1		-	-	-	-
1,2,3-trichloropropane	mg/kg	0.1		-	-	-	-
trans-1,4-dichloro-2-butene	mg/kg	1		-	-	-	-
1,2-dibromo-3-chloropropane	mg/kg	0.1		-	-	-	-
Hexachlorobutadiene	mg/kg	0.1		-	-	-	-
Halogenated Aromatics							
Chlorobenzene	mg/kg	0.1		-	-	-	-
Bromobenzene	mg/kg	0.1		-	-	-	-
2-chlorotoluene	mg/kg	0.1		-	-	-	-
4-chlorotoluene	mg/kg	0.1		-	-	-	-
1,3-dichlorobenzene	mg/kg	0.1		-	-	-	-
1,4-dichlorobenzene	mg/kg	0.1		-	-	-	-
1,2-dichlorobenzene	mg/kg	0.1		-	-	-	-
1,2,4-trichlorobenzene	mg/kg	0.1		-	-	-	-
1,2,3-trichlorobenzene	mg/kg	0.1		-	-	-	-
Monocyclic Aromatic Hydrocarbons							
Benzene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Styrene (Vinyl benzene)	mg/kg	0.1		-	-	-	-
Isopropylbenzene (Cumene)	mg/kg	0.1		-	-	-	-
n-propylbenzene	mg/kg	0.1		-	-	-	-

Parameter	Units	LOR	Sample Number: SE195215.001 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH101-0.1-0.2	SE195215.002 Soil 10 Jul 2019 BH101-0.6-0.7	SE195215.003 Soil 10 Jul 2019 BH102-0.2-0.3	SE195215.004 Soil 10 Jul 2019 BH103-0.2-0.3
VOC's in Soil Method: AN433 Tested: 15/7/2019 (continued)						
1,3,5-trimethylbenzene	mg/kg	0.1	-	-	-	-
tert-butylbenzene	mg/kg	0.1	-	-	-	-
1,2,4-trimethylbenzene	mg/kg	0.1	-	-	-	-
sec-butylbenzene	mg/kg	0.1	-	-	-	-
p-isopropyltoluene	mg/kg	0.1	-	-	-	-
n-butylbenzene	mg/kg	0.1	-	-	-	-
Nitrogenous Compounds						
Acrylonitrile	mg/kg	0.1	-	-	-	-
2-nitropropane	mg/kg	10	-	-	-	-
Oxygenated Compounds						
Acetone (2-propanone)	mg/kg	10	-	-	-	-
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	-	-	-	-
Vinyl acetate	mg/kg	10	-	-	-	-
MEK (2-butanone)	mg/kg	10	-	-	-	-
MIBK (4-methyl-2-pentanone)	mg/kg	1	-	-	-	-
2-hexanone (MBK)	mg/kg	5	-	-	-	-
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Sulphonated Compounds						
Carbon disulfide	mg/kg	0.5	-	-	-	-
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**98**	**80**	**85**	**97**
d4-1,2-dichloroethane (Surrogate)	%	-	**80**	**72**	**78**	**84**
d8-toluene (Surrogate)	%	-	**83**	**64**	**76**	**85**
Bromofluorobenzene (Surrogate)	%	-	**74**	**57**	**66**	**82**
Totals						
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Total VOC*	mg/kg	24	-	-	-	-
Total Volatile Chlorinated Hydrocarbons*	mg/kg	3	-	-	-	-
Total Other Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	-	-	-	-
Total Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	-	-	-	-

Parameter	Units	LOR	Sample Number: SE195215.001 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH101-0.1-0.2	SE195215.002 Soil 10 Jul 2019 BH101-0.6-0.7	SE195215.003 Soil 10 Jul 2019 BH102-0.2-0.3	SE195215.004 Soil 10 Jul 2019 BH103-0.2-0.3
VOC's in Soil Method: AN433 Tested: 15/7/2019 (continued)						
Trihalomethanes						
Chloroform	mg/kg	0.1	-	-	-	-
Bromodichloromethane	mg/kg	0.1	-	-	-	-
Chlorodibromomethane	mg/kg	0.1	-	-	-	-
Bromoform	mg/kg	0.1	-	-	-	-
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 15/7/2019						
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**98**	**80**	**85**	**97**
d4-1,2-dichloroethane (Surrogate)	%	-	**80**	**72**	**78**	**84**
d8-toluene (Surrogate)	%	-	**83**	**64**	**76**	**85**
Bromofluorobenzene (Surrogate)	%	-	**74**	**57**	**66**	**82**
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 15/7/2019						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	**58**	**82**
TRH C29-C36	mg/kg	45	<45	<45	<45	**180**
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	**270**
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	**340**
TRH F Bands						
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	**170**
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	**170**

Parameter	Units	LOR	Sample Number: SE195215.001 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH101-0.1-0.2	SE195215.002 Soil 10 Jul 2019 BH101-0.6-0.7	SE195215.003 Soil 10 Jul 2019 BH102-0.2-0.3	SE195215.004 Soil 10 Jul 2019 BH103-0.2-0.3
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 15/7/2019						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	**0.1**	<0.1	**0.3**	**0.2**
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	**0.5**	**0.3**
Pyrene	mg/kg	0.1	<0.1	<0.1	**0.4**	**0.3**
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	**0.2**	**0.2**
Chrysene	mg/kg	0.1	<0.1	<0.1	**0.2**	**0.2**
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	**0.3**	**0.2**
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	**0.1**	**0.1**
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	**0.2**	**0.2**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	**0.2**	**0.1**
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	**0.2**	**0.2**
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	**0.3**	**0.2**
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	**0.4**	**0.3**
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	**0.4**	**0.3**
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	**2.6**	**1.8**
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	**2.6**	**1.8**
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	**102**	**104**	**104**	**108**
2-fluorobiphenyl (Surrogate)	%	-	**88**	**84**	**86**	**86**
d14-p-terphenyl (Surrogate)	%	-	**98**	**102**	**100**	**100**
OC Pesticides in Soil Method: AN420 Tested: 15/7/2019						
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1
Surrogates						

Parameter	Units	LOR	Sample Number: SE195215.001 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH101-0.1-0.2	SE195215.002 Soil 10 Jul 2019 BH101-0.6-0.7	SE195215.003 Soil 10 Jul 2019 BH102-0.2-0.3	SE195215.004 Soil 10 Jul 2019 BH103-0.2-0.3
OC Pesticides in Soil Method: AN420 Tested: 15/7/2019 (continued)						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**102**	**97**	**102**	**96**
OP Pesticides in Soil Method: AN420 Tested: 15/7/2019						
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**88**	**84**	**86**	**86**
d14-p-terphenyl (Surrogate)	%	-	**98**	**102**	**100**	**100**
PCBs in Soil Method: AN420 Tested: 15/7/2019						
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**102**	**97**	**102**	**96**
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 16/7/2019						
Arsenic, As	mg/kg	1	**4**	**8**	**6**	**4**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	**6.4**	**16**	**19**	**20**
Copper, Cu	mg/kg	0.5	**25**	**16**	**42**	**36**
Nickel, Ni	mg/kg	0.5	**13**	**8.3**	**35**	**22**
Lead, Pb	mg/kg	1	**10**	**68**	**59**	**15**
Zinc, Zn	mg/kg	2	**55**	**190**	**140**	**45**

Parameter	Units	LOR	Sample Number: SE195215.001 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH101-0.1-0.2	SE195215.002 Soil 10 Jul 2019 BH101-0.6-0.7	SE195215.003 Soil 10 Jul 2019 BH102-0.2-0.3	SE195215.004 Soil 10 Jul 2019 BH103-0.2-0.3
Mercury in Soil Method: AN312 Tested: 16/7/2019						
Mercury	mg/kg	0.05	<0.05	**0.17**	<0.05	<0.05
Moisture Content Method: AN002 Tested: 15/7/2019						
% Moisture	%w/w	0.5	**9.9**	**20**	**16**	**5.0**
Fibre Identification in soil Method: AN602 Tested: 16/7/2019						
FibreID						
Asbestos Detected	No unit	-	No	No	No	No
SemiQuant						
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01
VOCs in Water Method: AN433 Tested: 16/7/2019						
Monocyclic Aromatic Hydrocarbons						
Benzene	µg/L	0.5	-	-	-	-
Toluene	µg/L	0.5	-	-	-	-
Ethylbenzene	µg/L	0.5	-	-	-	-
m/p-xylene	µg/L	1	-	-	-	-
o-xylene	µg/L	0.5	-	-	-	-
Polycyclic VOCs						
Naphthalene	µg/L	0.5	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.001 Soil 10 Jul 2019 BH101-0.1-0.2	SE195215.002 Soil 10 Jul 2019 BH101-0.6-0.7	SE195215.003 Soil 10 Jul 2019 BH102-0.2-0.3	SE195215.004 Soil 10 Jul 2019 BH103-0.2-0.3
VOCs in Water Method: AN433 Tested: 16/7/2019 (continued)							
Surrogates							
Dibromofluoromethane (Surrogate)	%	-		-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-		-	-	-	-
d8-toluene (Surrogate)	%	-		-	-	-	-
Bromofluorobenzene (Surrogate)	%	-		-	-	-	-
Totals							
Total Xylenes	µg/L	1.5		-	-	-	-
Total BTEX	µg/L	3		-	-	-	-
Volatile Petroleum Hydrocarbons in Water Method: AN433 Tested: 16/7/2019							
TRH C6-C10	µg/L	50		-	-	-	-
TRH C6-C9	µg/L	40		-	-	-	-
Surrogates							
Dibromofluoromethane (Surrogate)	%	-		-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-		-	-	-	-
d8-toluene (Surrogate)	%	-		-	-	-	-
Bromofluorobenzene (Surrogate)	%	-		-	-	-	-
VPH F Bands							
Benzene (F0)	µg/L	0.5		-	-	-	-
TRH C6-C10 minus BTEX (F1)	µg/L	50		-	-	-	-
TRH (Total Recoverable Hydrocarbons) in Water Method: AN403 Tested: 15/7/2019							
TRH C10-C14	µg/L	50		-	-	-	-
TRH C15-C28	µg/L	200		-	-	-	-
TRH C29-C36	µg/L	200		-	-	-	-
TRH C37-C40	µg/L	200		-	-	-	-
TRH C10-C36	µg/L	450		-	-	-	-
TRH C10-C40	µg/L	650		-	-	-	-
TRH F Bands							
TRH >C10-C16	µg/L	60		-	-	-	-
TRH >C10-C16 - Naphthalene (F2)	µg/L	60		-	-	-	-
TRH >C16-C34 (F3)	µg/L	500		-	-	-	-
TRH >C34-C40 (F4)	µg/L	500		-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.001 Soil 10 Jul 2019 BH101-0.1-0.2	SE195215.002 Soil 10 Jul 2019 BH101-0.6-0.7	SE195215.003 Soil 10 Jul 2019 BH102-0.2-0.3	SE195215.004 Soil 10 Jul 2019 BH103-0.2-0.3
Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 15/7/2019							
Arsenic, As	µg/L	1		-	-	-	-
Cadmium, Cd	µg/L	0.1		-	-	-	-
Chromium, Cr	µg/L	1		-	-	-	-
Copper, Cu	µg/L	1		-	-	-	-
Lead, Pb	µg/L	1		-	-	-	-
Nickel, Ni	µg/L	1		-	-	-	-
Zinc, Zn	µg/L	5		-	-	-	-
Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 15/7/2019							
Mercury	mg/L	0.0001		-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.005 Soil 10 Jul 2019 BH104-0.3-0.4	SE195215.006 Soil 10 Jul 2019 BH105-0.2-0.3	SE195215.007 Soil 10 Jul 2019 BH106-0.2-0.3	SE195215.008 Soil 10 Jul 2019 BH107-0.2-0.3
VOC's in Soil Method: AN433 Tested: 15/7/2019							
Fumigants							
2,2-dichloropropane	mg/kg	0.1		-	-	<0.1	-
1,2-dichloropropane	mg/kg	0.1		-	-	<0.1	-
cis-1,3-dichloropropene	mg/kg	0.1		-	-	<0.1	-
trans-1,3-dichloropropene	mg/kg	0.1		-	-	<0.1	-
1,2-dibromoethane (EDB)	mg/kg	0.1		-	-	<0.1	-
Halogenated Aliphatics							
Dichlorodifluoromethane (CFC-12)	mg/kg	1		-	-	<1	-
Chloromethane	mg/kg	1		-	-	<1	-
Vinyl chloride (Chloroethene)	mg/kg	0.1		-	-	<0.1	-
Bromomethane	mg/kg	1		-	-	<1	-
Chloroethane	mg/kg	1		-	-	<1	-
Trichlorofluoromethane	mg/kg	1		-	-	<1	-
Iodomethane	mg/kg	5		-	-	<5	-
1,1-dichloroethene	mg/kg	0.1		-	-	<0.1	-
Dichloromethane (Methylene chloride)	mg/kg	0.5		-	-	<0.5	-
Allyl chloride	mg/kg	0.1		-	-	<0.1	-
trans-1,2-dichloroethene	mg/kg	0.1		-	-	<0.1	-
1,1-dichloroethane	mg/kg	0.1		-	-	<0.1	-
cis-1,2-dichloroethene	mg/kg	0.1		-	-	<0.1	-
Bromochloromethane	mg/kg	0.1		-	-	<0.1	-
1,2-dichloroethane	mg/kg	0.1		-	-	<0.1	-
1,1,1-trichloroethane	mg/kg	0.1		-	-	<0.1	-
1,1-dichloropropene	mg/kg	0.1		-	-	<0.1	-
Carbon tetrachloride	mg/kg	0.1		-	-	<0.1	-
Dibromomethane	mg/kg	0.1		-	-	<0.1	-
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1		-	-	<0.1	-
1,1,2-trichloroethane	mg/kg	0.1		-	-	<0.1	-
1,3-dichloropropane	mg/kg	0.1		-	-	<0.1	-
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1		-	-	<0.1	-
1,1,1,2-tetrachloroethane	mg/kg	0.1		-	-	<0.1	-
cis-1,4-dichloro-2-butene	mg/kg	1		-	-	<1	-
1,1,2,2-tetrachloroethane	mg/kg	0.1		-	-	<0.1	-
1,2,3-trichloropropane	mg/kg	0.1		-	-	<0.1	-
trans-1,4-dichloro-2-butene	mg/kg	1		-	-	<1	-
1,2-dibromo-3-chloropropane	mg/kg	0.1		-	-	<0.1	-
Hexachlorobutadiene	mg/kg	0.1		-	-	<0.1	-
Halogenated Aromatics							
Chlorobenzene	mg/kg	0.1		-	-	<0.1	-
Bromobenzene	mg/kg	0.1		-	-	<0.1	-
2-chlorotoluene	mg/kg	0.1		-	-	<0.1	-
4-chlorotoluene	mg/kg	0.1		-	-	<0.1	-
1,3-dichlorobenzene	mg/kg	0.1		-	-	<0.1	-
1,4-dichlorobenzene	mg/kg	0.1		-	-	<0.1	-
1,2-dichlorobenzene	mg/kg	0.1		-	-	<0.1	-
1,2,4-trichlorobenzene	mg/kg	0.1		-	-	<0.1	-
1,2,3-trichlorobenzene	mg/kg	0.1		-	-	<0.1	-
Monocyclic Aromatic Hydrocarbons							
Benzene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Styrene (Vinyl benzene)	mg/kg	0.1		-	-	<0.1	-
Isopropylbenzene (Cumene)	mg/kg	0.1		-	-	<0.1	-
n-propylbenzene	mg/kg	0.1		-	-	<0.1	-

Parameter	Units	LOR	Sample Number: SE195215.005 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH104-0.3-0.4	SE195215.006 Soil 10 Jul 2019 BH105-0.2-0.3	SE195215.007 Soil 10 Jul 2019 BH106-0.2-0.3	SE195215.008 Soil 10 Jul 2019 BH107-0.2-0.3
VOC's in Soil Method: AN433 Tested: 15/7/2019 (continued)						
1,3,5-trimethylbenzene	mg/kg	0.1	-	-	<0.1	-
tert-butylbenzene	mg/kg	0.1	-	-	<0.1	-
1,2,4-trimethylbenzene	mg/kg	0.1	-	-	<0.1	-
sec-butylbenzene	mg/kg	0.1	-	-	<0.1	-
p-isopropyltoluene	mg/kg	0.1	-	-	<0.1	-
n-butylbenzene	mg/kg	0.1	-	-	<0.1	-
Nitrogenous Compounds						
Acrylonitrile	mg/kg	0.1	-	-	<0.1	-
2-nitropropane	mg/kg	10	-	-	<10	-
Oxygenated Compounds						
Acetone (2-propanone)	mg/kg	10	-	-	<10	-
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	-	-	<0.1	-
Vinyl acetate	mg/kg	10	-	-	<10	-
MEK (2-butanone)	mg/kg	10	-	-	<10	-
MIBK (4-methyl-2-pentanone)	mg/kg	1	-	-	<1	-
2-hexanone (MBK)	mg/kg	5	-	-	<5	-
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Sulphonated Compounds						
Carbon disulfide	mg/kg	0.5	-	-	<0.5	-
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**76**	**88**	**98**	**96**
d4-1,2-dichloroethane (Surrogate)	%	-	**72**	**80**	**89**	**88**
d8-toluene (Surrogate)	%	-	**67**	**69**	**68**	**70**
Bromofluorobenzene (Surrogate)	%	-	**61**	**68**	**68**	**69**
Totals						
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Total VOC*	mg/kg	24	-	-	<24	-
Total Volatile Chlorinated Hydrocarbons*	mg/kg	3	-	-	<3.0	-
Total Other Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	-	-	<1.8	-
Total Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	-	-	<1.8	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE195215.005 Soil 10 Jul 2019 BH104-0.3-0.4	SE195215.006 Soil 10 Jul 2019 BH105-0.2-0.3	SE195215.007 Soil 10 Jul 2019 BH106-0.2-0.3	SE195215.008 Soil 10 Jul 2019 BH107-0.2-0.3
VOC's in Soil Method: AN433 Tested: 15/7/2019 (continued)						
Trihalomethanes						
Chloroform	mg/kg	0.1	-	-	<0.1	-
Bromodichloromethane	mg/kg	0.1	-	-	<0.1	-
Chlorodibromomethane	mg/kg	0.1	-	-	<0.1	-
Bromoform	mg/kg	0.1	-	-	<0.1	-
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 15/7/2019						
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**76**	**88**	**98**	**96**
d4-1,2-dichloroethane (Surrogate)	%	-	**72**	**80**	**89**	**88**
d8-toluene (Surrogate)	%	-	**67**	**69**	**68**	**70**
Bromofluorobenzene (Surrogate)	%	-	**61**	**68**	**68**	**69**
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 15/7/2019						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	**49**	<45	<45
TRH C29-C36	mg/kg	45	<45	**56**	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210
TRH F Bands						
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	**90**	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.005 Soil 10 Jul 2019 BH104-0.3-0.4	SE195215.006 Soil 10 Jul 2019 BH105-0.2-0.3	SE195215.007 Soil 10 Jul 2019 BH106-0.2-0.3	SE195215.008 Soil 10 Jul 2019 BH107-0.2-0.3
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 15/7/2019							
Naphthalene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1		<0.1	**0.2**	<0.1	**0.2**
Acenaphthene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1		<0.1	**0.8**	**0.1**	**0.4**
Anthracene	mg/kg	0.1		<0.1	**0.4**	<0.1	**0.2**
Fluoranthene	mg/kg	0.1		<0.1	**1.6**	**0.3**	**0.7**
Pyrene	mg/kg	0.1		<0.1	**1.6**	**0.3**	**0.7**
Benzo(a)anthracene	mg/kg	0.1		<0.1	**0.9**	**0.2**	**0.4**
Chrysene	mg/kg	0.1		<0.1	**0.8**	**0.2**	**0.4**
Benzo(b&j)fluoranthene	mg/kg	0.1		<0.1	**0.8**	**0.2**	**0.4**
Benzo(k)fluoranthene	mg/kg	0.1		<0.1	**0.4**	**0.1**	**0.2**
Benzo(a)pyrene	mg/kg	0.1		<0.1	**0.8**	**0.2**	**0.4**
Indeno(1,2,3-cd)pyrene	mg/kg	0.1		<0.1	**0.5**	**0.1**	**0.3**
Dibenzo(ah)anthracene	mg/kg	0.1		<0.1	**0.1**	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1		<0.1	**0.5**	**0.1**	**0.2**
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2		<0.2	**1.2**	**0.3**	**0.5**
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3		<0.3	**1.2**	**0.4**	**0.6**
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2		<0.2	**1.2**	**0.3**	**0.6**
Total PAH (18)	mg/kg	0.8		<0.8	**9.2**	**2.0**	**4.3**
Total PAH (NEPM/WHO 16)	mg/kg	0.8		<0.8	**9.2**	**2.0**	**4.3**
Surrogates							
d5-nitrobenzene (Surrogate)	%	-		**110**	**100**	**106**	**106**
2-fluorobiphenyl (Surrogate)	%	-		**82**	**76**	**80**	**100**
d14-p-terphenyl (Surrogate)	%	-		**88**	**82**	**86**	**106**
OC Pesticides in Soil Method: AN420 Tested: 15/7/2019							
Hexachlorobenzene (HCB)	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Lindane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
o,p'-DDE	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1		<0.1	<0.1	**0.1**	<0.1
Dieldrin	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
o,p'-DDD	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
o,p'-DDT	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Endrin Ketone	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1		<1	<1	<1	<1
Surrogates							

Parameter	Units	LOR	Sample Number: SE195215.005 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH104-0.3-0.4	SE195215.006 Soil 10 Jul 2019 BH105-0.2-0.3	SE195215.007 Soil 10 Jul 2019 BH106-0.2-0.3	SE195215.008 Soil 10 Jul 2019 BH107-0.2-0.3
OC Pesticides in Soil Method: AN420 Tested: 15/7/2019 (continued)						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**98**	**101**	**104**	**95**
OP Pesticides in Soil Method: AN420 Tested: 15/7/2019						
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**82**	**76**	**80**	**100**
d14-p-terphenyl (Surrogate)	%	-	**88**	**82**	**86**	**106**
PCBs in Soil Method: AN420 Tested: 15/7/2019						
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**98**	**101**	**104**	**95**
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 16/7/2019						
Arsenic, As	mg/kg	1	**8**	**13**	**8**	**7**
Cadmium, Cd	mg/kg	0.3	<0.3	**0.3**	**7.3**	<0.3
Chromium, Cr	mg/kg	0.3	**18**	**18**	**15**	**24**
Copper, Cu	mg/kg	0.5	**71**	**54**	**650**	**23**
Nickel, Ni	mg/kg	0.5	**7.7**	**16**	**23**	**11**
Lead, Pb	mg/kg	1	**250**	**130**	**520**	**440**
Zinc, Zn	mg/kg	2	**300**	**190**	**950**	**140**

Parameter	Units	LOR	Sample Number: SE195215.005 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH104-0.3-0.4	SE195215.006 Soil 10 Jul 2019 BH105-0.2-0.3	SE195215.007 Soil 10 Jul 2019 BH106-0.2-0.3	SE195215.008 Soil 10 Jul 2019 BH107-0.2-0.3
Mercury in Soil Method: AN312 Tested: 16/7/2019						
Mercury	mg/kg	0.05	**0.10**	**0.10**	**0.10**	**0.09**
Moisture Content Method: AN002 Tested: 15/7/2019						
% Moisture	%w/w	0.5	**20**	**18**	**14**	**15**
Fibre Identification in soil Method: AN602 Tested: 16/7/2019						
FibreID						
Asbestos Detected	No unit	-	No	No	No	No
SemiQuant						
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01
VOCs in Water Method: AN433 Tested: 16/7/2019						
Monocyclic Aromatic Hydrocarbons						
Benzene	µg/L	0.5	-	-	-	-
Toluene	µg/L	0.5	-	-	-	-
Ethylbenzene	µg/L	0.5	-	-	-	-
m/p-xylene	µg/L	1	-	-	-	-
o-xylene	µg/L	0.5	-	-	-	-
Polycyclic VOCs						
Naphthalene	µg/L	0.5	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.005 Soil 10 Jul 2019 BH104-0.3-0.4	SE195215.006 Soil 10 Jul 2019 BH105-0.2-0.3	SE195215.007 Soil 10 Jul 2019 BH106-0.2-0.3	SE195215.008 Soil 10 Jul 2019 BH107-0.2-0.3
VOCs in Water Method: AN433 Tested: 16/7/2019 (continued)							
Surrogates							
Dibromofluoromethane (Surrogate)	%	-		-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-		-	-	-	-
d8-toluene (Surrogate)	%	-		-	-	-	-
Bromofluorobenzene (Surrogate)	%	-		-	-	-	-
Totals							
Total Xylenes	µg/L	1.5		-	-	-	-
Total BTEX	µg/L	3		-	-	-	-
Volatile Petroleum Hydrocarbons in Water Method: AN433 Tested: 16/7/2019							
TRH C6-C10	µg/L	50		-	-	-	-
TRH C6-C9	µg/L	40		-	-	-	-
Surrogates							
Dibromofluoromethane (Surrogate)	%	-		-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-		-	-	-	-
d8-toluene (Surrogate)	%	-		-	-	-	-
Bromofluorobenzene (Surrogate)	%	-		-	-	-	-
VPH F Bands							
Benzene (F0)	µg/L	0.5		-	-	-	-
TRH C6-C10 minus BTEX (F1)	µg/L	50		-	-	-	-
TRH (Total Recoverable Hydrocarbons) in Water Method: AN403 Tested: 15/7/2019							
TRH C10-C14	µg/L	50		-	-	-	-
TRH C15-C28	µg/L	200		-	-	-	-
TRH C29-C36	µg/L	200		-	-	-	-
TRH C37-C40	µg/L	200		-	-	-	-
TRH C10-C36	µg/L	450		-	-	-	-
TRH C10-C40	µg/L	650		-	-	-	-
TRH F Bands							
TRH >C10-C16	µg/L	60		-	-	-	-
TRH >C10-C16 - Naphthalene (F2)	µg/L	60		-	-	-	-
TRH >C16-C34 (F3)	µg/L	500		-	-	-	-
TRH >C34-C40 (F4)	µg/L	500		-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.005 Soil 10 Jul 2019 BH104-0.3-0.4	SE195215.006 Soil 10 Jul 2019 BH105-0.2-0.3	SE195215.007 Soil 10 Jul 2019 BH106-0.2-0.3	SE195215.008 Soil 10 Jul 2019 BH107-0.2-0.3
Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 15/7/2019							
Arsenic, As	µg/L	1		-	-	-	-
Cadmium, Cd	µg/L	0.1		-	-	-	-
Chromium, Cr	µg/L	1		-	-	-	-
Copper, Cu	µg/L	1		-	-	-	-
Lead, Pb	µg/L	1		-	-	-	-
Nickel, Ni	µg/L	1		-	-	-	-
Zinc, Zn	µg/L	5		-	-	-	-
Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 15/7/2019							
Mercury	mg/L	0.0001		-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.009 Soil 10 Jul 2019 BH107-1.4-1.5	SE195215.010 Soil 10 Jul 2019 BH108-0.3-0.4	SE195215.011 Soil 10 Jul 2019 BH109-0.2-0.3	SE195215.012 Soil 10 Jul 2019 BH109-0.9-1.0
VOC's in Soil Method: AN433 Tested: 15/7/2019							
Fumigants							
2,2-dichloropropane	mg/kg	0.1		-	-	<0.1	-
1,2-dichloropropane	mg/kg	0.1		-	-	<0.1	-
cis-1,3-dichloropropene	mg/kg	0.1		-	-	<0.1	-
trans-1,3-dichloropropene	mg/kg	0.1		-	-	<0.1	-
1,2-dibromoethane (EDB)	mg/kg	0.1		-	-	<0.1	-
Halogenated Aliphatics							
Dichlorodifluoromethane (CFC-12)	mg/kg	1		-	-	<1	-
Chloromethane	mg/kg	1		-	-	<1	-
Vinyl chloride (Chloroethene)	mg/kg	0.1		-	-	<0.1	-
Bromomethane	mg/kg	1		-	-	<1	-
Chloroethane	mg/kg	1		-	-	<1	-
Trichlorofluoromethane	mg/kg	1		-	-	<1	-
Iodomethane	mg/kg	5		-	-	<5	-
1,1-dichloroethene	mg/kg	0.1		-	-	<0.1	-
Dichloromethane (Methylene chloride)	mg/kg	0.5		-	-	<0.5	-
Allyl chloride	mg/kg	0.1		-	-	<0.1	-
trans-1,2-dichloroethene	mg/kg	0.1		-	-	<0.1	-
1,1-dichloroethane	mg/kg	0.1		-	-	<0.1	-
cis-1,2-dichloroethene	mg/kg	0.1		-	-	<0.1	-
Bromochloromethane	mg/kg	0.1		-	-	<0.1	-
1,2-dichloroethane	mg/kg	0.1		-	-	<0.1	-
1,1,1-trichloroethane	mg/kg	0.1		-	-	<0.1	-
1,1-dichloropropene	mg/kg	0.1		-	-	<0.1	-
Carbon tetrachloride	mg/kg	0.1		-	-	<0.1	-
Dibromomethane	mg/kg	0.1		-	-	<0.1	-
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1		-	-	<0.1	-
1,1,2-trichloroethane	mg/kg	0.1		-	-	<0.1	-
1,3-dichloropropane	mg/kg	0.1		-	-	<0.1	-
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1		-	-	<0.1	-
1,1,1,2-tetrachloroethane	mg/kg	0.1		-	-	<0.1	-
cis-1,4-dichloro-2-butene	mg/kg	1		-	-	<1	-
1,1,2,2-tetrachloroethane	mg/kg	0.1		-	-	<0.1	-
1,2,3-trichloropropane	mg/kg	0.1		-	-	<0.1	-
trans-1,4-dichloro-2-butene	mg/kg	1		-	-	<1	-
1,2-dibromo-3-chloropropane	mg/kg	0.1		-	-	<0.1	-
Hexachlorobutadiene	mg/kg	0.1		-	-	<0.1	-
Halogenated Aromatics							
Chlorobenzene	mg/kg	0.1		-	-	<0.1	-
Bromobenzene	mg/kg	0.1		-	-	<0.1	-
2-chlorotoluene	mg/kg	0.1		-	-	<0.1	-
4-chlorotoluene	mg/kg	0.1		-	-	<0.1	-
1,3-dichlorobenzene	mg/kg	0.1		-	-	<0.1	-
1,4-dichlorobenzene	mg/kg	0.1		-	-	<0.1	-
1,2-dichlorobenzene	mg/kg	0.1		-	-	<0.1	-
1,2,4-trichlorobenzene	mg/kg	0.1		-	-	<0.1	-
1,2,3-trichlorobenzene	mg/kg	0.1		-	-	<0.1	-
Monocyclic Aromatic Hydrocarbons							
Benzene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Styrene (Vinyl benzene)	mg/kg	0.1		-	-	<0.1	-
Isopropylbenzene (Cumene)	mg/kg	0.1		-	-	<0.1	-
n-propylbenzene	mg/kg	0.1		-	-	<0.1	-

Parameter	Units	LOR	Sample Number: SE195215.009 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH107-1.4-1.5	SE195215.010 Soil 10 Jul 2019 BH108-0.3-0.4	SE195215.011 Soil 10 Jul 2019 BH109-0.2-0.3	SE195215.012 Soil 10 Jul 2019 BH109-0.9-1.0
VOC's in Soil Method: AN433 Tested: 15/7/2019 (continued)						
1,3,5-trimethylbenzene	mg/kg	0.1	-	-	<0.1	-
tert-butylbenzene	mg/kg	0.1	-	-	<0.1	-
1,2,4-trimethylbenzene	mg/kg	0.1	-	-	<0.1	-
sec-butylbenzene	mg/kg	0.1	-	-	<0.1	-
p-isopropyltoluene	mg/kg	0.1	-	-	<0.1	-
n-butylbenzene	mg/kg	0.1	-	-	<0.1	-
Nitrogenous Compounds						
Acrylonitrile	mg/kg	0.1	-	-	<0.1	-
2-nitropropane	mg/kg	10	-	-	<10	-
Oxygenated Compounds						
Acetone (2-propanone)	mg/kg	10	-	-	<10	-
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	-	-	<0.1	-
Vinyl acetate	mg/kg	10	-	-	<10	-
MEK (2-butanone)	mg/kg	10	-	-	<10	-
MIBK (4-methyl-2-pentanone)	mg/kg	1	-	-	<1	-
2-hexanone (MBK)	mg/kg	5	-	-	<5	-
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Sulphonated Compounds						
Carbon disulfide	mg/kg	0.5	-	-	<0.5	-
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**92**	**90**	**100**	**73**
d4-1,2-dichloroethane (Surrogate)	%	-	**81**	**89**	**88**	**71**
d8-toluene (Surrogate)	%	-	**72**	**87**	**78**	**70**
Bromofluorobenzene (Surrogate)	%	-	**66**	**71**	**66**	**61**
Totals						
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Total VOC*	mg/kg	24	-	-	<24	-
Total Volatile Chlorinated Hydrocarbons*	mg/kg	3	-	-	<3.0	-
Total Other Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	-	-	<1.8	-
Total Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	-	-	<1.8	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name SE195215.009 Soil 10 Jul 2019 BH107-1.4-1.5	SE195215.010 Soil 10 Jul 2019 BH108-0.3-0.4	SE195215.011 Soil 10 Jul 2019 BH109-0.2-0.3	SE195215.012 Soil 10 Jul 2019 BH109-0.9-1.0
VOC's in Soil Method: AN433 Tested: 15/7/2019 (continued)						
Trihalomethanes						
Chloroform	mg/kg	0.1	-	-	<0.1	-
Bromodichloromethane	mg/kg	0.1	-	-	<0.1	-
Chlorodibromomethane	mg/kg	0.1	-	-	<0.1	-
Bromoform	mg/kg	0.1	-	-	<0.1	-
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 15/7/2019						
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**92**	**90**	**100**	**73**
d4-1,2-dichloroethane (Surrogate)	%	-	**81**	**89**	**88**	**71**
d8-toluene (Surrogate)	%	-	**72**	**87**	**78**	**70**
Bromofluorobenzene (Surrogate)	%	-	**66**	**71**	**66**	**61**
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 15/7/2019						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	**55**	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210
TRH F Bands						
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.009 Soil 10 Jul 2019 BH107-1.4-1.5	SE195215.010 Soil 10 Jul 2019 BH108-0.3-0.4	SE195215.011 Soil 10 Jul 2019 BH109-0.2-0.3	SE195215.012 Soil 10 Jul 2019 BH109-0.9-1.0
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 15/7/2019							
Naphthalene	mg/kg	0.1		<0.1	**0.1**	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1		<0.1	**0.7**	<0.1	<0.1
Acenaphthene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1		<0.1	**1.3**	<0.1	<0.1
Anthracene	mg/kg	0.1		<0.1	**0.8**	<0.1	<0.1
Fluoranthene	mg/kg	0.1		<0.1	**3.3**	**0.2**	<0.1
Pyrene	mg/kg	0.1		<0.1	**2.8**	**0.2**	<0.1
Benzo(a)anthracene	mg/kg	0.1		<0.1	**1.8**	**0.1**	<0.1
Chrysene	mg/kg	0.1		<0.1	**1.6**	**0.1**	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1		<0.1	**1.8**	**0.1**	<0.1
Benzo(k)fluoranthene	mg/kg	0.1		<0.1	**1.0**	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1		<0.1	**1.6**	**0.1**	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1		<0.1	**0.9**	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1		<0.1	**0.2**	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1		<0.1	**0.8**	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2		<0.2	**2.4**	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3		<0.3	**2.4**	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2		<0.2	**2.4**	<0.2	<0.2
Total PAH (18)	mg/kg	0.8		<0.8	**19**	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8		<0.8	**19**	<0.8	<0.8
Surrogates							
d5-nitrobenzene (Surrogate)	%	-		**108**	**90**	**88**	**90**
2-fluorobiphenyl (Surrogate)	%	-		**78**	**90**	**88**	**90**
d14-p-terphenyl (Surrogate)	%	-		**88**	**88**	**88**	**90**
OC Pesticides in Soil Method: AN420 Tested: 15/7/2019							
Hexachlorobenzene (HCB)	mg/kg	0.1		-	<0.1	<0.1	-
Alpha BHC	mg/kg	0.1		-	<0.1	<0.1	-
Lindane	mg/kg	0.1		-	<0.1	<0.1	-
Heptachlor	mg/kg	0.1		-	<0.1	<0.1	-
Aldrin	mg/kg	0.1		-	<0.1	<0.1	-
Beta BHC	mg/kg	0.1		-	<0.1	<0.1	-
Delta BHC	mg/kg	0.1		-	<0.1	<0.1	-
Heptachlor epoxide	mg/kg	0.1		-	<0.1	<0.1	-
o,p'-DDE	mg/kg	0.1		-	<0.1	<0.1	-
Alpha Endosulfan	mg/kg	0.2		-	<0.2	<0.2	-
Gamma Chlordane	mg/kg	0.1		-	<0.1	<0.1	-
Alpha Chlordane	mg/kg	0.1		-	<0.1	<0.1	-
trans-Nonachlor	mg/kg	0.1		-	<0.1	<0.1	-
p,p'-DDE	mg/kg	0.1		-	<0.1	<0.1	-
Dieldrin	mg/kg	0.2		-	<0.2	<0.2	-
Endrin	mg/kg	0.2		-	<0.2	<0.2	-
o,p'-DDD	mg/kg	0.1		-	<0.1	<0.1	-
o,p'-DDT	mg/kg	0.1		-	<0.1	<0.1	-
Beta Endosulfan	mg/kg	0.2		-	<0.2	<0.2	-
p,p'-DDD	mg/kg	0.1		-	<0.1	<0.1	-
p,p'-DDT	mg/kg	0.1		-	<0.1	<0.1	-
Endosulfan sulphate	mg/kg	0.1		-	<0.1	<0.1	-
Endrin Aldehyde	mg/kg	0.1		-	<0.1	<0.1	-
Methoxychlor	mg/kg	0.1		-	<0.1	<0.1	-
Endrin Ketone	mg/kg	0.1		-	<0.1	<0.1	-
Isodrin	mg/kg	0.1		-	<0.1	<0.1	-
Mirex	mg/kg	0.1		-	<0.1	<0.1	-
Total CLP OC Pesticides	mg/kg	1		-	<1	<1	-
Surrogates							

Parameter	Units	LOR	Sample Number: SE195215.009 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH107-1.4-1.5	SE195215.010 Soil 10 Jul 2019 BH108-0.3-0.4	SE195215.011 Soil 10 Jul 2019 BH109-0.2-0.3	SE195215.012 Soil 10 Jul 2019 BH109-0.9-1.0
OC Pesticides in Soil Method: AN420 Tested: 15/7/2019 (continued)						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	**99**	**107**	-
OP Pesticides in Soil Method: AN420 Tested: 15/7/2019						
Dichlorvos	mg/kg	0.5	-	<0.5	<0.5	-
Dimethoate	mg/kg	0.5	-	<0.5	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	-	<0.5	<0.5	-
Fenitrothion	mg/kg	0.2	-	<0.2	<0.2	-
Malathion	mg/kg	0.2	-	<0.2	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-	<0.2	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	-	<0.2	<0.2	-
Bromophos Ethyl	mg/kg	0.2	-	<0.2	<0.2	-
Methidathion	mg/kg	0.5	-	<0.5	<0.5	-
Ethion	mg/kg	0.2	-	<0.2	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	-	<0.2	<0.2	-
Total OP Pesticides*	mg/kg	1.7	-	<1.7	<1.7	-
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	-	**90**	**88**	-
d14-p-terphenyl (Surrogate)	%	-	-	**88**	**88**	-
PCBs in Soil Method: AN420 Tested: 15/7/2019						
Arochlor 1016	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1221	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1232	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1242	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1248	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1254	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1260	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1262	mg/kg	0.2	-	<0.2	<0.2	-
Arochlor 1268	mg/kg	0.2	-	<0.2	<0.2	-
Total PCBs (Arochlors)	mg/kg	1	-	<1	<1	-
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	**99**	**107**	-
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 16/7/2019						
Arsenic, As	mg/kg	1	**9**	**5**	**8**	**9**
Cadmium, Cd	mg/kg	0.3	<0.3	**0.3**	<0.3	<0.3
Chromium, Cr	mg/kg	0.3	**12**	**26**	**21**	**15**
Copper, Cu	mg/kg	0.5	**17**	**35**	**24**	**18**
Nickel, Ni	mg/kg	0.5	**1.4**	**12**	**4.4**	**1.2**
Lead, Pb	mg/kg	1	**23**	**230**	**69**	**21**
Zinc, Zn	mg/kg	2	**21**	**240**	**170**	**22**

Parameter	Units	LOR	Sample Number: SE195215.009 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH107-1.4-1.5	SE195215.010 Soil 10 Jul 2019 BH108-0.3-0.4	SE195215.011 Soil 10 Jul 2019 BH109-0.2-0.3	SE195215.012 Soil 10 Jul 2019 BH109-0.9-1.0
Mercury in Soil Method: AN312 Tested: 16/7/2019						
Mercury	mg/kg	0.05	<0.05	**0.17**	**0.08**	<0.05
Moisture Content Method: AN002 Tested: 15/7/2019						
% Moisture	%w/w	0.5	**21**	**9.1**	**17**	**24**
Fibre Identification in soil Method: AN602 Tested: 17/7/2019						
FibreID						
Asbestos Detected	No unit	-	-	No	No	-
SemiQuant						
Estimated Fibres*	%w/w	0.01	-	<0.01	<0.01	-
VOCs in Water Method: AN433 Tested: 16/7/2019						
Monocyclic Aromatic Hydrocarbons						
Benzene	µg/L	0.5	-	-	-	-
Toluene	µg/L	0.5	-	-	-	-
Ethylbenzene	µg/L	0.5	-	-	-	-
m/p-xylene	µg/L	1	-	-	-	-
o-xylene	µg/L	0.5	-	-	-	-
Polycyclic VOCs						
Naphthalene	µg/L	0.5	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.009 Soil 10 Jul 2019 BH107-1.4-1.5	SE195215.010 Soil 10 Jul 2019 BH108-0.3-0.4	SE195215.011 Soil 10 Jul 2019 BH109-0.2-0.3	SE195215.012 Soil 10 Jul 2019 BH109-0.9-1.0
VOCs in Water Method: AN433 Tested: 16/7/2019 (continued)							
Surrogates							
Dibromofluoromethane (Surrogate)	%	-		-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-		-	-	-	-
d8-toluene (Surrogate)	%	-		-	-	-	-
Bromofluorobenzene (Surrogate)	%	-		-	-	-	-
Totals							
Total Xylenes	µg/L	1.5		-	-	-	-
Total BTEX	µg/L	3		-	-	-	-
Volatile Petroleum Hydrocarbons in Water Method: AN433 Tested: 16/7/2019							
TRH C6-C10	µg/L	50		-	-	-	-
TRH C6-C9	µg/L	40		-	-	-	-
Surrogates							
Dibromofluoromethane (Surrogate)	%	-		-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-		-	-	-	-
d8-toluene (Surrogate)	%	-		-	-	-	-
Bromofluorobenzene (Surrogate)	%	-		-	-	-	-
VPH F Bands							
Benzene (F0)	µg/L	0.5		-	-	-	-
TRH C6-C10 minus BTEX (F1)	µg/L	50		-	-	-	-
TRH (Total Recoverable Hydrocarbons) in Water Method: AN403 Tested: 15/7/2019							
TRH C10-C14	µg/L	50		-	-	-	-
TRH C15-C28	µg/L	200		-	-	-	-
TRH C29-C36	µg/L	200		-	-	-	-
TRH C37-C40	µg/L	200		-	-	-	-
TRH C10-C36	µg/L	450		-	-	-	-
TRH C10-C40	µg/L	650		-	-	-	-
TRH F Bands							
TRH >C10-C16	µg/L	60		-	-	-	-
TRH >C10-C16 - Naphthalene (F2)	µg/L	60		-	-	-	-
TRH >C16-C34 (F3)	µg/L	500		-	-	-	-
TRH >C34-C40 (F4)	µg/L	500		-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.009 Soil 10 Jul 2019 BH107-1.4-1.5	SE195215.010 Soil 10 Jul 2019 BH108-0.3-0.4	SE195215.011 Soil 10 Jul 2019 BH109-0.2-0.3	SE195215.012 Soil 10 Jul 2019 BH109-0.9-1.0
Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 15/7/2019							
Arsenic, As	µg/L	1		-	-	-	-
Cadmium, Cd	µg/L	0.1		-	-	-	-
Chromium, Cr	µg/L	1		-	-	-	-
Copper, Cu	µg/L	1		-	-	-	-
Lead, Pb	µg/L	1		-	-	-	-
Nickel, Ni	µg/L	1		-	-	-	-
Zinc, Zn	µg/L	5		-	-	-	-
Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 15/7/2019							
Mercury	mg/L	0.0001		-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.013 Soil 10 Jul 2019 BH110-0.2-0.3	SE195215.014 Soil 10 Jul 2019 BH110-1.1-1.2	SE195215.015 Soil 10 Jul 2019 BH111-0.2-0.3	SE195215.016 Soil 10 Jul 2019 BH111-1.4-1.5
VOC's in Soil Method: AN433 Tested: 15/7/2019							
Fumigants							
2,2-dichloropropane	mg/kg	0.1		-	-	-	-
1,2-dichloropropane	mg/kg	0.1		-	-	-	-
cis-1,3-dichloropropene	mg/kg	0.1		-	-	-	-
trans-1,3-dichloropropene	mg/kg	0.1		-	-	-	-
1,2-dibromoethane (EDB)	mg/kg	0.1		-	-	-	-
Halogenated Aliphatics							
Dichlorodifluoromethane (CFC-12)	mg/kg	1		-	-	-	-
Chloromethane	mg/kg	1		-	-	-	-
Vinyl chloride (Chloroethene)	mg/kg	0.1		-	-	-	-
Bromomethane	mg/kg	1		-	-	-	-
Chloroethane	mg/kg	1		-	-	-	-
Trichlorofluoromethane	mg/kg	1		-	-	-	-
Iodomethane	mg/kg	5		-	-	-	-
1,1-dichloroethene	mg/kg	0.1		-	-	-	-
Dichloromethane (Methylene chloride)	mg/kg	0.5		-	-	-	-
Allyl chloride	mg/kg	0.1		-	-	-	-
trans-1,2-dichloroethene	mg/kg	0.1		-	-	-	-
1,1-dichloroethane	mg/kg	0.1		-	-	-	-
cis-1,2-dichloroethene	mg/kg	0.1		-	-	-	-
Bromochloromethane	mg/kg	0.1		-	-	-	-
1,2-dichloroethane	mg/kg	0.1		-	-	-	-
1,1,1-trichloroethane	mg/kg	0.1		-	-	-	-
1,1-dichloropropene	mg/kg	0.1		-	-	-	-
Carbon tetrachloride	mg/kg	0.1		-	-	-	-
Dibromomethane	mg/kg	0.1		-	-	-	-
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1		-	-	-	-
1,1,2-trichloroethane	mg/kg	0.1		-	-	-	-
1,3-dichloropropane	mg/kg	0.1		-	-	-	-
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1		-	-	-	-
1,1,1,2-tetrachloroethane	mg/kg	0.1		-	-	-	-
cis-1,4-dichloro-2-butene	mg/kg	1		-	-	-	-
1,1,2,2-tetrachloroethane	mg/kg	0.1		-	-	-	-
1,2,3-trichloropropane	mg/kg	0.1		-	-	-	-
trans-1,4-dichloro-2-butene	mg/kg	1		-	-	-	-
1,2-dibromo-3-chloropropane	mg/kg	0.1		-	-	-	-
Hexachlorobutadiene	mg/kg	0.1		-	-	-	-
Halogenated Aromatics							
Chlorobenzene	mg/kg	0.1		-	-	-	-
Bromobenzene	mg/kg	0.1		-	-	-	-
2-chlorotoluene	mg/kg	0.1		-	-	-	-
4-chlorotoluene	mg/kg	0.1		-	-	-	-
1,3-dichlorobenzene	mg/kg	0.1		-	-	-	-
1,4-dichlorobenzene	mg/kg	0.1		-	-	-	-
1,2-dichlorobenzene	mg/kg	0.1		-	-	-	-
1,2,4-trichlorobenzene	mg/kg	0.1		-	-	-	-
1,2,3-trichlorobenzene	mg/kg	0.1		-	-	-	-
Monocyclic Aromatic Hydrocarbons							
Benzene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Styrene (Vinyl benzene)	mg/kg	0.1		-	-	-	-
Isopropylbenzene (Cumene)	mg/kg	0.1		-	-	-	-
n-propylbenzene	mg/kg	0.1		-	-	-	-

Parameter	Units	LOR	Sample Number: SE195215.013 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH110-0.2-0.3	SE195215.014 Soil 10 Jul 2019 BH110-1.1-1.2	SE195215.015 Soil 10 Jul 2019 BH111-0.2-0.3	SE195215.016 Soil 10 Jul 2019 BH111-1.4-1.5
VOC's in Soil Method: AN433 Tested: 15/7/2019 (continued)						
1,3,5-trimethylbenzene	mg/kg	0.1	-	-	-	-
tert-butylbenzene	mg/kg	0.1	-	-	-	-
1,2,4-trimethylbenzene	mg/kg	0.1	-	-	-	-
sec-butylbenzene	mg/kg	0.1	-	-	-	-
p-isopropyltoluene	mg/kg	0.1	-	-	-	-
n-butylbenzene	mg/kg	0.1	-	-	-	-
Nitrogenous Compounds						
Acrylonitrile	mg/kg	0.1	-	-	-	-
2-nitropropane	mg/kg	10	-	-	-	-
Oxygenated Compounds						
Acetone (2-propanone)	mg/kg	10	-	-	-	-
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	-	-	-	-
Vinyl acetate	mg/kg	10	-	-	-	-
MEK (2-butanone)	mg/kg	10	-	-	-	-
MIBK (4-methyl-2-pentanone)	mg/kg	1	-	-	-	-
2-hexanone (MBK)	mg/kg	5	-	-	-	-
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	**5.7**	**0.1**	**0.4**	<0.1
Sulphonated Compounds						
Carbon disulfide	mg/kg	0.5	-	-	-	-
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**50**	**58**	**76**	**72**
d4-1,2-dichloroethane (Surrogate)	%	-	**54**	**66**	**82**	**71**
d8-toluene (Surrogate)	%	-	**134**	**86**	**89**	**77**
Bromofluorobenzene (Surrogate)	%	-	**129**	**63**	**88**	**60**
Totals						
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Total VOC*	mg/kg	24	-	-	-	-
Total Volatile Chlorinated Hydrocarbons*	mg/kg	3	-	-	-	-
Total Other Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	-	-	-	-
Total Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	-	-	-	-

Parameter	Units	LOR	Sample Number: SE195215.013 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH110-0.2-0.3	SE195215.014 Soil 10 Jul 2019 BH110-1.1-1.2	SE195215.015 Soil 10 Jul 2019 BH111-0.2-0.3	SE195215.016 Soil 10 Jul 2019 BH111-1.4-1.5
VOC's in Soil Method: AN433 Tested: 15/7/2019 (continued)						
Trihalomethanes						
Chloroform	mg/kg	0.1	-	-	-	-
Bromodichloromethane	mg/kg	0.1	-	-	-	-
Chlorodibromomethane	mg/kg	0.1	-	-	-	-
Bromoform	mg/kg	0.1	-	-	-	-
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 15/7/2019						
TRH C6-C10	mg/kg	25	**280**	<25	<25	<25
TRH C6-C9	mg/kg	20	**260**	<20	<20	<20
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**50**	**58**	**76**	**72**
d4-1,2-dichloroethane (Surrogate)	%	-	**54**	**66**	**82**	**71**
d8-toluene (Surrogate)	%	-	**134**	**86**	**89**	**77**
Bromofluorobenzene (Surrogate)	%	-	**129**	**63**	**88**	**60**
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	**280**	<25	<25	<25
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 15/7/2019						
TRH C10-C14	mg/kg	20	**160**	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	**160**	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210
TRH F Bands						
TRH >C10-C16	mg/kg	25	**160**	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	**160**	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

Parameter	Units	LOR	Sample Number: SE195215.013 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH110-0.2-0.3	SE195215.014 Soil 10 Jul 2019 BH110-1.1-1.2	SE195215.015 Soil 10 Jul 2019 BH111-0.2-0.3	SE195215.016 Soil 10 Jul 2019 BH111-1.4-1.5
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 15/7/2019						
Naphthalene	mg/kg	0.1	**1.7**	<0.1	**0.4**	<0.1
2-methylnaphthalene	mg/kg	0.1	**6.6**	**0.2**	**0.3**	<0.1
1-methylnaphthalene	mg/kg	0.1	**3.8**	**0.1**	**0.2**	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	**0.1**	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2	<0.2	**0.2**	<0.2
Total PAH (18)	mg/kg	0.8	**12**	<0.8	**2.2**	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	**1.7**	<0.8	**1.7**	<0.8
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	**96**	**90**	**94**	**94**
2-fluorobiphenyl (Surrogate)	%	-	**90**	**88**	**92**	**92**
d14-p-terphenyl (Surrogate)	%	-	**90**	**90**	**90**	**94**
OC Pesticides in Soil Method: AN420 Tested: 15/7/2019						
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	-	<0.1	-
Alpha BHC	mg/kg	0.1	<0.1	-	<0.1	-
Lindane	mg/kg	0.1	<0.1	-	<0.1	-
Heptachlor	mg/kg	0.1	<0.1	-	<0.1	-
Aldrin	mg/kg	0.1	<0.1	-	<0.1	-
Beta BHC	mg/kg	0.1	<0.1	-	<0.1	-
Delta BHC	mg/kg	0.1	<0.1	-	<0.1	-
Heptachlor epoxide	mg/kg	0.1	<0.1	-	<0.1	-
o,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-
Alpha Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-
Gamma Chlordane	mg/kg	0.1	<0.1	-	<0.1	-
Alpha Chlordane	mg/kg	0.1	<0.1	-	<0.1	-
trans-Nonachlor	mg/kg	0.1	<0.1	-	<0.1	-
p,p'-DDE	mg/kg	0.1	<0.1	-	<0.1	-
Dieldrin	mg/kg	0.2	<0.2	-	<0.2	-
Endrin	mg/kg	0.2	<0.2	-	<0.2	-
o,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-
o,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-
Beta Endosulfan	mg/kg	0.2	<0.2	-	<0.2	-
p,p'-DDD	mg/kg	0.1	<0.1	-	<0.1	-
p,p'-DDT	mg/kg	0.1	<0.1	-	<0.1	-
Endosulfan sulphate	mg/kg	0.1	<0.1	-	<0.1	-
Endrin Aldehyde	mg/kg	0.1	<0.1	-	<0.1	-
Methoxychlor	mg/kg	0.1	<0.1	-	<0.1	-
Endrin Ketone	mg/kg	0.1	<0.1	-	<0.1	-
Isodrin	mg/kg	0.1	<0.1	-	<0.1	-
Mirex	mg/kg	0.1	<0.1	-	<0.1	-
Total CLP OC Pesticides	mg/kg	1	<1	-	<1	-
Surrogates						

Parameter	Units	LOR	Sample Number: SE195215.013 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH110-0.2-0.3	SE195215.014 Soil 10 Jul 2019 BH110-1.1-1.2	SE195215.015 Soil 10 Jul 2019 BH111-0.2-0.3	SE195215.016 Soil 10 Jul 2019 BH111-1.4-1.5
OC Pesticides in Soil Method: AN420 Tested: 15/7/2019 (continued)						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**108**	-	**100**	-
OP Pesticides in Soil Method: AN420 Tested: 15/7/2019						
Dichlorvos	mg/kg	0.5	<0.5	-	<0.5	-
Dimethoate	mg/kg	0.5	<0.5	-	<0.5	-
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	-	<0.5	-
Fenitrothion	mg/kg	0.2	<0.2	-	<0.2	-
Malathion	mg/kg	0.2	<0.2	-	<0.2	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	-	<0.2	-
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	-	<0.2	-
Bromophos Ethyl	mg/kg	0.2	<0.2	-	<0.2	-
Methidathion	mg/kg	0.5	<0.5	-	<0.5	-
Ethion	mg/kg	0.2	<0.2	-	<0.2	-
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	-	<0.2	-
Total OP Pesticides*	mg/kg	1.7	<1.7	-	<1.7	-
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	**90**	-	**92**	-
d14-p-terphenyl (Surrogate)	%	-	**90**	-	**90**	-
PCBs in Soil Method: AN420 Tested: 15/7/2019						
Arochlor 1016	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1221	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1232	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1242	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1248	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1254	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1260	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1262	mg/kg	0.2	<0.2	-	<0.2	-
Arochlor 1268	mg/kg	0.2	<0.2	-	<0.2	-
Total PCBs (Arochlors)	mg/kg	1	<1	-	<1	-
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**108**	-	**100**	-
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 16/7/2019						
Arsenic, As	mg/kg	1	**7**	**8**	**6**	**8**
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	**0.3**	<0.3
Chromium, Cr	mg/kg	0.3	**18**	**12**	**14**	**9.9**
Copper, Cu	mg/kg	0.5	**18**	**15**	**33**	**33**
Nickel, Ni	mg/kg	0.5	**5.8**	**2.2**	**13**	**7.7**
Lead, Pb	mg/kg	1	**56**	**14**	**82**	**12**
Zinc, Zn	mg/kg	2	**67**	**17**	**130**	**54**

Parameter	Units	LOR	Sample Number: SE195215.013 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH110-0.2-0.3	SE195215.014 Soil 10 Jul 2019 BH110-1.1-1.2	SE195215.015 Soil 10 Jul 2019 BH111-0.2-0.3	SE195215.016 Soil 10 Jul 2019 BH111-1.4-1.5
Mercury in Soil Method: AN312 Tested: 16/7/2019						
Mercury	mg/kg	0.05	<0.05	<0.05	**0.12**	<0.05
Moisture Content Method: AN002 Tested: 15/7/2019						
% Moisture	%w/w	0.5	**19**	**20**	**13**	**19**
Fibre Identification in soil Method: AN602 Tested: 16/7/2019						
FibreID						
Asbestos Detected	No unit	-	No	-	No	-
SemiQuant						
Estimated Fibres*	%w/w	0.01	<0.01	-	<0.01	-
VOCs in Water Method: AN433 Tested: 16/7/2019						
Monocyclic Aromatic Hydrocarbons						
Benzene	µg/L	0.5	-	-	-	-
Toluene	µg/L	0.5	-	-	-	-
Ethylbenzene	µg/L	0.5	-	-	-	-
m/p-xylene	µg/L	1	-	-	-	-
o-xylene	µg/L	0.5	-	-	-	-
Polycyclic VOCs						
Naphthalene	µg/L	0.5	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.013 Soil 10 Jul 2019 BH110-0.2-0.3	SE195215.014 Soil 10 Jul 2019 BH110-1.1-1.2	SE195215.015 Soil 10 Jul 2019 BH111-0.2-0.3	SE195215.016 Soil 10 Jul 2019 BH111-1.4-1.5
VOCs in Water Method: AN433 Tested: 16/7/2019 (continued)							
Surrogates							
Dibromofluoromethane (Surrogate)	%	-		-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-		-	-	-	-
d8-toluene (Surrogate)	%	-		-	-	-	-
Bromofluorobenzene (Surrogate)	%	-		-	-	-	-
Totals							
Total Xylenes	µg/L	1.5		-	-	-	-
Total BTEX	µg/L	3		-	-	-	-
Volatile Petroleum Hydrocarbons in Water Method: AN433 Tested: 16/7/2019							
TRH C6-C10	µg/L	50		-	-	-	-
TRH C6-C9	µg/L	40		-	-	-	-
Surrogates							
Dibromofluoromethane (Surrogate)	%	-		-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-		-	-	-	-
d8-toluene (Surrogate)	%	-		-	-	-	-
Bromofluorobenzene (Surrogate)	%	-		-	-	-	-
VPH F Bands							
Benzene (F0)	µg/L	0.5		-	-	-	-
TRH C6-C10 minus BTEX (F1)	µg/L	50		-	-	-	-
TRH (Total Recoverable Hydrocarbons) in Water Method: AN403 Tested: 15/7/2019							
TRH C10-C14	µg/L	50		-	-	-	-
TRH C15-C28	µg/L	200		-	-	-	-
TRH C29-C36	µg/L	200		-	-	-	-
TRH C37-C40	µg/L	200		-	-	-	-
TRH C10-C36	µg/L	450		-	-	-	-
TRH C10-C40	µg/L	650		-	-	-	-
TRH F Bands							
TRH >C10-C16	µg/L	60		-	-	-	-
TRH >C10-C16 - Naphthalene (F2)	µg/L	60		-	-	-	-
TRH >C16-C34 (F3)	µg/L	500		-	-	-	-
TRH >C34-C40 (F4)	µg/L	500		-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.013 Soil 10 Jul 2019 BH110-0.2-0.3	SE195215.014 Soil 10 Jul 2019 BH110-1.1-1.2	SE195215.015 Soil 10 Jul 2019 BH111-0.2-0.3	SE195215.016 Soil 10 Jul 2019 BH111-1.4-1.5
Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 15/7/2019							
Arsenic, As	µg/L	1		-	-	-	-
Cadmium, Cd	µg/L	0.1		-	-	-	-
Chromium, Cr	µg/L	1		-	-	-	-
Copper, Cu	µg/L	1		-	-	-	-
Lead, Pb	µg/L	1		-	-	-	-
Nickel, Ni	µg/L	1		-	-	-	-
Zinc, Zn	µg/L	5		-	-	-	-
Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 15/7/2019							
Mercury	mg/L	0.0001		-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.017 Soil 10 Jul 2019 BH112-0.2-0.3	SE195215.018 Soil 10 Jul 2019 BH112-0.7-0.8	SE195215.019 Soil 10 Jul 2019 BH113-0.2-0.3	SE195215.020 Soil 10 Jul 2019 BH113-1.2-1.3
VOC's in Soil Method: AN433 Tested: 15/7/2019							
Fumigants							
2,2-dichloropropane	mg/kg	0.1		-	-	-	-
1,2-dichloropropane	mg/kg	0.1		-	-	-	-
cis-1,3-dichloropropene	mg/kg	0.1		-	-	-	-
trans-1,3-dichloropropene	mg/kg	0.1		-	-	-	-
1,2-dibromoethane (EDB)	mg/kg	0.1		-	-	-	-
Halogenated Aliphatics							
Dichlorodifluoromethane (CFC-12)	mg/kg	1		-	-	-	-
Chloromethane	mg/kg	1		-	-	-	-
Vinyl chloride (Chloroethene)	mg/kg	0.1		-	-	-	-
Bromomethane	mg/kg	1		-	-	-	-
Chloroethane	mg/kg	1		-	-	-	-
Trichlorofluoromethane	mg/kg	1		-	-	-	-
Iodomethane	mg/kg	5		-	-	-	-
1,1-dichloroethene	mg/kg	0.1		-	-	-	-
Dichloromethane (Methylene chloride)	mg/kg	0.5		-	-	-	-
Allyl chloride	mg/kg	0.1		-	-	-	-
trans-1,2-dichloroethene	mg/kg	0.1		-	-	-	-
1,1-dichloroethane	mg/kg	0.1		-	-	-	-
cis-1,2-dichloroethene	mg/kg	0.1		-	-	-	-
Bromochloromethane	mg/kg	0.1		-	-	-	-
1,2-dichloroethane	mg/kg	0.1		-	-	-	-
1,1,1-trichloroethane	mg/kg	0.1		-	-	-	-
1,1-dichloropropene	mg/kg	0.1		-	-	-	-
Carbon tetrachloride	mg/kg	0.1		-	-	-	-
Dibromomethane	mg/kg	0.1		-	-	-	-
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1		-	-	-	-
1,1,2-trichloroethane	mg/kg	0.1		-	-	-	-
1,3-dichloropropane	mg/kg	0.1		-	-	-	-
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1		-	-	-	-
1,1,1,2-tetrachloroethane	mg/kg	0.1		-	-	-	-
cis-1,4-dichloro-2-butene	mg/kg	1		-	-	-	-
1,1,2,2-tetrachloroethane	mg/kg	0.1		-	-	-	-
1,2,3-trichloropropane	mg/kg	0.1		-	-	-	-
trans-1,4-dichloro-2-butene	mg/kg	1		-	-	-	-
1,2-dibromo-3-chloropropane	mg/kg	0.1		-	-	-	-
Hexachlorobutadiene	mg/kg	0.1		-	-	-	-
Halogenated Aromatics							
Chlorobenzene	mg/kg	0.1		-	-	-	-
Bromobenzene	mg/kg	0.1		-	-	-	-
2-chlorotoluene	mg/kg	0.1		-	-	-	-
4-chlorotoluene	mg/kg	0.1		-	-	-	-
1,3-dichlorobenzene	mg/kg	0.1		-	-	-	-
1,4-dichlorobenzene	mg/kg	0.1		-	-	-	-
1,2-dichlorobenzene	mg/kg	0.1		-	-	-	-
1,2,4-trichlorobenzene	mg/kg	0.1		-	-	-	-
1,2,3-trichlorobenzene	mg/kg	0.1		-	-	-	-
Monocyclic Aromatic Hydrocarbons							
Benzene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2		<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Styrene (Vinyl benzene)	mg/kg	0.1		-	-	-	-
Isopropylbenzene (Cumene)	mg/kg	0.1		-	-	-	-
n-propylbenzene	mg/kg	0.1		-	-	-	-

Parameter	Units	LOR	Sample Number: SE195215.017 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH112-0.2-0.3	SE195215.018 Soil 10 Jul 2019 BH112-0.7-0.8	SE195215.019 Soil 10 Jul 2019 BH113-0.2-0.3	SE195215.020 Soil 10 Jul 2019 BH113-1.2-1.3
VOC's in Soil Method: AN433 Tested: 15/7/2019 (continued)						
1,3,5-trimethylbenzene	mg/kg	0.1	-	-	-	-
tert-butylbenzene	mg/kg	0.1	-	-	-	-
1,2,4-trimethylbenzene	mg/kg	0.1	-	-	-	-
sec-butylbenzene	mg/kg	0.1	-	-	-	-
p-isopropyltoluene	mg/kg	0.1	-	-	-	-
n-butylbenzene	mg/kg	0.1	-	-	-	-
Nitrogenous Compounds						
Acrylonitrile	mg/kg	0.1	-	-	-	-
2-nitropropane	mg/kg	10	-	-	-	-
Oxygenated Compounds						
Acetone (2-propanone)	mg/kg	10	-	-	-	-
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	-	-	-	-
Vinyl acetate	mg/kg	10	-	-	-	-
MEK (2-butanone)	mg/kg	10	-	-	-	-
MIBK (4-methyl-2-pentanone)	mg/kg	1	-	-	-	-
2-hexanone (MBK)	mg/kg	5	-	-	-	-
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Sulphonated Compounds						
Carbon disulfide	mg/kg	0.5	-	-	-	-
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**71**	**86**	**93**	**91**
d4-1,2-dichloroethane (Surrogate)	%	-	**79**	**80**	**83**	**80**
d8-toluene (Surrogate)	%	-	**100**	**78**	**80**	**78**
Bromofluorobenzene (Surrogate)	%	-	**74**	**67**	**68**	**65**
Totals						
Total Xylenes	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6
Total VOC*	mg/kg	24	-	-	-	-
Total Volatile Chlorinated Hydrocarbons*	mg/kg	3	-	-	-	-
Total Other Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	-	-	-	-
Total Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	-	-	-	-

Parameter	Units	LOR	Sample Number: SE195215.017 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH112-0.2-0.3	SE195215.018 Soil 10 Jul 2019 BH112-0.7-0.8	SE195215.019 Soil 10 Jul 2019 BH113-0.2-0.3	SE195215.020 Soil 10 Jul 2019 BH113-1.2-1.3
VOC's in Soil Method: AN433 Tested: 15/7/2019 (continued)						
Trihalomethanes						
Chloroform	mg/kg	0.1	-	-	-	-
Bromodichloromethane	mg/kg	0.1	-	-	-	-
Chlorodibromomethane	mg/kg	0.1	-	-	-	-
Bromoform	mg/kg	0.1	-	-	-	-
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 15/7/2019						
TRH C6-C10	mg/kg	25	<25	<25	<25	<25
TRH C6-C9	mg/kg	20	<20	<20	<20	<20
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**71**	**86**	**93**	**91**
d4-1,2-dichloroethane (Surrogate)	%	-	**79**	**80**	**83**	**80**
d8-toluene (Surrogate)	%	-	**100**	**78**	**80**	**78**
Bromofluorobenzene (Surrogate)	%	-	**74**	**67**	**68**	**65**
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 15/7/2019						
TRH C10-C14	mg/kg	20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210
TRH F Bands						
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.017 Soil 10 Jul 2019 BH112-0.2-0.3	SE195215.018 Soil 10 Jul 2019 BH112-0.7-0.8	SE195215.019 Soil 10 Jul 2019 BH113-0.2-0.3	SE195215.020 Soil 10 Jul 2019 BH113-1.2-1.3
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 15/7/2019							
Naphthalene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1		<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2		<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3		<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2		<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8		<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8		<0.8	<0.8	<0.8	<0.8
Surrogates							
d5-nitrobenzene (Surrogate)	%	-		**90**	**90**	**90**	**92**
2-fluorobiphenyl (Surrogate)	%	-		**90**	**90**	**90**	**90**
d14-p-terphenyl (Surrogate)	%	-		**90**	**90**	**90**	**92**
OC Pesticides in Soil Method: AN420 Tested: 15/7/2019							
Hexachlorobenzene (HCB)	mg/kg	0.1		<0.1	-	<0.1	-
Alpha BHC	mg/kg	0.1		<0.1	-	<0.1	-
Lindane	mg/kg	0.1		<0.1	-	<0.1	-
Heptachlor	mg/kg	0.1		<0.1	-	<0.1	-
Aldrin	mg/kg	0.1		<0.1	-	<0.1	-
Beta BHC	mg/kg	0.1		<0.1	-	<0.1	-
Delta BHC	mg/kg	0.1		<0.1	-	<0.1	-
Heptachlor epoxide	mg/kg	0.1		<0.1	-	<0.1	-
o,p'-DDE	mg/kg	0.1		<0.1	-	<0.1	-
Alpha Endosulfan	mg/kg	0.2		<0.2	-	<0.2	-
Gamma Chlordane	mg/kg	0.1		<0.1	-	<0.1	-
Alpha Chlordane	mg/kg	0.1		<0.1	-	<0.1	-
trans-Nonachlor	mg/kg	0.1		<0.1	-	<0.1	-
p,p'-DDE	mg/kg	0.1		<0.1	-	<0.1	-
Dieldrin	mg/kg	0.2		<0.2	-	<0.2	-
Endrin	mg/kg	0.2		<0.2	-	<0.2	-
o,p'-DDD	mg/kg	0.1		<0.1	-	<0.1	-
o,p'-DDT	mg/kg	0.1		<0.1	-	<0.1	-
Beta Endosulfan	mg/kg	0.2		<0.2	-	<0.2	-
p,p'-DDD	mg/kg	0.1		<0.1	-	<0.1	-
p,p'-DDT	mg/kg	0.1		<0.1	-	<0.1	-
Endosulfan sulphate	mg/kg	0.1		<0.1	-	<0.1	-
Endrin Aldehyde	mg/kg	0.1		<0.1	-	<0.1	-
Methoxychlor	mg/kg	0.1		<0.1	-	<0.1	-
Endrin Ketone	mg/kg	0.1		<0.1	-	<0.1	-
Isodrin	mg/kg	0.1		<0.1	-	<0.1	-
Mirex	mg/kg	0.1		<0.1	-	<0.1	-
Total CLP OC Pesticides	mg/kg	1		<1	-	<1	-
Surrogates							

Parameter	Units	LOR	Sample Number: SE195215.017 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH112-0.2-0.3		Sample Number: SE195215.018 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH112-0.7-0.8		Sample Number: SE195215.019 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH113-0.2-0.3		Sample Number: SE195215.020 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH113-1.2-1.3	
OC Pesticides in Soil Method: AN420 Tested: 15/7/2019 (continued)										
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**100**		-		**100**		-	
OP Pesticides in Soil Method: AN420 Tested: 15/7/2019										
Dichlorvos	mg/kg	0.5	<0.5		-		<0.5		-	
Dimethoate	mg/kg	0.5	<0.5		-		<0.5		-	
Diazinon (Dimpylate)	mg/kg	0.5	<0.5		-		<0.5		-	
Fenitrothion	mg/kg	0.2	<0.2		-		<0.2		-	
Malathion	mg/kg	0.2	<0.2		-		<0.2		-	
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2		-		<0.2		-	
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2		-		<0.2		-	
Bromophos Ethyl	mg/kg	0.2	<0.2		-		<0.2		-	
Methidathion	mg/kg	0.5	<0.5		-		<0.5		-	
Ethion	mg/kg	0.2	<0.2		-		<0.2		-	
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2		-		<0.2		-	
Total OP Pesticides*	mg/kg	1.7	<1.7		-		<1.7		-	
Surrogates										
2-fluorobiphenyl (Surrogate)	%	-	**90**		-		**90**		-	
d14-p-terphenyl (Surrogate)	%	-	**90**		-		**90**		-	
PCBs in Soil Method: AN420 Tested: 15/7/2019										
Arochlor 1016	mg/kg	0.2	<0.2		-		<0.2		-	
Arochlor 1221	mg/kg	0.2	<0.2		-		<0.2		-	
Arochlor 1232	mg/kg	0.2	<0.2		-		<0.2		-	
Arochlor 1242	mg/kg	0.2	<0.2		-		<0.2		-	
Arochlor 1248	mg/kg	0.2	<0.2		-		<0.2		-	
Arochlor 1254	mg/kg	0.2	<0.2		-		<0.2		-	
Arochlor 1260	mg/kg	0.2	<0.2		-		<0.2		-	
Arochlor 1262	mg/kg	0.2	<0.2		-		<0.2		-	
Arochlor 1268	mg/kg	0.2	<0.2		-		<0.2		-	
Total PCBs (Arochlors)	mg/kg	1	<1		-		<1		-	
Surrogates										
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	**100**		-		**100**		-	
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 16/7/2019										
Arsenic, As	mg/kg	1	**7**		**10**		**3**		**6**	
Cadmium, Cd	mg/kg	0.3	<0.3		<0.3		<0.3		<0.3	
Chromium, Cr	mg/kg	0.3	**21**		**8.9**		**14**		**9.8**	
Copper, Cu	mg/kg	0.5	**17**		**26**		**20**		**16**	
Nickel, Ni	mg/kg	0.5	**7.3**		**6.2**		**14**		**3.5**	
Lead, Pb	mg/kg	1	**23**		**9**		**73**		**13**	
Zinc, Zn	mg/kg	2	**33**		**45**		**78**		**22**	

Parameter	Units	LOR	Sample Number: SE195215.017 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: BH112-0.2-0.3	SE195215.018 Soil 10 Jul 2019 BH112-0.7-0.8	SE195215.019 Soil 10 Jul 2019 BH113-0.2-0.3	SE195215.020 Soil 10 Jul 2019 BH113-1.2-1.3
Mercury in Soil Method: AN312 Tested: 16/7/2019						
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content Method: AN002 Tested: 15/7/2019						
% Moisture	%w/w	0.5	**21**	**20**	**13**	**20**
Fibre Identification in soil Method: AN602 Tested: 16/7/2019						
FibreID						
Asbestos Detected	No unit	-	No	-	No	-
SemiQuant						
Estimated Fibres*	%w/w	0.01	<0.01	-	<0.01	-
VOCs in Water Method: AN433 Tested: 16/7/2019						
Monocyclic Aromatic Hydrocarbons						
Benzene	µg/L	0.5	-	-	-	-
Toluene	µg/L	0.5	-	-	-	-
Ethylbenzene	µg/L	0.5	-	-	-	-
m/p-xylene	µg/L	1	-	-	-	-
o-xylene	µg/L	0.5	-	-	-	-
Polycyclic VOCs						
Naphthalene	µg/L	0.5	-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.017 Soil 10 Jul 2019 BH112-0.2-0.3	SE195215.018 Soil 10 Jul 2019 BH112-0.7-0.8	SE195215.019 Soil 10 Jul 2019 BH113-0.2-0.3	SE195215.020 Soil 10 Jul 2019 BH113-1.2-1.3
VOCs in Water Method: AN433 Tested: 16/7/2019 (continued)							
Surrogates							
Dibromofluoromethane (Surrogate)	%	-		-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-		-	-	-	-
d8-toluene (Surrogate)	%	-		-	-	-	-
Bromofluorobenzene (Surrogate)	%	-		-	-	-	-
Totals							
Total Xylenes	µg/L	1.5		-	-	-	-
Total BTEX	µg/L	3		-	-	-	-
Volatile Petroleum Hydrocarbons in Water Method: AN433 Tested: 16/7/2019							
TRH C6-C10	µg/L	50		-	-	-	-
TRH C6-C9	µg/L	40		-	-	-	-
Surrogates							
Dibromofluoromethane (Surrogate)	%	-		-	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-		-	-	-	-
d8-toluene (Surrogate)	%	-		-	-	-	-
Bromofluorobenzene (Surrogate)	%	-		-	-	-	-
VPH F Bands							
Benzene (F0)	µg/L	0.5		-	-	-	-
TRH C6-C10 minus BTEX (F1)	µg/L	50		-	-	-	-
TRH (Total Recoverable Hydrocarbons) in Water Method: AN403 Tested: 15/7/2019							
TRH C10-C14	µg/L	50		-	-	-	-
TRH C15-C28	µg/L	200		-	-	-	-
TRH C29-C36	µg/L	200		-	-	-	-
TRH C37-C40	µg/L	200		-	-	-	-
TRH C10-C36	µg/L	450		-	-	-	-
TRH C10-C40	µg/L	650		-	-	-	-
TRH F Bands							
TRH >C10-C16	µg/L	60		-	-	-	-
TRH >C10-C16 - Naphthalene (F2)	µg/L	60		-	-	-	-
TRH >C16-C34 (F3)	µg/L	500		-	-	-	-
TRH >C34-C40 (F4)	µg/L	500		-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.017 Soil 10 Jul 2019 BH112-0.2-0.3	SE195215.018 Soil 10 Jul 2019 BH112-0.7-0.8	SE195215.019 Soil 10 Jul 2019 BH113-0.2-0.3	SE195215.020 Soil 10 Jul 2019 BH113-1.2-1.3
Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 15/7/2019							
Arsenic, As	µg/L	1		-	-	-	-
Cadmium, Cd	µg/L	0.1		-	-	-	-
Chromium, Cr	µg/L	1		-	-	-	-
Copper, Cu	µg/L	1		-	-	-	-
Lead, Pb	µg/L	1		-	-	-	-
Nickel, Ni	µg/L	1		-	-	-	-
Zinc, Zn	µg/L	5		-	-	-	-
Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 15/7/2019							
Mercury	mg/L	0.0001		-	-	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.021 Soil 10 Jul 2019 QD1	SE195215.022 Water 10 Jul 2019 QR1	SE195215.023 Soil 10 Jul 2019 QTS1	SE195215.024 Soil 10 Jul 2019 QTB1
VOC's in Soil Method: AN433 Tested: 15/7/2019							
Fumigants							
2,2-dichloropropane	mg/kg	0.1		-	-	-	-
1,2-dichloropropane	mg/kg	0.1		-	-	-	-
cis-1,3-dichloropropene	mg/kg	0.1		-	-	-	-
trans-1,3-dichloropropene	mg/kg	0.1		-	-	-	-
1,2-dibromoethane (EDB)	mg/kg	0.1		-	-	-	-
Halogenated Aliphatics							
Dichlorodifluoromethane (CFC-12)	mg/kg	1		-	-	-	-
Chloromethane	mg/kg	1		-	-	-	-
Vinyl chloride (Chloroethene)	mg/kg	0.1		-	-	-	-
Bromomethane	mg/kg	1		-	-	-	-
Chloroethane	mg/kg	1		-	-	-	-
Trichlorofluoromethane	mg/kg	1		-	-	-	-
Iodomethane	mg/kg	5		-	-	-	-
1,1-dichloroethene	mg/kg	0.1		-	-	-	-
Dichloromethane (Methylene chloride)	mg/kg	0.5		-	-	-	-
Allyl chloride	mg/kg	0.1		-	-	-	-
trans-1,2-dichloroethene	mg/kg	0.1		-	-	-	-
1,1-dichloroethane	mg/kg	0.1		-	-	-	-
cis-1,2-dichloroethene	mg/kg	0.1		-	-	-	-
Bromochloromethane	mg/kg	0.1		-	-	-	-
1,2-dichloroethane	mg/kg	0.1		-	-	-	-
1,1,1-trichloroethane	mg/kg	0.1		-	-	-	-
1,1-dichloropropene	mg/kg	0.1		-	-	-	-
Carbon tetrachloride	mg/kg	0.1		-	-	-	-
Dibromomethane	mg/kg	0.1		-	-	-	-
Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1		-	-	-	-
1,1,2-trichloroethane	mg/kg	0.1		-	-	-	-
1,3-dichloropropane	mg/kg	0.1		-	-	-	-
Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1		-	-	-	-
1,1,1,2-tetrachloroethane	mg/kg	0.1		-	-	-	-
cis-1,4-dichloro-2-butene	mg/kg	1		-	-	-	-
1,1,2,2-tetrachloroethane	mg/kg	0.1		-	-	-	-
1,2,3-trichloropropane	mg/kg	0.1		-	-	-	-
trans-1,4-dichloro-2-butene	mg/kg	1		-	-	-	-
1,2-dibromo-3-chloropropane	mg/kg	0.1		-	-	-	-
Hexachlorobutadiene	mg/kg	0.1		-	-	-	-
Halogenated Aromatics							
Chlorobenzene	mg/kg	0.1		-	-	-	-
Bromobenzene	mg/kg	0.1		-	-	-	-
2-chlorotoluene	mg/kg	0.1		-	-	-	-
4-chlorotoluene	mg/kg	0.1		-	-	-	-
1,3-dichlorobenzene	mg/kg	0.1		-	-	-	-
1,4-dichlorobenzene	mg/kg	0.1		-	-	-	-
1,2-dichlorobenzene	mg/kg	0.1		-	-	-	-
1,2,4-trichlorobenzene	mg/kg	0.1		-	-	-	-
1,2,3-trichlorobenzene	mg/kg	0.1		-	-	-	-
Monocyclic Aromatic Hydrocarbons							
Benzene	mg/kg	0.1		<0.1	-	[102%]	<0.1
Toluene	mg/kg	0.1		<0.1	-	[97%]	<0.1
Ethylbenzene	mg/kg	0.1		<0.1	-	[93%]	<0.1
m/p-xylene	mg/kg	0.2		<0.2	-	[91%]	<0.2
o-xylene	mg/kg	0.1		<0.1	-	[95%]	<0.1
Styrene (Vinyl benzene)	mg/kg	0.1		-	-	-	-
Isopropylbenzene (Cumene)	mg/kg	0.1		-	-	-	-
n-propylbenzene	mg/kg	0.1		-	-	-	-

Parameter	Units	LOR	Sample Number: SE195215.021 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: QD1	SE195215.022 Water 10 Jul 2019 QR1	SE195215.023 Soil 10 Jul 2019 QTS1	SE195215.024 Soil 10 Jul 2019 QTB1
VOC's in Soil Method: AN433 Tested: 15/7/2019 (continued)						
1,3,5-trimethylbenzene	mg/kg	0.1	-	-	-	-
tert-butylbenzene	mg/kg	0.1	-	-	-	-
1,2,4-trimethylbenzene	mg/kg	0.1	-	-	-	-
sec-butylbenzene	mg/kg	0.1	-	-	-	-
p-isopropyltoluene	mg/kg	0.1	-	-	-	-
n-butylbenzene	mg/kg	0.1	-	-	-	-
Nitrogenous Compounds						
Acrylonitrile	mg/kg	0.1	-	-	-	-
2-nitropropane	mg/kg	10	-	-	-	-
Oxygenated Compounds						
Acetone (2-propanone)	mg/kg	10	-	-	-	-
MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	-	-	-	-
Vinyl acetate	mg/kg	10	-	-	-	-
MEK (2-butanone)	mg/kg	10	-	-	-	-
MIBK (4-methyl-2-pentanone)	mg/kg	1	-	-	-	-
2-hexanone (MBK)	mg/kg	5	-	-	-	-
Polycyclic VOCs						
Naphthalene	mg/kg	0.1	<0.1	-	-	<0.1
Sulphonated Compounds						
Carbon disulfide	mg/kg	0.5	-	-	-	-
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**74**	-	**85**	**96**
d4-1,2-dichloroethane (Surrogate)	%	-	**74**	-	**98**	**91**
d8-toluene (Surrogate)	%	-	**67**	-	**90**	**93**
Bromofluorobenzene (Surrogate)	%	-	**59**	-	**99**	**75**
Totals						
Total Xylenes	mg/kg	0.3	<0.3	-	-	<0.3
Total BTEX	mg/kg	0.6	<0.6	-	-	<0.6
Total VOC*	mg/kg	24	-	-	-	-
Total Volatile Chlorinated Hydrocarbons*	mg/kg	3	-	-	-	-
Total Other Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	-	-	-	-
Total Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	-	-	-	-

Parameter	Units	LOR	Sample Number: SE195215.021 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: QD1	SE195215.022 Water 10 Jul 2019 QR1	SE195215.023 Soil 10 Jul 2019 QTS1	SE195215.024 Soil 10 Jul 2019 QTB1
VOC's in Soil Method: AN433 Tested: 15/7/2019 (continued)						
Trihalomethanes						
Chloroform	mg/kg	0.1	-	-	-	-
Bromodichloromethane	mg/kg	0.1	-	-	-	-
Chlorodibromomethane	mg/kg	0.1	-	-	-	-
Bromoform	mg/kg	0.1	-	-	-	-
Volatile Petroleum Hydrocarbons in Soil Method: AN433 Tested: 15/7/2019						
TRH C6-C10	mg/kg	25	<25	-	-	-
TRH C6-C9	mg/kg	20	<20	-	-	-
Surrogates						
Dibromofluoromethane (Surrogate)	%	-	**74**	-	-	-
d4-1,2-dichloroethane (Surrogate)	%	-	**74**	-	-	-
d8-toluene (Surrogate)	%	-	**67**	-	-	-
Bromofluorobenzene (Surrogate)	%	-	**59**	-	-	-
VPH F Bands						
Benzene (F0)	mg/kg	0.1	<0.1	-	-	-
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	-	-	-
TRH (Total Recoverable Hydrocarbons) in Soil Method: AN403 Tested: 15/7/2019						
TRH C10-C14	mg/kg	20	<20	-	-	-
TRH C15-C28	mg/kg	45	<45	-	-	-
TRH C29-C36	mg/kg	45	<45	-	-	-
TRH C37-C40	mg/kg	100	<100	-	-	-
TRH C10-C36 Total	mg/kg	110	<110	-	-	-
TRH C10-C40 Total (F bands)	mg/kg	210	<210	-	-	-
TRH F Bands						
TRH >C10-C16	mg/kg	25	<25	-	-	-
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	-	-	-
TRH >C16-C34 (F3)	mg/kg	90	<90	-	-	-
TRH >C34-C40 (F4)	mg/kg	120	<120	-	-	-

Parameter	Units	LOR	Sample Number: SE195215.021 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: QD1	SE195215.022 Water 10 Jul 2019 QR1	SE195215.023 Soil 10 Jul 2019 QTS1	SE195215.024 Soil 10 Jul 2019 QTB1
PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: AN420 Tested: 15/7/2019						
Naphthalene	mg/kg	0.1	-	-	-	-
2-methylnaphthalene	mg/kg	0.1	-	-	-	-
1-methylnaphthalene	mg/kg	0.1	-	-	-	-
Acenaphthylene	mg/kg	0.1	-	-	-	-
Acenaphthene	mg/kg	0.1	-	-	-	-
Fluorene	mg/kg	0.1	-	-	-	-
Phenanthrene	mg/kg	0.1	-	-	-	-
Anthracene	mg/kg	0.1	-	-	-	-
Fluoranthene	mg/kg	0.1	-	-	-	-
Pyrene	mg/kg	0.1	-	-	-	-
Benzo(a)anthracene	mg/kg	0.1	-	-	-	-
Chrysene	mg/kg	0.1	-	-	-	-
Benzo(b&j)fluoranthene	mg/kg	0.1	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.1	-	-	-	-
Benzo(a)pyrene	mg/kg	0.1	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	-	-	-	-
Dibenzo(ah)anthracene	mg/kg	0.1	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.1	-	-	-	-
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	-	-	-	-
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	-	-	-	-
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	-	-	-	-
Total PAH (18)	mg/kg	0.8	-	-	-	-
Total PAH (NEPM/WHO 16)	mg/kg	0.8	-	-	-	-
Surrogates						
d5-nitrobenzene (Surrogate)	%	-	-	-	-	-
2-fluorobiphenyl (Surrogate)	%	-	-	-	-	-
d14-p-terphenyl (Surrogate)	%	-	-	-	-	-
OC Pesticides in Soil Method: AN420 Tested: 15/7/2019						
Hexachlorobenzene (HCB)	mg/kg	0.1	-	-	-	-
Alpha BHC	mg/kg	0.1	-	-	-	-
Lindane	mg/kg	0.1	-	-	-	-
Heptachlor	mg/kg	0.1	-	-	-	-
Aldrin	mg/kg	0.1	-	-	-	-
Beta BHC	mg/kg	0.1	-	-	-	-
Delta BHC	mg/kg	0.1	-	-	-	-
Heptachlor epoxide	mg/kg	0.1	-	-	-	-
o,p'-DDE	mg/kg	0.1	-	-	-	-
Alpha Endosulfan	mg/kg	0.2	-	-	-	-
Gamma Chlordane	mg/kg	0.1	-	-	-	-
Alpha Chlordane	mg/kg	0.1	-	-	-	-
trans-Nonachlor	mg/kg	0.1	-	-	-	-
p,p'-DDE	mg/kg	0.1	-	-	-	-
Dieldrin	mg/kg	0.2	-	-	-	-
Endrin	mg/kg	0.2	-	-	-	-
o,p'-DDD	mg/kg	0.1	-	-	-	-
o,p'-DDT	mg/kg	0.1	-	-	-	-
Beta Endosulfan	mg/kg	0.2	-	-	-	-
p,p'-DDD	mg/kg	0.1	-	-	-	-
p,p'-DDT	mg/kg	0.1	-	-	-	-
Endosulfan sulphate	mg/kg	0.1	-	-	-	-
Endrin Aldehyde	mg/kg	0.1	-	-	-	-
Methoxychlor	mg/kg	0.1	-	-	-	-
Endrin Ketone	mg/kg	0.1	-	-	-	-
Isodrin	mg/kg	0.1	-	-	-	-
Mirex	mg/kg	0.1	-	-	-	-
Total CLP OC Pesticides	mg/kg	1	-	-	-	-
Surrogates						

Parameter	Units	LOR	Sample Number: SE195215.021 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: QD1	SE195215.022 Water 10 Jul 2019 QR1	SE195215.023 Soil 10 Jul 2019 QTS1	SE195215.024 Soil 10 Jul 2019 QTB1
OC Pesticides in Soil Method: AN420 Tested: 17/7/2019 (continued)						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	-	-	-
OP Pesticides in Soil Method: AN420 Tested: 15/7/2019						
Dichlorvos	mg/kg	0.5	-	-	-	-
Dimethoate	mg/kg	0.5	-	-	-	-
Diazinon (Dimpylate)	mg/kg	0.5	-	-	-	-
Fenitrothion	mg/kg	0.2	-	-	-	-
Malathion	mg/kg	0.2	-	-	-	-
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	-	-	-	-
Parathion-ethyl (Parathion)	mg/kg	0.2	-	-	-	-
Bromophos Ethyl	mg/kg	0.2	-	-	-	-
Methidathion	mg/kg	0.5	-	-	-	-
Ethion	mg/kg	0.2	-	-	-	-
Azinphos-methyl (Guthion)	mg/kg	0.2	-	-	-	-
Total OP Pesticides*	mg/kg	1.7	-	-	-	-
Surrogates						
2-fluorobiphenyl (Surrogate)	%	-	-	-	-	-
d14-p-terphenyl (Surrogate)	%	-	-	-	-	-
PCBs in Soil Method: AN420 Tested: 15/7/2019						
Arochlor 1016	mg/kg	0.2	-	-	-	-
Arochlor 1221	mg/kg	0.2	-	-	-	-
Arochlor 1232	mg/kg	0.2	-	-	-	-
Arochlor 1242	mg/kg	0.2	-	-	-	-
Arochlor 1248	mg/kg	0.2	-	-	-	-
Arochlor 1254	mg/kg	0.2	-	-	-	-
Arochlor 1260	mg/kg	0.2	-	-	-	-
Arochlor 1262	mg/kg	0.2	-	-	-	-
Arochlor 1268	mg/kg	0.2	-	-	-	-
Total PCBs (Arochlors)	mg/kg	1	-	-	-	-
Surrogates						
Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	-	-	-	-
Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES Method: AN040/AN320 Tested: 16/7/2019						
Arsenic, As	mg/kg	1	**8**	-	-	-
Cadmium, Cd	mg/kg	0.3	<0.3	-	-	-
Chromium, Cr	mg/kg	0.3	**17**	-	-	-
Copper, Cu	mg/kg	0.5	**14**	-	-	-
Nickel, Ni	mg/kg	0.5	**7.8**	-	-	-
Lead, Pb	mg/kg	1	**27**	-	-	-
Zinc, Zn	mg/kg	2	**39**	-	-	-

Parameter	Units	LOR	Sample Number: SE195215.021 Sample Matrix: Soil Sample Date: 10 Jul 2019 Sample Name: QD1	SE195215.022 Water 10 Jul 2019 QR1	SE195215.023 Soil 10 Jul 2019 QTS1	SE195215.024 Soil 10 Jul 2019 QTB1
Mercury in Soil Method: AN312 Tested: 16/7/2019						
Mercury	mg/kg	0.05	<0.05	-	-	-
Moisture Content Method: AN002 Tested: 15/7/2019						
% Moisture	%w/w	0.5	**20**	-	-	<0.5
Fibre Identification in soil Method: AN602 Tested: 17/7/2019						
FibreID						
Asbestos Detected	No unit	-	-	-	-	-
SemiQuant						
Estimated Fibres*	%w/w	0.01	-	-	-	-
VOCs in Water Method: AN433 Tested: 16/7/2019						
Monocyclic Aromatic Hydrocarbons						
Benzene	µg/L	0.5	-	<0.5	-	-
Toluene	µg/L	0.5	-	<0.5	-	-
Ethylbenzene	µg/L	0.5	-	<0.5	-	-
m/p-xylene	µg/L	1	-	<1	-	-
o-xylene	µg/L	0.5	-	<0.5	-	-
Polycyclic VOCs						
Naphthalene	µg/L	0.5	-	<0.5	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.021 Soil 10 Jul 2019 QD1	SE195215.022 Water 10 Jul 2019 QR1	SE195215.023 Soil 10 Jul 2019 QTS1	SE195215.024 Soil 10 Jul 2019 QTB1
VOCs in Water Method: AN433 Tested: 16/7/2019 (continued)							
Surrogates							
Dibromofluoromethane (Surrogate)	%	-		-	**110**	-	-
d4-1,2-dichloroethane (Surrogate)	%	-		-	**102**	-	-
d8-toluene (Surrogate)	%	-		-	**105**	-	-
Bromofluorobenzene (Surrogate)	%	-		-	**80**	-	-
Totals							
Total Xylenes	µg/L	1.5		-	<1.5	-	-
Total BTEX	µg/L	3		-	<3	-	-
Volatile Petroleum Hydrocarbons in Water Method: AN433 Tested: 16/7/2019							
TRH C6-C10	µg/L	50		-	<50	-	-
TRH C6-C9	µg/L	40		-	<40	-	-
Surrogates							
Dibromofluoromethane (Surrogate)	%	-		-	**110**	-	-
d4-1,2-dichloroethane (Surrogate)	%	-		-	**102**	-	-
d8-toluene (Surrogate)	%	-		-	**105**	-	-
Bromofluorobenzene (Surrogate)	%	-		-	**80**	-	-
VPH F Bands							
Benzene (F0)	µg/L	0.5		-	<0.5	-	-
TRH C6-C10 minus BTEX (F1)	µg/L	50		-	<50	-	-
TRH (Total Recoverable Hydrocarbons) in Water Method: AN403 Tested: 15/7/2019							
TRH C10-C14	µg/L	50		-	<50	-	-
TRH C15-C28	µg/L	200		-	<200	-	-
TRH C29-C36	µg/L	200		-	<200	-	-
TRH C37-C40	µg/L	200		-	<200	-	-
TRH C10-C36	µg/L	450		-	<450	-	-
TRH C10-C40	µg/L	650		-	<650	-	-
TRH F Bands							
TRH >C10-C16	µg/L	60		-	<60	-	-
TRH >C10-C16 - Naphthalene (F2)	µg/L	60		-	<60	-	-
TRH >C16-C34 (F3)	µg/L	500		-	<500	-	-
TRH >C34-C40 (F4)	µg/L	500		-	<500	-	-

Parameter	Units	LOR	Sample Number Sample Matrix Sample Date Sample Name	SE195215.021 Soil 10 Jul 2019 QD1	SE195215.022 Water 10 Jul 2019 QR1	SE195215.023 Soil 10 Jul 2019 QTS1	SE195215.024 Soil 10 Jul 2019 QTB1
Trace Metals (Dissolved) in Water by ICPMS Method: AN318 Tested: 15/7/2019							
Arsenic, As	µg/L	1		-	<1	-	-
Cadmium, Cd	µg/L	0.1		-	<0.1	-	-
Chromium, Cr	µg/L	1		-	<1	-	-
Copper, Cu	µg/L	1		-	<1	-	-
Lead, Pb	µg/L	1		-	<1	-	-
Nickel, Ni	µg/L	1		-	<1	-	-
Zinc, Zn	µg/L	5		-	<5	-	-
Mercury (dissolved) in Water Method: AN311(Perth)/AN312 Tested: 15/7/2019							
Mercury	mg/L	0.0001		-	<0.0001	-	-

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Mercury (dissolved) in Water **Method: ME-(AU)-[ENV]AN311(Perth)/AN312**

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Mercury	LB178408	mg/L	0.0001	<0.0001	92%

Mercury in Soil **Method: ME-(AU)-[ENV]AN312**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Mercury	LB178584	mg/kg	0.05	<0.05	0 - 10%	103%	113%
	LB178586	mg/kg	0.05	<0.05	0%	110%	100%

Moisture Content **Method: ME-(AU)-[ENV]AN002**

Parameter	QC Reference	Units	LOR	DUP %RPD
% Moisture	LB178436	%w/w	0.5	2 - 16%

OC Pesticides in Soil **Method: ME-(AU)-[ENV]AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Hexachlorobenzene (HCB)	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Alpha BHC	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Lindane	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Heptachlor	LB178435	mg/kg	0.1	<0.1	0%	88%	100%
Aldrin	LB178435	mg/kg	0.1	<0.1	0%	90%	100%
Beta BHC	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Delta BHC	LB178435	mg/kg	0.1	<0.1	0%	80%	89%
Heptachlor epoxide	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
o,p'-DDE	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Alpha Endosulfan	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
Gamma Chlordane	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Alpha Chlordane	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
trans-Nonachlor	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
p,p'-DDE	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Dieldrin	LB178435	mg/kg	0.2	<0.2	0%	89%	99%
Endrin	LB178435	mg/kg	0.2	<0.2	0%	86%	95%
o,p'-DDD	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
o,p'-DDT	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Beta Endosulfan	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
p,p'-DDD	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
p,p'-DDT	LB178435	mg/kg	0.1	<0.1	0%	77%	85%
Endosulfan sulphate	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Endrin Aldehyde	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Methoxychlor	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Endrin Ketone	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Isodrin	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Mirex	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Total CLP OC Pesticides	LB178435	mg/kg	1	<1	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB178435	%	-	92%	8%	96%	102%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

OP Pesticides in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Dichlorvos	LB178435	mg/kg	0.5	<0.5	0%	91%	102%
Dimethoate	LB178435	mg/kg	0.5	<0.5	0%	NA	NA
Diazinon (Dimpylate)	LB178435	mg/kg	0.5	<0.5	0%	120%	107%
Fenitrothion	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
Malathion	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
Chlorpyrifos (Chlorpyrifos Ethyl)	LB178435	mg/kg	0.2	<0.2	0%	121%	98%
Parathion-ethyl (Parathion)	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
Bromophos Ethyl	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
Methidathion	LB178435	mg/kg	0.5	<0.5	0%	NA	NA
Ethion	LB178435	mg/kg	0.2	<0.2	0%	110%	119%
Azinphos-methyl (Guthion)	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
Total OP Pesticides*	LB178435	mg/kg	1.7	<1.7	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
2-fluorobiphenyl (Surrogate)	LB178435	%	-	82%	2%	86%	84%
d14-p-terphenyl (Surrogate)	LB178435	%	-	104%	5%	106%	102%

PAH (Polynuclear Aromatic Hydrocarbons) in Soil Method: ME-(AU)-[ENV]AN420

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB178435	mg/kg	0.1	<0.1	0%	107%	114%
2-methylnaphthalene	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
1-methylnaphthalene	LB178435	mg/kg	0.1	<0.1	0%	NA	NA
Acenaphthylene	LB178435	mg/kg	0.1	<0.1	0 - 6%	112%	123%
Acenaphthene	LB178435	mg/kg	0.1	<0.1	0%	114%	121%
Fluorene	LB178435	mg/kg	0.1	<0.1	0 - 40%	NA	NA
Phenanthrene	LB178435	mg/kg	0.1	<0.1	0 - 23%	116%	109%
Anthracene	LB178435	mg/kg	0.1	<0.1	0 - 6%	109%	118%
Fluoranthene	LB178435	mg/kg	0.1	<0.1	0 - 3%	106%	110%
Pyrene	LB178435	mg/kg	0.1	<0.1	0 - 6%	118%	102%
Benzo(a)anthracene	LB178435	mg/kg	0.1	<0.1	0 - 10%	NA	NA
Chrysene	LB178435	mg/kg	0.1	<0.1	0 - 9%	NA	NA
Benzo(b&j)fluoranthene	LB178435	mg/kg	0.1	<0.1	0 - 10%	NA	NA
Benzo(k)fluoranthene	LB178435	mg/kg	0.1	<0.1	0 - 13%	NA	NA
Benzo(a)pyrene	LB178435	mg/kg	0.1	<0.1	0 - 11%	119%	122%
Indeno(1,2,3-cd)pyrene	LB178435	mg/kg	0.1	<0.1	0 - 13%	NA	NA
Dibenzo(ah)anthracene	LB178435	mg/kg	0.1	<0.1	0 - 13%	NA	NA
Benzo(ghi)perylene	LB178435	mg/kg	0.1	<0.1	0 - 12%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=0	LB178435	TEQ (mg/kg)	0.2	<0.2	0 - 11%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=LOR	LB178435	TEQ (mg/kg)	0.3	<0.3	0 - 11%	NA	NA
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	LB178435	TEQ (mg/kg)	0.2	<0.2	0 - 11%	NA	NA
Total PAH (18)	LB178435	mg/kg	0.8	<0.8	0 - 5%	NA	NA
Total PAH (NEPM/WHO 16)	LB178435	mg/kg	0.8	<0.8			

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
d5-nitrobenzene (Surrogate)	LB178435	%	-	100%	4 - 5%	106%	110%
2-fluorobiphenyl (Surrogate)	LB178435	%	-	82%	2 - 5%	86%	84%
d14-p-terphenyl (Surrogate)	LB178435	%	-	104%	4 - 5%	106%	102%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

PCBs in Soil **Method: ME-(AU)-[ENV]AN420**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arochlor 1016	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1221	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1232	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1242	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1248	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1254	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1260	LB178435	mg/kg	0.2	<0.2	0%	107%	114%
Arochlor 1262	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
Arochlor 1268	LB178435	mg/kg	0.2	<0.2	0%	NA	NA
Total PCBs (Arochlors)	LB178435	mg/kg	1	<1	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Tetrachloro-m-xylene (TCMX) (Surrogate)	LB178435	%	-	92%	8%	95%	100%

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES **Method: ME-(AU)-[ENV]AN040/AN320**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB178576	mg/kg	1	2	11 - 65%	95%	89%
	LB178578	mg/kg	1	2	2%	100%	87%
Cadmium, Cd	LB178576	mg/kg	0.3	<0.3	0 - 8%	102%	89%
	LB178578	mg/kg	0.3	<0.3	0%	103%	93%
Chromium, Cr	LB178576	mg/kg	0.3	<0.3	3 - 19%	91%	91%
	LB178578	mg/kg	0.3	<0.3	29%	80%	91%
Copper, Cu	LB178576	mg/kg	0.5	<0.5	8 - 12%	81%	110%
	LB178578	mg/kg	0.5	<0.5	37 - 40%	81%	91%
Nickel, Ni	LB178576	mg/kg	0.5	<0.5	2 - 13%	82%	105%
	LB178578	mg/kg	0.5	<0.5	11%	81%	89%
Lead, Pb	LB178576	mg/kg	1	<1	10 - 17%	81%	92%
	LB178578	mg/kg	1	<1	18%	84%	86%
Zinc, Zn	LB178576	mg/kg	2	<2.0	8 - 12%	89%	127%
	LB178578	mg/kg	2	<2.0	17%	91%	81%

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Trace Metals (Dissolved) in Water by ICPMS **Method: ME-(AU)-[ENV]AN318**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Arsenic, As	LB178403	µg/L	1	<1	0%	101%	104%
Cadmium, Cd	LB178403	µg/L	0.1	<0.1	0%	103%	102%
Chromium, Cr	LB178403	µg/L	1	<1	0%	107%	108%
Copper, Cu	LB178403	µg/L	1	<1	2%	109%	109%
Lead, Pb	LB178403	µg/L	1	<1	0 - 3%	99%	93%
Nickel, Ni	LB178403	µg/L	1	<1		106%	106%
Zinc, Zn	LB178403	µg/L	5	<5	0 - 1%	114%	111%

TRH (Total Recoverable Hydrocarbons) in Soil **Method: ME-(AU)-[ENV]AN403**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C10-C14	LB178435	mg/kg	20	<20	0%	108%	105%
TRH C15-C28	LB178435	mg/kg	45	<45	0 - 12%	93%	115%
TRH C29-C36	LB178435	mg/kg	45	<45	0%	75%	70%
TRH C37-C40	LB178435	mg/kg	100	<100	0%	NA	NA
TRH C10-C36 Total	LB178435	mg/kg	110	<110	0%	NA	NA
TRH C10-C40 Total (F bands)	LB178435	mg/kg	210	<210	0%	NA	NA

TRH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH >C10-C16	LB178435	mg/kg	25	<25	0%	105%	108%
TRH >C10-C16 - Naphthalene (F2)	LB178435	mg/kg	25	<25	0%	NA	NA
TRH >C16-C34 (F3)	LB178435	mg/kg	90	<90	0%	85%	100%
TRH >C34-C40 (F4)	LB178435	mg/kg	120	<120	0%	75%	NA

TRH (Total Recoverable Hydrocarbons) in Water **Method: ME-(AU)-[ENV]AN403**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
TRH C10-C14	LB178412	µg/L	50	<50	0%	80%
TRH C15-C28	LB178412	µg/L	200	<200	0%	98%
TRH C29-C36	LB178412	µg/L	200	<200	0%	116%
TRH C37-C40	LB178412	µg/L	200	<200	0%	NA
TRH C10-C36	LB178412	µg/L	450	<450	0%	NA
TRH C10-C40	LB178412	µg/L	650	<650	0%	NA

TRH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
TRH >C10-C16	LB178412	µg/L	60	<60	0%	88%
TRH >C10-C16 - Naphthalene (F2)	LB178412	µg/L	60	<60	0%	NA
TRH >C16-C34 (F3)	LB178412	µg/L	500	<500	0%	109%
TRH >C34-C40 (F4)	LB178412	µg/L	500	<500	0%	121%

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

VOC's in Soil **Method: ME-(AU)-[ENV]AN433**

Fumigants

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
2,2-dichloropropane	LB178428	mg/kg	0.1	<0.1	NA
1,2-dichloropropane	LB178428	mg/kg	0.1	<0.1	NA
cis-1,3-dichloropropene	LB178428	mg/kg	0.1	<0.1	NA
trans-1,3-dichloropropene	LB178428	mg/kg	0.1	<0.1	NA
1,2-dibromoethane (EDB)	LB178428	mg/kg	0.1	<0.1	NA

Halogenated Aliphatics

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Dichlorodifluoromethane (CFC-12)	LB178428	mg/kg	1	<1	NA
Chloromethane	LB178428	mg/kg	1	<1	NA
Vinyl chloride (Chloroethene)	LB178428	mg/kg	0.1	<0.1	NA
Bromomethane	LB178428	mg/kg	1	<1	NA
Chloroethane	LB178428	mg/kg	1	<1	NA
Trichlorofluoromethane	LB178428	mg/kg	1	<1	NA
Iodomethane	LB178428	mg/kg	5	<5	NA
1,1-dichloroethene	LB178428	mg/kg	0.1	<0.1	96%
Dichloromethane (Methylene chloride)	LB178428	mg/kg	0.5	<0.5	NA
Allyl chloride	LB178428	mg/kg	0.1	<0.1	NA
trans-1,2-dichloroethene	LB178428	mg/kg	0.1	<0.1	NA
1,1-dichloroethane	LB178428	mg/kg	0.1	<0.1	NA
cis-1,2-dichloroethene	LB178428	mg/kg	0.1	<0.1	NA
Bromochloromethane	LB178428	mg/kg	0.1	<0.1	NA
1,2-dichloroethane	LB178428	mg/kg	0.1	<0.1	119%
1,1,1-trichloroethane	LB178428	mg/kg	0.1	<0.1	NA
1,1-dichloropropene	LB178428	mg/kg	0.1	<0.1	NA
Carbon tetrachloride	LB178428	mg/kg	0.1	<0.1	NA
Dibromomethane	LB178428	mg/kg	0.1	<0.1	NA
Trichloroethene (Trichloroethylene -TCE)	LB178428	mg/kg	0.1	<0.1	72%
1,1,2-trichloroethane	LB178428	mg/kg	0.1	<0.1	NA
1,3-dichloropropane	LB178428	mg/kg	0.1	<0.1	NA
Tetrachloroethene (Perchloroethylene,PCE)	LB178428	mg/kg	0.1	<0.1	NA
1,1,1,2-tetrachloroethane	LB178428	mg/kg	0.1	<0.1	NA
cis-1,4-dichloro-2-butene	LB178428	mg/kg	1	<1	NA
1,1,2,2-tetrachloroethane	LB178428	mg/kg	0.1	<0.1	NA
1,2,3-trichloropropane	LB178428	mg/kg	0.1	<0.1	NA
trans-1,4-dichloro-2-butene	LB178428	mg/kg	1	<1	NA
1,2-dibromo-3-chloropropane	LB178428	mg/kg	0.1	<0.1	NA
Hexachlorobutadiene	LB178428	mg/kg	0.1	<0.1	NA

Halogenated Aromatics

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Chlorobenzene	LB178428	mg/kg	0.1	<0.1	110%
Bromobenzene	LB178428	mg/kg	0.1	<0.1	NA
2-chlorotoluene	LB178428	mg/kg	0.1	<0.1	NA
4-chlorotoluene	LB178428	mg/kg	0.1	<0.1	NA
1,3-dichlorobenzene	LB178428	mg/kg	0.1	<0.1	NA
1,4-dichlorobenzene	LB178428	mg/kg	0.1	<0.1	NA
1,2-dichlorobenzene	LB178428	mg/kg	0.1	<0.1	NA
1,2,4-trichlorobenzene	LB178428	mg/kg	0.1	<0.1	NA
1,2,3-trichlorobenzene	LB178428	mg/kg	0.1	<0.1	NA

Monocyclic Aromatic Hydrocarbons

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

VOC's in Soil Method: ME-(AU)-[ENV]AN433 (continued)

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Benzene	LB178428	mg/kg	0.1	<0.1	0%	71%
Toluene	LB178428	mg/kg	0.1	<0.1	0%	73%
Ethylbenzene	LB178428	mg/kg	0.1	<0.1	0%	67%
m/p-xylene	LB178428	mg/kg	0.2	<0.2	0%	83%
o-xylene	LB178428	mg/kg	0.1	<0.1	0%	73%
Styrene (Vinyl benzene)	LB178428	mg/kg	0.1	<0.1		NA
Isopropylbenzene (Cumene)	LB178428	mg/kg	0.1	<0.1		NA
n-propylbenzene	LB178428	mg/kg	0.1	<0.1		NA
1,3,5-trimethylbenzene	LB178428	mg/kg	0.1	<0.1		NA
tert-butylbenzene	LB178428	mg/kg	0.1	<0.1		NA
1,2,4-trimethylbenzene	LB178428	mg/kg	0.1	<0.1		NA
sec-butylbenzene	LB178428	mg/kg	0.1	<0.1		NA
p-isopropyltoluene	LB178428	mg/kg	0.1	<0.1		NA
n-butylbenzene	LB178428	mg/kg	0.1	<0.1		NA

Nitrogenous Compounds

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Acrylonitrile	LB178428	mg/kg	0.1	<0.1	NA
2-nitropropane	LB178428	mg/kg	10	<10	NA

Oxygenated Compounds

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Acetone (2-propanone)	LB178428	mg/kg	10	<10	NA
MtBE (Methyl-tert-butyl ether)	LB178428	mg/kg	0.1	<0.1	NA
Vinyl acetate	LB178428	mg/kg	10	<10	NA
MEK (2-butanone)	LB178428	mg/kg	10	<10	NA
MIBK (4-methyl-2-pentanone)	LB178428	mg/kg	1	<1	NA
2-hexanone (MBK)	LB178428	mg/kg	5	<5	NA

Polycyclic VOCs

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Naphthalene	LB178428	mg/kg	0.1	<0.1	0%	NA

Sulphonated Compounds

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Carbon disulfide	LB178428	mg/kg	0.5	<0.5	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Dibromofluoromethane (Surrogate)	LB178428	%	-	113%	3 - 10%	100%
d4-1,2-dichloroethane (Surrogate)	LB178428	%	-	90%	1 - 2%	81%
d8-toluene (Surrogate)	LB178428	%	-	90%	3%	90%
Bromofluorobenzene (Surrogate)	LB178428	%	-	74%	1 - 5%	97%

Totals

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery
Total Xylenes	LB178428	mg/kg	0.3	<0.3	0%	NA
Total BTEX	LB178428	mg/kg	0.6	<0.6	0%	NA
Total VOC*	LB178428	mg/kg	24	<24		NA
Total Volatile Chlorinated Hydrocarbons*	LB178428	mg/kg	3	<3.0		NA
Total Other Chlorinated Hydrocarbons VIC EPA*	LB178428	mg/kg	1.8	<1.8		NA
Total Chlorinated Hydrocarbons VIC EPA*	LB178428	mg/kg	1.8	<1.8		NA

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

VOC's in Soil Method: ME-(AU)-[ENV]AN433 (continued)

Trihalomethanes

Parameter	QC Reference	Units	LOR	MB	LCS %Recovery
Chloroform	LB178428	mg/kg	0.1	<0.1	106%
Bromodichloromethane	LB178428	mg/kg	0.1	<0.1	NA
Chlorodibromomethane	LB178428	mg/kg	0.1	<0.1	NA
Bromoform	LB178428	mg/kg	0.1	<0.1	NA

VOCs in Water Method: ME-(AU)-[ENV]AN433

Monocyclic Aromatic Hydrocarbons

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Benzene	LB178418	µg/L	0.5	<0.5	0%	115%	102%
Toluene	LB178418	µg/L	0.5	<0.5	0%	122%	106%
Ethylbenzene	LB178418	µg/L	0.5	<0.5	0%	119%	103%
m/p-xylene	LB178418	µg/L	1	<1	0%	119%	107%
o-xylene	LB178418	µg/L	0.5	<0.5	0%	118%	104%

Polycyclic VOCs

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Naphthalene	LB178418	µg/L	0.5	<0.5	0%	NA	NA

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Dibromofluoromethane (Surrogate)	LB178418	%	-	113%	9 - 28%	89%	84%
d4-1,2-dichloroethane (Surrogate)	LB178418	%	-	106%	6 - 19%	88%	86%
d8-toluene (Surrogate)	LB178418	%	-	104%	2 - 13%	98%	98%
Bromofluorobenzene (Surrogate)	LB178418	%	-	78%	1%	109%	107%

Totals

Parameter	QC Reference	Units	LOR	MB
Total Xylenes	LB178418	µg/L	1.5	<1.5
Total BTEX	LB178418	µg/L	3	<3

QC SUMMARY

MB blank results are compared to the Limit of Reporting
LCS and MS spike recoveries are measured as the percentage of analyte recovered from the sample compared the the amount of analyte spiked into the sample.
DUP and MSD relative percent differences are measured against their original counterpart samples according to the formula : *the absolute difference of the two results divided by the average of the two results as a percentage*. Where the DUP RPD is 'NA' , the results are less than the LOR and thus the RPD is not applicable.

Volatile Petroleum Hydrocarbons in Soil **Method: ME-(AU)-[ENV]AN433**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MSD %RPD
TRH C6-C10	LB178428	mg/kg	25	<25	0%	91%	200%
TRH C6-C9	LB178428	mg/kg	20	<20	0%	94%	200%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MSD %RPD
Dibromofluoromethane (Surrogate)	LB178428	%	-	113%	3 - 10%	100%	200%
d4-1,2-dichloroethane (Surrogate)	LB178428	%	-	90%	1 - 2%	81%	200%
d8-toluene (Surrogate)	LB178428	%	-	90%	3%	90%	200%
Bromofluorobenzene (Surrogate)	LB178428	%	-	74%	1 - 5%	97%	200%

VPH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MSD %RPD
Benzene (F0)	LB178428	mg/kg	0.1	<0.1	0%	NA	NA
TRH C6-C10 minus BTEX (F1)	LB178428	mg/kg	25	<25	0%	131%	198%

Volatile Petroleum Hydrocarbons in Water **Method: ME-(AU)-[ENV]AN433**

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
TRH C6-C10	LB178418	µg/L	50	<50	0%	97%	85%
TRH C6-C9	LB178418	µg/L	40	<40	0%	92%	84%

Surrogates

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Dibromofluoromethane (Surrogate)	LB178418	%	-	113%	9 - 28%	89%	84%
d4-1,2-dichloroethane (Surrogate)	LB178418	%	-	106%	6 - 19%	88%	86%
d8-toluene (Surrogate)	LB178418	%	-	104%	2 - 13%	98%	98%
Bromofluorobenzene (Surrogate)	LB178418	%	-	78%	1%	109%	107%

VPH F Bands

Parameter	QC Reference	Units	LOR	MB	DUP %RPD	LCS %Recovery	MS %Recovery
Benzene (F0)	LB178418	µg/L	0.5	<0.5	0%	NA	NA
TRH C6-C10 minus BTEX (F1)	LB178418	µg/L	50	<50	0%	93%	81%

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

IS	Insufficient sample for analysis.	LOR	Limit of Reporting
LNR	Sample listed, but not received.	↑↓	Raised or Lowered Limit of Reporting
*	NATA accreditation does not cover the performance of this service.	QFH	QC result is above the upper tolerance
		QFL	QC result is below the lower tolerance
**	Indicative data, theoretical holding time exceeded.	-	The sample was not analysed for this analyte
		NVL	Not Validated

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calcuated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client only. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law .

This report must not be reproduced, except in full.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Joel Heininger
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	joel.heininger@eiaustralia.com.au
Project	**E24273.E02 Castlereagh&Bathurst Liverpoo**
Order Number	**E24273.E02**
Samples	14

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE195215 R0**
Date Received	11 Jul 2019
Date Reported	19 Jul 2019

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all soil samples using trace analysis technique.

Asbestos analysed by Approved Identifier Yusuf Kuthpudin .

SIGNATORIES

Akheeqar Beniameen
Chemist

Dong Liang
Metals/Inorganics Team Leader

Kamrul Ahsan
Senior Chemist

Ly Kim Ha
Organic Section Head

Ravee Sivasubramaniam
Hygiene Team Leader

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Fibre Identification	Est.%w/w*
SE195215.001	BH101-0.1-0.2	Soil	180g Clay,Soil,Rocks	10 Jul 2019	No Asbestos Found	<0.01
SE195215.002	BH101-0.6-0.7	Soil	101g Clay,Soil,Rocks	10 Jul 2019	No Asbestos Found	<0.01
SE195215.003	BH102-0.2-0.3	Soil	208g Clay,Sand,Soil, Rocks	10 Jul 2019	No Asbestos Found	<0.01
SE195215.004	BH103-0.2-0.3	Soil	132g Clay,Soil,Rocks	10 Jul 2019	No Asbestos Found	<0.01
SE195215.005	BH104-0.3-0.4	Soil	188g Clay,Sand,Soil, Rocks	10 Jul 2019	No Asbestos Found Organic Fibres Detected	<0.01
SE195215.006	BH105-0.2-0.3	Soil	204g Clay,Sand,Soil, Rocks	10 Jul 2019	No Asbestos Found	<0.01
SE195215.007	BH106-0.2-0.3	Soil	169g Clay,Sand,Soil, Rocks	10 Jul 2019	No Asbestos Found	<0.01
SE195215.008	BH107-0.2-0.3	Soil	226g Clay,Sand,Soil, Rocks	10 Jul 2019	No Asbestos Found Organic Fibres Detected	<0.01
SE195215.010	BH108-0.3-0.4	Soil	116g Clay,Soil,Rocks	10 Jul 2019	No Asbestos Found	<0.01
SE195215.011	BH109-0.2-0.3	Soil	138g Clay,Sand,Soil, Rocks	10 Jul 2019	No Asbestos Found	<0.01
SE195215.013	BH110-0.2-0.3	Soil	272g Clay,Sand,Soil, Rocks	10 Jul 2019	No Asbestos Found	<0.01
SE195215.015	BH111-0.2-0.3	Soil	240g Clay,Sand,Soil, Rocks	10 Jul 2019	No Asbestos Found Organic Fibres Detected	<0.01
SE195215.017	BH112-0.2-0.3	Soil	232g Clay,Soil,Rocks	10 Jul 2019	No Asbestos Found	<0.01
SE195215.019	BH113-0.2-0.3	Soil	206g Clay,Sand,Soil, Rocks	10 Jul 2019	No Asbestos Found	<0.01

METHOD SUMMARY

SE195215 R0

METHOD	METHODOLOGY SUMMARY
AN602	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection limit of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602	The sample can be reported “no asbestos found at the reporting limit of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service .
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy, including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos -containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company 's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client only. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law .

This test report shall not be reproduced, except in full.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Lan Ye
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	Lan.ye@eiaustralia.com.au
Project	**E24273 Castlereagh & Bathurst Liverpool**
Order Number	**E24273**
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE195781 R0**
Date Received	26/7/2019
Date Reported	2/8/2019

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES

Akheeqar Beniameen
Chemist

Dong Liang
Metals/Inorganics Team Leader

Ly Kim Ha
Organic Section Head

VOCs in Water [AN433] Tested: 1/8/2019

PARAMETER	UOM	LOR	DP_BH2-1 WATER - 26/7/2019 SE195781.001	DP_BH4-1 WATER - 26/7/2019 SE195781.002
Benzene	µg/L	0.5	<0.5	<0.5
Toluene	µg/L	0.5	<0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5	<0.5
m/p-xylene	µg/L	1	<1	<1
o-xylene	µg/L	0.5	<0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5	<1.5
Total BTEX	µg/L	3	<3	<3
Naphthalene	µg/L	0.5	**1.1**	**0.5**
Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5
Chloromethane	µg/L	5	<5	<5
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3
Bromomethane	µg/L	10	<10	<10
Chloroethane	µg/L	5	<5	<5
Trichlorofluoromethane	µg/L	1	<1	<1
Acetone (2-propanone)	µg/L	10	<10	<10
Iodomethane	µg/L	5	<5	<5
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5
Acrylonitrile	µg/L	0.5	<0.5	<0.5
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5
Allyl chloride	µg/L	2	<2	<2
Carbon disulfide	µg/L	2	<2	<2
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5
MtBE (Methyl-tert-butyl ether)	µg/L	2	<2	<2
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5
Vinyl acetate	µg/L	10	<10	<10
MEK (2-butanone)	µg/L	10	<10	<10
cis-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5
Bromochloromethane	µg/L	0.5	<0.5	<0.5
Chloroform (THM)	µg/L	0.5	<0.5	<0.5
2,2-dichloropropane	µg/L	0.5	<0.5	<0.5
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5
Dibromomethane	µg/L	0.5	<0.5	<0.5
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	<0.5
2-nitropropane	µg/L	100	<100	<100
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5
MIBK (4-methyl-2-pentanone)	µg/L	5	<5	<5
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5
2-hexanone (MBK)	µg/L	5	<5	<5
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	<0.5
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5
Chlorobenzene	µg/L	0.5	<0.5	<0.5
Bromoform (THM)	µg/L	0.5	<0.5	<0.5
cis-1,4-dichloro-2-butene	µg/L	1	<1	<1
Styrene (Vinyl benzene)	µg/L	0.5	<0.5	<0.5
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1

VOCs in Water [AN433] Tested: 1/8/2019 (continued)

PARAMETER	UOM	LOR	DP_BH2-1 WATER - 26/7/2019 SE195781.001	DP_BH4-1 WATER - 26/7/2019 SE195781.002
Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	<0.5
Bromobenzene	µg/L	0.5	<0.5	<0.5
n-propylbenzene	µg/L	0.5	<0.5	<0.5
2-chlorotoluene	µg/L	0.5	<0.5	<0.5
4-chlorotoluene	µg/L	0.5	<0.5	<0.5
1,3,5-trimethylbenzene	µg/L	0.5	<0.5	<0.5
tert-butylbenzene	µg/L	0.5	<0.5	<0.5
1,2,4-trimethylbenzene	µg/L	0.5	<0.5	<0.5
sec-butylbenzene	µg/L	0.5	<0.5	<0.5
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3
p-isopropyltoluene	µg/L	0.5	<0.5	<0.5
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5
n-butylbenzene	µg/L	0.5	<0.5	<0.5
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5
Total VOC	µg/L	10	<10	<10

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 1/8/2019

PARAMETER	UOM	LOR	DP_BH2-1 WATER - 26/7/2019 SE195781.001	DP_BH4-1 WATER - 26/7/2019 SE195781.002
TRH C6-C9	µg/L	40	<40	<40
Benzene (F0)	µg/L	0.5	<0.5	<0.5
TRH C6-C10	µg/L	50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 29/7/2019

PARAMETER	UOM	LOR	DP_BH2-1 WATER - 26/7/2019 SE195781.001	DP_BH4-1 WATER - 26/7/2019 SE195781.002
TRH C10-C14	µg/L	50	<50	<50
TRH C15-C28	µg/L	200	<200	<200
TRH C29-C36	µg/L	200	<200	<200
TRH C37-C40	µg/L	200	<200	<200
TRH >C10-C16	µg/L	60	<60	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500
TRH C10-C36	µg/L	450	<450	<450
TRH C10-C40	µg/L	650	<650	<650
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	<60

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 29/7/2019

PARAMETER	UOM	LOR	DP_BH2-1 WATER - 26/7/2019 SE195781.001	DP_BH4-1 WATER - 26/7/2019 SE195781.002
Naphthalene	µg/L	0.1	<0.1	<0.1
2-methylnaphthalene	µg/L	0.1	<0.1	<0.1
1-methylnaphthalene	µg/L	0.1	<0.1	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	<0.1	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1
Total PAH (18)	µg/L	1	<1	<1

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 29/7/2019

PARAMETER	UOM	LOR	DP_BH2-1 WATER - 26/7/2019 SE195781.001	DP_BH4-1 WATER - 26/7/2019 SE195781.002
Arsenic, As	µg/L	1	**4**	**1**
Cadmium, Cd	µg/L	0.1	<0.1	**0.2**
Chromium, Cr	µg/L	1	<1	<1
Copper, Cu	µg/L	1	**1**	<1
Lead, Pb	µg/L	1	<1	**2**
Nickel, Ni	µg/L	1	**21**	**19**
Zinc, Zn	µg/L	5	**14**	**15**

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 30/7/2019

PARAMETER	UOM	LOR	DP_BH2-1 WATER - 26/7/2019 SE195781.001	DP_BH4-1 WATER - 26/7/2019 SE195781.002
Mercury	mg/L	0.0001	<0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). Where F2 is corrected for Naphthalene, the VOC data for Naphthalene is used.
AN403	Additionally, the volatile C6-C9/C6-C10 fractions may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoveerable Hydrocarbons - Silica (TRH-Silica) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client only. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law .

This report must not be reproduced, except in full.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Joel Heininger
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	joel.heininger@eiaustralia.com.au
Project	**E24273 Castlereagh&Bathurst Liverpool-Ad**
Order Number	**E24273**
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE195781A R0**
Date Received	1/8/2019
Date Reported	6/8/2019

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Dong Liang
Metals/Inorganics Team Leader

Total Phenolics in Water [AN289] Tested: 2/8/2019

PARAMETER	UOM	LOR	DP_BH2-1 WATER - 26/7/2019 SE195781A.001	DP_BH4-1 WATER - 26/7/2019 SE195781A.002
Total Phenols	mg/L	0.01	<0.01	<0.01

Conductivity and TDS by Calculation - Water [AN106] Tested: 2/8/2019

PARAMETER	UOM	LOR	DP_BH2-1 WATER - 26/7/2019 SE195781A.001	DP_BH4-1 WATER - 26/7/2019 SE195781A.002
Conductivity @ 25 C	µS/cm	2	**12000**	**19000**

Metals in Water (Dissolved) by ICPOES [AN320] Tested: 2/8/2019

PARAMETER	UOM	LOR	DP_BH2-1 WATER - 26/7/2019 SE195781A.001	DP_BH4-1 WATER - 26/7/2019 SE195781A.002
Calcium, Ca	mg/L	0.1	130	130
Magnesium, Mg	mg/L	0.1	360	660
Total Hardness by Calculation	mg CaCO3/L	1	1800	3000

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 5/8/2019

PARAMETER	UOM	LOR	DP_BH2-1 WATER - 26/7/2019 SE195781A.001	DP_BH4-1 WATER - 26/7/2019 SE195781A.002
Aluminium, Al	µg/L	5	<5	**6**

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN106	Conductivity and TDS by Calculation: Conductivity is measured by meter with temperature compensation and is calibrated against a standard solution of potassium chloride. Conductivity is generally reported as µmhos /cm or µS/cm @ 25°C. For soils, an extract with water is made at a ratio of 1:5 and the EC determined and reported on the extract, or calculated back to the as-received sample. Total Dissolved Salts can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. SGS use 0.6. Reference APHA 2510 B.
AN106	Salinity may be calculated in terms of NaCl from the sample conductivity. This assumes all soluble salts present , measured by the conductivity, are present as NaCl.
AN289	Analysis of Total Phenols in Soil Sediment and Water: Steam distillable phenols react with 4-aminoantipyrine at pH 7.9±0.1 in the presence of potassium ferricyanide to form a coloured antipyrine dye analysed by Discrete Analyser. Reference APHA 5530 B/D.
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN320	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components .
AN320	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements . Reference APHA 3120 B.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client only. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law .

This report must not be reproduced, except in full.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Lan Ye
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	Lan.ye@eiaustralia.com.au
Project	**E24273 Castlereagh&Bathurst Liverpool**
Order Number	**E24273**
Samples	6

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE195782 R0**
Date Received	26/7/2019
Date Reported	2/8/2019

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES

Akheeqar Beniameen
Chemist

Dong Liang
Metals/Inorganics Team Leader

Ly Kim Ha
Organic Section Head

VOCs in Water [AN433] Tested: 1/8/2019

PARAMETER	UOM	LOR	BH110M WATER - 26/7/2019 SE195782.001	BH112M WATER - 26/7/2019 SE195782.002	GWQD1 WATER - 26/7/2019 SE195782.003	GWQR1 WATER - 26/7/2019 SE195782.004	GWQTS1 WATER - 26/7/2019 SE195782.005
Benzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	[100%]
Toluene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	[108%]
Ethylbenzene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	[100%]
m/p-xylene	µg/L	1	<1	<1	<1	<1	[100%]
o-xylene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	[101%]
Total Xylenes	µg/L	1.5	<1.5	<1.5	<1.5	<1.5	-
Total BTEX	µg/L	3	<3	<3	<3	<3	-
Naphthalene	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	-
Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	<5	-	-	-
Chloromethane	µg/L	5	<5	<5	-	-	-
Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	<0.3	-	-	-
Bromomethane	µg/L	10	<10	<10	-	-	-
Chloroethane	µg/L	5	<5	<5	-	-	-
Trichlorofluoromethane	µg/L	1	<1	<1	-	-	-
Acetone (2-propanone)	µg/L	10	<10	<10	-	-	-
Iodomethane	µg/L	5	<5	<5	-	-	-
1,1-dichloroethene	µg/L	0.5	<0.5	<0.5	-	-	-
Acrylonitrile	µg/L	0.5	<0.5	<0.5	-	-	-
Dichloromethane (Methylene chloride)	µg/L	5	<5	<5	-	-	-
Allyl chloride	µg/L	2	<2	<2	-	-	-
Carbon disulfide	µg/L	2	<2	<2	-	-	-
trans-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	-	-	-
MtBE (Methyl-tert-butyl ether)	µg/L	2	<2	<2	-	-	-
1,1-dichloroethane	µg/L	0.5	<0.5	<0.5	-	-	-
Vinyl acetate	µg/L	10	<10	<10	-	-	-
MEK (2-butanone)	µg/L	10	<10	<10	-	-	-
cis-1,2-dichloroethene	µg/L	0.5	<0.5	<0.5	-	-	-
Bromochloromethane	µg/L	0.5	<0.5	<0.5	-	-	-
Chloroform (THM)	µg/L	0.5	<0.5	<0.5	-	-	-
2,2-dichloropropane	µg/L	0.5	<0.5	<0.5	-	-	-
1,2-dichloroethane	µg/L	0.5	<0.5	<0.5	-	-	-
1,1,1-trichloroethane	µg/L	0.5	<0.5	<0.5	-	-	-
1,1-dichloropropene	µg/L	0.5	<0.5	<0.5	-	-	-
Carbon tetrachloride	µg/L	0.5	<0.5	<0.5	-	-	-
Dibromomethane	µg/L	0.5	<0.5	<0.5	-	-	-
1,2-dichloropropane	µg/L	0.5	<0.5	<0.5	-	-	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	<0.5	-	-	-
2-nitropropane	µg/L	100	<100	<100	-	-	-
Bromodichloromethane (THM)	µg/L	0.5	<0.5	<0.5	-	-	-
MIBK (4-methyl-2-pentanone)	µg/L	5	<5	<5	-	-	-
cis-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	-	-	-
trans-1,3-dichloropropene	µg/L	0.5	<0.5	<0.5	-	-	-
1,1,2-trichloroethane	µg/L	0.5	<0.5	<0.5	-	-	-
1,3-dichloropropane	µg/L	0.5	<0.5	<0.5	-	-	-
Dibromochloromethane (THM)	µg/L	0.5	<0.5	<0.5	-	-	-
2-hexanone (MBK)	µg/L	5	<5	<5	-	-	-
1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	<0.5	-	-	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	<0.5	-	-	-
1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	-	-	-
Chlorobenzene	µg/L	0.5	<0.5	<0.5	-	-	-
Bromoform (THM)	µg/L	0.5	<0.5	<0.5	-	-	-
cis-1,4-dichloro-2-butene	µg/L	1	<1	<1	-	-	-
Styrene (Vinyl benzene)	µg/L	0.5	<0.5	<0.5	-	-	-
1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	<0.5	-	-	-
1,2,3-trichloropropane	µg/L	0.5	<0.5	<0.5	-	-	-
trans-1,4-dichloro-2-butene	µg/L	1	<1	<1	-	-	-

VOCs in Water [AN433] Tested: 1/8/2019 (continued)

PARAMETER	UOM	LOR	BH110M WATER - 26/7/2019 SE195782.001	BH112M WATER - 26/7/2019 SE195782.002	GWQD1 WATER - 26/7/2019 SE195782.003	GWQR1 WATER - 26/7/2019 SE195782.004	GWQTS1 WATER - 26/7/2019 SE195782.005
Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	<0.5	-	-	-
Bromobenzene	µg/L	0.5	<0.5	<0.5	-	-	-
n-propylbenzene	µg/L	0.5	<0.5	<0.5	-	-	-
2-chlorotoluene	µg/L	0.5	<0.5	<0.5	-	-	-
4-chlorotoluene	µg/L	0.5	<0.5	<0.5	-	-	-
1,3,5-trimethylbenzene	µg/L	0.5	<0.5	<0.5	-	-	-
tert-butylbenzene	µg/L	0.5	<0.5	<0.5	-	-	-
1,2,4-trimethylbenzene	µg/L	0.5	<0.5	<0.5	-	-	-
sec-butylbenzene	µg/L	0.5	<0.5	<0.5	-	-	-
1,3-dichlorobenzene	µg/L	0.5	<0.5	<0.5	-	-	-
1,4-dichlorobenzene	µg/L	0.3	<0.3	<0.3	-	-	-
p-isopropyltoluene	µg/L	0.5	<0.5	<0.5	-	-	-
1,2-dichlorobenzene	µg/L	0.5	<0.5	<0.5	-	-	-
n-butylbenzene	µg/L	0.5	<0.5	<0.5	-	-	-
1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	<0.5	-	-	-
1,2,4-trichlorobenzene	µg/L	0.5	<0.5	<0.5	-	-	-
Hexachlorobutadiene	µg/L	0.5	<0.5	<0.5	-	-	-
1,2,3-trichlorobenzene	µg/L	0.5	<0.5	<0.5	-	-	-
Total VOC	µg/L	10	<10	<10	-	-	-

VOCs in Water [AN433] Tested: 1/8/2019 (continued)

PARAMETER	UOM	LOR	GWQTB1 WATER - 26/7/2019 SE195782.006
Benzene	µg/L	0.5	<0.5
Toluene	µg/L	0.5	<0.5
Ethylbenzene	µg/L	0.5	<0.5
m/p-xylene	µg/L	1	<1
o-xylene	µg/L	0.5	<0.5
Total Xylenes	µg/L	1.5	<1.5
Total BTEX	µg/L	3	<3
Naphthalene	µg/L	0.5	<0.5
Dichlorodifluoromethane (CFC-12)	µg/L	5	-
Chloromethane	µg/L	5	-
Vinyl chloride (Chloroethene)	µg/L	0.3	-
Bromomethane	µg/L	10	-
Chloroethane	µg/L	5	-
Trichlorofluoromethane	µg/L	1	-
Acetone (2-propanone)	µg/L	10	-
Iodomethane	µg/L	5	-
1,1-dichloroethene	µg/L	0.5	-
Acrylonitrile	µg/L	0.5	-
Dichloromethane (Methylene chloride)	µg/L	5	-
Allyl chloride	µg/L	2	-
Carbon disulfide	µg/L	2	-
trans-1,2-dichloroethene	µg/L	0.5	-
MtBE (Methyl-tert-butyl ether)	µg/L	2	-
1,1-dichloroethane	µg/L	0.5	-
Vinyl acetate	µg/L	10	-
MEK (2-butanone)	µg/L	10	-
cis-1,2-dichloroethene	µg/L	0.5	-
Bromochloromethane	µg/L	0.5	-
Chloroform (THM)	µg/L	0.5	-
2,2-dichloropropane	µg/L	0.5	-
1,2-dichloroethane	µg/L	0.5	-
1,1,1-trichloroethane	µg/L	0.5	-
1,1-dichloropropene	µg/L	0.5	-
Carbon tetrachloride	µg/L	0.5	-
Dibromomethane	µg/L	0.5	-
1,2-dichloropropane	µg/L	0.5	-
Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	-
2-nitropropane	µg/L	100	-
Bromodichloromethane (THM)	µg/L	0.5	-
MIBK (4-methyl-2-pentanone)	µg/L	5	-
cis-1,3-dichloropropene	µg/L	0.5	-
trans-1,3-dichloropropene	µg/L	0.5	-
1,1,2-trichloroethane	µg/L	0.5	-
1,3-dichloropropane	µg/L	0.5	-
Dibromochloromethane (THM)	µg/L	0.5	-
2-hexanone (MBK)	µg/L	5	-
1,2-dibromoethane (EDB)	µg/L	0.5	-
Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	-
1,1,1,2-tetrachloroethane	µg/L	0.5	-
Chlorobenzene	µg/L	0.5	-
Bromoform (THM)	µg/L	0.5	-
cis-1,4-dichloro-2-butene	µg/L	1	-
Styrene (Vinyl benzene)	µg/L	0.5	-
1,1,2,2-tetrachloroethane	µg/L	0.5	-
1,2,3-trichloropropane	µg/L	0.5	-
trans-1,4-dichloro-2-butene	µg/L	1	-

VOCs in Water [AN433] Tested: 1/8/2019 (continued)

PARAMETER	UOM	LOR	GWQTB1 WATER - 26/7/2019 SE195782.006
Isopropylbenzene (Cumene)	µg/L	0.5	-
Bromobenzene	µg/L	0.5	-
n-propylbenzene	µg/L	0.5	-
2-chlorotoluene	µg/L	0.5	-
4-chlorotoluene	µg/L	0.5	-
1,3,5-trimethylbenzene	µg/L	0.5	-
tert-butylbenzene	µg/L	0.5	-
1,2,4-trimethylbenzene	µg/L	0.5	-
sec-butylbenzene	µg/L	0.5	-
1,3-dichlorobenzene	µg/L	0.5	-
1,4-dichlorobenzene	µg/L	0.3	-
p-isopropyltoluene	µg/L	0.5	-
1,2-dichlorobenzene	µg/L	0.5	-
n-butylbenzene	µg/L	0.5	-
1,2-dibromo-3-chloropropane	µg/L	0.5	-
1,2,4-trichlorobenzene	µg/L	0.5	-
Hexachlorobutadiene	µg/L	0.5	-
1,2,3-trichlorobenzene	µg/L	0.5	-
Total VOC	µg/L	10	-

Volatile Petroleum Hydrocarbons in Water [AN433] Tested: 1/8/2019

PARAMETER	UOM	LOR	BH110M WATER - 26/7/2019 SE195782.001	BH112M WATER - 26/7/2019 SE195782.002	GWQD1 WATER - 26/7/2019 SE195782.003	GWQR1 WATER - 26/7/2019 SE195782.004
TRH C6-C9	µg/L	40	<40	<40	<40	<40
Benzene (F0)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5
TRH C6-C10	µg/L	50	<50	<50	<50	<50
TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	<50	<50	<50

TRH (Total Recoverable Hydrocarbons) in Water [AN403] Tested: 29/7/2019

PARAMETER	UOM	LOR	BH110M WATER - 26/7/2019 SE195782.001	BH112M WATER - 26/7/2019 SE195782.002	GWQD1 WATER - 26/7/2019 SE195782.003	GWQR1 WATER - 26/7/2019 SE195782.004
TRH C10-C14	µg/L	50	**100**	<50	<50	<50
TRH C15-C28	µg/L	200	**210**	<200	<200	<200
TRH C29-C36	µg/L	200	<200	<200	<200	<200
TRH C37-C40	µg/L	200	<200	<200	<200	<200
TRH >C10-C16	µg/L	60	**120**	<60	<60	<60
TRH >C16-C34 (F3)	µg/L	500	<500	<500	<500	<500
TRH >C34-C40 (F4)	µg/L	500	<500	<500	<500	<500
TRH C10-C36	µg/L	450	<450	<450	<450	<450
TRH C10-C40	µg/L	650	<650	<650	<650	<650
TRH >C10-C16 - Naphthalene (F2)	µg/L	60	**120**	<60	<60	<60

PAH (Polynuclear Aromatic Hydrocarbons) in Water [AN420] Tested: 29/7/2019

PARAMETER	UOM	LOR	BH110M WATER - 26/7/2019 SE195782.001	BH112M WATER - 26/7/2019 SE195782.002
Naphthalene	µg/L	0.1	<0.1	<0.1
2-methylnaphthalene	µg/L	0.1	**0.3**	<0.1
1-methylnaphthalene	µg/L	0.1	**0.3**	<0.1
Acenaphthylene	µg/L	0.1	<0.1	<0.1
Acenaphthene	µg/L	0.1	<0.1	<0.1
Fluorene	µg/L	0.1	<0.1	<0.1
Phenanthrene	µg/L	0.1	**0.6**	<0.1
Anthracene	µg/L	0.1	<0.1	<0.1
Fluoranthene	µg/L	0.1	<0.1	<0.1
Pyrene	µg/L	0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	0.1	<0.1	<0.1
Chrysene	µg/L	0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	<0.1
Benzo(k)fluoranthene	µg/L	0.1	<0.1	<0.1
Benzo(a)pyrene	µg/L	0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	<0.1
Dibenzo(ah)anthracene	µg/L	0.1	<0.1	<0.1
Benzo(ghi)perylene	µg/L	0.1	<0.1	<0.1
Total PAH (18)	µg/L	1	**2**	<1

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 29/7/2019

PARAMETER	UOM	LOR	BH110M WATER - 26/7/2019 SE195782.001	BH112M WATER - 26/7/2019 SE195782.002	GWQD1 WATER - 26/7/2019 SE195782.003	GWQR1 WATER - 26/7/2019 SE195782.004
Arsenic, As	µg/L	1	**1**	**2**	<1	<1
Cadmium, Cd	µg/L	0.1	**0.2**	<0.1	<0.1	<0.1
Chromium, Cr	µg/L	1	<1	<1	<1	<1
Copper, Cu	µg/L	1	<1	**1**	**1**	<1
Lead, Pb	µg/L	1	<1	<1	<1	<1
Nickel, Ni	µg/L	1	**14**	**2**	<1	<1
Zinc, Zn	µg/L	5	**6**	<5	**23**	<5

Mercury (dissolved) in Water [AN311(Perth)/AN312] Tested: 30/7/2019

PARAMETER	UOM	LOR	BH110M WATER - 26/7/2019 SE195782.001	BH112M WATER - 26/7/2019 SE195782.002	GWQD1 WATER - 26/7/2019 SE195782.003	GWQR1 WATER - 26/7/2019 SE195782.004
Mercury	mg/L	0.0001	<0.0001	<0.0001	<0.0001	<0.0001

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN311(Perth)/AN312	Mercury by Cold Vapour AAS in Waters: Mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500.
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). Where F2 is corrected for Naphthalene, the VOC data for Naphthalene is used.
AN403	Additionally, the volatile C6-C9/C6-C10 fractions may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoveerable Hydrocarbons - Silica (TRH-Silica) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client only. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law .

This report must not be reproduced, except in full.

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Joel Heininger
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	joel.heininger@eiaustralia.com.au
Project	**E24273 Castlereagh&Bathurst Liverpool-Ad**
Order Number	**E24273**
Samples	6

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE195782A R0**
Date Received	1/8/2019
Date Reported	6/8/2019

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES

Bennet Lo
Senior Organic Chemist/Metals Chemist

Dong Liang
Metals/Inorganics Team Leader

Total Phenolics in Water [AN289] Tested: 2/8/2019

PARAMETER	UOM	LOR	BH110M WATER - 26/7/2019 SE195782A.001	BH112M WATER - 26/7/2019 SE195782A.002
Total Phenols	mg/L	0.01	<0.01	<0.01

Conductivity and TDS by Calculation - Water [AN106] Tested: 2/8/2019

PARAMETER	UOM	LOR	BH110M WATER - 26/7/2019 SE195782A.001	BH112M WATER - 26/7/2019 SE195782A.002
Conductivity @ 25 C	µS/cm	2	**17000**	**2000**

Trace Metals (Dissolved) in Water by ICPMS [AN318] Tested: 5/8/2019

PARAMETER	UOM	LOR	BH110M WATER - 26/7/2019 SE195782A.001	BH112M WATER - 26/7/2019 SE195782A.002
Aluminium, Al	µg/L	5	**13**	**99**

Metals in Water (Dissolved) by ICPOES [AN320] Tested: 2/8/2019

PARAMETER	UOM	LOR	BH110M WATER - 26/7/2019 SE195782A.001	BH112M WATER - 26/7/2019 SE195782A.002
Calcium, Ca	mg/L	0.1	**150**	**10**
Magnesium, Mg	mg/L	0.1	**620**	**15**
Total Hardness by Calculation	mg CaCO3/L	1	**2900**	**86**

METHOD	METHODOLOGY SUMMARY
AN020	Unpreserved water sample is filtered through a 0.45µm membrane filter and acidified with nitric acid similar to APHA3030B.
AN106	Conductivity and TDS by Calculation: Conductivity is measured by meter with temperature compensation and is calibrated against a standard solution of potassium chloride. Conductivity is generally reported as µmhos /cm or µS/cm @ 25°C. For soils, an extract with water is made at a ratio of 1:5 and the EC determined and reported on the extract, or calculated back to the as-received sample. Total Dissolved Salts can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. SGS use 0.6. Reference APHA 2510 B.
AN106	Salinity may be calculated in terms of NaCl from the sample conductivity. This assumes all soluble salts present , measured by the conductivity, are present as NaCl.
AN289	Analysis of Total Phenols in Soil Sediment and Water: Steam distillable phenols react with 4-aminoantipyrine at pH 7.9±0.1 in the presence of potassium ferricyanide to form a coloured antipyrine dye analysed by Discrete Analyser. Reference APHA 5530 B/D.
AN318	Determination of elements at trace level in waters by ICP-MS technique, in accordance with USEPA 6020A.
AN320	Metals by ICP-OES: Samples are preserved with 10% nitric acid for a wide range of metals and some non-metals. This solution is measured by Inductively Coupled Plasma. Solutions are aspirated into an argon plasma at 8000-10000K and emit characteristic energy or light as a result of electron transitions through unique energy levels. The emitted light is focused onto a diffraction grating where it is separated into components .
AN320	Photomultipliers or CCDs are used to measure the light intensity at specific wavelengths. This intensity is directly proportional to concentration. Corrections are required to compensate for spectral overlap between elements . Reference APHA 3120 B.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au.pv.sgsvr/en-gb/environment.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client only. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law .

This report must not be reproduced, except in full.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 221463

Client Details

Client	EI Australia
Attention	Joel Heininger
Address	Suite 6.01, 55 Miller Street, Pyrmont, NSW, 2009

Sample Details

Your Reference	**E24273.E02, Liverpool**
Number of Samples	1 soil
Date samples received	11/07/2019
Date completed instructions received	11/07/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

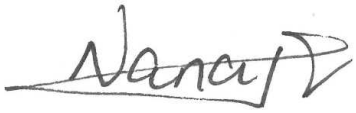
Date results requested by	18/07/2019
Date of Issue	16/07/2019

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor
Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		221463-1
Your Reference	UNITS	QT1
Date Sampled		10/07/2019
Type of sample		soil
Date extracted	-	12/07/2019
Date analysed	-	13/07/2019
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	87

svTRH (C10-C40) in Soil		
Our Reference		221463-1
Your Reference	UNITS	QT1
Date Sampled		10/07/2019
Type of sample		soil
Date extracted	-	12/07/2019
Date analysed	-	13/07/2019
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	81

Acid Extractable metals in soil		
Our Reference		221463-1
Your Reference	UNITS	QT1
Date Sampled		10/07/2019
Type of sample		soil
Date prepared	-	12/07/2019
Date analysed	-	12/07/2019
Arsenic	mg/kg	10
Cadmium	mg/kg	<0.4
Chromium	mg/kg	31
Copper	mg/kg	18
Lead	mg/kg	39
Mercury	mg/kg	0.2
Nickel	mg/kg	15
Zinc	mg/kg	210

Moisture		
Our Reference		221463-1
Your Reference	UNITS	QT1
Date Sampled		10/07/2019
Type of sample		soil
Date prepared	-	12/07/2019
Date analysed	-	15/07/2019
Moisture	%	22

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date extracted	-			12/07/2019	[NT]	[NT]	[NT]	[NT]	12/07/2019	[NT]
Date analysed	-			13/07/2019	[NT]	[NT]	[NT]	[NT]	13/07/2019	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	90	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	[NT]	[NT]	[NT]	[NT]	90	[NT]
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	[NT]	[NT]	92	[NT]
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	[NT]	[NT]	90	[NT]
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	89	[NT]
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	88	[NT]
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	106	[NT]	[NT]	[NT]	[NT]	106	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date extracted	-			12/07/2019	[NT]	[NT]	[NT]	[NT]	12/07/2019	[NT]
Date analysed	-			13/07/2019	[NT]	[NT]	[NT]	[NT]	13/07/2019	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	92	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	99	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	92	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	99	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	101	[NT]
Surrogate o-Terphenyl	%		Org-003	85	[NT]	[NT]	[NT]	[NT]	113	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	[NT]
Date prepared	-			12/07/2019	[NT]	[NT]	[NT]	[NT]	12/07/2019	[NT]
Date analysed	-			12/07/2019	[NT]	[NT]	[NT]	[NT]	12/07/2019	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	110	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	107	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 222960

Client Details

Client	EI Australia
Attention	Lan Ye
Address	Suite 6.01, 55 Miller Street, Pyrmont, NSW, 2009

Sample Details

Your Reference	**E24273, Liverpool**
Number of Samples	1 water
Date samples received	01/08/2019
Date completed instructions received	01/08/2019

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

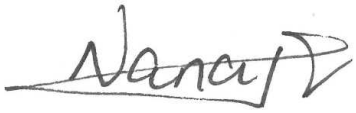
Date results requested by	08/08/2019
Date of Issue	07/08/2019

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Loren Bardwell, Senior Chemist
Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water		
Our Reference		222960-1
Your Reference	UNITS	GWQT1
Date Sampled		26/07/2019
Type of sample		water
Date extracted	-	06/08/2019
Date analysed	-	07/08/2019
TRH C_6 - C_9	µg/L	<10
TRH C_6 - C_{10}	µg/L	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	101
Surrogate toluene-d8	%	101
Surrogate 4-BFB	%	107

svTRH (C10-C40) in Water		
Our Reference		222960-1
Your Reference	UNITS	GWQT1
Date Sampled		26/07/2019
Type of sample		water
Date extracted	-	02/08/2019
Date analysed	-	03/08/2019
TRH C_{10} - C_{14}	µg/L	<50
TRH C_{15} - C_{28}	µg/L	<100
TRH C_{29} - C_{36}	µg/L	<100
TRH >C_{10} - C_{16}	µg/L	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50
TRH >C_{16} - C_{34}	µg/L	<100
TRH >C_{34} - C_{40}	µg/L	<100
Surrogate o-Terphenyl	%	76

HM in water - dissolved		
Our Reference		222960-1
Your Reference	UNITS	GWQT1
Date Sampled		26/07/2019
Type of sample		water
Date prepared	-	02/08/2019
Date analysed	-	02/08/2019
Arsenic-Dissolved	µg/L	<1
Cadmium-Dissolved	µg/L	<0.1
Chromium-Dissolved	µg/L	<1
Copper-Dissolved	µg/L	1
Lead-Dissolved	µg/L	<1
Mercury-Dissolved	µg/L	<0.05
Nickel-Dissolved	µg/L	<1
Zinc-Dissolved	µg/L	2

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			06/08/2019	[NT]	[NT]	[NT]	[NT]	06/08/2019	[NT]
Date analysed	-			07/08/2019	[NT]	[NT]	[NT]	[NT]	07/08/2019	[NT]
TRH C_6 - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	120	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	120	[NT]
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	117	[NT]
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	118	[NT]
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	121	[NT]
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	122	[NT]
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	119	[NT]
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-016	99	[NT]	[NT]	[NT]	[NT]	97	[NT]
Surrogate toluene-d8	%		Org-016	100	[NT]	[NT]	[NT]	[NT]	102	[NT]
Surrogate 4-BFB	%		Org-016	111	[NT]	[NT]	[NT]	[NT]	105	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			02/08/2019	[NT]	[NT]	[NT]	[NT]	02/08/2019	[NT]
Date analysed	-			03/08/2019	[NT]	[NT]	[NT]	[NT]	03/08/2019	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	77	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	70	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	105	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	77	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	70	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	105	[NT]
Surrogate o-Terphenyl	%		Org-003	114	[NT]	[NT]	[NT]	[NT]	80	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date prepared	-			02/08/2019	[NT]	[NT]	[NT]	[NT]	02/08/2019	[NT]
Date analysed	-			02/08/2019	[NT]	[NT]	[NT]	[NT]	02/08/2019	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	[NT]	[NT]	[NT]	[NT]	99	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

A.B.N. 44 000 964 278
10 / 585 Blackburn Road
Notting Hill, Vic, 3168
Telephone: (03) 9574 3200

Chartered Chemists

26-Jul-2019

REPORT NUMBER: M191355
Site/Client Ref: Liverpool
Order No: E24273.E02

EI Australia

Suite 6.01, 55 Miller Street
Pyrmont
NSW 2009
Attention: Emmanuel Woelders

CERTIFICATE OF ANALYSIS

SAMPLES:	Four samples were received for analysis
DATE RECEIVED:	**22-Jul-2019**
DATE COMMENCED:	**22-Jul-2019**
METHODS:	See Attached Results
RESULTS:	Please refer to attached pages for results.

Note: Results are based on samples as received at SGS laboratories

REPORTED BY:

Majid Abdolali
Chemist

NATA Accredited Laboratory Number: 2562
Corporate Site Number: 14420
Accredited for compliance
with ISO/IEC 17025 - Testing.

The sampling for the samples in this report was carried out in accordance with SGS's NATA accredited sampling methods

ANALYTICAL RESULTS

Matrix: Canister
Method: TO-15.04 Receipt Vacuum / Pressure
Units as Listed - ^^ Vacuum reported as inches of Mercury below standard atmospheric pressure

Test Started: 23-07-2019

Analyte Name		Leeder ID	2019020502	2019020503	2019020504
		Client ID	SV1 SC4217	SV1 Field Dup SC3696	SV2 SC4216
		Sampled Date	18-07-2019	18-07-2019	18-07-2019
		PQL			
Receipt Pressure (PSIA)			15.0	13.6	13.4
Receipt Vacuum (inch Hg) ^^			NV	2.04	2.45

ANALYTICAL RESULTS

Matrix: Canister
Method: TO-15.02 Volatile Organics (w/v)
Sample units are expressed in µg/m³

Test Started: 23-07-2019

Analyte Name	Sampled Date	PQL	Leeder ID: 2019020502 Client ID: SV1 SC4217 Sampled Date: 18-07-2019	Leeder ID: 2019020503 Client ID: SV1 Field Dup SC3696 Sampled Date: 18-07-2019	Leeder ID: 2019020504 Client ID: SV2 SC4216 Sampled Date: 18-07-2019	Leeder ID: 2019020505 Client ID: SV1 SC4217 Duplicate	Leeder ID: 2019020506 Client ID: Method Blank
Acrolein			<2.9	<3.2	<3.2	<3.6	<1.4
Acrylonitrile			<7.4	<8.2	<8.2	<9.3	<3.6
tert-Amyl Methyl Ether			<2.5	<2.7	<2.7	<3.1	<1.2
Benzene			<2.5	<2.7	3.7	<3.1	<1.2
Bromodichloromethane			<4.1	<4.6	<4.6	<5.2	<2
Bromoform			<5	<5.5	<5.5	<6.2	<2.4
Bromomethane			<3.7	<4.1	<4.1	<4.7	<1.8
1,3-Butadiene			<1.2	<1.4	<1.4	<1.6	<0.6
2-Butanone (Methyl Ethyl			<2.1	<2.3	<2.3	<2.6	<1
tert-Butyl Alcohol			<2.1	<2.3	<2.3	<2.6	<1
n-Butylbenzene			<3.3	<3.6	<3.7	<4.1	<1.6
sec-Butylbenzene			<3.3	<3.6	<3.7	<4.1	<1.6
tert-Butylbenzene			<3.3	<3.6	<3.7	<4.1	<1.6
Carbon Tetrachloride			<4.1	<4.6	<4.6	<5.2	<2
Chlorobenzene			<2.5	<2.7	<2.7	<3.1	<1.2
Chloroethane			<2.5	<2.7	<2.7	<3.1	<1.2
Chloroform			<3.7	<4.1	<4.1	<4.7	<1.8
Chloromethane			<2.9	<3.2	<3.2	<3.6	<1.4
2-Chloroprene			<4.5	<5	<5	<5.7	<2.2
3-Chloropropene			<2.9	<3.2	<3.2	<3.6	<1.4
2-Chlorotoluene			<3.7	<4.1	<4.1	<4.7	<1.8
alpha-Chlorotoluene			<2.9	<3.2	<3.2	<3.6	<1.4
Cumene			<3.3	<3.6	<3.7	<4.1	<1.6
Cyclohexane			<1.7	<1.8	<1.8	<2.1	<0.8
o-Cymene			<3.3	<3.6	<3.7	<4.1	<1.6
Dibromochloromethane			<5	<5.5	<5.5	<6.2	<2.4
1,2-Dibromoethane (EDB)			<5	<5.5	<5.5	<6.2	<2.4
1,2-Dichlorobenzene			<5.4	<5.9	<6	<6.7	<2.6
1,3-Dichlorobenzene			<5.4	<5.9	<6	<6.7	<2.6
1,4-Dichlorobenzene			<5.4	<5.9	<6	<6.7	<2.6
1,1-Dichloroethane			<2.9	<3.2	<3.2	<3.6	<1.4
1,2-Dichloroethane			<4.1	<4.6	<4.6	<5.2	<2
1,1-Dichloroethene			<2.5	<2.7	<2.7	<3.1	<1.2
cis-1,2-Dichloroethene			<3.3	<3.6	<3.7	<4.1	<1.6
trans-1,2-Dichloroethene			<2.5	<2.7	<2.7	<3.1	<1.2
1,2-Dichloropropane			<7.4	<8.2	<8.2	<9.3	<3.6
cis-1,3-Dichloropropene			<2.5	<2.7	<2.7	<3.1	<1.2
trans-1,3-Dichloropropene			<2.9	<3.2	<3.2	<3.6	<1.4
Diisopropyl Ether			<2.9	<3.2	<3.2	<3.6	<1.4
1,4-Dioxane			<2.5	<2.7	<2.7	<3.1	<1.2

ANALYTICAL RESULTS

Matrix: Canister
Method: TO-15.02 Volatile Organics (w/v)
Sample units are expressed in µg/m³ Test Started: 23-07-2019

Analyte Name	Leeder ID / Client ID / Sampled Date / PQL	2019020502 SV1 SC4217 18-07-2019	2019020503 SV1 Field Dup SC3696 18-07-2019	2019020504 SV2 SC4216 18-07-2019	2019020505 SV1 SC4217 Duplicate	2019020506 Method Blank
Ethyl Acetate		<3.3	<3.6	<3.7	<4.1	<1.6
Ethyl Benzene		<2.5	<2.7	<2.7	<3.1	<1.2
Ethyl tert-Butyl Ether		<2.1	<2.3	<2.3	<2.6	<1
4-Ethyltoluene		<2.5	<2.7	<2.7	<3.1	<1.2
Freon 11		17	19	<1.4	16	<0.6
Freon 113		<4.1	<4.6	<4.6	<5.2	<2
Freon 114		<1.2	<1.4	<1.4	<1.6	<0.6
Freon 12		<1.7	<1.8	<1.8	<2.1	<0.8
Heptane		<2.9	<3.2	<3.2	<3.6	<1.4
Hexachlorobutadiene		<8.3	<9.1	<9.2	<10	<4
Hexane		<2.5	<2.7	<2.7	<3.1	<1.2
2-Hexanone		<2.5	<2.7	<2.7	<3.1	<1.2
m,p-Xylene		<5.4	<5.9	<6	<6.7	<2.6
Methyl Methacrylate		<2.9	<3.2	<3.2	<3.6	<1.4
Methyl tert-butyl ether		<2.5	<2.7	<2.7	<3.1	<1.2
4-Methyl-2-pentanone		<2.5	<2.7	<2.7	<3.1	<1.2
Naphthalene		<8.7	<9.6	<9.6	<11	<4.2
2-Propanol		990	200	110	1000	<20
Propene		<4.1	<4.6	<4.6	<5.2	<2
Propylbenzene		<2.9	<3.2	<3.2	<3.6	<1.4
Styrene		<2.5	<2.7	<2.7	<3.1	<1.2
1,1,1,2-Tetrachloroethane		<4.1	<4.6	<4.6	<5.2	<2
1,1,2,2-Tetrachloroethane		<2.9	<3.2	<3.2	<3.6	<1.4
Tetrachloroethene		91	89	480	94	<2.2
Tetrahydrofuran		<1.7	<1.8	<1.8	<2.1	<0.8
Toluene		5.8	5.1	4.2	5.1	<1.2
1,2,4-Trichlorobenzene		<15	<16	<16	<19	<7.2
1,1,1-Trichloroethane		<3.3	<3.6	<3.7	<4.1	<1.6
1,1,2-Trichloroethane		<3.3	<3.6	<3.7	<4.1	<1.6
Trichloroethene		<3.7	<4.1	<4.1	<4.7	<1.8
1,2,4-Trimethylbenzene		4.1	6.4	<3.6	4.0	<1.6
1,3,5-Trimethylbenzene		<2.5	<2.7	<2.7	<3.1	<1.2
2,2,4-Trimethylpentane		<3.7	<4.1	<4.1	<4.7	<1.8
Vinyl Acetate		<2.9	<3.2	<3.2	<3.6	<1.4
Vinyl Bromide		<3.3	<3.6	<3.7	<4.1	<1.6
Vinyl Chloride		<1.7	<1.8	<1.8	<2.1	<0.8
o-Xylene		<2.5	<2.7	<2.7	<3.1	<1.2

ANALYTICAL RESULTS

Matrix: Canister
Method: TO-15 TPH.03
Sample units are expressed in mg/m³ Test Started: 23-07-2019

Analyte Name	Leeder ID / Client ID / Sampled Date / PQL	2019020502 SV1 SC4217 18-07-2019	2019020503 SV1 Field Dup SC3696 18-07-2019	2019020504 SV2 SC4216 18-07-2019	2019020505 SV1 SC4217 Duplicate	2019020506 Method Blank
C6-C10		0.35	0.26	0.81	0.42	<0.04
C6-C10 (less BTEX)		0.33	0.25	0.79	0.41	<0.04
>C10-C12		<0.083	<0.091	<0.092	<0.1	<0.04
>C10-C12 (less Naphthalene)		<0.083	<0.091	<0.092	<0.1	<0.04

Matrix: Carbon Tube
Method: MA-5.ST.ADD.02 Additional Volatile Organics
Sample units are expressed in mg/m³ Test Started: 24-07-2019

Analyte Name	Leeder ID / Client ID / Sampled Date / PQL	2019020507 IPA Shroud 618353 18-07-2019
Isopropanol		27000

Matrix: Carbon Tube
Method: MA-5.ST.ADD.01 Additional Volatile Organics
Sample units are expressed in µg total Test Started: 24-07-2019

Analyte Name	Leeder ID / Client ID / Sampled Date / PQL	2019020508 Method Blank
Isopropanol	0.5	nd

QA/QC RESULTS

Matrix: Canister
Method: TO-15.02 Volatile Organics (w/v)
Quality Control Results are expressed in Percent Recovery of expected result

Test Started: 23-07-2019

Analyte Name	Leeder ID / Client ID / Sampled Date / PQL	2019020509 Method Spike
Benzene		101
1,3-Butadiene		90
Chloroform		103

Matrix: Canister
Method: TO-15.02 Volatile Organics (w/v)
Quality Control Results are expressed in Percent Recovery of expected result

Test Started: 23-07-2019

Analyte Name	Leeder ID / Client ID / Sampled Date / PQL	2019020509 Method Spike
Tetrachloroethene		104
Trichloroethene		104
Vinyl Chloride		85

Matrix: Carbon Tube
Method: MA-5.ST.ADD.01 Additional Volatile Organics
Quality Control Results are expressed in Percent Recovery of expected result

Test Started: 24-07-2019

Analyte Name	Leeder ID / Client ID / Sampled Date / PQL	2019020511 Method Spike	2019020512 Method Spike Dup
Isopropanol		104	106

QUALIFIERS / NOTES FOR REPORTED RESULTS

PQL	Practical Quantitation Limit
nd	Not Detected – The analyte was not detected above the reported PQL.
is	Insufficient Sample to perform this analysis.
T	Tentative identification based on computer library search of mass spectra.
NC	Not calculated and/or Results below PQL
NV	No Vacuum, Canister received above standard atmospheric pressure
nr	Not Requested for analysis.
R	Rejected Result – results for this analysis failed QC checks.
SQ	Semi-Quantitative result – quantitation based on a generic response factor for this class of analyte.
IM	Inappropriate method of analysis for this compound
U	Unable to provide Quality Control data – high levels of compounds in sample interfered with analysis of QC results.
UF	Unable to provide Quality Control data- Surrogates failed QC checks due to sample matrix effects
L	Analyte detected at a level above the linear response of calibration curve.
E	Estimated result. NATA accreditation does not cover estimated results.
C1	These compounds co-elute.
--	Parameter Not Determined
CT	Elevated concentration. Results reported from carbon tube analysis
**	Sample shows non-petroleum hydrocarbon profile

This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/en/Terms-and-Conditions/General-Conditions-of-Services-English.aspx. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents

This report must not be reproduced, except in full.

Appendix J – QA/QC Assessment

J1.1 Project QA/QC Protocols

The overall quality assurance comprises an assessment of the reliability of the field procedures and the laboratory results against standard industry practices, documented sampling and analysis plans or remediation action plans. A summary of the project QA/QC protocols to be followed during the investigation works is presented in **Table J-1**.

Table J-1 QA/QC Protocols

Task	Description	Project
Field QA/QC		
General	Work was to be undertaken following standard field procedures which are based on industry accepted standard practice.	Soil samples were generally collected directly from the drill auger. Soil samples were placed in 250 gram glass jars, which were filled to minimise headspace, and sealed using Teflon-coated lids.
	All fieldwork was supervised by a suitably qualified and experienced scientist or engineer.	Yes
Soil screening with PID	The PID was serviced and calibrated as per manufacturer requirements. PID calibrated at the beginning of each day of fieldwork.	Yes See **Appendix G** for calibration documentation.
Equipment decontamination	Sampling equipment to be decontaminated after the collection of each soil sample by washing with phosphate-free detergent (such as Decon 90 or Alconox) and potable water, followed by a final distilled water rinse. One rinsate blank would be collected per day and analysed for the primary contaminants. All results should be non-detect.	Yes Two rinsate samples were collected in total. One was collected during the soil investigation on 10 July, 2019 (QR1), with the other being collected during the groundwater monitoring event on 26 July, 2019 (GWQR1).
Transport	Samples were stored in a chilled (with ice bricks) cooler box and transported to the laboratories. To ensure the integrity of the samples from collection to receipt by the analytical laboratory, samples were sent by courier to the laboratories under 'chain of custody' describing sample preservation and transport duration.	Yes
Trip Blanks	Trip Blank (TB) samples were to be prepared and analysed by the primary laboratory for BTEX. Analytical results for this sample were below the laboratory LOR, indicating that ideal sample transport and handling conditions were achieved.	Two trip blank (TB) samples (QTB1 and GWQTB1) prepared by the primary laboratory, were analysed for BTEX during both soil and groundwater testing. TB results were reported below the laboratory LOR, indicating that ideal sample transport and handling conditions were achieved.

Task	Description	Project
Trip Spikes	Trip spike (TS) samples were to be submitted to the primary laboratory for BTEX analysis, the results for which were reported within the RPD acceptance levels for trip spike recovery. It was therefore concluded that satisfactory sample transport and handling conditions were achieved.	Two trip spike (TS) sample (QTS1 and GWQTS1) were submitted to the primary laboratory for BTEX analysis, the results for which were all reported within the RPD acceptance levels for trip spike recovery. It was therefore concluded that satisfactory sample transport and handling conditions were achieved.
QA Samples	Field and laboratory QA samples were analysed as follows: ▪ intra-laboratory duplicate samples at a rate of 1 in 20 primary samples (as per NEPM); and ▪ inter-laboratory duplicate samples at a rate of 1 in 20 primary samples (as per NEPM). Field and laboratory acceptable limits between 30–50% RPD as stated by AS 4482.1–2005. RPDs that exceed this range may be considered acceptable where: ▪ Results are less than 10 times the limits of reporting (LOR); ▪ Results are less than 20 times the LOR and the RPD is less than 50%; or ▪ Heterogeneous materials or volatile compounds are encountered. Non-compliance is to be documented in the report and the sample re-analysed or a higher level conservatively adopted.	The required sampling density of 1 per 20 duplicated samples was achieved and sufficient for the investigation. Field and laboratory QA samples are summarised in **Table J-2** and calculated RPD values are displayed in **Tables J-5** and J-**6** at the end of this section. Copies of laboratory reports are included in **Appendix I**.
Laboratory QA/QC		
Laboratory analysis	The laboratories selected are NATA accredited for the analytes selected and perform their own internal QA/QC programs	Yes SGS - primary laboratory Envirolab - secondary laboratory Laboratory QA/QC reports are included in **Appendix K.**
	Appropriate detection limits were used for the analyses to be undertaken.	Practical Quantitation Limits for all tested parameters during the assessment are presented in **Appendix K**, **Tables QC3** and **QC4**.
Holding Times	Holding times are the maximum permissible elapsed time in days from the collection of the sample to its extraction and/or analysis. All extraction and analyses should be completed within standard guidelines.	Assessment of holding times has been undertaken by the laboratory.

Task	Description	Project
Method Blanks	The method blank sample is laboratory prepared, containing the reagents used to prepare the sample for final analysis. The purpose of this procedure is to identify contamination in the reagent materials and assess potential bias in the sample analysis due to contaminated reagents. The QC criterion aims to find no detectable contamination in the reagents. Each analysis procedure should be subject to a method blank analysis. The results of each should indicate that contaminants were not detected.	Assessment of method blanks has been undertaken by the laboratory.
Laboratory Duplicates	Laboratory duplicates are field samples that are split in the laboratory and subsequently analysed a number of times in the same batch. These sub-samples are selected by the laboratory to assess the accuracy and precision of the analytical method. The selected laboratories should undertake QA/QC procedures such as calibration standards, laboratory control samples, surrogates, reference materials, sample duplicates and matrix spikes. Intra-laboratory duplicates should be performed at a frequency of 1 per 10 samples.	Assessment of laboratory duplicates has been undertaken by the laboratory.
Laboratory Control Standard	A laboratory control standard is a standard reference material used in preparing primary standards. The concentration should be equivalent to a mid-range standard to confirm the primary calibration. Laboratory control samples should be performed on a frequency of 1 per 20 samples or at least one per analytical run.	Assessment of laboratory control standards has been undertaken by the laboratory.
Matrix Spikes / Matrix Spike Duplicates (MS/MSD)	MS/MSDs are field samples to which a predetermined stock solution of known concentration has been added. The samples are then analysed for recovery of the known addition. Recoveries should be within the stated laboratory control limits of 70 to 130% and duplicates should have RPDs of less than 50%.	Assessment of matrix spikes has been undertaken by the laboratory.

Task	Description	Project
Surrogate Spikes	Surrogate spikes provide a means of checking, for every analysis that no gross errors have occurred at any stage of the procedure leading to significant analyte loss. Recoveries should be within the stated laboratory control limits of 70 to 130%.	Assessment of surrogate spikes has been undertaken by the laboratory.
QA/QC Conclusion	The QA/QC indicators should either all comply with the required standards or showed no variations that would have no significant effect on the quality of the data.	Assessment of the investigation QA/QC is presented in the following sections.

J1.2 Calculation of Relative Percentage Difference (RPD)

The RPD values were calculated using the following equation:

$$\boldsymbol{RPD} = \frac{|\boldsymbol{C_O} - \boldsymbol{C_R}|}{[(\boldsymbol{C_O} + \boldsymbol{C_R})/\boldsymbol{2}]} \times \boldsymbol{100}$$

Where: C_O = Concentration obtained for the primary sample; and
C_R = Concentration obtained for the duplicate or triplicate sample.

J2.1 Field QA/QC Program

The field quality assurance/quality control (QA/QC) samples collected during the works are summarised in **Table J-5** at the end of this section. Inter-lab duplicates were analysed by the secondary laboratory (Envirolab).

Table J-2 Field QA Sampling Program

Matrix	Primary QA Sample	Duplicate (Primary Lab)	Triplicate (Secondary Lab)	Total Duplicates
Soil	BH101_0.1-0.2	QD1	QT1	2
Groundwater	BH110	GWQD1	-	1
Groundwater	BH112	-	GWQT1	1
Soil Vapour	SV1	SV1 Field Dup	-	1

J2.2 Field data quality indicators

A discussion of the field data quality indicators is presented in **Table J-3** below.

Table J-3 Field Data Quality Indicators

DQI	Item	Conformance/Comments
Completeness Percentage of useable data from sampling episode (data set).	Each critical location sampled	**Yes**
	SAQP appropriate and complied with	**Yes**
	Appropriate number of field duplicate samples taken	**Yes**
	Experienced sampler	**Yes**
	Field documentation correct	**Yes**
Comparability Confidence [expressed qualitatively] that data may be considered to be equivalent for each sampling and analytical event.	Same sampling method used on each occasion/location	**Yes**
	Experienced sampler	**Yes**
	Same type of samples collected (filtered, size, fractions)	**Yes**
Representativeness Confidence the data is representative of each media present on the site.	Appropriate media sampled according to SAQP	**Yes**
	Each media identified in SAQP sampled	**Yes**
Precision Quantitative measure of the variability (or reproducibility) of data.	SOPs appropriate and complied with	**Yes**
Accuracy (bias) Quantitative measure of the closeness of reported data to the true value.	SOPs appropriate and complied with	**Yes**

J2.3 Conclusion for the field QA/QC

All samples, including field QC samples, were transported to the primary and secondary laboratories under strict Chain-of-Custody conditions and appropriate copies of relevant documentation were included in the respective reports.

The overall completeness of documentation produced under the field program was considered to be adequate for the purposes of drawing valid conclusions regarding the environmental condition of the site.

Based on the results of the field QA/QC data, EI considers the field QA/QC programme carried out during the investigation to be appropriate and the results to be acceptable.

J2.4 Laboratory QA/QC

Primary and intra-laboratory duplicate samples were analysed by SGS located in Alexandria NSW, and inter-laboratory duplicate samples were analysed by Envirolab located in Chatswood NSW. All laboratories are accredited by NATA for the analyses undertaken.

A discussion of the laboratory DQIs is presented below.

Table J-4 Field Data Quality Indicators

DQI	Item	Conformance/Comments
Completeness (a measure of the amount of useable data (expressed as %) from a data collection activity)	All critical samples analysed according to SAQP and proposal	**Yes**
	All analytes analysed according to SAQP in proposal	**Yes**
	Appropriate methods and PQLs	**Yes**
	Sample documentation complete	**Yes**
	Sample holding times complied with	**Yes**
Comparability (the confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event)	Sample analytical methods used (including clean-up)	**Yes**
	Sample PQLs (justify/ quantify if different)	**Yes**
	Same laboratories (justify/ quantify if different)	**Yes**
	Same units (justify/ quantify if different)	**Yes**
Representativeness (the confidence (expressed qualitatively) that data are representative of each media present on the site)	All key samples analysed according to SAQP in the proposal.	**Yes**
Precision (a quantitative measure of the variability (or reproducibility) of data)	Analysis of laboratory duplicates	**Yes**
	Analysis of field duplicates	**Yes**
	Analysis of laboratory-prepared volatile trip spikes	**Yes**

DQI	Item	Conformance/Comments
Accuracy (bias) (a quantitative measure of the closeness of reported data to the true value)	Analysis of field blanks	**Yes**
	Analysis of rinsate blanks	**Yes**
	Analysis of method blanks	**Yes**
	Analysis of matrix spikes (MS)	**Yes**
	Analysis of matrix spike duplicates (MSD)	**Yes**
	Analysis of surrogate spikes	**Yes**
	Analysis of reference materials	Not applicable
	Analysis of laboratory control samples	**Yes**

Overall, it is considered that the laboratory data quality objectives for this project have been achieved.

J2.5 Conclusions on Laboratory QA/QC

Based on the laboratory QA/QC results EI considers that the data generally confirms the analytical results for the various phases of laboratory testing were valid and useable for interpretation purposes.

J2.6 Summary of Project QA/QC

The sampling methods (including sample preservation, transport and decontamination procedures) and laboratory methods followed during this investigation works were consistent with EI protocols and were found to meet the DQOs for this project. It is therefore considered that the data is sufficiently precise and accurate and that the results can be used.

Table J-5 **Soil RPD values** **E24273.E02 - Liverpool**

Sample identification	Description	Date	TRH				BTEX				Heavy Metals							
			F1	F2	F3	F4	Benzene	Toluene	Ethylbenzene	Xylene (total)	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Zinc
Intra-laboratory Duplicate - Soil Investigation																		
BH101_0.6-0.7	Soil	10/07/2019	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	8	<0.3	16	16	68	0.17	8.3	190
QD1	BFD of BH101_0.6-0.7		<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	8	<0.3	17	14	27	<0.05	7.8	39
RPD			*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*6.06*	*13.33*	**86.32**	**109.09**	*6.21*	**131.88**
Inter-laboratory Duplicate - Soil Investigation																		
BH101_0.6-0.7	Soil	10/07/2019	<25	<25	<90	<120	<0.1	<0.1	<0.1	<0.3	8	<0.3	16	16	68	0.17	8.3	190
QT1	BFD of BH101_0.6-0.7		<25	<50	<100	<100	<0.2	<0.5	<1	<3	10	<0.4	31	18	39	0.2	15	210
RPD		-	*0.00*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*22.22*	*NA*	**63.83**	*11.76*	**54.21**	*16.22*	**57.51**	*10.00*
Rinsate Blanks																		
QR1	Equipment Rinsate	10/07/2019	<50	<60	<500	<500	<0.5	0.5	<0.5	<1.5	<1	<0.1	<1	1	<1	<0.1	<1	<5
Trip Blanks																		
QTB1	Soil Trip Blank	10/07/2019	-				<0.1	<0.1	<0.1	<0.3	-	-	-	-	-	-	-	-
Trip Spikes																		
QTS1	Soil Trip Spike	10/07/2019	-				[102%]	[97%]	[93%]	[91%][1]	-	-	-	-	-	-	-	-

NOTE: All results are reported in mg/kg (soil) or µg/L (water)

66.67	RPD calculated by halving detection limit exceeds 30-50% range referenced from AS4482.1 (2005)
52.87	RPD exceeds 30-50% range referenced from AS4482.1 (2005)

F1 = TRH C6-C10 less the sum of BTEX
F2 = TRH >C10-C16 less naphthalene
F3 = TRH >C16-C34
F4 = TRH >C34-C40

[1] Value shown is the lowest recovery value reported for xylenes

eiaustralia
Contamination | Remediation | Geotechnical

Table J-6 **Groundwater RPD values** **E24273.E02 - Liverpool**

Sample identification	Description	Date	TRH				BTEX				Heavy Metals							
			F1	F2	F3	F4	Benzene	Toluene	Ethylbenzene	Xylene (total)	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	Mercury	Nickel	Zinc
Intra-laboratory Duplicate - Groundwater Investigation																		
BH110	Groundwater	26/07/2019	<50	120	<500	<500	<0.5	<0.5	<0.5	<1.5	1	0.2	<1	<1	<1	<0.1	14	6
GW-QD1	BFD of BH110		<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	<1	<0.1	<1	1	<1	<0.1	1	23
RPD		-	*0.00*	**66.67**	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	**66.67**	*0.00*	*0.00*	*0.00*	*0.00*	**173.33**	**117.24**
Inter-laboratory Duplicate - Groundwater Investigation																		
BH112	Groundwater	26/07/2019	<50	<60	<500	<500	<0.5	<0.5	<0.5	<1.5	2	<0.1	<1	1	<1	<0.1	2	<5
GW-QT1	BFD of BH112		<10	<50	<100	<100	<1	<1	<1	<3	<1	<0.1	<1	1	<1	<0.05	<1	2
RPD		-	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	**66.67**	*0.00*	*0.00*	*0.00*	*0.00*	*NA*	**66.67**	**85.71**
Rinsate Blanks																		
GW-QR1	Equipment Rinsate	26/07/2019	<50	<60	<500	<500	<0.5	0.6	<0.5	<1.5	<1	<0.1	<1	<1	<1	<0.1	<1	<5
Trip Blanks																		
GW-QTB1	Water trip blank	26/07/2019	-	-	-	-	<0.5	<0.5	<0.5	<1.5	-	-	-	-	-	-	-	-
Trip Spikes																		
GW-QTS1	Water trip spike	26/07/2019	-	-	-	-	[100%]	[108%]	[100%]	[100%] [1]	-	-	-	-	-	-	-	-

NOTE: All results are reported in mg/kg (soil) or µg/L (water)

66.67	RPD calculated by halving detection limit exceeds 30-50% range referenced from AS4482.1 (2005)
52.87	RPD exceeds 30-50% range referenced from AS4482.1 (2005)

F1 = TRH C6-C10 less the sum of BTEX
F2 = TRH >C10-C16 less naphthalene
F3 = TRH >C16-C34
F4 = TRH >C34-C40
[1] Value shown is the lowest recovery value reported for xylenes

eiaustralia
Contamination | Remediation | Geotechnical

Appendix K – Laboratory QA/QC Policies and DQOs

STATEMENT OF QA/QC PERFORMANCE

SE195215 R0

CLIENT DETAILS

Contact	Joel Heininger
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	joel.heininger@eiaustralia.com.au
Project	**E24273.E02 Castlereagh&Bathurst Liverpoo**
Order Number	**E24273.E02**
Samples	24

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE195215 R0**
Date Received	11 Jul 2019
Date Reported	19 Jul 2019

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Surrogate	VOC's in Soil	6 items
	Volatile Petroleum Hydrocarbons in Soil	6 items
Duplicate	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	1 item
	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	2 items

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	23 Soil, 1 Water
Date documentation received	11/7/2019	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	6.2°C	Sufficient sample for analysis	Yes
Turnaround time requested	Standard		

HOLDING TIME SUMMARY

SE195215 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Fibre Identification in soil

Method: ME-(AU)-[ENV]AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101-0.1-0.2	SE195215.001	LB178607	10 Jul 2019	11 Jul 2019	09 Jul 2020	16 Jul 2019	09 Jul 2020	17 Jul 2019
BH101-0.6-0.7	SE195215.002	LB178607	10 Jul 2019	11 Jul 2019	09 Jul 2020	16 Jul 2019	09 Jul 2020	17 Jul 2019
BH102-0.2-0.3	SE195215.003	LB178607	10 Jul 2019	11 Jul 2019	09 Jul 2020	16 Jul 2019	09 Jul 2020	17 Jul 2019
BH103-0.2-0.3	SE195215.004	LB178607	10 Jul 2019	11 Jul 2019	09 Jul 2020	16 Jul 2019	09 Jul 2020	17 Jul 2019
BH104-0.3-0.4	SE195215.005	LB178607	10 Jul 2019	11 Jul 2019	09 Jul 2020	16 Jul 2019	09 Jul 2020	17 Jul 2019
BH105-0.2-0.3	SE195215.006	LB178607	10 Jul 2019	11 Jul 2019	09 Jul 2020	16 Jul 2019	09 Jul 2020	17 Jul 2019
BH106-0.2-0.3	SE195215.007	LB178607	10 Jul 2019	11 Jul 2019	09 Jul 2020	16 Jul 2019	09 Jul 2020	17 Jul 2019
BH107-0.2-0.3	SE195215.008	LB178607	10 Jul 2019	11 Jul 2019	09 Jul 2020	16 Jul 2019	09 Jul 2020	17 Jul 2019
BH108-0.3-0.4	SE195215.010	LB178607	10 Jul 2019	11 Jul 2019	09 Jul 2020	16 Jul 2019	09 Jul 2020	17 Jul 2019
BH109-0.2-0.3	SE195215.011	LB178607	10 Jul 2019	11 Jul 2019	09 Jul 2020	16 Jul 2019	09 Jul 2020	17 Jul 2019
BH110-0.2-0.3	SE195215.013	LB178607	10 Jul 2019	11 Jul 2019	09 Jul 2020	16 Jul 2019	09 Jul 2020	17 Jul 2019
BH111-0.2-0.3	SE195215.015	LB178607	10 Jul 2019	11 Jul 2019	09 Jul 2020	16 Jul 2019	09 Jul 2020	17 Jul 2019
BH112-0.2-0.3	SE195215.017	LB178607	10 Jul 2019	11 Jul 2019	09 Jul 2020	16 Jul 2019	09 Jul 2020	17 Jul 2019
BH113-0.2-0.3	SE195215.019	LB178607	10 Jul 2019	11 Jul 2019	09 Jul 2020	16 Jul 2019	09 Jul 2020	17 Jul 2019

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE195215.022	LB178408	10 Jul 2019	11 Jul 2019	07 Aug 2019	15 Jul 2019	07 Aug 2019	15 Jul 2019

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101-0.1-0.2	SE195215.001	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH101-0.6-0.7	SE195215.002	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH102-0.2-0.3	SE195215.003	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH103-0.2-0.3	SE195215.004	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH104-0.3-0.4	SE195215.005	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH105-0.2-0.3	SE195215.006	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH106-0.2-0.3	SE195215.007	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH107-0.2-0.3	SE195215.008	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH107-1.4-1.5	SE195215.009	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH108-0.3-0.4	SE195215.010	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH109-0.2-0.3	SE195215.011	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH109-0.9-1.0	SE195215.012	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH110-0.2-0.3	SE195215.013	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH110-1.1-1.2	SE195215.014	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH111-0.2-0.3	SE195215.015	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH111-1.4-1.5	SE195215.016	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH112-0.2-0.3	SE195215.017	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH112-0.7-0.8	SE195215.018	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH113-0.2-0.3	SE195215.019	LB178584	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
BH113-1.2-1.3	SE195215.020	LB178586	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019
QD1	SE195215.021	LB178586	10 Jul 2019	11 Jul 2019	07 Aug 2019	16 Jul 2019	07 Aug 2019	18 Jul 2019

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101-0.1-0.2	SE195215.001	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH101-0.6-0.7	SE195215.002	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH102-0.2-0.3	SE195215.003	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH103-0.2-0.3	SE195215.004	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH104-0.3-0.4	SE195215.005	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH105-0.2-0.3	SE195215.006	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH106-0.2-0.3	SE195215.007	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH107-0.2-0.3	SE195215.008	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH107-1.4-1.5	SE195215.009	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH108-0.3-0.4	SE195215.010	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH109-0.2-0.3	SE195215.011	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH109-0.9-1.0	SE195215.012	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH110-0.2-0.3	SE195215.013	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH110-1.1-1.2	SE195215.014	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH111-0.2-0.3	SE195215.015	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019

HOLDING TIME SUMMARY

SE195215 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Moisture Content (continued)

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH111-1.4-1.5	SE195215.016	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH112-0.2-0.3	SE195215.017	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH112-0.7-0.8	SE195215.018	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH113-0.2-0.3	SE195215.019	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
BH113-1.2-1.3	SE195215.020	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
QD1	SE195215.021	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019
QTB1	SE195215.024	LB178436	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	20 Jul 2019	17 Jul 2019

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101-0.1-0.2	SE195215.001	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH101-0.6-0.7	SE195215.002	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH102-0.2-0.3	SE195215.003	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH103-0.2-0.3	SE195215.004	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH104-0.3-0.4	SE195215.005	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH105-0.2-0.3	SE195215.006	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH106-0.2-0.3	SE195215.007	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH107-0.2-0.3	SE195215.008	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH107-1.4-1.5	SE195215.009	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH108-0.3-0.4	SE195215.010	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH109-0.2-0.3	SE195215.011	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH109-0.9-1.0	SE195215.012	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH110-0.2-0.3	SE195215.013	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH110-1.1-1.2	SE195215.014	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH111-0.2-0.3	SE195215.015	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH111-1.4-1.5	SE195215.016	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH112-0.2-0.3	SE195215.017	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH112-0.7-0.8	SE195215.018	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH113-0.2-0.3	SE195215.019	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH113-1.2-1.3	SE195215.020	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
QD1	SE195215.021	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101-0.1-0.2	SE195215.001	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH101-0.6-0.7	SE195215.002	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH102-0.2-0.3	SE195215.003	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH103-0.2-0.3	SE195215.004	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH104-0.3-0.4	SE195215.005	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH105-0.2-0.3	SE195215.006	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH106-0.2-0.3	SE195215.007	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH107-0.2-0.3	SE195215.008	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH107-1.4-1.5	SE195215.009	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH108-0.3-0.4	SE195215.010	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH109-0.2-0.3	SE195215.011	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH109-0.9-1.0	SE195215.012	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH110-0.2-0.3	SE195215.013	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH110-1.1-1.2	SE195215.014	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH111-0.2-0.3	SE195215.015	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH111-1.4-1.5	SE195215.016	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH112-0.2-0.3	SE195215.017	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH112-0.7-0.8	SE195215.018	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH113-0.2-0.3	SE195215.019	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH113-1.2-1.3	SE195215.020	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
QD1	SE195215.021	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101-0.1-0.2	SE195215.001	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH101-0.6-0.7	SE195215.002	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH102-0.2-0.3	SE195215.003	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019

HOLDING TIME SUMMARY

SE195215 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH103-0.2-0.3	SE195215.004	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH104-0.3-0.4	SE195215.005	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH105-0.2-0.3	SE195215.006	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH106-0.2-0.3	SE195215.007	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH107-0.2-0.3	SE195215.008	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH107-1.4-1.5	SE195215.009	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH108-0.3-0.4	SE195215.010	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH109-0.2-0.3	SE195215.011	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH109-0.9-1.0	SE195215.012	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH110-0.2-0.3	SE195215.013	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH110-1.1-1.2	SE195215.014	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH111-0.2-0.3	SE195215.015	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH111-1.4-1.5	SE195215.016	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH112-0.2-0.3	SE195215.017	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH112-0.7-0.8	SE195215.018	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH113-0.2-0.3	SE195215.019	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH113-1.2-1.3	SE195215.020	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
QD1	SE195215.021	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101-0.1-0.2	SE195215.001	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH101-0.6-0.7	SE195215.002	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH102-0.2-0.3	SE195215.003	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH103-0.2-0.3	SE195215.004	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH104-0.3-0.4	SE195215.005	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH105-0.2-0.3	SE195215.006	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH106-0.2-0.3	SE195215.007	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH107-0.2-0.3	SE195215.008	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH107-1.4-1.5	SE195215.009	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH108-0.3-0.4	SE195215.010	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH109-0.2-0.3	SE195215.011	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH109-0.9-1.0	SE195215.012	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH110-0.2-0.3	SE195215.013	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH110-1.1-1.2	SE195215.014	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH111-0.2-0.3	SE195215.015	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH111-1.4-1.5	SE195215.016	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH112-0.2-0.3	SE195215.017	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH112-0.7-0.8	SE195215.018	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH113-0.2-0.3	SE195215.019	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH113-1.2-1.3	SE195215.020	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
QD1	SE195215.021	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101-0.1-0.2	SE195215.001	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH101-0.6-0.7	SE195215.002	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH102-0.2-0.3	SE195215.003	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH103-0.2-0.3	SE195215.004	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH104-0.3-0.4	SE195215.005	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH105-0.2-0.3	SE195215.006	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH106-0.2-0.3	SE195215.007	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH107-0.2-0.3	SE195215.008	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH107-1.4-1.5	SE195215.009	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH108-0.3-0.4	SE195215.010	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH109-0.2-0.3	SE195215.011	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH109-0.9-1.0	SE195215.012	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH110-0.2-0.3	SE195215.013	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH110-1.1-1.2	SE195215.014	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH111-0.2-0.3	SE195215.015	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH111-1.4-1.5	SE195215.016	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES (continued)

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH112-0.2-0.3	SE195215.017	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH112-0.7-0.8	SE195215.018	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH113-0.2-0.3	SE195215.019	LB178576	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
BH113-1.2-1.3	SE195215.020	LB178578	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019
QD1	SE195215.021	LB178578	10 Jul 2019	11 Jul 2019	06 Jan 2020	16 Jul 2019	06 Jan 2020	18 Jul 2019

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE195215.022	LB178403	10 Jul 2019	11 Jul 2019	06 Jan 2020	15 Jul 2019	06 Jan 2020	15 Jul 2019

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101-0.1-0.2	SE195215.001	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH101-0.6-0.7	SE195215.002	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH102-0.2-0.3	SE195215.003	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH103-0.2-0.3	SE195215.004	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH104-0.3-0.4	SE195215.005	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH105-0.2-0.3	SE195215.006	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH106-0.2-0.3	SE195215.007	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH107-0.2-0.3	SE195215.008	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH107-1.4-1.5	SE195215.009	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH108-0.3-0.4	SE195215.010	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH109-0.2-0.3	SE195215.011	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH109-0.9-1.0	SE195215.012	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH110-0.2-0.3	SE195215.013	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH110-1.1-1.2	SE195215.014	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH111-0.2-0.3	SE195215.015	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH111-1.4-1.5	SE195215.016	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH112-0.2-0.3	SE195215.017	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH112-0.7-0.8	SE195215.018	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH113-0.2-0.3	SE195215.019	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
BH113-1.2-1.3	SE195215.020	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019
QD1	SE195215.021	LB178435	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE195215.022	LB178412	10 Jul 2019	11 Jul 2019	17 Jul 2019	15 Jul 2019	24 Aug 2019	17 Jul 2019

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101-0.1-0.2	SE195215.001	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH101-0.6-0.7	SE195215.002	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH102-0.2-0.3	SE195215.003	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH103-0.2-0.3	SE195215.004	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH104-0.3-0.4	SE195215.005	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH105-0.2-0.3	SE195215.006	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH106-0.2-0.3	SE195215.007	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH107-0.2-0.3	SE195215.008	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH107-1.4-1.5	SE195215.009	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH108-0.3-0.4	SE195215.010	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH109-0.2-0.3	SE195215.011	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH109-0.9-1.0	SE195215.012	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH110-0.2-0.3	SE195215.013	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH110-1.1-1.2	SE195215.014	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH111-0.2-0.3	SE195215.015	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH111-1.4-1.5	SE195215.016	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH112-0.2-0.3	SE195215.017	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH112-0.7-0.8	SE195215.018	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH113-0.2-0.3	SE195215.019	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH113-1.2-1.3	SE195215.020	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019

HOLDING TIME SUMMARY

SE195215 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QD1	SE195215.021	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
QTS1	SE195215.023	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
QTB1	SE195215.024	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE195215.022	LB178418	10 Jul 2019	11 Jul 2019	17 Jul 2019	15 Jul 2019	24 Aug 2019	16 Jul 2019

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH101-0.1-0.2	SE195215.001	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH101-0.6-0.7	SE195215.002	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH102-0.2-0.3	SE195215.003	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH103-0.2-0.3	SE195215.004	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH104-0.3-0.4	SE195215.005	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH105-0.2-0.3	SE195215.006	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH106-0.2-0.3	SE195215.007	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH107-0.2-0.3	SE195215.008	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH107-1.4-1.5	SE195215.009	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH108-0.3-0.4	SE195215.010	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH109-0.2-0.3	SE195215.011	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH109-0.9-1.0	SE195215.012	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH110-0.2-0.3	SE195215.013	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH110-1.1-1.2	SE195215.014	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH111-0.2-0.3	SE195215.015	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH111-1.4-1.5	SE195215.016	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH112-0.2-0.3	SE195215.017	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH112-0.7-0.8	SE195215.018	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
BH113-0.2-0.3	SE195215.019	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	18 Jul 2019
BH113-1.2-1.3	SE195215.020	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
QD1	SE195215.021	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
QTS1	SE195215.023	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019
QTB1	SE195215.024	LB178428	10 Jul 2019	11 Jul 2019	24 Jul 2019	15 Jul 2019	24 Aug 2019	19 Jul 2019

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QR1	SE195215.022	LB178418	10 Jul 2019	11 Jul 2019	17 Jul 2019	15 Jul 2019	24 Aug 2019	16 Jul 2019

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH101-0.1-0.2	SE195215.001	%	60 - 130%	102
	BH101-0.6-0.7	SE195215.002	%	60 - 130%	97
	BH102-0.2-0.3	SE195215.003	%	60 - 130%	102
	BH103-0.2-0.3	SE195215.004	%	60 - 130%	96
	BH104-0.3-0.4	SE195215.005	%	60 - 130%	98
	BH105-0.2-0.3	SE195215.006	%	60 - 130%	101
	BH106-0.2-0.3	SE195215.007	%	60 - 130%	104
	BH107-0.2-0.3	SE195215.008	%	60 - 130%	95
	BH108-0.3-0.4	SE195215.010	%	60 - 130%	99
	BH109-0.2-0.3	SE195215.011	%	60 - 130%	107
	BH110-0.2-0.3	SE195215.013	%	60 - 130%	108
	BH111-0.2-0.3	SE195215.015	%	60 - 130%	100
	BH112-0.2-0.3	SE195215.017	%	60 - 130%	100
	BH113-0.2-0.3	SE195215.019	%	60 - 130%	100

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH101-0.1-0.2	SE195215.001	%	60 - 130%	88
	BH101-0.6-0.7	SE195215.002	%	60 - 130%	84
	BH102-0.2-0.3	SE195215.003	%	60 - 130%	86
	BH103-0.2-0.3	SE195215.004	%	60 - 130%	86
	BH104-0.3-0.4	SE195215.005	%	60 - 130%	82
	BH105-0.2-0.3	SE195215.006	%	60 - 130%	76
	BH106-0.2-0.3	SE195215.007	%	60 - 130%	80
	BH107-0.2-0.3	SE195215.008	%	60 - 130%	100
	BH108-0.3-0.4	SE195215.010	%	60 - 130%	90
	BH109-0.2-0.3	SE195215.011	%	60 - 130%	88
	BH110-0.2-0.3	SE195215.013	%	60 - 130%	90
	BH111-0.2-0.3	SE195215.015	%	60 - 130%	92
	BH112-0.2-0.3	SE195215.017	%	60 - 130%	90
	BH113-0.2-0.3	SE195215.019	%	60 - 130%	90
d14-p-terphenyl (Surrogate)	BH101-0.1-0.2	SE195215.001	%	60 - 130%	98
	BH101-0.6-0.7	SE195215.002	%	60 - 130%	102
	BH102-0.2-0.3	SE195215.003	%	60 - 130%	100
	BH103-0.2-0.3	SE195215.004	%	60 - 130%	100
	BH104-0.3-0.4	SE195215.005	%	60 - 130%	88
	BH105-0.2-0.3	SE195215.006	%	60 - 130%	82
	BH106-0.2-0.3	SE195215.007	%	60 - 130%	86
	BH107-0.2-0.3	SE195215.008	%	60 - 130%	106
	BH108-0.3-0.4	SE195215.010	%	60 - 130%	88
	BH109-0.2-0.3	SE195215.011	%	60 - 130%	88
	BH110-0.2-0.3	SE195215.013	%	60 - 130%	90
	BH111-0.2-0.3	SE195215.015	%	60 - 130%	90
	BH112-0.2-0.3	SE195215.017	%	60 - 130%	90
	BH113-0.2-0.3	SE195215.019	%	60 - 130%	90

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH101-0.1-0.2	SE195215.001	%	70 - 130%	88
	BH101-0.6-0.7	SE195215.002	%	70 - 130%	84
	BH102-0.2-0.3	SE195215.003	%	70 - 130%	86
	BH103-0.2-0.3	SE195215.004	%	70 - 130%	86
	BH104-0.3-0.4	SE195215.005	%	70 - 130%	82
	BH105-0.2-0.3	SE195215.006	%	70 - 130%	76
	BH106-0.2-0.3	SE195215.007	%	70 - 130%	80
	BH107-0.2-0.3	SE195215.008	%	70 - 130%	100
	BH107-1.4-1.5	SE195215.009	%	70 - 130%	78
	BH108-0.3-0.4	SE195215.010	%	70 - 130%	90
	BH109-0.2-0.3	SE195215.011	%	70 - 130%	88
	BH109-0.9-1.0	SE195215.012	%	70 - 130%	90
	BH110-0.2-0.3	SE195215.013	%	70 - 130%	90
	BH110-1.1-1.2	SE195215.014	%	70 - 130%	88

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH111-0.2-0.3	SE195215.015	%	70 - 130%	92
	BH111-1.4-1.5	SE195215.016	%	70 - 130%	92
	BH112-0.2-0.3	SE195215.017	%	70 - 130%	90
	BH112-0.7-0.8	SE195215.018	%	70 - 130%	90
	BH113-0.2-0.3	SE195215.019	%	70 - 130%	90
	BH113-1.2-1.3	SE195215.020	%	70 - 130%	90
d14-p-terphenyl (Surrogate)	BH101-0.1-0.2	SE195215.001	%	70 - 130%	98
	BH101-0.6-0.7	SE195215.002	%	70 - 130%	102
	BH102-0.2-0.3	SE195215.003	%	70 - 130%	100
	BH103-0.2-0.3	SE195215.004	%	70 - 130%	100
	BH104-0.3-0.4	SE195215.005	%	70 - 130%	88
	BH105-0.2-0.3	SE195215.006	%	70 - 130%	82
	BH106-0.2-0.3	SE195215.007	%	70 - 130%	86
	BH107-0.2-0.3	SE195215.008	%	70 - 130%	106
	BH107-1.4-1.5	SE195215.009	%	70 - 130%	88
	BH108-0.3-0.4	SE195215.010	%	70 - 130%	88
	BH109-0.2-0.3	SE195215.011	%	70 - 130%	88
	BH109-0.9-1.0	SE195215.012	%	70 - 130%	90
	BH110-0.2-0.3	SE195215.013	%	70 - 130%	90
	BH110-1.1-1.2	SE195215.014	%	70 - 130%	90
	BH111-0.2-0.3	SE195215.015	%	70 - 130%	90
	BH111-1.4-1.5	SE195215.016	%	70 - 130%	94
	BH112-0.2-0.3	SE195215.017	%	70 - 130%	90
	BH112-0.7-0.8	SE195215.018	%	70 - 130%	90
	BH113-0.2-0.3	SE195215.019	%	70 - 130%	90
	BH113-1.2-1.3	SE195215.020	%	70 - 130%	92
d5-nitrobenzene (Surrogate)	BH101-0.1-0.2	SE195215.001	%	70 - 130%	102
	BH101-0.6-0.7	SE195215.002	%	70 - 130%	104
	BH102-0.2-0.3	SE195215.003	%	70 - 130%	104
	BH103-0.2-0.3	SE195215.004	%	70 - 130%	108
	BH104-0.3-0.4	SE195215.005	%	70 - 130%	110
	BH105-0.2-0.3	SE195215.006	%	70 - 130%	100
	BH106-0.2-0.3	SE195215.007	%	70 - 130%	106
	BH107-0.2-0.3	SE195215.008	%	70 - 130%	106
	BH107-1.4-1.5	SE195215.009	%	70 - 130%	108
	BH108-0.3-0.4	SE195215.010	%	70 - 130%	90
	BH109-0.2-0.3	SE195215.011	%	70 - 130%	88
	BH109-0.9-1.0	SE195215.012	%	70 - 130%	90
	BH110-0.2-0.3	SE195215.013	%	70 - 130%	96
	BH110-1.1-1.2	SE195215.014	%	70 - 130%	90
	BH111-0.2-0.3	SE195215.015	%	70 - 130%	94
	BH111-1.4-1.5	SE195215.016	%	70 - 130%	94
	BH112-0.2-0.3	SE195215.017	%	70 - 130%	90
	BH112-0.7-0.8	SE195215.018	%	70 - 130%	90
	BH113-0.2-0.3	SE195215.019	%	70 - 130%	90
	BH113-1.2-1.3	SE195215.020	%	70 - 130%	92

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH101-0.1-0.2	SE195215.001	%	60 - 130%	102
	BH101-0.6-0.7	SE195215.002	%	60 - 130%	97
	BH102-0.2-0.3	SE195215.003	%	60 - 130%	102
	BH103-0.2-0.3	SE195215.004	%	60 - 130%	96
	BH104-0.3-0.4	SE195215.005	%	60 - 130%	98
	BH105-0.2-0.3	SE195215.006	%	60 - 130%	101
	BH106-0.2-0.3	SE195215.007	%	60 - 130%	104
	BH107-0.2-0.3	SE195215.008	%	60 - 130%	95
	BH108-0.3-0.4	SE195215.010	%	60 - 130%	99
	BH109-0.2-0.3	SE195215.011	%	60 - 130%	107
	BH110-0.2-0.3	SE195215.013	%	60 - 130%	108
	BH111-0.2-0.3	SE195215.015	%	60 - 130%	100

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH112-0.2-0.3	SE195215.017	%	60 - 130%	100
	BH113-0.2-0.3	SE195215.019	%	60 - 130%	100

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH101-0.1-0.2	SE195215.001	%	60 - 130%	74
	BH101-0.6-0.7	SE195215.002	%	60 - 130%	57 ①
	BH102-0.2-0.3	SE195215.003	%	60 - 130%	66
	BH103-0.2-0.3	SE195215.004	%	60 - 130%	82
	BH104-0.3-0.4	SE195215.005	%	60 - 130%	61
	BH105-0.2-0.3	SE195215.006	%	60 - 130%	68
	BH106-0.2-0.3	SE195215.007	%	60 - 130%	68
	BH107-0.2-0.3	SE195215.008	%	60 - 130%	69
	BH107-1.4-1.5	SE195215.009	%	60 - 130%	66
	BH108-0.3-0.4	SE195215.010	%	60 - 130%	71
	BH109-0.2-0.3	SE195215.011	%	60 - 130%	66
	BH109-0.9-1.0	SE195215.012	%	60 - 130%	61
	BH110-0.2-0.3	SE195215.013	%	60 - 130%	129
	BH110-1.1-1.2	SE195215.014	%	60 - 130%	63
	BH111-0.2-0.3	SE195215.015	%	60 - 130%	88
	BH111-1.4-1.5	SE195215.016	%	60 - 130%	60
	BH112-0.2-0.3	SE195215.017	%	60 - 130%	74
	BH112-0.7-0.8	SE195215.018	%	60 - 130%	67
	BH113-0.2-0.3	SE195215.019	%	60 - 130%	68
	BH113-1.2-1.3	SE195215.020	%	60 - 130%	65
	QD1	SE195215.021	%	60 - 130%	59 ①
	QTS1	SE195215.023	%	60 - 130%	99
	QTB1	SE195215.024	%	60 - 130%	75
d4-1,2-dichloroethane (Surrogate)	BH101-0.1-0.2	SE195215.001	%	60 - 130%	80
	BH101-0.6-0.7	SE195215.002	%	60 - 130%	72
	BH102-0.2-0.3	SE195215.003	%	60 - 130%	78
	BH103-0.2-0.3	SE195215.004	%	60 - 130%	84
	BH104-0.3-0.4	SE195215.005	%	60 - 130%	72
	BH105-0.2-0.3	SE195215.006	%	60 - 130%	80
	BH106-0.2-0.3	SE195215.007	%	60 - 130%	89
	BH107-0.2-0.3	SE195215.008	%	60 - 130%	88
	BH107-1.4-1.5	SE195215.009	%	60 - 130%	81
	BH108-0.3-0.4	SE195215.010	%	60 - 130%	89
	BH109-0.2-0.3	SE195215.011	%	60 - 130%	88
	BH109-0.9-1.0	SE195215.012	%	60 - 130%	71
	BH110-0.2-0.3	SE195215.013	%	60 - 130%	54 ④
	BH110-1.1-1.2	SE195215.014	%	60 - 130%	66
	BH111-0.2-0.3	SE195215.015	%	60 - 130%	82
	BH111-1.4-1.5	SE195215.016	%	60 - 130%	71
	BH112-0.2-0.3	SE195215.017	%	60 - 130%	79
	BH112-0.7-0.8	SE195215.018	%	60 - 130%	80
	BH113-0.2-0.3	SE195215.019	%	60 - 130%	83
	BH113-1.2-1.3	SE195215.020	%	60 - 130%	80
	QD1	SE195215.021	%	60 - 130%	74
	QTS1	SE195215.023	%	60 - 130%	98
	QTB1	SE195215.024	%	60 - 130%	91
d8-toluene (Surrogate)	BH101-0.1-0.2	SE195215.001	%	60 - 130%	83
	BH101-0.6-0.7	SE195215.002	%	60 - 130%	64
	BH102-0.2-0.3	SE195215.003	%	60 - 130%	76
	BH103-0.2-0.3	SE195215.004	%	60 - 130%	85
	BH104-0.3-0.4	SE195215.005	%	60 - 130%	67
	BH105-0.2-0.3	SE195215.006	%	60 - 130%	69
	BH106-0.2-0.3	SE195215.007	%	60 - 130%	68
	BH107-0.2-0.3	SE195215.008	%	60 - 130%	70
	BH107-1.4-1.5	SE195215.009	%	60 - 130%	72
	BH108-0.3-0.4	SE195215.010	%	60 - 130%	87

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	BH109-0.2-0.3	SE195215.011	%	60 - 130%	78
	BH109-0.9-1.0	SE195215.012	%	60 - 130%	70
	BH110-0.2-0.3	SE195215.013	%	60 - 130%	134 ④
	BH110-1.1-1.2	SE195215.014	%	60 - 130%	86
	BH111-0.2-0.3	SE195215.015	%	60 - 130%	89
	BH111-1.4-1.5	SE195215.016	%	60 - 130%	77
	BH112-0.2-0.3	SE195215.017	%	60 - 130%	100
	BH112-0.7-0.8	SE195215.018	%	60 - 130%	78
	BH113-0.2-0.3	SE195215.019	%	60 - 130%	80
	BH113-1.2-1.3	SE195215.020	%	60 - 130%	78
	QD1	SE195215.021	%	60 - 130%	67
	QTS1	SE195215.023	%	60 - 130%	90
	QTB1	SE195215.024	%	60 - 130%	93
Dibromofluoromethane (Surrogate)	BH101-0.1-0.2	SE195215.001	%	60 - 130%	98
	BH101-0.6-0.7	SE195215.002	%	60 - 130%	80
	BH102-0.2-0.3	SE195215.003	%	60 - 130%	85
	BH103-0.2-0.3	SE195215.004	%	60 - 130%	97
	BH104-0.3-0.4	SE195215.005	%	60 - 130%	76
	BH105-0.2-0.3	SE195215.006	%	60 - 130%	88
	BH106-0.2-0.3	SE195215.007	%	60 - 130%	98
	BH107-0.2-0.3	SE195215.008	%	60 - 130%	96
	BH107-1.4-1.5	SE195215.009	%	60 - 130%	92
	BH108-0.3-0.4	SE195215.010	%	60 - 130%	90
	BH109-0.2-0.3	SE195215.011	%	60 - 130%	100
	BH109-0.9-1.0	SE195215.012	%	60 - 130%	73
	BH110-0.2-0.3	SE195215.013	%	60 - 130%	50 ④
	BH110-1.1-1.2	SE195215.014	%	60 - 130%	58 ④
	BH111-0.2-0.3	SE195215.015	%	60 - 130%	76
	BH111-1.4-1.5	SE195215.016	%	60 - 130%	72
	BH112-0.2-0.3	SE195215.017	%	60 - 130%	71
	BH112-0.7-0.8	SE195215.018	%	60 - 130%	86
	BH113-0.2-0.3	SE195215.019	%	60 - 130%	93
	BH113-1.2-1.3	SE195215.020	%	60 - 130%	91
	QD1	SE195215.021	%	60 - 130%	74
	QTS1	SE195215.023	%	60 - 130%	85
	QTB1	SE195215.024	%	60 - 130%	96

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QR1	SE195215.022	%	40 - 130%	80
d4-1,2-dichloroethane (Surrogate)	QR1	SE195215.022	%	40 - 130%	102
d8-toluene (Surrogate)	QR1	SE195215.022	%	40 - 130%	105
Dibromofluoromethane (Surrogate)	QR1	SE195215.022	%	40 - 130%	110

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH101-0.1-0.2	SE195215.001	%	60 - 130%	74
	BH101-0.6-0.7	SE195215.002	%	60 - 130%	57 ①
	BH102-0.2-0.3	SE195215.003	%	60 - 130%	66
	BH103-0.2-0.3	SE195215.004	%	60 - 130%	82
	BH104-0.3-0.4	SE195215.005	%	60 - 130%	61
	BH105-0.2-0.3	SE195215.006	%	60 - 130%	68
	BH106-0.2-0.3	SE195215.007	%	60 - 130%	68
	BH107-0.2-0.3	SE195215.008	%	60 - 130%	69
	BH107-1.4-1.5	SE195215.009	%	60 - 130%	66
	BH108-0.3-0.4	SE195215.010	%	60 - 130%	71
	BH109-0.2-0.3	SE195215.011	%	60 - 130%	66
	BH109-0.9-1.0	SE195215.012	%	60 - 130%	61
	BH110-0.2-0.3	SE195215.013	%	60 - 130%	129
	BH110-1.1-1.2	SE195215.014	%	60 - 130%	63
	BH111-0.2-0.3	SE195215.015	%	60 - 130%	88
	BH111-1.4-1.5	SE195215.016	%	60 - 130%	60

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil (continued) — **Method: ME-(AU)-[ENV]AN433**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH112-0.2-0.3	SE195215.017	%	60 - 130%	74
	BH112-0.7-0.8	SE195215.018	%	60 - 130%	67
	BH113-0.2-0.3	SE195215.019	%	60 - 130%	68
	BH113-1.2-1.3	SE195215.020	%	60 - 130%	65
	QD1	SE195215.021	%	60 - 130%	59 ①
d4-1,2-dichloroethane (Surrogate)	BH101-0.1-0.2	SE195215.001	%	60 - 130%	80
	BH101-0.6-0.7	SE195215.002	%	60 - 130%	72
	BH102-0.2-0.3	SE195215.003	%	60 - 130%	78
	BH103-0.2-0.3	SE195215.004	%	60 - 130%	84
	BH104-0.3-0.4	SE195215.005	%	60 - 130%	72
	BH105-0.2-0.3	SE195215.006	%	60 - 130%	80
	BH106-0.2-0.3	SE195215.007	%	60 - 130%	89
	BH107-0.2-0.3	SE195215.008	%	60 - 130%	88
	BH107-1.4-1.5	SE195215.009	%	60 - 130%	81
	BH108-0.3-0.4	SE195215.010	%	60 - 130%	89
	BH109-0.2-0.3	SE195215.011	%	60 - 130%	88
	BH109-0.9-1.0	SE195215.012	%	60 - 130%	71
	BH110-0.2-0.3	SE195215.013	%	60 - 130%	54 ④
	BH110-1.1-1.2	SE195215.014	%	60 - 130%	66
	BH111-0.2-0.3	SE195215.015	%	60 - 130%	82
	BH111-1.4-1.5	SE195215.016	%	60 - 130%	71
	BH112-0.2-0.3	SE195215.017	%	60 - 130%	79
	BH112-0.7-0.8	SE195215.018	%	60 - 130%	80
	BH113-0.2-0.3	SE195215.019	%	60 - 130%	83
	BH113-1.2-1.3	SE195215.020	%	60 - 130%	80
	QD1	SE195215.021	%	60 - 130%	74
d8-toluene (Surrogate)	BH101-0.1-0.2	SE195215.001	%	60 - 130%	83
	BH101-0.6-0.7	SE195215.002	%	60 - 130%	64
	BH102-0.2-0.3	SE195215.003	%	60 - 130%	76
	BH103-0.2-0.3	SE195215.004	%	60 - 130%	85
	BH104-0.3-0.4	SE195215.005	%	60 - 130%	67
	BH105-0.2-0.3	SE195215.006	%	60 - 130%	69
	BH106-0.2-0.3	SE195215.007	%	60 - 130%	68
	BH107-0.2-0.3	SE195215.008	%	60 - 130%	70
	BH107-1.4-1.5	SE195215.009	%	60 - 130%	72
	BH108-0.3-0.4	SE195215.010	%	60 - 130%	87
	BH109-0.2-0.3	SE195215.011	%	60 - 130%	78
	BH109-0.9-1.0	SE195215.012	%	60 - 130%	70
	BH110-0.2-0.3	SE195215.013	%	60 - 130%	134 ④
	BH110-1.1-1.2	SE195215.014	%	60 - 130%	86
	BH111-0.2-0.3	SE195215.015	%	60 - 130%	89
	BH111-1.4-1.5	SE195215.016	%	60 - 130%	77
	BH112-0.2-0.3	SE195215.017	%	60 - 130%	100
	BH112-0.7-0.8	SE195215.018	%	60 - 130%	78
	BH113-0.2-0.3	SE195215.019	%	60 - 130%	80
	BH113-1.2-1.3	SE195215.020	%	60 - 130%	78
	QD1	SE195215.021	%	60 - 130%	67
Dibromofluoromethane (Surrogate)	BH101-0.1-0.2	SE195215.001	%	60 - 130%	98
	BH101-0.6-0.7	SE195215.002	%	60 - 130%	80
	BH102-0.2-0.3	SE195215.003	%	60 - 130%	85
	BH103-0.2-0.3	SE195215.004	%	60 - 130%	97
	BH104-0.3-0.4	SE195215.005	%	60 - 130%	76
	BH105-0.2-0.3	SE195215.006	%	60 - 130%	88
	BH106-0.2-0.3	SE195215.007	%	60 - 130%	98
	BH107-0.2-0.3	SE195215.008	%	60 - 130%	96
	BH107-1.4-1.5	SE195215.009	%	60 - 130%	92
	BH108-0.3-0.4	SE195215.010	%	60 - 130%	90
	BH109-0.2-0.3	SE195215.011	%	60 - 130%	100
	BH109-0.9-1.0	SE195215.012	%	60 - 130%	73
	BH110-0.2-0.3	SE195215.013	%	60 - 130%	50 ④
	BH110-1.1-1.2	SE195215.014	%	60 - 130%	58 ④

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil (continued) — Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Dibromofluoromethane (Surrogate)	BH111-0.2-0.3	SE195215.015	%	60 - 130%	76
	BH111-1.4-1.5	SE195215.016	%	60 - 130%	72
	BH112-0.2-0.3	SE195215.017	%	60 - 130%	71
	BH112-0.7-0.8	SE195215.018	%	60 - 130%	86
	BH113-0.2-0.3	SE195215.019	%	60 - 130%	93
	BH113-1.2-1.3	SE195215.020	%	60 - 130%	91
	QD1	SE195215.021	%	60 - 130%	74

Volatile Petroleum Hydrocarbons in Water — Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QR1	SE195215.022	%	40 - 130%	80
d4-1,2-dichloroethane (Surrogate)	QR1	SE195215.022	%	60 - 130%	102
d8-toluene (Surrogate)	QR1	SE195215.022	%	40 - 130%	105
Dibromofluoromethane (Surrogate)	QR1	SE195215.022	%	40 - 130%	110

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB178408.001	Mercury	mg/L	0.0001	<0.0001

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB178584.001	Mercury	mg/kg	0.05	<0.05
LB178586.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB178435.001		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Alpha BHC	mg/kg	0.1	<0.1
		Lindane	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		Endrin Aldehyde	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Endrin Ketone	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	92

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB178435.001		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	82
		d14-p-terphenyl (Surrogate)	%	-	104

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB178435.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB178435.001		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	100
		2-fluorobiphenyl (Surrogate)	%	-	82
		d14-p-terphenyl (Surrogate)	%	-	104

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB178435.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	92

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB178576.001	Arsenic, As	mg/kg	1	2
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2.0
LB178578.001	Arsenic, As	mg/kg	1	2
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.3	<0.3
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2.0

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB178403.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB178435.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB178412.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB178428.001	Fumigants	2,2-dichloropropane	mg/kg	0.1	<0.1
		1,2-dichloropropane	mg/kg	0.1	<0.1
		cis-1,3-dichloropropene	mg/kg	0.1	<0.1
		trans-1,3-dichloropropene	mg/kg	0.1	<0.1
		1,2-dibromoethane (EDB)	mg/kg	0.1	<0.1
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	mg/kg	1	<1
		Chloromethane	mg/kg	1	<1
		Vinyl chloride (Chloroethene)	mg/kg	0.1	<0.1
		Bromomethane	mg/kg	1	<1
		Chloroethane	mg/kg	1	<1
		Trichlorofluoromethane	mg/kg	1	<1
		Iodomethane	mg/kg	5	<5
		1,1-dichloroethene	mg/kg	0.1	<0.1
		Dichloromethane (Methylene chloride)	mg/kg	0.5	<0.5
		Allyl chloride	mg/kg	0.1	<0.1
		trans-1,2-dichloroethene	mg/kg	0.1	<0.1
		1,1-dichloroethane	mg/kg	0.1	<0.1
		cis-1,2-dichloroethene	mg/kg	0.1	<0.1
		Bromochloromethane	mg/kg	0.1	<0.1
		1,2-dichloroethane	mg/kg	0.1	<0.1
		1,1,1-trichloroethane	mg/kg	0.1	<0.1
		1,1-dichloropropene	mg/kg	0.1	<0.1
		Carbon tetrachloride	mg/kg	0.1	<0.1
		Dibromomethane	mg/kg	0.1	<0.1
		Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	<0.1
		1,1,2-trichloroethane	mg/kg	0.1	<0.1
		1,3-dichloropropane	mg/kg	0.1	<0.1
		Tetrachloroethene (Perchloroethylene,PCE)	mg/kg	0.1	<0.1
		1,1,1,2-tetrachloroethane	mg/kg	0.1	<0.1
		cis-1,4-dichloro-2-butene	mg/kg	1	<1
		1,1,2,2-tetrachloroethane	mg/kg	0.1	<0.1
		1,2,3-trichloropropane	mg/kg	0.1	<0.1
		trans-1,4-dichloro-2-butene	mg/kg	1	<1
		1,2-dibromo-3-chloropropane	mg/kg	0.1	<0.1
		Hexachlorobutadiene	mg/kg	0.1	<0.1
	Halogenated Aromatics	Chlorobenzene	mg/kg	0.1	<0.1
		Bromobenzene	mg/kg	0.1	<0.1
		2-chlorotoluene	mg/kg	0.1	<0.1
		4-chlorotoluene	mg/kg	0.1	<0.1
		1,3-dichlorobenzene	mg/kg	0.1	<0.1
		1,4-dichlorobenzene	mg/kg	0.1	<0.1
		1,2-dichlorobenzene	mg/kg	0.1	<0.1
		1,2,4-trichlorobenzene	mg/kg	0.1	<0.1
		1,2,3-trichlorobenzene	mg/kg	0.1	<0.1
	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
		Styrene (Vinyl benzene)	mg/kg	0.1	<0.1
		Isopropylbenzene (Cumene)	mg/kg	0.1	<0.1
		n-propylbenzene	mg/kg	0.1	<0.1
		1,3,5-trimethylbenzene	mg/kg	0.1	<0.1
		tert-butylbenzene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB178428.001	Monocyclic Aromatic Hydrocarbons	1,2,4-trimethylbenzene	mg/kg	0.1	<0.1
		sec-butylbenzene	mg/kg	0.1	<0.1
		p-isopropyltoluene	mg/kg	0.1	<0.1
		n-butylbenzene	mg/kg	0.1	<0.1
	Nitrogenous Compounds	Acrylonitrile	mg/kg	0.1	<0.1
		2-nitropropane	mg/kg	10	<10
	Oxygenated Compounds	Acetone (2-propanone)	mg/kg	10	<10
		MtBE (Methyl-tert-butyl ether)	mg/kg	0.1	<0.1
		Vinyl acetate	mg/kg	10	<10
		MEK (2-butanone)	mg/kg	10	<10
		MIBK (4-methyl-2-pentanone)	mg/kg	1	<1
		2-hexanone (MBK)	mg/kg	5	<5
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Sulphonated	Carbon disulfide	mg/kg	0.5	<0.5
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	113
		d4-1,2-dichloroethane (Surrogate)	%	-	90
		d8-toluene (Surrogate)	%	-	90
		Bromofluorobenzene (Surrogate)	%	-	74
	Totals	Total BTEX	mg/kg	0.6	<0.6
		Total Other Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	<1.8
		Total Chlorinated Hydrocarbons VIC EPA*	mg/kg	1.8	<1.8
	Trihalomethanes	Chloroform	mg/kg	0.1	<0.1
		Bromodichloromethane	mg/kg	0.1	<0.1
		Chlorodibromomethane	mg/kg	0.1	<0.1
		Bromoform	mg/kg	0.1	<0.1

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB178418.001	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	<0.5
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	113
		d4-1,2-dichloroethane (Surrogate)	%	-	106
		d8-toluene (Surrogate)	%	-	104
		Bromofluorobenzene (Surrogate)	%	-	78

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB178428.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	113
		d4-1,2-dichloroethane (Surrogate)	%	-	90
		d8-toluene (Surrogate)	%	-	90

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB178418.001		TRH C6-C9	µg/L	40	<40
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	113
		d4-1,2-dichloroethane (Surrogate)	%	-	106
		d8-toluene (Surrogate)	%	-	104
		Bromofluorobenzene (Surrogate)	%	-	78

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195215.010	LB178584.014	Mercury	mg/kg	0.05	0.17	0.15	61	10
SE195215.019	LB178584.024	Mercury	mg/kg	0.05	<0.05	<0.05	188	0
SE195218.001	LB178586.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE195218.005	LB178586.019	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195215.010	LB178436.011	% Moisture	%w/w	0.5	9.1	7.8	42	16
SE195215.020	LB178436.022	% Moisture	%w/w	0.5	20	19	35	2

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195215.011	LB178435.032		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.15	30	8

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195215.010	LB178435.014		Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.4	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	5

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195215.010	LB178435.014		Naphthalene	mg/kg	0.1	0.1	<0.1	148	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	0.7	0.7	45	6
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	0.2	113	40
			Phenanthrene	mg/kg	0.1	1.3	1.7	37	23
			Anthracene	mg/kg	0.1	0.8	0.8	43	6
			Fluoranthene	mg/kg	0.1	3.3	3.2	33	3
			Pyrene	mg/kg	0.1	2.8	2.7	34	6
			Benzo(a)anthracene	mg/kg	0.1	1.8	1.7	36	10
			Chrysene	mg/kg	0.1	1.6	1.5	36	9
			Benzo(b&j)fluoranthene	mg/kg	0.1	1.8	1.6	36	10
			Benzo(k)fluoranthene	mg/kg	0.1	1.0	0.9	41	13
			Benzo(a)pyrene	mg/kg	0.1	1.6	1.4	37	11
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.9	0.8	41	13
			Dibenzo(ah)anthracene	mg/kg	0.1	0.2	0.2	74	13
			Benzo(ghi)perylene	mg/kg	0.1	0.8	0.7	44	12
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	2.4	2.2	19	11
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	2.4	2.2	23	11
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	2.4	2.2	19	11
			Total PAH (18)	mg/kg	0.8	19	18	34	5
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.4	30	5
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.4	30	2
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.4	0.4	30	5
SE195215.020	LB178435.028		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	mg/kg	0.3	<0.3	<0.3	134	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	mg/kg	0.2	<0.2	<0.2	175	0
			Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.4	30	4
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.4	30	5
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.4	30	4

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195215.011	LB178435.032	Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
		Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195215.011	LB178435.032		Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	30	8

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195215.010	LB178576.014	Arsenic, As	mg/kg	1	5	9	44	65 ②
		Cadmium, Cd	mg/kg	0.3	0.3	<0.3	128	8
		Chromium, Cr	mg/kg	0.3	26	25	32	3
		Copper, Cu	mg/kg	0.5	35	31	32	12
		Nickel, Ni	mg/kg	0.5	12	11	34	2
		Lead, Pb	mg/kg	1	230	210	30	10
		Zinc, Zn	mg/kg	2	240	220	31	8
SE195215.019	LB178576.024	Arsenic, As	mg/kg	1	3	3	63	11
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	14	12	34	19
		Copper, Cu	mg/kg	0.5	20	22	32	8
		Nickel, Ni	mg/kg	0.5	14	13	34	13
		Lead, Pb	mg/kg	1	73	62	31	17
		Zinc, Zn	mg/kg	2	78	69	33	12
SE195216.008	LB178578.014	Copper, Cu	mg/kg	0.5	110	73	31	37 ②
SE195218.005	LB178578.021	Arsenic, As	mg/kg	1	2	2	79	2
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.3	4.1	5.5	40	29
		Copper, Cu	mg/kg	0.5	9.0	14	34	40 ②
		Nickel, Ni	mg/kg	0.5	2.5	2.8	49	11
		Lead, Pb	mg/kg	1	2	3	73	18
		Zinc, Zn	mg/kg	2	10	8	52	17

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195251.001	LB178403.014	Arsenic, As	µg/L	1	<1	<1	176	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	156	0
		Copper, Cu	µg/L	1	7	7	29	2
		Lead, Pb	µg/L	1	4	4	43	3
		Zinc, Zn	µg/L	5	120	120	19	1
SE195252.005	LB178403.017	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	1	1	93	2
		Lead, Pb	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	<5	<5	141	0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195215.010	LB178435.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	55	49	117	12
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE195215.020	LB178435.028		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195215.020	LB178435.028	TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195253.076	LB178412.018		TRH C10-C14	µg/L	50	0	0	200	0
			TRH C15-C28	µg/L	200	0	0	200	0
			TRH C29-C36	µg/L	200	0	0	200	0
			TRH C37-C40	µg/L	200	0	0	200	0
			TRH C10-C36	µg/L	450	0	0	200	0
			TRH C10-C40	µg/L	650	0	0	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	0	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	0	0	200	0
			TRH >C16-C34 (F3)	µg/L	500	0	0	200	0
			TRH >C34-C40 (F4)	µg/L	500	0	0	200	0

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195215.010	LB178428.015	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	5.0	50	10
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.5	4.5	50	1
			d8-toluene (Surrogate)	mg/kg	-	4.3	4.5	50	3
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.6	3.6	50	1
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0
SE195215.020	LB178428.029	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene	mg/kg	0.1	<0.1	<0.1	163	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	4.7	50	3
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.0	4.1	50	2
			d8-toluene (Surrogate)	mg/kg	-	3.9	4.1	50	3
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.2	3.4	50	5
		Totals	Total Xylenes	mg/kg	0.3	<0.3	<0.3	200	0
			Total BTEX	mg/kg	0.6	<0.6	<0.6	200	0

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195146.001	LB178418.018	Monocyclic	Benzene	µg/L	0.5	<0.5	0.03	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	0.07	200	0
			Ethylbenzene	µg/L	0.5	<0.5	0.03	200	0
			m/p-xylene	µg/L	1	<1	0.04	200	0
			o-xylene	µg/L	0.5	<0.5	0.02	200	0
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	0.31	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	6.7	5.08	30	28
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.7	4.76	30	19
			d8-toluene (Surrogate)	µg/L	-	5.4	4.72	30	13
			Bromofluorobenzene (Surrogate)	µg/L	-	3.9	3.98	30	1
SE195160.001	LB178418.019	Monocyclic	Benzene	µg/L	0.5	<0.5	0.04	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	0.11	200	0
			Ethylbenzene	µg/L	0.5	<0.5	0.03	200	0
			m/p-xylene	µg/L	1	<1	0.13	200	0
			o-xylene	µg/L	0.5	<0.5	0.06	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195160.001	LB178418.019	Polycyclic	Naphthalene	µg/L	0.5	<0.5	0.34	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.7	5.16	30	9
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.6	5.95	30	6
			d8-toluene (Surrogate)	µg/L	-	5.3	5.17	30	2
			Bromofluorobenzene (Surrogate)	µg/L	-	4.2	4.19	30	1

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195215.010	LB178428.014		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	5.0	30	10
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.5	4.5	30	1
			d8-toluene (Surrogate)	mg/kg	-	4.3	4.5	30	3
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.6	3.6	30	1
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE195215.020	LB178428.028		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.5	4.7	30	3
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.0	4.1	30	2
			d8-toluene (Surrogate)	mg/kg	-	3.9	4.1	30	3
			Bromofluorobenzene (Surrogate)	mg/kg	-	3.2	3.4	30	5
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195146.001	LB178418.018	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	6.7	5.08	30	28
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.7	4.76	30	19
			d8-toluene (Surrogate)	µg/L	-	5.4	4.72	30	13
			Bromofluorobenzene (Surrogate)	µg/L	-	3.9	3.98	30	1
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.03	200	0
SE195160.001	LB178418.019		TRH C6-C10	µg/L	50	<50	0	200	0
			TRH C6-C9	µg/L	40	<40	0	200	0
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	5.7	5.16	30	9
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.6	5.95	30	6
			d8-toluene (Surrogate)	µg/L	-	5.3	5.17	30	2
			Bromofluorobenzene (Surrogate)	µg/L	-	4.2	4.19	30	1
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.04	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-0.37	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB178584.002	Mercury	mg/kg	0.05	0.21	0.2	70 - 130	103
LB178586.002	Mercury	mg/kg	0.05	0.22	0.2	70 - 130	110

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB178435.002		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	88
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	90
		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	80
		Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	89
		Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	86
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	77
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.14	0.15	40 - 130	96

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB178435.002		Dichlorvos	mg/kg	0.5	1.8	2	60 - 140	91
		Diazinon (Dimpylate)	mg/kg	0.5	2.4	2	60 - 140	120
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.4	2	60 - 140	121
		Ethion	mg/kg	0.2	2.2	2	60 - 140	110
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	86
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	106

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB178435.002		Naphthalene	mg/kg	0.1	4.3	4	60 - 140	107
		Acenaphthylene	mg/kg	0.1	4.5	4	60 - 140	112
		Acenaphthene	mg/kg	0.1	4.6	4	60 - 140	114
		Phenanthrene	mg/kg	0.1	4.6	4	60 - 140	116
		Anthracene	mg/kg	0.1	4.3	4	60 - 140	109
		Fluoranthene	mg/kg	0.1	4.2	4	60 - 140	106
		Pyrene	mg/kg	0.1	4.7	4	60 - 140	118
		Benzo(a)pyrene	mg/kg	0.1	4.8	4	60 - 140	119
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	106
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	86
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	106

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB178435.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	107

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB178576.002	Arsenic, As	mg/kg	1	320	336.32	79 - 120	95
	Cadmium, Cd	mg/kg	0.3	420	416.6	69 - 131	102
	Chromium, Cr	mg/kg	0.3	32	35.2	80 - 120	91
	Copper, Cu	mg/kg	0.5	300	370.46	80 - 120	81
	Nickel, Ni	mg/kg	0.5	170	210.88	79 - 120	82
	Lead, Pb	mg/kg	1	88	107.87	79 - 120	81
	Zinc, Zn	mg/kg	2	270	301.27	80 - 121	89
LB178578.002	Arsenic, As	mg/kg	1	340	336.32	79 - 120	100
	Cadmium, Cd	mg/kg	0.3	430	416.6	69 - 131	103
	Chromium, Cr	mg/kg	0.3	28	35.2	80 - 120	80
	Copper, Cu	mg/kg	0.5	300	370.46	80 - 120	81
	Nickel, Ni	mg/kg	0.5	170	210.88	79 - 120	81
	Lead, Pb	mg/kg	1	91	107.87	79 - 120	84
	Zinc, Zn	mg/kg	2	270	301.27	80 - 121	91

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Trace Metals (Dissolved) in Water by ICPMS (continued)

Method: ME-(AU)-[ENV]AN318

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB178403.002		Arsenic, As	µg/L	1	20	20	80 - 120	101
		Cadmium, Cd	µg/L	0.1	21	20	80 - 120	103
		Chromium, Cr	µg/L	1	21	20	80 - 120	107
		Copper, Cu	µg/L	1	22	20	80 - 120	109
		Lead, Pb	µg/L	1	20	20	80 - 120	99
		Nickel, Ni	µg/L	1	21	20	80 - 120	106
		Zinc, Zn	µg/L	5	23	20	80 - 120	114

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB178435.002		TRH C10-C14	mg/kg	20	43	40	60 - 140	108
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	93
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	75
	TRH F Bands	TRH >C10-C16	mg/kg	25	42	40	60 - 140	105
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	85
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	75

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB178412.002		TRH C10-C14	µg/L	50	960	1200	60 - 140	80
		TRH C15-C28	µg/L	200	1200	1200	60 - 140	98
		TRH C29-C36	µg/L	200	1400	1200	60 - 140	116
	TRH F Bands	TRH >C10-C16	µg/L	60	1100	1200	60 - 140	88
		TRH >C16-C34 (F3)	µg/L	500	1300	1200	60 - 140	109
		TRH >C34-C40 (F4)	µg/L	500	730	600	60 - 140	121

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB178428.002	Halogenated	1,1-dichloroethene	mg/kg	0.1	2.5	2.56	60 - 140	96
	Aliphatics	1,2-dichloroethane	mg/kg	0.1	3.0	2.56	60 - 140	119
		Trichloroethene (Trichloroethylene -TCE)	mg/kg	0.1	1.8	2.56	60 - 140	72
	Halogenated	Chlorobenzene	mg/kg	0.1	2.8	2.56	60 - 140	110
	Monocyclic	Benzene	mg/kg	0.1	2.1	2.9	60 - 140	71
	Aromatic	Toluene	mg/kg	0.1	2.1	2.9	60 - 140	73
		Ethylbenzene	mg/kg	0.1	1.9	2.9	60 - 140	67
		m/p-xylene	mg/kg	0.2	4.8	5.8	60 - 140	83
		o-xylene	mg/kg	0.1	2.1	2.9	60 - 140	73
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.0	5	60 - 140	100
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.1	5	60 - 140	81
		d8-toluene (Surrogate)	mg/kg	-	4.5	5	60 - 140	90
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.9	5	60 - 140	97
	Trihalomethan	Chloroform	mg/kg	0.1	2.7	2.56	60 - 140	106

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB178418.002	Monocyclic	Benzene	µg/L	0.5	52	45.45	60 - 140	115
	Aromatic	Toluene	µg/L	0.5	55	45.45	60 - 140	122
		Ethylbenzene	µg/L	0.5	54	45.45	60 - 140	119
		m/p-xylene	µg/L	1	110	90.9	60 - 140	119
		o-xylene	µg/L	0.5	53	45.45	60 - 140	118
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.5	5	60 - 140	89
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.4	5	60 - 140	88
		d8-toluene (Surrogate)	µg/L	-	4.9	5	60 - 140	98
		Bromofluorobenzene (Surrogate)	µg/L	-	5.5	5	60 - 140	109

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB178428.002		TRH C6-C10	mg/kg	25	<25	24.65	60 - 140	91
		TRH C6-C9	mg/kg	20	22	23.2	60 - 140	94
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.0	5	60 - 140	100
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	4.1	5	60 - 140	81
		d8-toluene (Surrogate)	mg/kg	-	4.5	5	60 - 140	90
		Bromofluorobenzene (Surrogate)	mg/kg	-	4.9	5	60 - 140	97

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Volatile Petroleum Hydrocarbons in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB178428.002	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140	131

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB178418.002		TRH C6-C10	µg/L	50	920	946.63	60 - 140	97
		TRH C6-C9	µg/L	40	760	818.71	60 - 140	92
	Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.5	5	60 - 140	89
		d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.4	5	60 - 140	88
		d8-toluene (Surrogate)	µg/L	-	4.9	5	60 - 140	98
		Bromofluorobenzene (Surrogate)	µg/L	-	5.5	5	60 - 140	109
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	590	639.67	60 - 140	93

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195215.001	LB178584.004	Mercury	mg/kg	0.05	0.26	<0.05	0.2	113
SE195215.020	LB178586.004	Mercury	mg/kg	0.05	0.21	<0.05	0.2	100

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195215.001	LB178435.031		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	100
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	100
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	89
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Dieldrin	mg/kg	0.2	<0.2	<0.2	0.2	99
			Endrin	mg/kg	0.2	<0.2	<0.2	0.2	95
			o,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT	mg/kg	0.1	<0.1	<0.1	-	-
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	85
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin Ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	mg/kg	0.1	<0.1	<0.1	-	-
			Total CLP OC Pesticides	mg/kg	1	1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	-	102

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195215.001	LB178435.031		Dichlorvos	mg/kg	0.5	2.0	<0.5	2	102
			Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
			Diazinon (Dimpylate)	mg/kg	0.5	2.1	<0.5	2	107
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
			Malathion	mg/kg	0.2	<0.2	<0.2	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.0	<0.2	2	98
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
			Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
			Ethion	mg/kg	0.2	2.4	<0.2	2	119
			Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
			Total OP Pesticides*	mg/kg	1.7	8.6	<1.7	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	84
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	102

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195215.001	LB178435.031	Naphthalene	mg/kg	0.1	4.6	<0.1	4	114
		2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
		1-methylnaphthalene	mg/kg	0.1	0.1	<0.1	-	-
		Acenaphthylene	mg/kg	0.1	4.9	<0.1	4	123
		Acenaphthene	mg/kg	0.1	4.9	<0.1	4	121
		Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
		Phenanthrene	mg/kg	0.1	4.5	0.1	4	109

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195215.001	LB178435.031		Anthracene	mg/kg	0.1	4.7	<0.1	4	118
			Fluoranthene	mg/kg	0.1	4.5	<0.1	4	110
			Pyrene	mg/kg	0.1	4.1	<0.1	4	102
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Chrysene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(a)pyrene	mg/kg	0.1	4.9	<0.1	4	122
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	4.9	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	5.1	<0.3	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	5.0	<0.2	-	-
			Total PAH (18)	mg/kg	0.8	37	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.6	0.5	-	110
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.4	-	84
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	102

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195215.001	LB178435.031		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1260	mg/kg	0.2	0.5	<0.2	0.4	114
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0	0	-	100

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195215.001	LB178576.004	Arsenic, As	mg/kg	1	48	4	50	89
		Cadmium, Cd	mg/kg	0.3	44	<0.3	50	89
		Chromium, Cr	mg/kg	0.3	52	6.4	50	91
		Copper, Cu	mg/kg	0.5	80	25	50	110
		Nickel, Ni	mg/kg	0.5	65	13	50	105
		Lead, Pb	mg/kg	1	55	10	50	92
		Zinc, Zn	mg/kg	2	120	55	50	127
SE195215.020	LB178578.004	Arsenic, As	mg/kg	1	50	6	50	87
		Cadmium, Cd	mg/kg	0.3	46	<0.3	50	93
		Chromium, Cr	mg/kg	0.3	55	9.8	50	91
		Copper, Cu	mg/kg	0.5	62	16	50	91
		Nickel, Ni	mg/kg	0.5	48	3.5	50	89
		Lead, Pb	mg/kg	1	56	13	50	86
		Zinc, Zn	mg/kg	2	63	22	50	81

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195215.022	LB178403.004	Arsenic, As	µg/L	1	21	<1	20	104
		Cadmium, Cd	µg/L	0.1	20	<0.1	20	102
		Chromium, Cr	µg/L	1	22	<1	20	108
		Copper, Cu	µg/L	1	22	<1	20	109
		Lead, Pb	µg/L	1	19	<1	20	93
		Nickel, Ni	µg/L	1	21	<1	20	106
		Zinc, Zn	µg/L	5	24	<5	20	111

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number	Parameter	Units	LOR

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195215.001	LB178435.031		TRH C10-C14	mg/kg	20	42	<20	40	105
			TRH C15-C28	mg/kg	45	46	<45	40	115
			TRH C29-C36	mg/kg	45	<45	<45	40	70
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	<110	<110	-	-
			TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	43	<25	40	108
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	43	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	100
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOCs in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195215.022	LB178418.020	Monocyclic	Benzene	µg/L	0.5	46	<0.5	45.45	102
		Aromatic	Toluene	µg/L	0.5	48	<0.5	45.45	106
			Ethylbenzene	µg/L	0.5	47	<0.5	45.45	103
			m/p-xylene	µg/L	1	97	<1	90.9	107
			o-xylene	µg/L	0.5	47	<0.5	45.45	104
		Polycyclic	Naphthalene	µg/L	0.5	50	<0.5	-	-
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.2	5.5	-	84
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.3	5.1	-	86
			d8-toluene (Surrogate)	µg/L	-	4.9	5.2	-	98
			Bromofluorobenzene (Surrogate)	µg/L	-	5.4	4.0	-	107

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195215.001	LB178428.032		TRH C6-C10	mg/kg	25	<25	<25	24.65	85
			TRH C6-C9	mg/kg	20	20	<20	23.2	86
		Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	4.4	4.9	-	88
			d4-1,2-dichloroethane (Surrogate)	mg/kg	-	3.6	4.0	-	72
			d8-toluene (Surrogate)	mg/kg	-	3.9	4.2	-	78
			Bromofluorobenzene (Surrogate)	mg/kg	-	4.8	3.7	-	95
		VPH F	Benzene (F0)	mg/kg	0.1	1.9	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	7.25	120

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195215.022	LB178418.020		TRH C6-C10	µg/L	50	810	<50	946.63	85
			TRH C6-C9	µg/L	40	690	<40	818.71	84
		Surrogates	Dibromofluoromethane (Surrogate)	µg/L	-	4.2	5.5	-	84
			d4-1,2-dichloroethane (Surrogate)	µg/L	-	4.3	5.1	-	86
			d8-toluene (Surrogate)	µg/L	-	4.9	5.2	-	98
			Bromofluorobenzene (Surrogate)	µg/L	-	5.4	4.0	-	107
		VPH F	Benzene (F0)	µg/L	0.5	46	<0.5	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	520	<50	639.67	81

MATRIX SPIKE DUPLICATES

SE195215 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

QC Sample	Sample Number	Parameter	Units	LOR

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client only. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

This test report shall not be reproduced, except in full.

STATEMENT OF QA/QC PERFORMANCE

SE195781 R0

CLIENT DETAILS

Contact	Lan Ye
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	Lan.ye@eiaustralia.com.au
Project	**E24273 Castlereagh & Bathurst Liverpool**
Order Number	**E24273**
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE195781 R0**
Date Received	26 Jul 2019
Date Reported	02 Aug 2019

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

HOLDING TIME SUMMARY

SE195781 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DP_BH2-1	SE195781.001	LB179654	26 Jul 2019	26 Jul 2019	23 Aug 2019	30 Jul 2019	23 Aug 2019	30 Jul 2019
DP_BH4-1	SE195781.002	LB179654	26 Jul 2019	26 Jul 2019	23 Aug 2019	30 Jul 2019	23 Aug 2019	30 Jul 2019

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DP_BH2-1	SE195781.001	LB179579	26 Jul 2019	26 Jul 2019	02 Aug 2019	29 Jul 2019	07 Sep 2019	02 Aug 2019
DP_BH4-1	SE195781.002	LB179579	26 Jul 2019	26 Jul 2019	02 Aug 2019	29 Jul 2019	07 Sep 2019	02 Aug 2019

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DP_BH2-1	SE195781.001	LB179502	26 Jul 2019	26 Jul 2019	22 Jan 2020	29 Jul 2019	22 Jan 2020	29 Jul 2019
DP_BH4-1	SE195781.002	LB179502	26 Jul 2019	26 Jul 2019	22 Jan 2020	29 Jul 2019	22 Jan 2020	29 Jul 2019

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DP_BH2-1	SE195781.001	LB179579	26 Jul 2019	26 Jul 2019	02 Aug 2019	29 Jul 2019	07 Sep 2019	02 Aug 2019
DP_BH4-1	SE195781.002	LB179579	26 Jul 2019	26 Jul 2019	02 Aug 2019	29 Jul 2019	07 Sep 2019	02 Aug 2019

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DP_BH2-1	SE195781.001	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019
DP_BH4-1	SE195781.002	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DP_BH2-1	SE195781.001	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019
DP_BH4-1	SE195781.002	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Water — Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	DP_BH2-1	SE195781.001	%	40 - 130%	70
	DP_BH4-1	SE195781.002	%	40 - 130%	70
d14-p-terphenyl (Surrogate)	DP_BH2-1	SE195781.001	%	40 - 130%	82
	DP_BH4-1	SE195781.002	%	40 - 130%	86
d5-nitrobenzene (Surrogate)	DP_BH2-1	SE195781.001	%	40 - 130%	64
	DP_BH4-1	SE195781.002	%	40 - 130%	66

VOCs in Water — Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	DP_BH2-1	SE195781.001	%	40 - 130%	96
	DP_BH4-1	SE195781.002	%	40 - 130%	91
d4-1,2-dichloroethane (Surrogate)	DP_BH2-1	SE195781.001	%	40 - 130%	124
	DP_BH4-1	SE195781.002	%	40 - 130%	118
d8-toluene (Surrogate)	DP_BH2-1	SE195781.001	%	40 - 130%	105
	DP_BH4-1	SE195781.002	%	40 - 130%	93

Volatile Petroleum Hydrocarbons in Water — Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	DP_BH2-1	SE195781.001	%	40 - 130%	96
	DP_BH4-1	SE195781.002	%	40 - 130%	91
d4-1,2-dichloroethane (Surrogate)	DP_BH2-1	SE195781.001	%	60 - 130%	124
	DP_BH4-1	SE195781.002	%	60 - 130%	118
d8-toluene (Surrogate)	DP_BH2-1	SE195781.001	%	40 - 130%	105
	DP_BH4-1	SE195781.002	%	40 - 130%	93

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB179654.001	Mercury	mg/L	0.0001	0.00788

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB179579.001		Naphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Acenaphthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
		Dibenzo(ah)anthracene	µg/L	0.1	<0.1
		Benzo(ghi)perylene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	76
		2-fluorobiphenyl (Surrogate)	%	-	72
		d14-p-terphenyl (Surrogate)	%	-	84

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB179502.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB179579.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB179976.001	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5
		1,2-dichloropropane	µg/L	0.5	<0.5
		cis-1,3-dichloropropene	µg/L	0.5	<0.5
		trans-1,3-dichloropropene	µg/L	0.5	<0.5
		1,2-dibromoethane (EDB)	µg/L	0.5	<0.5
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5
		Chloromethane	µg/L	5	<5
		Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3
		Bromomethane	µg/L	10	<10
		Chloroethane	µg/L	5	<5
		Trichlorofluoromethane	µg/L	1	<1
		Iodomethane	µg/L	5	<5
		1,1-dichloroethene	µg/L	0.5	<0.5
		Dichloromethane (Methylene chloride)	µg/L	5	<5
		Allyl chloride	µg/L	2	<2
		trans-1,2-dichloroethene	µg/L	0.5	<0.5
		1,1-dichloroethane	µg/L	0.5	<0.5
		cis-1,2-dichloroethene	µg/L	0.5	<0.5

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB179976.001	Halogenated Aliphatics	Bromochloromethane	µg/L	0.5	<0.5
		1,2-dichloroethane	µg/L	0.5	<0.5
		1,1,1-trichloroethane	µg/L	0.5	<0.5
		1,1-dichloropropene	µg/L	0.5	<0.5
		Carbon tetrachloride	µg/L	0.5	<0.5
		Dibromomethane	µg/L	0.5	<0.5
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5
		1,1,2-trichloroethane	µg/L	0.5	<0.5
		1,3-dichloropropane	µg/L	0.5	<0.5
		Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5
		1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5
		cis-1,4-dichloro-2-butene	µg/L	1	<1
		1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5
		1,2,3-trichloropropane	µg/L	0.5	<0.5
		trans-1,4-dichloro-2-butene	µg/L	1	<1
		1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5
		Hexachlorobutadiene	µg/L	0.5	<0.5
	Halogenated Aromatics	Chlorobenzene	µg/L	0.5	<0.5
		Bromobenzene	µg/L	0.5	<0.5
		2-chlorotoluene	µg/L	0.5	<0.5
		4-chlorotoluene	µg/L	0.5	<0.5
		1,3-dichlorobenzene	µg/L	0.5	<0.5
		1,4-dichlorobenzene	µg/L	0.3	<0.3
		1,2-dichlorobenzene	µg/L	0.5	<0.5
		1,2,4-trichlorobenzene	µg/L	0.5	<0.5
		1,2,3-trichlorobenzene	µg/L	0.5	<0.5
	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
		Styrene (Vinyl benzene)	µg/L	0.5	<0.5
		Isopropylbenzene (Cumene)	µg/L	0.5	<0.5
		n-propylbenzene	µg/L	0.5	<0.5
		1,3,5-trimethylbenzene	µg/L	0.5	<0.5
		tert-butylbenzene	µg/L	0.5	<0.5
		1,2,4-trimethylbenzene	µg/L	0.5	<0.5
		sec-butylbenzene	µg/L	0.5	<0.5
		p-isopropyltoluene	µg/L	0.5	<0.5
		n-butylbenzene	µg/L	0.5	<0.5
	Nitrogenous Compounds	Acrylonitrile	µg/L	0.5	<0.5
	Oxygenated Compounds	Acetone (2-propanone)	µg/L	10	<10
		MtBE (Methyl-tert-butyl ether)	µg/L	2	<2
		Vinyl acetate	µg/L	10	<10
		MEK (2-butanone)	µg/L	10	<10
		MIBK (4-methyl-2-pentanone)	µg/L	5	<5
		2-hexanone (MBK)	µg/L	5	<5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	
	Sulphonated	Carbon disulfide	µg/L	2	<2
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	114
		d8-toluene (Surrogate)	%	-	103
		Bromofluorobenzene (Surrogate)	%	-	95
	Trihalomethanes	Chloroform (THM)	µg/L	0.5	<0.5
		Bromodichloromethane (THM)	µg/L	0.5	<0.5
		Dibromochloromethane (THM)	µg/L	0.5	<0.5
		Bromoform (THM)	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Volatile Petroleum Hydrocarbons in Water (continued) — **Method: ME-(AU)-[ENV]AN433**

Sample Number		Parameter	Units	LOR	Result
LB179976.001		TRH C6-C9	µg/L	40	<40
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	114
		d8-toluene (Surrogate)	%	-	103
		Bromofluorobenzene (Surrogate)	%	-	95

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195780.001	LB179654.011	Mercury	µg/L	0.0001	<0.00005	-0.0226	200	0

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195782.002	LB179579.019		Naphthalene	µg/L	0.1	0	0	200	0
			2-methylnaphthalene	µg/L	0.1	0	0	200	0
			1-methylnaphthalene	µg/L	0.1	0	0	200	0
			Acenaphthylene	µg/L	0.1	0	0	200	0
			Acenaphthene	µg/L	0.1	0	0	200	0
			Fluorene	µg/L	0.1	0	0	200	0
			Phenanthrene	µg/L	0.1	0.03	0.03	200	0
			Anthracene	µg/L	0.1	0.03	0.03	200	0
			Fluoranthene	µg/L	0.1	0	0	200	0
			Pyrene	µg/L	0.1	0.01	0.01	200	0
			Benzo(a)anthracene	µg/L	0.1	0.08	0.06	173	0
			Chrysene	µg/L	0.1	0.06	0.05	200	0
			Benzo(b&j)fluoranthene	µg/L	0.1	0.02	0	200	0
			Benzo(k)fluoranthene	µg/L	0.1	0.01	0	200	0
			Benzo(a)pyrene	µg/L	0.1	0.04	0.01	200	0
			Indeno(1,2,3-cd)pyrene	µg/L	0.1	0	0	200	0
			Dibenzo(ah)anthracene	µg/L	0.1	0	0	200	0
			Benzo(ghi)perylene	µg/L	0.1	0	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.37	0.34	30	8
			2-fluorobiphenyl (Surrogate)	µg/L	-	0.41	0.38	30	8
			d14-p-terphenyl (Surrogate)	µg/L	-	0.49	0.43	30	13

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195783.001	LB179502.014	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	<1	1	112	7
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	22	23	37	3
SE195785.001	LB179502.020	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	1	1	91	2
		Lead, Pb	µg/L	1	1	1	106	3
		Nickel, Ni	µg/L	1	<1	1	120	1
		Zinc, Zn	µg/L	5	5	5	110	7

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195782.002	LB179579.019		TRH C10-C14	µg/L	50	0	0	200	0
			TRH C15-C28	µg/L	200	0	0	200	0
			TRH C29-C36	µg/L	200	0	0	200	0
			TRH C37-C40	µg/L	200	0	0	200	0
			TRH C10-C36	µg/L	450	0	0	200	0
			TRH C10-C40	µg/L	650	0	0	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	0	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	-0.2914294911	0	200	0
			TRH >C16-C34 (F3)	µg/L	500	0	0	200	0
			TRH >C34-C40 (F4)	µg/L	500	0	0	200	0

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate	Parameter	Units	LOR

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOCs in Water (continued) — **Method: ME-(AU)-[ENV]AN433**

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195781.001	LB179976.025	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5	0	200	0
			1,2-dichloropropane	µg/L	0.5	<0.5	0	200	0
			cis-1,3-dichloropropene	µg/L	0.5	<0.5	0	200	0
			trans-1,3-dichloropropene	µg/L	0.5	<0.5	0	200	0
			1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	0	200	0
		Halogenated	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	0	200	0
		Aliphatics	Chloromethane	µg/L	5	<5	0	200	0
			Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	0	200	0
			Bromomethane	µg/L	10	<10	0	200	0
			Chloroethane	µg/L	5	<5	0	200	0
			Trichlorofluoromethane	µg/L	1	<1	0	200	0
			Iodomethane	µg/L	5	<5	0	200	0
			1,1-dichloroethene	µg/L	0.5	<0.5	0	200	0
			Dichloromethane (Methylene chloride)	µg/L	5	<5	0	200	0
			Allyl chloride	µg/L	2	<2	0	200	0
			trans-1,2-dichloroethene	µg/L	0.5	<0.5	0	200	0
			1,1-dichloroethane	µg/L	0.5	<0.5	0	200	0
			cis-1,2-dichloroethene	µg/L	0.5	<0.5	0	200	0
			Bromochloromethane	µg/L	0.5	<0.5	0	200	0
			1,2-dichloroethane	µg/L	0.5	<0.5	0	200	0
			1,1,1-trichloroethane	µg/L	0.5	<0.5	0	200	0
			1,1-dichloropropene	µg/L	0.5	<0.5	0	200	0
			Carbon tetrachloride	µg/L	0.5	<0.5	0	200	0
			Dibromomethane	µg/L	0.5	<0.5	0	200	0
			Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	0	200	0
			1,1,2-trichloroethane	µg/L	0.5	<0.5	0	200	0
			1,3-dichloropropane	µg/L	0.5	<0.5	0	200	0
			Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	0	200	0
			1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	0	200	0
			cis-1,4-dichloro-2-butene	µg/L	1	<1	0	200	0
			1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	0	200	0
			1,2,3-trichloropropane	µg/L	0.5	<0.5	0	200	0
			trans-1,4-dichloro-2-butene	µg/L	1	<1	0	200	0
			1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	0	200	0
			Hexachlorobutadiene	µg/L	0.5	<0.5	0	200	0
		Halogenated	Chlorobenzene	µg/L	0.5	<0.5	0	200	0
		Aromatics	Bromobenzene	µg/L	0.5	<0.5	0	200	0
			2-chlorotoluene	µg/L	0.5	<0.5	0	200	0
			4-chlorotoluene	µg/L	0.5	<0.5	0	200	0
			1,3-dichlorobenzene	µg/L	0.5	<0.5	0	200	0
			1,4-dichlorobenzene	µg/L	0.3	<0.3	0	200	0
			1,2-dichlorobenzene	µg/L	0.5	<0.5	0	200	0
			1,2,4-trichlorobenzene	µg/L	0.5	<0.5	0	200	0
			1,2,3-trichlorobenzene	µg/L	0.5	<0.5	0	200	0
		Monocyclic	Benzene	µg/L	0.5	<0.5	0.0357472427	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	0.0572142541	200	0
			Ethylbenzene	µg/L	0.5	<0.5	0.0212509195	200	0
			m/p-xylene	µg/L	1	<1	0.0476989460	200	0
			o-xylene	µg/L	0.5	<0.5	0.0193432980	200	0
			Styrene (Vinyl benzene)	µg/L	0.5	<0.5	0	200	0
			Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	0	200	0
			n-propylbenzene	µg/L	0.5	<0.5	0	200	0
			1,3,5-trimethylbenzene	µg/L	0.5	<0.5	0	200	0
			tert-butylbenzene	µg/L	0.5	<0.5	0	200	0
			1,2,4-trimethylbenzene	µg/L	0.5	<0.5	0	200	0
			sec-butylbenzene	µg/L	0.5	<0.5	0	200	0
			p-isopropyltoluene	µg/L	0.5	<0.5	0	200	0
			n-butylbenzene	µg/L	0.5	<0.5	0	200	0
		Nitrogenous	Acrylonitrile	µg/L	0.5	<0.5	0	200	0
		Oxygenated	Acetone (2-propanone)	µg/L	10	<10	0	200	0
		Compounds	MtBE (Methyl-tert-butyl ether)	µg/L	2	<2	0	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195781.001	LB179976.025	Oxygenated	Vinyl acetate	µg/L	10	<10	0	200	0
		Compounds	MEK (2-butanone)	µg/L	10	<10	0	200	0
			MIBK (4-methyl-2-pentanone)	µg/L	5	<5	0	200	0
			2-hexanone (MBK)	µg/L	5	<5	0	200	0
		Polycyclic	Naphthalene	µg/L	0.5	1.1	0.5829074944	90	59
		Sulphonated	Carbon disulfide	µg/L	2	<2	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.2	5.8796374742	30	5
			d8-toluene (Surrogate)	µg/L	-	5.3	5.0958307866	30	3
			Bromofluorobenzene (Surrogate)	µg/L	-	4.8	4.3986138301	30	9
		Trihalomethan	Chloroform (THM)	µg/L	0.5	<0.5	0	200	0
		es	Bromodichloromethane (THM)	µg/L	0.5	<0.5	0	200	0
			Dibromochloromethane (THM)	µg/L	0.5	<0.5	0	200	0
			Bromoform (THM)	µg/L	0.5	<0.5	0	200	0
SE195804.014	LB179976.026	Monocyclic	Benzene	µg/L	0.5	0.012236610	60.011801299	1 200	0
		Aromatic	Toluene	µg/L	0.5	0.055332092	50.064544180	8 200	0
			Ethylbenzene	µg/L	0.5	0.017798870	10.023961763	3 200	0
			m/p-xylene	µg/L	1	0.065196621	00.069600312	5 200	0
			o-xylene	µg/L	0.5	0.018761302	60.024586761	5 200	0
		Polycyclic	Naphthalene	µg/L	0.5	0.129096936	60.237203692	5 200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.030012482	95.740073272	3 30	5
			d8-toluene (Surrogate)	µg/L	-	4.951730088	85.323743146	4 30	7
			Bromofluorobenzene (Surrogate)	µg/L	-	4.872484163	14.566092467	8 30	6

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195781.001	LB179976.025		TRH C6-C10	µg/L	50	<50	0	200	0
			TRH C6-C9	µg/L	40	<40	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.2	5.8796374742	30	5
			d8-toluene (Surrogate)	µg/L	-	5.3	5.0958307866	30	3
			Bromofluorobenzene (Surrogate)	µg/L	-	4.8	4.3986138301	30	9
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.0357472427	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-0.1812546606	200	0
SE195804.014	LB179976.026		TRH C6-C10	µg/L	50	0	0	200	0
			TRH C6-C9	µg/L	40	0	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.030012482	95.740073272	3 30	5
			d8-toluene (Surrogate)	µg/L	-	4.951730088	85.323743146	4 30	7
			Bromofluorobenzene (Surrogate)	µg/L	-	4.872484163	14.566092467	8 30	6
		VPH F Bands	Benzene (F0)	µg/L	0.5	0.012236610	60.011801299	1 200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	-0.169325497	00.194494317	4 200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB179579.002		Naphthalene	µg/L	0.1	31	40	60 - 140	77
		Acenaphthylene	µg/L	0.1	35	40	60 - 140	88
		Acenaphthene	µg/L	0.1	30	40	60 - 140	74
		Phenanthrene	µg/L	0.1	33	40	60 - 140	84
		Anthracene	µg/L	0.1	32	40	60 - 140	80
		Fluoranthene	µg/L	0.1	31	40	60 - 140	77
		Pyrene	µg/L	0.1	33	40	60 - 140	83
		Benzo(a)pyrene	µg/L	0.1	34	40	60 - 140	85
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.4	0.5	40 - 130	78
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	76
		d14-p-terphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	80

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB179502.002		Arsenic, As	µg/L	1	19	20	80 - 120	97
		Cadmium, Cd	µg/L	0.1	19	20	80 - 120	97
		Chromium, Cr	µg/L	1	21	20	80 - 120	106
		Copper, Cu	µg/L	1	20	20	80 - 120	101
		Lead, Pb	µg/L	1	19	20	80 - 120	95
		Nickel, Ni	µg/L	1	20	20	80 - 120	100
		Zinc, Zn	µg/L	5	20	20	80 - 120	99

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB179579.002		TRH C10-C14	µg/L	50	960	1200	60 - 140	80
		TRH C15-C28	µg/L	200	1200	1200	60 - 140	98
		TRH C29-C36	µg/L	200	1400	1200	60 - 140	116
	TRH F Bands	TRH >C10-C16	µg/L	60	1100	1200	60 - 140	88
		TRH >C16-C34 (F3)	µg/L	500	1300	1200	60 - 140	109
		TRH >C34-C40 (F4)	µg/L	500	730	600	60 - 140	121

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB179976.002	Halogenated	1,1-dichloroethene	µg/L	0.5	58	45.45	60 - 140	127
	Aliphatics	1,2-dichloroethane	µg/L	0.5	58	45.45	60 - 140	127
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	44	45.45	60 - 140	96
	Halogenated	Chlorobenzene	µg/L	0.5	54	45.45	60 - 140	118
	Monocyclic	Benzene	µg/L	0.5	51	45.45	60 - 140	113
	Aromatic	Toluene	µg/L	0.5	55	45.45	60 - 140	120
		Ethylbenzene	µg/L	0.5	51	45.45	60 - 140	111
		m/p-xylene	µg/L	1	110	90.9	60 - 140	119
		o-xylene	µg/L	0.5	52	45.45	60 - 140	115
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.9	5	60 - 140	117
		d8-toluene (Surrogate)	µg/L	-	4.5	5	60 - 140	90
		Bromofluorobenzene (Surrogate)	µg/L	-	4.8	5	60 - 140	96
	Trihalomethan	Chloroform (THM)	µg/L	0.5	54	45.45	60 - 140	119

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB179976.023		TRH C6-C10	µg/L	50	NA	946.63	60 - 140	110
		TRH C6-C9	µg/L	40	NA	818.71	60 - 140	104
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	NA	5	60 - 140	105
		d8-toluene (Surrogate)	µg/L	-	NA	5	60 - 140	94
		Bromofluorobenzene (Surrogate)	µg/L	-	NA	5	60 - 140	105
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	NA	639.67	60 - 140	109

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195698.026	LB179502.004	Arsenic, As	µg/L	1	21	<1	20	106
		Cadmium, Cd	µg/L	0.1	20	<0.1	20	101
		Chromium, Cr	µg/L	1	22	<1	20	109
		Copper, Cu	µg/L	1	22	<1	20	109
		Lead, Pb	µg/L	1	19	<1	20	95
		Nickel, Ni	µg/L	1	21	<1	20	104
		Zinc, Zn	µg/L	5	25	<5	20	117

VOCs in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE195782.002	LB179976.027	Halogenated	Dichlorodifluoromethane (CFC-12)	µg/L	5	0	-	-
		Monocyclic	Benzene	µg/L	0.5	0.07929425170	45.45	112
		Aromatic	Toluene	µg/L	0.5	0.02483003177	45.45	97
			Ethylbenzene	µg/L	0.5	0.01224220630	45.45	105
			m/p-xylene	µg/L	1	0.02924625013	90.9	111
			o-xylene	µg/L	0.5	0.01354430275	45.45	107
		Polycyclic	Naphthalene	µg/L	0.5	0.29142949118	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.10069282651	-	94
			d8-toluene (Surrogate)	µg/L	-	5.06136534922	-	89
			Bromofluorobenzene (Surrogate)	µg/L	-	4.85241736880	-	95

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE195782.002	LB179976.027		TRH C6-C10	µg/L	50	0	946.63	93
			TRH C6-C9	µg/L	40	0	818.71	94
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.10069282651	-	94
			d8-toluene (Surrogate)	µg/L	-	5.06136534922	-	89
			Bromofluorobenzene (Surrogate)	µg/L	-	4.85241736880	-	95
		VPH F	Benzene (F0)	µg/L	0.5	0.07929425170	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	-0.15915704267	639.67	92

MATRIX SPIKE DUPLICATES

SE195781 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client only. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

This test report shall not be reproduced, except in full.

STATEMENT OF QA/QC PERFORMANCE

SE195781A R0

CLIENT DETAILS

Contact	Joel Heininger
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	joel.heininger@eiaustralia.com.au
Project	**E24273 Castlereagh&Bathurst Liverpool-Ad**
Order Number	**E24273**
Samples	2

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE195781A R0**
Date Received	01 Aug 2019
Date Reported	06 Aug 2019

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	2 Water
Date documentation received	1/8/19@9:50am	Type of documentation received	Email
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	12.6°C	Sufficient sample for analysis	Yes
Turnaround time requested	Three Days		

HOLDING TIME SUMMARY

SE195781A R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DP_BH2-1	SE195781A.001	LB180076	26 Jul 2019	01 Aug 2019	23 Aug 2019	02 Aug 2019	23 Aug 2019	05 Aug 2019
DP_BH4-1	SE195781A.002	LB180076	26 Jul 2019	01 Aug 2019	23 Aug 2019	02 Aug 2019	23 Aug 2019	05 Aug 2019

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DP_BH2-1	SE195781A.001	LB180007	26 Jul 2019	01 Aug 2019	22 Jan 2020	02 Aug 2019	22 Jan 2020	02 Aug 2019
DP_BH4-1	SE195781A.002	LB180007	26 Jul 2019	01 Aug 2019	22 Jan 2020	02 Aug 2019	22 Jan 2020	02 Aug 2019

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DP_BH2-1	SE195781A.001	LB180015	26 Jul 2019	01 Aug 2019	23 Aug 2019	02 Aug 2019	23 Aug 2019	02 Aug 2019
DP_BH4-1	SE195781A.002	LB180015	26 Jul 2019	01 Aug 2019	23 Aug 2019	02 Aug 2019	23 Aug 2019	02 Aug 2019

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
DP_BH2-1	SE195781A.001	LB180103	26 Jul 2019	01 Aug 2019	22 Jan 2020	05 Aug 2019	22 Jan 2020	05 Aug 2019
DP_BH4-1	SE195781A.002	LB180103	26 Jul 2019	01 Aug 2019	22 Jan 2020	05 Aug 2019	22 Jan 2020	05 Aug 2019

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No surrogates were required for this job.

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result
LB180076.001	Conductivity @ 25 C	µS/cm	2	<2

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Number	Parameter	Units	LOR	Result
LB180007.001	Calcium, Ca	mg/L	0.1	<0.1
	Magnesium, Mg	mg/L	0.1	<0.1

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result
LB180015.001	Total Phenols	mg/L	0.01	<0.01

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB180103.001	Aluminium, Al	µg/L	5	<5

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195982.001	LB180076.014	Conductivity @ 25 C	µS/cm	2	1072.36	1072.02	15	0
SE195982.006	LB180076.020	Conductivity @ 25 C	µS/cm	2	4282.58	4288.8	15	0

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195996.001	LB180103.014	Aluminium, Al	µg/L	5	2.438	2.333	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180076.002	Conductivity @ 25 C	µS/cm	2	290	303	90 - 110	97

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180007.002	Calcium, Ca	mg/L	0.1	1.9	2	80 - 120	95
	Magnesium, Mg	mg/L	0.1	1.9	2	80 - 120	96

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180015.002	Total Phenols	mg/L	0.01	0.25	0.25	80 - 120	99

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180103.002	Aluminium, Al	µg/L	5	21	20	80 - 120	104

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Metals in Water (Dissolved) by ICPOES — **Method: ME-(AU)-[ENV]AN320**

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195781A.00	LB180007.004	Calcium, Ca	mg/L	0.1	170	130	52	89
1		Magnesium, Mg	mg/L	0.1	400	360	52	82

MATRIX SPIKE DUPLICATES

SE195781A R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client only. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

This test report shall not be reproduced, except in full.

STATEMENT OF QA/QC PERFORMANCE

SE195782 R0

CLIENT DETAILS

Contact	Lan Ye
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	Lan.ye@eiaustralia.com.au
Project	**E24273 Castlereagh&Bathurst Liverpool**
Order Number	**E24273**
Samples	6

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE195782 R0**
Date Received	26 Jul 2019
Date Reported	02 Aug 2019

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

HOLDING TIME SUMMARY

SE195782 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH110M	SE195782.001	LB179654	26 Jul 2019	26 Jul 2019	23 Aug 2019	30 Jul 2019	23 Aug 2019	30 Jul 2019
BH112M	SE195782.002	LB179654	26 Jul 2019	26 Jul 2019	23 Aug 2019	30 Jul 2019	23 Aug 2019	30 Jul 2019
GWQD1	SE195782.003	LB179654	26 Jul 2019	26 Jul 2019	23 Aug 2019	30 Jul 2019	23 Aug 2019	30 Jul 2019
GWQR1	SE195782.004	LB179654	26 Jul 2019	26 Jul 2019	23 Aug 2019	30 Jul 2019	23 Aug 2019	30 Jul 2019

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH110M	SE195782.001	LB179579	26 Jul 2019	26 Jul 2019	02 Aug 2019	29 Jul 2019	07 Sep 2019	02 Aug 2019
BH112M	SE195782.002	LB179579	26 Jul 2019	26 Jul 2019	02 Aug 2019	29 Jul 2019	07 Sep 2019	02 Aug 2019
GWQD1	SE195782.003	LB179579	26 Jul 2019	26 Jul 2019	02 Aug 2019	29 Jul 2019	07 Sep 2019	02 Aug 2019
GWQR1	SE195782.004	LB179579	26 Jul 2019	26 Jul 2019	02 Aug 2019	29 Jul 2019	07 Sep 2019	02 Aug 2019

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH110M	SE195782.001	LB179502	26 Jul 2019	26 Jul 2019	22 Jan 2020	29 Jul 2019	22 Jan 2020	29 Jul 2019
BH112M	SE195782.002	LB179502	26 Jul 2019	26 Jul 2019	22 Jan 2020	29 Jul 2019	22 Jan 2020	29 Jul 2019
GWQD1	SE195782.003	LB179502	26 Jul 2019	26 Jul 2019	22 Jan 2020	29 Jul 2019	22 Jan 2020	29 Jul 2019
GWQR1	SE195782.004	LB179502	26 Jul 2019	26 Jul 2019	22 Jan 2020	29 Jul 2019	22 Jan 2020	29 Jul 2019

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH110M	SE195782.001	LB179579	26 Jul 2019	26 Jul 2019	02 Aug 2019	29 Jul 2019	07 Sep 2019	02 Aug 2019
BH112M	SE195782.002	LB179579	26 Jul 2019	26 Jul 2019	02 Aug 2019	29 Jul 2019	07 Sep 2019	02 Aug 2019
GWQD1	SE195782.003	LB179579	26 Jul 2019	26 Jul 2019	02 Aug 2019	29 Jul 2019	07 Sep 2019	02 Aug 2019
GWQR1	SE195782.004	LB179579	26 Jul 2019	26 Jul 2019	02 Aug 2019	29 Jul 2019	07 Sep 2019	02 Aug 2019

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH110M	SE195782.001	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019
BH112M	SE195782.002	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019
GWQD1	SE195782.003	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019
GWQR1	SE195782.004	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019
GWQTS1	SE195782.005	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019
GWQTB1	SE195782.006	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH110M	SE195782.001	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019
BH112M	SE195782.002	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019
GWQD1	SE195782.003	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019
GWQR1	SE195782.004	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019
GWQTS1	SE195782.005	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019
GWQTB1	SE195782.006	LB179976	26 Jul 2019	26 Jul 2019	02 Aug 2019	01 Aug 2019	10 Sep 2019	02 Aug 2019

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH110M	SE195782.001	%	40 - 130%	74
	BH112M	SE195782.002	%	40 - 130%	82
d14-p-terphenyl (Surrogate)	BH110M	SE195782.001	%	40 - 130%	94
	BH112M	SE195782.002	%	40 - 130%	98
d5-nitrobenzene (Surrogate)	BH110M	SE195782.001	%	40 - 130%	68
	BH112M	SE195782.002	%	40 - 130%	74

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH110M	SE195782.001	%	40 - 130%	87
	BH112M	SE195782.002	%	40 - 130%	97
	GWQD1	SE195782.003	%	40 - 130%	92
	GWQR1	SE195782.004	%	40 - 130%	90
	GWQTS1	SE195782.005	%	40 - 130%	99
	GWQTB1	SE195782.006	%	40 - 130%	87
d4-1,2-dichloroethane (Surrogate)	BH110M	SE195782.001	%	40 - 130%	114
	BH112M	SE195782.002	%	40 - 130%	122
	GWQD1	SE195782.003	%	40 - 130%	111
	GWQR1	SE195782.004	%	40 - 130%	114
	GWQTS1	SE195782.005	%	40 - 130%	117
	GWQTB1	SE195782.006	%	40 - 130%	108
d8-toluene (Surrogate)	BH110M	SE195782.001	%	40 - 130%	83
	BH112M	SE195782.002	%	40 - 130%	101
	GWQD1	SE195782.003	%	40 - 130%	96
	GWQR1	SE195782.004	%	40 - 130%	98
	GWQTS1	SE195782.005	%	40 - 130%	110
	GWQTB1	SE195782.006	%	40 - 130%	92

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH110M	SE195782.001	%	40 - 130%	87
	BH112M	SE195782.002	%	40 - 130%	97
	GWQD1	SE195782.003	%	40 - 130%	92
	GWQR1	SE195782.004	%	40 - 130%	90
d4-1,2-dichloroethane (Surrogate)	BH110M	SE195782.001	%	60 - 130%	114
	BH112M	SE195782.002	%	60 - 130%	122
	GWQD1	SE195782.003	%	60 - 130%	111
	GWQR1	SE195782.004	%	60 - 130%	114
d8-toluene (Surrogate)	BH110M	SE195782.001	%	40 - 130%	83
	BH112M	SE195782.002	%	40 - 130%	101
	GWQD1	SE195782.003	%	40 - 130%	96
	GWQR1	SE195782.004	%	40 - 130%	98

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Sample Number	Parameter	Units	LOR	Result
LB179654.001	Mercury	mg/L	0.0001	0.00788

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB179579.001		Naphthalene	µg/L	0.1	<0.1
		2-methylnaphthalene	µg/L	0.1	<0.1
		1-methylnaphthalene	µg/L	0.1	<0.1
		Acenaphthylene	µg/L	0.1	<0.1
		Acenaphthene	µg/L	0.1	<0.1
		Fluorene	µg/L	0.1	<0.1
		Phenanthrene	µg/L	0.1	<0.1
		Anthracene	µg/L	0.1	<0.1
		Fluoranthene	µg/L	0.1	<0.1
		Pyrene	µg/L	0.1	<0.1
		Benzo(a)anthracene	µg/L	0.1	<0.1
		Chrysene	µg/L	0.1	<0.1
		Benzo(a)pyrene	µg/L	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1
		Dibenzo(ah)anthracene	µg/L	0.1	<0.1
		Benzo(ghi)perylene	µg/L	0.1	<0.1
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	76
		2-fluorobiphenyl (Surrogate)	%	-	72
		d14-p-terphenyl (Surrogate)	%	-	84

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB179502.001	Arsenic, As	µg/L	1	<1
	Cadmium, Cd	µg/L	0.1	<0.1
	Chromium, Cr	µg/L	1	<1
	Copper, Cu	µg/L	1	<1
	Lead, Pb	µg/L	1	<1
	Nickel, Ni	µg/L	1	<1
	Zinc, Zn	µg/L	5	<5

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB179579.001	TRH C10-C14	µg/L	50	<50
	TRH C15-C28	µg/L	200	<200
	TRH C29-C36	µg/L	200	<200
	TRH C37-C40	µg/L	200	<200

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB179976.001	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5
		1,2-dichloropropane	µg/L	0.5	<0.5
		cis-1,3-dichloropropene	µg/L	0.5	<0.5
		trans-1,3-dichloropropene	µg/L	0.5	<0.5
		1,2-dibromoethane (EDB)	µg/L	0.5	<0.5
	Halogenated Aliphatics	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5
		Chloromethane	µg/L	5	<5
		Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3
		Bromomethane	µg/L	10	<10
		Chloroethane	µg/L	5	<5
		Trichlorofluoromethane	µg/L	1	<1
		Iodomethane	µg/L	5	<5
		1,1-dichloroethene	µg/L	0.5	<0.5
		Dichloromethane (Methylene chloride)	µg/L	5	<5
		Allyl chloride	µg/L	2	<2
		trans-1,2-dichloroethene	µg/L	0.5	<0.5
		1,1-dichloroethane	µg/L	0.5	<0.5
		cis-1,2-dichloroethene	µg/L	0.5	<0.5

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB179976.001	Halogenated Aliphatics	Bromochloromethane	µg/L	0.5	<0.5
		1,2-dichloroethane	µg/L	0.5	<0.5
		1,1,1-trichloroethane	µg/L	0.5	<0.5
		1,1-dichloropropene	µg/L	0.5	<0.5
		Carbon tetrachloride	µg/L	0.5	<0.5
		Dibromomethane	µg/L	0.5	<0.5
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5
		1,1,2-trichloroethane	µg/L	0.5	<0.5
		1,3-dichloropropane	µg/L	0.5	<0.5
		Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5
		1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5
		cis-1,4-dichloro-2-butene	µg/L	1	<1
		1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5
		1,2,3-trichloropropane	µg/L	0.5	<0.5
		trans-1,4-dichloro-2-butene	µg/L	1	<1
		1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5
		Hexachlorobutadiene	µg/L	0.5	<0.5
	Halogenated Aromatics	Chlorobenzene	µg/L	0.5	<0.5
		Bromobenzene	µg/L	0.5	<0.5
		2-chlorotoluene	µg/L	0.5	<0.5
		4-chlorotoluene	µg/L	0.5	<0.5
		1,3-dichlorobenzene	µg/L	0.5	<0.5
		1,4-dichlorobenzene	µg/L	0.3	<0.3
		1,2-dichlorobenzene	µg/L	0.5	<0.5
		1,2,4-trichlorobenzene	µg/L	0.5	<0.5
		1,2,3-trichlorobenzene	µg/L	0.5	<0.5
	Monocyclic Aromatic Hydrocarbons	Benzene	µg/L	0.5	<0.5
		Toluene	µg/L	0.5	<0.5
		Ethylbenzene	µg/L	0.5	<0.5
		m/p-xylene	µg/L	1	<1
		o-xylene	µg/L	0.5	<0.5
		Styrene (Vinyl benzene)	µg/L	0.5	<0.5
		Isopropylbenzene (Cumene)	µg/L	0.5	<0.5
		n-propylbenzene	µg/L	0.5	<0.5
		1,3,5-trimethylbenzene	µg/L	0.5	<0.5
		tert-butylbenzene	µg/L	0.5	<0.5
		1,2,4-trimethylbenzene	µg/L	0.5	<0.5
		sec-butylbenzene	µg/L	0.5	<0.5
		p-isopropyltoluene	µg/L	0.5	<0.5
		n-butylbenzene	µg/L	0.5	<0.5
	Nitrogenous Compounds	Acrylonitrile	µg/L	0.5	<0.5
	Oxygenated Compounds	Acetone (2-propanone)	µg/L	10	<10
		MtBE (Methyl-tert-butyl ether)	µg/L	2	<2
		Vinyl acetate	µg/L	10	<10
		MEK (2-butanone)	µg/L	10	<10
		MIBK (4-methyl-2-pentanone)	µg/L	5	<5
		2-hexanone (MBK)	µg/L	5	<5
	Polycyclic VOCs	Naphthalene	µg/L	0.5	
	Sulphonated	Carbon disulfide	µg/L	2	<2
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	114
		d8-toluene (Surrogate)	%	-	103
		Bromofluorobenzene (Surrogate)	%	-	95
	Trihalomethanes	Chloroform (THM)	µg/L	0.5	<0.5
		Bromodichloromethane (THM)	µg/L	0.5	<0.5
		Dibromochloromethane (THM)	µg/L	0.5	<0.5
		Bromoform (THM)	µg/L	0.5	<0.5

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Volatile Petroleum Hydrocarbons in Water (continued) — **Method: ME-(AU)-[ENV]AN433**

Sample Number		Parameter	Units	LOR	Result
LB179976.001		TRH C6-C9	µg/L	40	<40
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	114
		d8-toluene (Surrogate)	%	-	103
		Bromofluorobenzene (Surrogate)	%	-	95

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury (dissolved) in Water

Method: ME-(AU)-[ENV]AN311(Perth)/AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195780.001	LB179654.011	Mercury	µg/L	0.0001	<0.00005	-0.0226	200	0

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195782.002	LB179579.019		Naphthalene	µg/L	0.1	<0.1	0	200	0
			2-methylnaphthalene	µg/L	0.1	<0.1	0	200	0
			1-methylnaphthalene	µg/L	0.1	<0.1	0	200	0
			Acenaphthylene	µg/L	0.1	<0.1	0	200	0
			Acenaphthene	µg/L	0.1	<0.1	0	200	0
			Fluorene	µg/L	0.1	<0.1	0	200	0
			Phenanthrene	µg/L	0.1	<0.1	0.03	200	0
			Anthracene	µg/L	0.1	<0.1	0.03	200	0
			Fluoranthene	µg/L	0.1	<0.1	0	200	0
			Pyrene	µg/L	0.1	<0.1	0.01	200	0
			Benzo(a)anthracene	µg/L	0.1	<0.1	0.06	173	0
			Chrysene	µg/L	0.1	<0.1	0.05	200	0
			Benzo(b&j)fluoranthene	µg/L	0.1	<0.1	0	200	0
			Benzo(k)fluoranthene	µg/L	0.1	<0.1	0	200	0
			Benzo(a)pyrene	µg/L	0.1	<0.1	0.01	200	0
			Indeno(1,2,3-cd)pyrene	µg/L	0.1	<0.1	0	200	0
			Dibenzo(ah)anthracene	µg/L	0.1	<0.1	0	200	0
			Benzo(ghi)perylene	µg/L	0.1	<0.1	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.4	0.34	30	8
			2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.38	30	8
			d14-p-terphenyl (Surrogate)	µg/L	-	0.5	0.43	30	13

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195783.001	LB179502.014	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	<1	1	112	7
		Lead, Pb	µg/L	1	<1	<1	200	0
		Nickel, Ni	µg/L	1	<1	<1	200	0
		Zinc, Zn	µg/L	5	22	23	37	3
SE195785.001	LB179502.020	Arsenic, As	µg/L	1	<1	<1	200	0
		Cadmium, Cd	µg/L	0.1	<0.1	<0.1	200	0
		Chromium, Cr	µg/L	1	<1	<1	200	0
		Copper, Cu	µg/L	1	1	1	91	2
		Lead, Pb	µg/L	1	1	1	106	3
		Nickel, Ni	µg/L	1	<1	1	120	1
		Zinc, Zn	µg/L	5	5	5	110	7

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195782.002	LB179579.019		TRH C10-C14	µg/L	50	<50	0	200	0
			TRH C15-C28	µg/L	200	<200	0	200	0
			TRH C29-C36	µg/L	200	<200	0	200	0
			TRH C37-C40	µg/L	200	<200	0	200	0
			TRH C10-C36	µg/L	450	<450	0	200	0
			TRH C10-C40	µg/L	650	<650	0	200	0
		TRH F Bands	TRH >C10-C16	µg/L	60	<60	0	200	0
			TRH >C10-C16 - Naphthalene (F2)	µg/L	60	<60	0	200	0
			TRH >C16-C34 (F3)	µg/L	500	<500	0	200	0
			TRH >C34-C40 (F4)	µg/L	500	<500	0	200	0

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate	Parameter	Units	LOR

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOCs in Water (continued) — **Method: ME-(AU)-[ENV]AN433**

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195781.001	LB179976.025	Fumigants	2,2-dichloropropane	µg/L	0.5	<0.5	0	200	0
			1,2-dichloropropane	µg/L	0.5	<0.5	0	200	0
			cis-1,3-dichloropropene	µg/L	0.5	<0.5	0	200	0
			trans-1,3-dichloropropene	µg/L	0.5	<0.5	0	200	0
			1,2-dibromoethane (EDB)	µg/L	0.5	<0.5	0	200	0
		Halogenated	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	0	200	0
		Aliphatics	Chloromethane	µg/L	5	<5	0	200	0
			Vinyl chloride (Chloroethene)	µg/L	0.3	<0.3	0	200	0
			Bromomethane	µg/L	10	<10	0	200	0
			Chloroethane	µg/L	5	<5	0	200	0
			Trichlorofluoromethane	µg/L	1	<1	0	200	0
			Iodomethane	µg/L	5	<5	0	200	0
			1,1-dichloroethene	µg/L	0.5	<0.5	0	200	0
			Dichloromethane (Methylene chloride)	µg/L	5	<5	0	200	0
			Allyl chloride	µg/L	2	<2	0	200	0
			trans-1,2-dichloroethene	µg/L	0.5	<0.5	0	200	0
			1,1-dichloroethane	µg/L	0.5	<0.5	0	200	0
			cis-1,2-dichloroethene	µg/L	0.5	<0.5	0	200	0
			Bromochloromethane	µg/L	0.5	<0.5	0	200	0
			1,2-dichloroethane	µg/L	0.5	<0.5	0	200	0
			1,1,1-trichloroethane	µg/L	0.5	<0.5	0	200	0
			1,1-dichloropropene	µg/L	0.5	<0.5	0	200	0
			Carbon tetrachloride	µg/L	0.5	<0.5	0	200	0
			Dibromomethane	µg/L	0.5	<0.5	0	200	0
			Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	<0.5	0	200	0
			1,1,2-trichloroethane	µg/L	0.5	<0.5	0	200	0
			1,3-dichloropropane	µg/L	0.5	<0.5	0	200	0
			Tetrachloroethene (Perchloroethylene,PCE)	µg/L	0.5	<0.5	0	200	0
			1,1,1,2-tetrachloroethane	µg/L	0.5	<0.5	0	200	0
			cis-1,4-dichloro-2-butene	µg/L	1	<1	0	200	0
			1,1,2,2-tetrachloroethane	µg/L	0.5	<0.5	0	200	0
			1,2,3-trichloropropane	µg/L	0.5	<0.5	0	200	0
			trans-1,4-dichloro-2-butene	µg/L	1	<1	0	200	0
			1,2-dibromo-3-chloropropane	µg/L	0.5	<0.5	0	200	0
			Hexachlorobutadiene	µg/L	0.5	<0.5	0	200	0
		Halogenated	Chlorobenzene	µg/L	0.5	<0.5	0	200	0
		Aromatics	Bromobenzene	µg/L	0.5	<0.5	0	200	0
			2-chlorotoluene	µg/L	0.5	<0.5	0	200	0
			4-chlorotoluene	µg/L	0.5	<0.5	0	200	0
			1,3-dichlorobenzene	µg/L	0.5	<0.5	0	200	0
			1,4-dichlorobenzene	µg/L	0.3	<0.3	0	200	0
			1,2-dichlorobenzene	µg/L	0.5	<0.5	0	200	0
			1,2,4-trichlorobenzene	µg/L	0.5	<0.5	0	200	0
			1,2,3-trichlorobenzene	µg/L	0.5	<0.5	0	200	0
		Monocyclic	Benzene	µg/L	0.5	<0.5	0.0357472427	200	0
		Aromatic	Toluene	µg/L	0.5	<0.5	0.0572142541	200	0
			Ethylbenzene	µg/L	0.5	<0.5	0.0212509195	200	0
			m/p-xylene	µg/L	1	<1	0.0476989460	200	0
			o-xylene	µg/L	0.5	<0.5	0.0193432980	200	0
			Styrene (Vinyl benzene)	µg/L	0.5	<0.5	0	200	0
			Isopropylbenzene (Cumene)	µg/L	0.5	<0.5	0	200	0
			n-propylbenzene	µg/L	0.5	<0.5	0	200	0
			1,3,5-trimethylbenzene	µg/L	0.5	<0.5	0	200	0
			tert-butylbenzene	µg/L	0.5	<0.5	0	200	0
			1,2,4-trimethylbenzene	µg/L	0.5	<0.5	0	200	0
			sec-butylbenzene	µg/L	0.5	<0.5	0	200	0
			p-isopropyltoluene	µg/L	0.5	<0.5	0	200	0
			n-butylbenzene	µg/L	0.5	<0.5	0	200	0
		Nitrogenous	Acrylonitrile	µg/L	0.5	<0.5	0	200	0
		Oxygenated	Acetone (2-propanone)	µg/L	10	<10	0	200	0
		Compounds	MtBE (Methyl-tert-butyl ether)	µg/L	2	<2	0	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOCs in Water (continued)

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195781.001	LB179976.025	Oxygenated	Vinyl acetate	µg/L	10	<10	0	200	0
		Compounds	MEK (2-butanone)	µg/L	10	<10	0	200	0
			MIBK (4-methyl-2-pentanone)	µg/L	5	<5	0	200	0
			2-hexanone (MBK)	µg/L	5	<5	0	200	0
		Polycyclic	Naphthalene	µg/L	0.5	1.1	0.5829074944	90	59
		Sulphonated	Carbon disulfide	µg/L	2	<2	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.2	5.8796374742	30	5
			d8-toluene (Surrogate)	µg/L	-	5.3	5.0958307866	30	3
			Bromofluorobenzene (Surrogate)	µg/L	-	4.8	4.3986138301	30	9
		Trihalomethan	Chloroform (THM)	µg/L	0.5	<0.5	0	200	0
		es	Bromodichloromethane (THM)	µg/L	0.5	<0.5	0	200	0
			Dibromochloromethane (THM)	µg/L	0.5	<0.5	0	200	0
			Bromoform (THM)	µg/L	0.5	<0.5	0	200	0
SE195804.014	LB179976.026	Monocyclic	Benzene	µg/L	0.5	0.012236610	60.0118012991	200	0
		Aromatic	Toluene	µg/L	0.5	0.055332092	50.0645441808	200	0
			Ethylbenzene	µg/L	0.5	0.017798870	10.0239617633	200	0
			m/p-xylene	µg/L	1	0.065196621	00.0696003125	200	0
			o-xylene	µg/L	0.5	0.018761302	60.0245867615	200	0
		Polycyclic	Naphthalene	µg/L	0.5	0.129096936	60.2372036925	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.0300124829	5.7400732723	30	5
			d8-toluene (Surrogate)	µg/L	-	4.9517300888	5.3237431464	30	7
			Bromofluorobenzene (Surrogate)	µg/L	-	4.8724841631	4.5660924678	30	6

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195781.001	LB179976.025		TRH C6-C10	µg/L	50	<50	0	200	0
			TRH C6-C9	µg/L	40	<40	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.2	5.8796374742	30	5
			d8-toluene (Surrogate)	µg/L	-	5.3	5.0958307866	30	3
			Bromofluorobenzene (Surrogate)	µg/L	-	4.8	4.3986138301	30	9
		VPH F Bands	Benzene (F0)	µg/L	0.5	<0.5	0.0357472427	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	-0.1812546606	200	0
SE195804.014	LB179976.026		TRH C6-C10	µg/L	50	0	0	200	0
			TRH C6-C9	µg/L	40	0	0	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.0300124829	5.7400732723	30	5
			d8-toluene (Surrogate)	µg/L	-	4.9517300888	5.3237431464	30	7
			Bromofluorobenzene (Surrogate)	µg/L	-	4.8724841631	4.5660924678	30	6
		VPH F Bands	Benzene (F0)	µg/L	0.5	0.012236610	60.0118012991	200	0
			TRH C6-C10 minus BTEX (F1)	µg/L	50	-0.169325497	00.1944943174	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB179579.002		Naphthalene	µg/L	0.1	31	40	60 - 140	77
		Acenaphthylene	µg/L	0.1	35	40	60 - 140	88
		Acenaphthene	µg/L	0.1	30	40	60 - 140	74
		Phenanthrene	µg/L	0.1	33	40	60 - 140	84
		Anthracene	µg/L	0.1	32	40	60 - 140	80
		Fluoranthene	µg/L	0.1	31	40	60 - 140	77
		Pyrene	µg/L	0.1	33	40	60 - 140	83
		Benzo(a)pyrene	µg/L	0.1	34	40	60 - 140	85
	Surrogates	d5-nitrobenzene (Surrogate)	µg/L	-	0.4	0.5	40 - 130	78
		2-fluorobiphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	76
		d14-p-terphenyl (Surrogate)	µg/L	-	0.4	0.5	40 - 130	80

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB179502.002		Arsenic, As	µg/L	1	19	20	80 - 120	97
		Cadmium, Cd	µg/L	0.1	19	20	80 - 120	97
		Chromium, Cr	µg/L	1	21	20	80 - 120	106
		Copper, Cu	µg/L	1	20	20	80 - 120	101
		Lead, Pb	µg/L	1	19	20	80 - 120	95
		Nickel, Ni	µg/L	1	20	20	80 - 120	100
		Zinc, Zn	µg/L	5	20	20	80 - 120	99

TRH (Total Recoverable Hydrocarbons) in Water

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB179579.002		TRH C10-C14	µg/L	50	960	1200	60 - 140	80
		TRH C15-C28	µg/L	200	1200	1200	60 - 140	98
		TRH C29-C36	µg/L	200	1400	1200	60 - 140	116
	TRH F Bands	TRH >C10-C16	µg/L	60	1100	1200	60 - 140	88
		TRH >C16-C34 (F3)	µg/L	500	1300	1200	60 - 140	109
		TRH >C34-C40 (F4)	µg/L	500	730	600	60 - 140	121

VOCs in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB179976.002	Halogenated	1,1-dichloroethene	µg/L	0.5	58	45.45	60 - 140	127
	Aliphatics	1,2-dichloroethane	µg/L	0.5	58	45.45	60 - 140	127
		Trichloroethene (Trichloroethylene,TCE)	µg/L	0.5	44	45.45	60 - 140	96
	Halogenated	Chlorobenzene	µg/L	0.5	54	45.45	60 - 140	118
	Monocyclic	Benzene	µg/L	0.5	51	45.45	60 - 140	113
	Aromatic	Toluene	µg/L	0.5	55	45.45	60 - 140	120
		Ethylbenzene	µg/L	0.5	51	45.45	60 - 140	111
		m/p-xylene	µg/L	1	110	90.9	60 - 140	119
		o-xylene	µg/L	0.5	52	45.45	60 - 140	115
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	5.9	5	60 - 140	117
		d8-toluene (Surrogate)	µg/L	-	4.5	5	60 - 140	90
		Bromofluorobenzene (Surrogate)	µg/L	-	4.8	5	60 - 140	96
	Trihalomethan	Chloroform (THM)	µg/L	0.5	54	45.45	60 - 140	119

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB179976.023		TRH C6-C10	µg/L	50	NA	946.63	60 - 140	110
		TRH C6-C9	µg/L	40	NA	818.71	60 - 140	104
	Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	NA	5	60 - 140	105
		d8-toluene (Surrogate)	µg/L	-	NA	5	60 - 140	94
		Bromofluorobenzene (Surrogate)	µg/L	-	NA	5	60 - 140	105
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	NA	639.67	60 - 140	109

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195698.026	LB179502.004	Arsenic, As	µg/L	1	21	<1	20	106
		Cadmium, Cd	µg/L	0.1	20	<0.1	20	101
		Chromium, Cr	µg/L	1	22	<1	20	109
		Copper, Cu	µg/L	1	22	<1	20	109
		Lead, Pb	µg/L	1	19	<1	20	95
		Nickel, Ni	µg/L	1	21	<1	20	104
		Zinc, Zn	µg/L	5	25	<5	20	117

VOCs in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE195782.002	LB179976.027	Halogenated	Dichlorodifluoromethane (CFC-12)	µg/L	5	<5	-	-
		Monocyclic	Benzene	µg/L	0.5	<0.5	45.45	112
		Aromatic	Toluene	µg/L	0.5	<0.5	45.45	97
			Ethylbenzene	µg/L	0.5	<0.5	45.45	105
			m/p-xylene	µg/L	1	<1	90.9	111
			o-xylene	µg/L	0.5	<0.5	45.45	107
		Polycyclic	Naphthalene	µg/L	0.5	<0.5	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.1	-	94
			d8-toluene (Surrogate)	µg/L	-	5.1	-	89
			Bromofluorobenzene (Surrogate)	µg/L	-	4.9	-	95

Volatile Petroleum Hydrocarbons in Water

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Original	Spike	Recovery%
SE195782.002	LB179976.027		TRH C6-C10	µg/L	50	<50	946.63	93
			TRH C6-C9	µg/L	40	<40	818.71	94
		Surrogates	d4-1,2-dichloroethane (Surrogate)	µg/L	-	6.1	-	94
			d8-toluene (Surrogate)	µg/L	-	5.1	-	89
			Bromofluorobenzene (Surrogate)	µg/L	-	4.9	-	95
		VPH F	Benzene (F0)	µg/L	0.5	<0.5	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	µg/L	50	<50	639.67	92

MATRIX SPIKE DUPLICATES

SE195782 R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client only. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

This test report shall not be reproduced, except in full.

STATEMENT OF QA/QC PERFORMANCE

SE195782A R0

CLIENT DETAILS

Contact	Joel Heininger
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	joel.heininger@eiaustralia.com.au
Project	**E24273 Castlereagh&Bathurst Liverpool-Ad**
Order Number	**E24273**
Samples	6

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE195782A R0**
Date Received	01 Aug 2019
Date Reported	06 Aug 2019

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	2 Water
Date documentation received	1/8/19@9:46am	Type of documentation received	Email
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	12.6°C	Sufficient sample for analysis	Yes
Turnaround time requested	Three Days		

HOLDING TIME SUMMARY

SE195782A R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS “Field Sampling Guide for Containers and Holding Time” (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH110M	SE195782A.001	LB180076	26 Jul 2019	01 Aug 2019	23 Aug 2019	02 Aug 2019	23 Aug 2019	05 Aug 2019
BH112M	SE195782A.002	LB180076	26 Jul 2019	01 Aug 2019	23 Aug 2019	02 Aug 2019	23 Aug 2019	05 Aug 2019

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH110M	SE195782A.001	LB180007	26 Jul 2019	01 Aug 2019	22 Jan 2020	02 Aug 2019	22 Jan 2020	02 Aug 2019
BH112M	SE195782A.002	LB180007	26 Jul 2019	01 Aug 2019	22 Jan 2020	02 Aug 2019	22 Jan 2020	02 Aug 2019

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH110M	SE195782A.001	LB180015	26 Jul 2019	01 Aug 2019	23 Aug 2019	02 Aug 2019	23 Aug 2019	02 Aug 2019
BH112M	SE195782A.002	LB180015	26 Jul 2019	01 Aug 2019	23 Aug 2019	02 Aug 2019	23 Aug 2019	02 Aug 2019

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH110M	SE195782A.001	LB180103	26 Jul 2019	01 Aug 2019	22 Jan 2020	05 Aug 2019	22 Jan 2020	05 Aug 2019
BH112M	SE195782A.002	LB180103	26 Jul 2019	01 Aug 2019	22 Jan 2020	05 Aug 2019	22 Jan 2020	05 Aug 2019

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No surrogates were required for this job.

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result
LB180076.001	Conductivity @ 25 C	µS/cm	2	<2

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Number	Parameter	Units	LOR	Result
LB180007.001	Calcium, Ca	mg/L	0.1	<0.1
	Magnesium, Mg	mg/L	0.1	<0.1

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result
LB180015.001	Total Phenols	mg/L	0.01	<0.01

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result
LB180103.001	Aluminium, Al	µg/L	5	<5

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195982.001	LB180076.014	Conductivity @ 25 C	µS/cm	2	1072.36	1072.02	15	0
SE195982.006	LB180076.020	Conductivity @ 25 C	µS/cm	2	4282.58	4288.8	15	0

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE195996.001	LB180103.014	Aluminium, Al	µg/L	5	2.438	2.333	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Conductivity and TDS by Calculation - Water

Method: ME-(AU)-[ENV]AN106

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180076.002	Conductivity @ 25 C	µS/cm	2	290	303	90 - 110	97

Metals in Water (Dissolved) by ICPOES

Method: ME-(AU)-[ENV]AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180007.002	Calcium, Ca	mg/L	0.1	1.9	2	80 - 120	95
	Magnesium, Mg	mg/L	0.1	1.9	2	80 - 120	96

Total Phenolics in Water

Method: ME-(AU)-[ENV]AN289

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180015.002	Total Phenols	mg/L	0.01	0.25	0.25	80 - 120	99

Trace Metals (Dissolved) in Water by ICPMS

Method: ME-(AU)-[ENV]AN318

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB180103.002	Aluminium, Al	µg/L	5	21	20	80 - 120	104

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Metals in Water (Dissolved) by ICPOES — **Method: ME-(AU)-[ENV]AN320**

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE195781A.00	LB180007.004	Calcium, Ca	mg/L	0.1	170	130	52	89
1		Magnesium, Mg	mg/L	0.1	400	360	52	82

MATRIX SPIKE DUPLICATES

SE195782A R0

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.

①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to Analytical Report comments for further information.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client only. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

This test report shall not be reproduced, except in full.

A.B.N. 44 000 964 278
10 / 585 Blackburn Road
Notting Hill, Vic, 3168
Telephone: (03) 9574 3200

Chartered Chemists

10-Jul-2019

REPORT NUMBER: M191355S

Site/Client Ref: Supply of Canisters

EI Australia

Suite 6.01, 55 Miller Street
Pyrmont
NSW 2009
Attention: Emmanuel Woelders

CERTIFICATE OF CLEANLINESS FOR SAMPLING EQUIPMENT

Sampling Equipment as detailed below has been certified as 'CLEAN'

DATE OF CERTIFICATION ANALYSIS **9-Jul-2019**

CERTIFIED BY:

Majid Abdolali
Chemist

NATA Accredited Laboratory Number: 2562
Corporate Site Number: 14420
Accredited for compliance
with ISO/IEC 17025 - Testing.

(I) RESULTS

Report N°: M191355S

Matrix: Canister

Method: TO-15.Certification Volatile Organics (w/v)

Sample units are expressed in µg/m³

	Leeder ID	2019020001	2019020002	2019020003	2019020004
	Client ID	SC4237	SC3696	SC4217	SC4216
Analyte Name	**PQL**				
Acrolein	1.4	nd	nd	nd	nd
Acrylonitrile	3.6	nd	nd	nd	nd
tert-Amyl Methyl Ether	1.2	nd	nd	nd	nd
Benzene	1	nd	nd	nd	nd
Bromodichloromethane	2	nd	nd	nd	nd
Bromoform	2.4	nd	nd	nd	nd
Bromomethane	1.8	nd	nd	nd	nd
1,3-Butadiene	0.6	nd	nd	nd	nd
2-Butanone (Methyl Ethyl Ketone)	1	nd	nd	nd	nd
tert-Butyl Alcohol	1	nd	nd	nd	nd
n-Butylbenzene	1.6	nd	nd	nd	nd
sec-Butylbenzene	1.6	nd	nd	nd	nd
tert-Butylbenzene	1.6	nd	nd	nd	nd
Carbon Tetrachloride	2	nd	nd	nd	nd
Chlorobenzene	1.2	nd	nd	nd	nd
Chloroethane	1.2	nd	nd	nd	nd
Chloroform	1.8	nd	nd	nd	nd
Chloromethane	1.4	nd	nd	nd	nd
2-Chloroprene	2.2	nd	nd	nd	nd
3-Chloropropene	1.4	nd	nd	nd	nd
2-Chlorotoluene	1.8	nd	nd	nd	nd
alpha-Chlorotoluene	1.4	nd	nd	nd	nd
Cumene	1.6	nd	nd	nd	nd

(I) RESULTS

Report N°: M191355S

Matrix: Canister

Method: TO-15.Certification Volatile Organics (w/v)

Sample units are expressed in µg/m³

	Leeder ID	2019020001	2019020002	2019020003	2019020004
	Client ID	SC4237	SC3696	SC4217	SC4216
Analyte Name	**PQL**				
Cyclohexane	0.8	nd	nd	nd	nd
o-Cymene	1.6	nd	nd	nd	nd
Dibromochloromethane	2.4	nd	nd	nd	nd
1,2-Dibromoethane (EDB)	2.4	nd	nd	nd	nd
1,2-Dichlorobenzene	2	nd	nd	nd	nd
1,3-Dichlorobenzene	2.6	nd	nd	nd	nd
1,4-Dichlorobenzene	2.6	nd	nd	nd	nd
1,1-Dichloroethane	1.4	nd	nd	nd	nd
1,2-Dichloroethane	2	nd	nd	nd	nd
1,1-Dichloroethene	1.2	nd	nd	nd	nd
cis-1,2-Dichloroethene	1.6	nd	nd	nd	nd
trans-1,2-Dichloroethene	1.2	nd	nd	nd	nd
1,2-Dichloropropane	1.6	nd	nd	nd	nd
cis-1,3-Dichloropropene	1.2	nd	nd	nd	nd
trans-1,3-Dichloropropene	1.4	nd	nd	nd	nd
Diisopropyl Ether	1.4	nd	nd	nd	nd
1,4-Dioxane	1.2	nd	nd	nd	nd
Ethyl Acetate	1.6	nd	nd	nd	nd
Ethyl Benzene	1.2	nd	nd	nd	nd
Ethyl tert-Butyl Ether	1	nd	nd	nd	nd
4-Ethyltoluene	1.2	nd	nd	nd	nd
Freon 11	0.6	nd	nd	nd	nd
Freon 113	2	nd	nd	nd	nd
Freon 114	0.6	nd	nd	nd	nd

(I) RESULTS

Report N°: M191355S

Matrix: Canister

Method: TO-15.Certification Volatile Organics (w/v)

Sample units are expressed in µg/m³

	Leeder ID	2019020001	2019020002	2019020003	2019020004
	Client ID	SC4237	SC3696	SC4217	SC4216
Analyte Name	**PQL**				
Freon 12	0.8	nd	nd	nd	nd
Heptane	1.4	nd	nd	nd	nd
Hexachlorobutadiene	4	nd	nd	nd	nd
Hexane	1.2	nd	nd	nd	nd
2-Hexanone	1.2	nd	nd	nd	nd
m,p-Xylene	2.6	nd	nd	nd	nd
Methyl Methacrylate	1.4	nd	nd	nd	nd
Methyl tert-butyl ether	1.2	nd	nd	nd	nd
4-Methyl-2-pentanone	1.2	nd	nd	nd	nd
Naphthalene	4.2	nd	nd	nd	nd
2-Propanol	20	nd	nd	nd	nd
Propene	2	nd	nd	nd	nd
Propylbenzene	1.4	nd	nd	nd	nd
Styrene	1.2	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	2	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.4	nd	nd	nd	nd
Tetrachloroethene	2.2	nd	nd	nd	nd
Tetrahydrofuran	0.8	nd	nd	nd	nd
Toluene	1.2	nd	nd	nd	nd
1,2,4-Trichlorobenzene	7.2	nd	nd	nd	nd
1,1,1-Trichloroethane	1.6	nd	nd	nd	nd
1,1,2-Trichloroethane	1.6	nd	nd	nd	nd
Trichloroethene	1.8	nd	nd	nd	nd
1,2,4-Trimethylbenzene	1.6	nd	nd	nd	nd

Report N°: M191355S

Matrix: Canister

Method: TO-15.Certification Volatile Organics (w/v)

Sample units are expressed in µg/m³

	Leeder ID	2019020001	2019020002	2019020003	2019020004
	Client ID	SC4237	SC3696	SC4217	SC4216
Analyte Name	**PQL**				
1,3,5-Trimethylbenzene	1.2	nd	nd	nd	nd
2,2,4-Trimethylpentane	1.8	nd	nd	nd	nd
Vinyl Acetate	1.4	nd	nd	nd	nd
Vinyl Bromide	1.6	nd	nd	nd	nd
Vinyl Chloride	0.8	nd	nd	nd	nd
o-Xylene	1.2	nd	nd	nd	nd

This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/en/Terms-and-Conditions/General-Conditions-of-Services-English.aspx. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents

This report must not be reproduced, except in full.