Proposed Seniors Living Development Preliminary Contamination Assessment

Lot 2 DP 1145348
107 Haussman Drive
Thornton

NEW17P-0074-AB
29 June 2017

Qualtest
LABORATORY (NSW) PTY LTD

GEOTECHNICAL I LABORATORY I EARTHWORKS I QUARRY I CONSTRUCTION MATERIAL TESTING

29 June 2017

McCloy Group,
Suite 1, Level 3, 426 King St,
Newcastle West NSW 2302

Attention: Mr Shane Boslem

Dear Shane

RE: PROPOSED SENIORS LIVING DEVELOPMENT
LOT 2 DP 1145348 (NO. 107) HAUSSMAN DRIVE, THORNTON
PHASE 1 CONTAMINATION ASSESSMENT

Please find enclosed our Preliminary Contamination Assessment (CA) report for the proposed Aged Seniors Living Development, to be located at 107 Haussman Drive, Thornton.

Based on information provided by McCloy Group, the site is proposed to be developed into an unspecified number of senior's living residential lots, with associated pavements, amenities, recreational areas, and park reserves.

McCloy Group required a Phase 1 CA for due diligence purposes. The CA was carried out in conjunction with a preliminary geotechnical investigation also carried out by Qualtest for the site (Report Ref: NEW17P-0074-AA, dated 29 June 2017).

This report was prepared in accordance with the relevant sections of the NSW OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites.

If you have any questions regarding this report, please do not hesitate to contact Jason Lee or the undersigned.

For and on behalf of Qualtest Laboratory (NSW) Pty Ltd

Emma Coleman
Senior Environmental Scientist

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1.0 Introduction

Qualtest Laboratory NSW Pty Ltd (Qualtest) is pleased to present this Phase 1 Contamination Assessment (Phase 1 CA) report to McCloy Group for the proposed subdivision of Lot 2 DP 1145348, located at 107 Haussman Drive, Thornton NSW (the site). The site location is shown on Figure 1, Appendix A.

Based on the brief and lot layout plans provided in an email from McCloy dated 2 May 2017, the project is understood to comprise cutting and filling within the limits of the former quarry site, to allow for the construction of an unspecified number of senior's living residential units, associated pavements, amenities, recreational areas and park reserves.

As part of the proposed development, cutting and filling of the site is proposed with possibly up to approximately 3m to 5m of fill anticipated in the central part of the site.

The site has previously been used as a quarry, with clay soils extracted for brick making at an off-site location. McCloy Group required a Phase 1 CA for due diligence purposes.

The Phase 1 CA was carried out in conjunction with a preliminary geotechnical investigation also carried out by Qualtest for the site (Report Ref: NEW17P-0074-AA, dated, 29 June, 2017).

2.0 Objectives

The objectives of the Phase 1 PCA were to:

- Identify potentially contaminating activities that are currently being performed on the site, and that may have been performed on the site in the past;
- Develop a preliminary conceptual site model (CSM) for the site, including assessment of Areas of Environmental Concern (AECs) and Chemicals of Potential Concern (COPC); and
- Carry out a preliminary assessment of potential contamination within fill materials on site;
- Provide recommendations for further assessment and or management, as required.

3.0 Scope of Works

In order to meet the above objectives, Qualtest carried out the following scope of works:

- Desktop study to assess past and present site uses;
- A site walkover to assess potential AECs;
- Collection of three environmental soil samples from three geotechnical test pit locations within fill materials;
- Laboratory analysis of selected environmental samples for a suite of common contaminants; and
- Preparation of a Phase 1 CA report.

4.0 Site Description

4.1 Site Identification

The site is located to the east of the Haussman Drive and is bounded by Raymond Terrace Road to the north, bushland and residential areas to the south and bushland to the east. There is an electrical substation on the western edge of the site, as shown in Figure 2. General site information is provided below in Table 2.1.

Table 2.1: Summary of Site Details

Site location:	107 Haussman Drive, Thornton, NSW
Approximate site area:	18.72 ha
Title Identification Details:	Lot 2 DP 1145348, within the Maitland local government area.
Current Ownership:	McCloy Group.
Previous Landuse:	Former clay quarry site.
Current Landuse:	Vacant land.
Proposed Landuse:	Residential subdivision for an aged care facility.
Adjoining Site Uses:	Power substation, residential and bushland.
Site Coordinates:	32°46'6"S S 151°38'2" E

4.2 Proposed Development

The proposed development is understood to include placement of potentially up to 3m to 5m deep fill in the central part of the site, where there is currently a low-lying area which is a partially filled void from the former quarry. It is assumed the remainder of the site will be subject to some cut and fill earthworks activities to facilitate residential development. The depth of potential cut and fill is not known at this stage.

4.3 Topography and Drainage

Reference to the NSW Land and Property Information Spatial Information Exchange website (https://six.nsw.gov.au/wps/portal/) indicated the elevation of the site ranged from approximately 20m AHD in the eastern portion of the site to 40m AHD in the south western portion of the site.

A survey plan provided by McCloy Group (Delfs Lacelles Consulting Surveyors, Project No. 15327, Drawing No. 1, Rev 1) shows:

- A low lying area in the centre of the site, at an elevation of about 19m AHD;
- The western side of the site slopes up from about 19m to 20m AHD (near the site centre) to about 38m AHD;
- The southern portion of the site slopes up from about 19m to 20m AHD (near the site centre) to about 31m AHD;
- The eastern portion of the site slopes up from about 19m AHD (near the site centre) to about 21m AHD;
- The northern portion of the site slopes up from about 19m to 20m AHD (near the site centre) to about 34m to 38m AHD;
- A drainage channel has been excavated from the central low-lying part of the site to the east, where it drains to surface water ponds, and overflow from these ponds would drain offsite to the east.

During field investigations the majority of the site surface was observed to slope towards the centre of the site. The south-eastern corner of the site was observed to slope to the east.

Surface water would be expected to infiltrate into site soils, with excess surface water draining towards the centre of the site. Surface water accumulating in the centre of the site would flow down the drainage channel to the east-southeast, and from there discharge into an unnamed creek. The head of the unnamed creek is shown to be about 50m east of the site on the topographic map. The unnamed creeks appear to discharge to an unnamed wetland about 1.8km east of the site.

4.4 Regional Geology

Reference to the 1:100,000 Newcastle Coalfield Regional Geology Series Sheet 9232 indicates the site to be underlain by the Tomago Coal Measures, comprising shale, mudstone, sandstone, coal, tuff and clay. These rocks typically weather to clays and silty clays.

4.5 Hydrogeology

Groundwater beneath the site is anticipated be present in semi-confined aquifers in residual soils or weathered rock greater than 5m below ground surface (bgs) in the lower parts of the site. Groundwater flow direction from beneath the site is anticipated to follow the surface topography and flow to the east, and then to the southeast. Groundwater beneath the site would be anticipated to discharge to an unnamed creek to the east of the site which appears to discharge to an unnamed wetland about 1.8km east of the site.

It should be noted that groundwater conditions can vary due to rainfall and other influences including regional groundwater flow, temperature, permeability, recharge areas, surface condition, and subsoil drainage.

A search of the NSW Department of Primary Industries (Office of Water) registered groundwater bores located within a 500m radius of the site was undertaken. The search revealed that there are no registered bores within this radius. There were three bores located greater than 2km from the site and a copy of the search is provided in Appendix C and summaries below in Table 4.5.

Table 4.5 – Summary of Groundwater Bore Data

BORE ID	STATUS	PURPOSE	APPROXIMATE DISTANCE AND DIRECTION FROM SITE	DRILLED DEPTH (m bgs)	WATER BEARING ZONE (m bgs)
GW079948	NK	Monitoring Bore	2.15km South West	NK	NK
GW200415	Active	Monitoring Bore	2.05m West	20.1	NK
GW200414	Active	Monitoring Bore	2.08km West	10.0	NK

4.6 Acid Sulfate Soils

Reference to the Beresfield Acid Sulfate Soil Risk Map (1:25,000 scale, 1997 Edition Two, supplied by the NSW Department of Land and Water Conservation) indicates that the site is located within an area of "no known occurrence" of Acid Sulfate Soils (ASS).

5.0 Site History Review

A site history review was undertaken as part of the PCA, and included:

- A review of historical ownership of the site;
- A review of aerial photography from the past 60 years;
- A site walkover to help identify current and previous activities carried out on the site, identify surrounding land uses, and assess AECs and COPCs;
- Interviews with people familiar with the site history;
- A review of NSW EPA notices applying to the site and nearby properties.

The information provided from the above reviews is summarised in the sections below.

5.1 Historical Titles Search

A search of historical titles for the site was undertaken by Advanced Legal Searchers Pty Ltd. A list of past registered proprietors for the lot was obtained dating back to 1920. The results of the search are included in Appendix D and presented below in Table 3.1.

Table 3.1: Summary of historical titles

Date	Proprietor	Inferred Land Use
2010 - Present	CSR Building Products Limited (formerly Monier PGH Holdings Limited)	Commercial
1995 - 2010	Monier PGH Holdings Limited	Commercial
1989 - 1995	PGH Limited	Commercial
1981 - 1989	Acmil Industries Pty Ltd (with various leases)	Commercial
1975 - 1981	The Housing Commission of NSW	Commercial
1974 - 1975	Jemanapa Pty Ltd	Commercial
1963 - 1974	Ena Albertha Latter (married woman) Ada Evelyn Burns (married woman) Ernest William Green (millwright)	Private
1921 - 1963	William George Green (contractor)	Private
Prior - 1921	George William Fane De Salis (returned soldier) Rodolph Fane De Salis (esquire)	Private

The historical titles search indicated that the site was privately owned land until 1974. Post 1974 the site has been owned and operated by a number of commercial entities including a government housing agency, and building product manufacturers. It is considered likely that the clay quarrying activities commenced in the 1980's by Acmil Industries Pty Ltd.

5.2 Aerial Photograph Review

Aerial photographs of the site from 1954, 1975 and 1984 were purchased from the Department of Land and Property Information, and satellite images from Google Earth for 2007, 2010 and 2016, were assessed by a Qualtest Environmental Scientist. The results of the aerial photograph review are summarised in Table 3.2. The aerial photographs are attached in Appendix D.

Table 3.2: Aerial photograph review

Year	Site	Surrounding Land
1954	The site is comprised largely of an area of bushland with a cleared, undeveloped section of land in the central northern portion of the site. This area is grassed.	The surrounding areas appear to be a mixture of bushland to the east and south. There are areas of cleared land and bushland to north of the existing roadway bordering the northern extent of the site, as well as a large clearing to the west of the site.
1975	The site appears to be similar to the 1954 photograph. The cleared area is smaller and more regular in shape than in 1954, and remains grassed. An access road is present running southeast to northwest through the approximately the centre of the site.	A large portion of land to the south of the site has been cleared for a residential subdivision. Buildings have been constructed in the vacant block to the north of the site and further land has been cleared for industrial purposes. To the west of the site appears to be a quarry and access roads for heavy vehicle access.
1984	In the northern portion of the site there appears to be a structure or an area of cleared land (the photograph is not clear). The remainder of the site appears to be similar to the 1975 photograph.	There has been further land clearing to the south of the site, for residential subdivisions. More buildings have been constructed in the cleared land to the north. The surrounding land to the east and west appears to be similar to the previous photograph.
2007	The majority of site has been cleared, likely associated with the clay quarry.	There has been a residential property with a large dam constructed to the north east of the site. The residential areas to the south of the site are larger. A power substation has been constructed on the western edge of the site.

Year	Site	Surrounding Land
2010	The site appears similar to 2007, but is becoming overgrown with vegetation.	The surrounding area appears to be similar to the 2007 google earth picture.
2016	The quarry on site appears to be un-used and vegetation re-growth is occurring.	The surrounding area appears to be similar to the 2010 google earth picture.

5.3 Site Observations

A Qualtest Environmental Scientist visited the site on 17 May 2017. Selected site photographs are presented in Appendix E.

The observations noted during the site walkover are summarised below:

- The majority of the site was bushland (see Photographs 1 and 2).
- The centre of the site was cleared and lower than the remainder of the site (see Photograph 3). The centre of the site appeared to have been subjected to some rehabilitation (filling and levelling) of the former quarry void;
- An access track is present from the site's western boundary to the central part of the site. This access track was observed to have been paved with crushed bricks (see Photograph 4). No potential Asbestos Containing Materials (ACM) were observed in this material;
- A circular access track is also present running generally around the site boundaries.
- A stockpile of bricks was located in the central region of the site (see Photograph 5), east of the lower central area and north of the access track.
- A drainage channel was observed on the eastern side of the lower central area (see Photograph 6);
- Two surface water ponds were observed in the eastern portion of the site (see Photographs 7 and 8). One of these contained water at the time of walkover, and the other was dry. The drainage channel from the centre of the site drains to these ponds. Overflow from the ponds would drain off-site to the east.

5.4 NSW EPA Records

A search of the NSW EPA database revealed that there are no properties within the proposed site in the Thornton area that are registered as having current and/or former notices. A copy of the search is provided in Appendix D.

It is noted that if a site does not appear on the record it may still be affected by contamination. For example:

- *Contamination may be present but the site has not been regulated by the EPA under the Contaminated Land Management Act 1997 or the Environmentally Hazardous Chemicals Act 1985.*
- *The EPA may be regulating contamination at the site through a licence or notice under the Protection of the Environment Operations Act 1997 (POEO Act).*
- *Contamination at the site may be being managed under the planning process.*

5.5 Anecdotal Information

The client provided the following information:

- The site was used for quarrying in the past, with clay quarried from the site used for brick production (off-site);
- They are not aware of potentially contaminating activities being carried out on site, such as re-fuelling or illegal dumping of waste;
- The central part of the site was filled, the source of the fill is not known.
- Based on anecdotal evidence, it is understood that the fill may have been placed as engineered fill in the order of 15 to 20 years ago. Despite the generally compact appearance of the material, at the time of this assessment Qualtest has not been provided with records of the placement or compaction of this material; therefore, it has been assessed to be uncontrolled fill for the purposes of this assessment.

5.6 Previous reports

No previous reports for the site have been provided to Qualtest.

5.7 Summary of site history

The information obtained from the site history review has been summarised below:

- The historical titles showed that the site was owned by a number of private entities from 1921 to 1974. The uses for the site during this time are uncertain, based on an aerial photograph from 1954, it appears that the site remained undeveloped during this time.
- From 1974 to 1981 the site was owned by a commercial entity and the Housing Commission of New South Wales. Based on an aerial photograph from 1975, it appears that the site remained undeveloped during this time.
- Since 1981 to the present the site has been owned by several commercial entities: Acmil Industries Pty Ltd, PGH Limited, Monier PGH Holdings Limited, and CSR Building Products Limited. The aerial photograph from 1984 indicates that some development may be commencing on site, and in 2007 the clay quarry appears to be in operation. Based on this is inferred that the quarry commenced in the early 1980's and continued into the 2000's.
- The aerial photograph from 2010 shows the site becoming re-vegetated and it appears the quarry is no longer in operation. By 2016 the site appears largely re-vegetated.

5.8 Gaps in the Site History

Whilst the site history is reasonably comprehensive there are some gaps identified in the review as follows:

- It is not known what activities were carried out by the private owners on the site, prior to use as a clay quarry.
- It is not known to what extent the site was rehabilitated following cessation of quarrying.

6.0 Field Investigations

Geotechnical field investigations were carried out on 17 May 2017 by an experienced Qualtest Geotechnical Engineer. The geotechnical investigation comprised 14 test pits (TP01 to TP14) spread across the site (see Figure 2, Appendix A).

Three environmental samples were collected from fill materials observed in test pits TP02, TP03 and TP04. The samples were collected at TP02 0.0-0.1m, TP03 0.3-0.4m and TP04 0.7-0.8m.

Soil samples were collected directly from the excavator bucket and a clean pair of disposable gloves was used whilst handling each new sample.

The soil samples were placed into 250mL laboratory supplied glass jars for laboratory analysis. Each soil sample was placed directly into an ice-chilled esky and remained chilled during transportation to the laboratory.

7.0 Laboratory analysis

The samples were dispatched to the NATA-accredited Eurofins MGT laboratory in Oakleigh, VIC under chain of custody conditions.

The soil samples were analysed for the following:

- Total Recoverable Hydrocarbons (TRH) – 3 primary soil samples;
- Benzene, Toluene, Ethylbenzene and Xylene (BTEX) – 3 primary soil samples;
- Polycyclic Aromatic Hydrocarbons (PAHs) – 3 primary soil samples; and,
- Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) – 3 primary soil samples.

8.0 Investigation Criteria

8.1 Health and Ecological Levels (Soil)

The health and ecological investigation levels for soil, presented in the *National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), NEPC 2013*, Canberra (referred to as NEPM 2013) are generally used in NSW when selecting investigation levels for chemical contaminants in soil.

The purpose of the NEPM (2013) is to '*establish a nationally consistent approach to the assessment of site contamination to ensure sound environmental management practices by the community which includes regulators, site assessors, environmental auditors, landowners, developers and industry*'.

NEPM (2013) provides health and ecological investigation and screening levels for different exposure scenarios based on a proposed land use. Health and ecological investigation and screening levels are applicable to the first stage (Tier 1) of site assessment and are used to assist in the iterative development of a Conceptual Site Model (CSM). They are adopted as concentrations of a contaminant above which either further appropriate investigation and/or evaluation will be required, or development of an appropriate management strategy (including remediation).

Health Investigation Levels (HILs) and Health Screening levels (HSLs) are applicable for assessing human health risk via relevant exposure pathways.

The HILs were developed for a broad range of metals and organic substances. These are generic to all soil types.

The HSLs have been developed for selected petroleum compounds and fractions and are applicable to assessing human health risk via inhalation and direct contact with soil and groundwater. The HSLs depend on specific soil physicochemical properties, building configurations, land use scenarios and the depth that groundwater is encountered.

Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) are applicable for assessing risk to terrestrial ecosystems under residential, open space and commercial/industrial land use scenarios. They apply to the top 2m of soil, which corresponds to the root zone and habitation zone of many species.

The EILs are associated with selected metals and organic compounds. The EILs are site specific and are determined by calculating an Ambient Background Concentration (ABC) and an Added Contaminant Limit (ACL) for the site, which are added together to get the EIL. In the absence of ambient background concentration data, a generic ACL, based on the soils pH, Cation Exchange Capacity (CEC) and clay content, has been adopted.

The ESLs are associated with petroleum compounds and fractions and are dependent on specific soil physical properties (i.e. coarse and fine-grained soil).

9.0 Results

9.1 Subsurface Conditions

The typical soil types encountered during test pitting for the geotechnical investigation are summarised in Table 9.1. The test pit logs are presented in Appendix F.

Table 9.1 – Summary of Geotechnical Units and Soil Types

Unit	Soil Type	Description
1A	FILL – Topsoil / Root Affected	Sandy CLAY, Silty Sandy CLAY, CLAY – low plasticity to medium plasticity, dark brown / dark grey, fine to medium grained sand, root affected, some gravel in places.
1B	FILL - Other	Variable soil materials including: Sandy CLAY – variable plasticity, variable colours often including shades of grey and brown, fine to medium grained sand, trace / some fine to medium grained sub-angular to sub-rounded gravel. SAND – fine to medium grained, brown, some fines of low plasticity. CLAY – high plasticity, dark grey, with pockets and lenses of Gravelly Silty SAND. Gravelly Clayey SAND.
2	TOPSOIL	Sandy CLAY – low plasticity, dark grey-brown, fine to medium grained sand, some fine to medium grained sub-angular to sub-rounded gravel in places, root affected. Silty SAND – fine to medium grained, dark brown, fines of low plasticity, some fine to medium grained sub-angular to sub-rounded gravel in places, root affected.
3	RESIDUAL SOIL	Sandy CLAY – medium plasticity to high plasticity, grey to pale grey with some orange / dark grey to black / pale grey to white with some

Unit	Soil Type	Description
		orange, fine to medium grained sand, some fine to medium grained angular to sub-rounded gravel in places. CLAY – medium plasticity to high plasticity, dark grey to black / pale grey to grey, some orange, some fine to medium grained sand. Silty CLAY – medium to high plasticity, pale orange-grey. Silty SAND – fine to coarse grained, black, fines of medium plasticity (ORIGIN: COAL). Clayey SAND, Gravelly CLAY, Clayey Gravelly SAND with cobble sized rock fragments. With relict rock structure, extremely weathered pockets in places.
4	EXTREMELY WEATHERED (EW) ROCK with soil properties	Extremely weathered SANDSTONE with soil properties, breaks down into Sandy CLAY – medium to high plasticity, grey to pale grey with orange.
5	HIGHLY WEATHERED (HW) ROCK	SHALE, SILTSONE, COAL - estimated very low to low strength. SANDSTONE - estimated low to medium strength. Extremely to highly weathered in places.

A summary of the distribution of the geotechnical units (soil types) encountered during the geotechnical investigation are summarised in Table 9.2.

Table 9.2 – Summary of Geotechnical Units encountered at Each Test Pit Location

Location	UNIT 1A FILL-Topsoil	UNIT 1B FILL - Other	UNIT 2 Topsoil	UNIT 3 Residual Soil	UNIT 4 EW Rock	UNIT 5 HW Rock
	Depth (metres)					
TP01	0.00 - 0.10	0.10 - 0.30	-	0.30 - 1.00 2.20 - 2.30	-	1.00 - 2.20 2.30 - 3.30
TP02	0.00 - 0.20	0.20 - 0.50	-	0.50 - 0.60	0.60 - 0.80	0.80 - 0.90*
TP03	0.00 - 0.50	0.50 - 1.50	-	1.50 - 1.70	-	1.70 - 2.20
TP04	0.00 - 0.10	0.10 - 1.50	-	1.50 - 2.00	-	2.00 - 2.20
TP05	0.00 - 0.10	0.10 - 0.30	-	0.30 - 1.60	-	1.60 - 2.30
TP06	0.00 - 0.40	0.40 - 1.80	-	1.80 - 2.20	-	-
TP07	0.00 - 0.60	-	-	0.60 - 1.20	-	1.20 - 3.00
TP08	-	-	0.00 - 0.30	0.30 - 0.70	-	0.70 - 0.95*
TP09	-	0.00 - 0.60	-	0.60 - 1.50	-	1.50 - 1.60*
TP10	-	-	0.00 - 0.30	0.30 - 2.00	-	2.00 - 2.40
TP11	0.00 - 0.50	-	0.50 - 0.70	0.70 - 1.70	-	1.70 - 2.10

Location	UNIT 1A FILL-Topsoil	UNIT 1B FILL - Other	UNIT 2 Topsoil	UNIT 3 Residual Soil	UNIT 4 EW Rock	UNIT 5 HW Rock
	Depth (metres)					
TP12	-	-	0.00 - 0.30	0.30 - 0.90	-	0.90 - 0.95*
TP13	0.00 - 0.30	0.30 - 0.80	-	-	-	0.80 - 1.70*
TP14	-	-	0.00 - 0.20	0.20 - 0.50	-	0.50 - 1.60*
NOTES: * denotes refusal of excavator bucket.						

No groundwater levels or inflows were encountered in the test pits during the limited time that they remained open on the day of the field investigations.

It should be noted that groundwater conditions can vary due to rainfall and other influences including regional groundwater flow, temperature, permeability, recharge areas, surface condition, and subsoil drainage.

No odours or staining was observed during test pitting. Anthropogenic material in the form of trace amounts of brick fragments were observed in fill material between 0.0 and 0.5m in TP11.

The majority of fill materials observed appeared to be re-worked site materials. It is possible the fill observed in the central part of the site, where a former quarry void has been partially filled, and fill material observed in TP11 comprises imported fill materials.

For further information regarding the subsurface conditions observed on the site refer to the geotechnical report carried out in conjunction with this Phase 1 CA (Qualtest Report Ref: NEW17P-0074AA, dated June 2016).

9.2 Laboratory Results

Soil analytical results are summarised in Table 1, Appendix B. The laboratory analytical reports are also included in Appendix G.

Soil Analytical Results

The soil laboratory results were compared to the investigation levels, HIL A, HSL A, EIL A and ESL A, described in Section 4.0. The analytical results showed that concentrations of contaminants were reported below the adopted criteria at the three sampling locations.

10.0 Conceptual Site Model

Based on the results of the Phase 1 CA carried out on the site a conceptual site model (CSM) has been developed.

10.1 Potential Sources of Contamination

Table 10.1 (below) shows the areas of environmental concern (AECs) and associated Chemicals of Potential Concern (COPCs) identified for the site.

Table 10.1 – Potential AECs and COCs

AEC	Potentially Contaminating Activity	Potential COCs	Likelihood of Contamination	Sampling Undertaken / Comments
1. Fill used to fill the central portion of the site	Potential importation/use of fill of unknown origin and quality	Heavy Metals, TRH, BTEX, PAH, OCP, Asbestos	Low	Soil samples fromTP02, TP03, TP04No potential ACM was observed, therefore the presence of asbestos is considered unlikely.
2. Fill observed in access track and TP11, and stockpile of bricks observed.	Potential importation/use of fill of unknown origin and quality	Heavy Metals, TRH, BTEX, PAH, OCP, Asbestos	Low	No sampling was undertaken. The stockpile of bricks appeared to have been imported for use in the access roads (after crushing). The bricks in the fill in TP11 may be associated with road construction, but this is not confirmed. No potential ACM was observed, therefore the presence of asbestos is considered unlikely.
Surface water and sediment in ponds	Potential contamination from run-off from fill materials on site	Heavy Metals, TRH, PAH, OCP, pH, EC	Low	No sampling was undertaken.

10.2 Potentially Affected Media, Receptors and Exposure Pathways

Table 10.2 summarises the potentially affected media, potential receptors to contamination, and potential and complete exposure pathways.

Table 10.2 – Summary of Potentially Affected Media, Receptors and Exposure Pathways

Consideration	Information
Potentially affected media	Soil Surface water and sediments
Potential transport mechanisms & exposure pathways	Direct dermal contact with contaminated soil and/or surface water Ingestion of contaminated soil and/or surface water Leaching of soil contaminants to surface water Surface water discharge to ponds on the eastern side of the site.
Potential receptors of contamination	***Site occupants & construction/maintenance workers*** Potential exposure via dermal contact with soil and surface water, and ingestion of soil and surface water. Contact with groundwater is considered unlikely, taking into account the anticipated depth to groundwater (>5m bgs in a semi-confined aquifer), and that groundwater is not currently extracted on site for beneficial use. ***Surface water*** Contaminants could leach from soils into surface water and sediments in the ponds on the eastern side of the site. ***Groundwater*** Contaminants could leach from soils into groundwater. This is considered a lower risk as groundwater is expected to be present at depths >5m bgs within a semi-confined aquifer. ***Unnamed Creek*** Surface water is anticipated to discharge to an unnamed creek about 50m east of the site. It is considered that groundwater could discharge to the unnamed creek. Given the low risk of groundwater to be contaminated as a result of site conditions, the risk of site contamination reaching this creek via groundwater is low.

10.3 Potential and Complete Exposure Pathways

Table 10.3 (below) summarises the potential and complete exposure pathways.

Table 10.3 – Potential and Complete Exposure Pathways

Receptor/Media	Exposure Pathway	Comment
Site occupants and construction/maintenance workers	Complete	There is a potential for site users and workers to be exposed to contaminated soil. Preliminary soil sampling and analysis showed concentrations of contaminants below the adopted criteria. Based on this, the risk of potential contamination being present is considered low.
Soil	Complete	Low contaminant concentrations were reported in the samples analysed.
Surface water and sediment in onsite ponds	Complete	Excess run-off from the site would flow into these ponds. If soil contamination is present, surface water and sediments may be impacted. This is considered to be a low risk.
Surface water ecosystems	Complete	Excess runoff from the site is anticipated to flow into an unnamed creek to the eats of the site. Given that the potential for contamination to be present on the site is low, it is considered that surface water run-off would be unlikely to cause contamination of the unnamed creek.
Groundwater users	Likely to be incomplete	Groundwater is anticipated to be at depths >5m and is not considered to be contaminated, meaning a complete exposure pathway probably does not exist.

11.0 Discussion

The site history review indicated that the site has been used for quarrying of clay since the mid 1980's. Prior to this, the uses of the site are unknown, but it is anticipated the site remained undeveloped.

During the site walkover, the majority of the site was observed to be bushland (re-vegetated quarry lands). A vacant, lower lying area was present in the centre of the site, which appeared to be a partially filled quarry void. An access track was present around the perimeter of the former quarry area.

Fill materials were observed in many of the test pits to depths between 0.1m and 1.5m bgs. The majority of fill materials observed appeared to be re-worked site materials. It is possible the fill observed in the central part of the site (partially fill former quarry void), and fill material observed in TP11 comprises imported fill materials.

A stockpile of bricks was observed to the east of the central lower area, and fill containing bricks was observed on the access track providing egress to the site. Fill containing brick fragments was also observed in a test pit (TP11) on the northern side of the site. The bricks appear to have been imported to the site for forming access tracks. No obvious potential Asbestos Containing Materials (ACM) were observed in the stockpile of bricks, the access roads, or the fill in the test pits.

Three AECs were identified: AEC 1 comprises the fill in the central part of the site, AEC 2 comprises fill observed on the access track and in TP11, and AEC 3 comprised surface water and sediment in ponds on the eastern side of the site.

Three samples were collected of the fill in AEC 1, and showed concentrations of contaminants below the adopted residential land use criteria. The sampling density was not sufficient to characterise the fill. Taking into account that about 3m to 5m of fill may be placed over this area, and no observations of gross contamination (odours or staining) were observed, it is considered that further sampling and analysis in the area of AEC 1 is not required.

No samples were collected in AEC 2. The potential for contamination in AEC 2 is considered to be low based on observations of the materials. Depending on the proposed use of this material, further sampling and analysis may be required (i.e. if it is to be placed within 2m of the surface of the residential allotments).

No samples were collected in AEC 3. The potential for contamination in this AEC is low. Taking into account that excess water from AEC 3 flows off-site, assessment of potential contamination is recommended.

12.0 Conclusions and Recommendations

Based on the site history and sampling and analysis carried out to date, the site is likely to be suitable for the proposed development in its present state, provided the following recommendations are implemented:

- Due to the presence of fill materials, an Unexpected Finds Procedure should be prepared and implemented during earthworks on the site.
- Sampling and analysis of the surface water and sediments in the ponds is carried out;
- Further sampling and analysis of fill materials on the access tracks and northern portion of the site (TP11) may be required if these materials are proposed to be used within 2m of the final surface of the residential allotments.

- If material is proposed to be re-used or disposed off-site, the material will require classification in accordance with the NSW EPA (2014) Waste Classification Guidelines, or assessment in accordance with a Resource Recovery Exemption/Order under the POEO (Waste) Regulation 2014.

13.0 Limitations

The findings presented in the report and used as the basis for recommendations presented herein were obtained using normal, industry accepted practices and standards. To our knowledge, they represent a reasonable interpretation of the general conditions of the site.

Data and opinions contained within the report may not be used in other contexts or for any other purposes without prior review and agreement by Qualtest. If this report is reproduced, it must be in full.

If you have any questions regarding this report, please do not hesitate to contact Jason Lee or the undersigned.

For and on behalf of Qualtest Laboratory (NSW) Pty Ltd

Emma Coleman
Senior Environmental Scientist

14.0 References

CSIRO Soil and Landscape Grid of Australia, accessed from http://www.clw.csiro.au/aclep/soilandlandscapegrid/ViewData-KML.html on 14 June 2017

Friebel & Nadebaum (2011). *Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater* (technical paper No.10) Guidelines, CRC for Contamination Assessment and Remediation of the Environment (CRC CARE).

Hawley S.P., Glen R.A. and Baker C.J. (1995) Newcastle Coalfield Regional Geology 1:100 000, 1st edition. Geological Survey of New South Wales, Sydney.

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

NSW Department of Primary Industries (Office of Water) Registered Groundwater Bore Map, accessed from http://allwaterdata.water.nsw.gov.au/water.stm, accessed on 14 June 2017.

NSW Land and Property Information, Spatial Information eXchange (SIX) Maps - Topographic Map, accessed from https://maps.six.nsw.gov.au/, accessed on 14 June 2017.

NSW Department of Land and Water Conservation (1997) Beresfield Acid Sulfate Soil Risk Map (1:25,000 scale, Edition Two)

NSW OEH (2011) Guidelines for Consultants Reporting on Contaminated Sites.

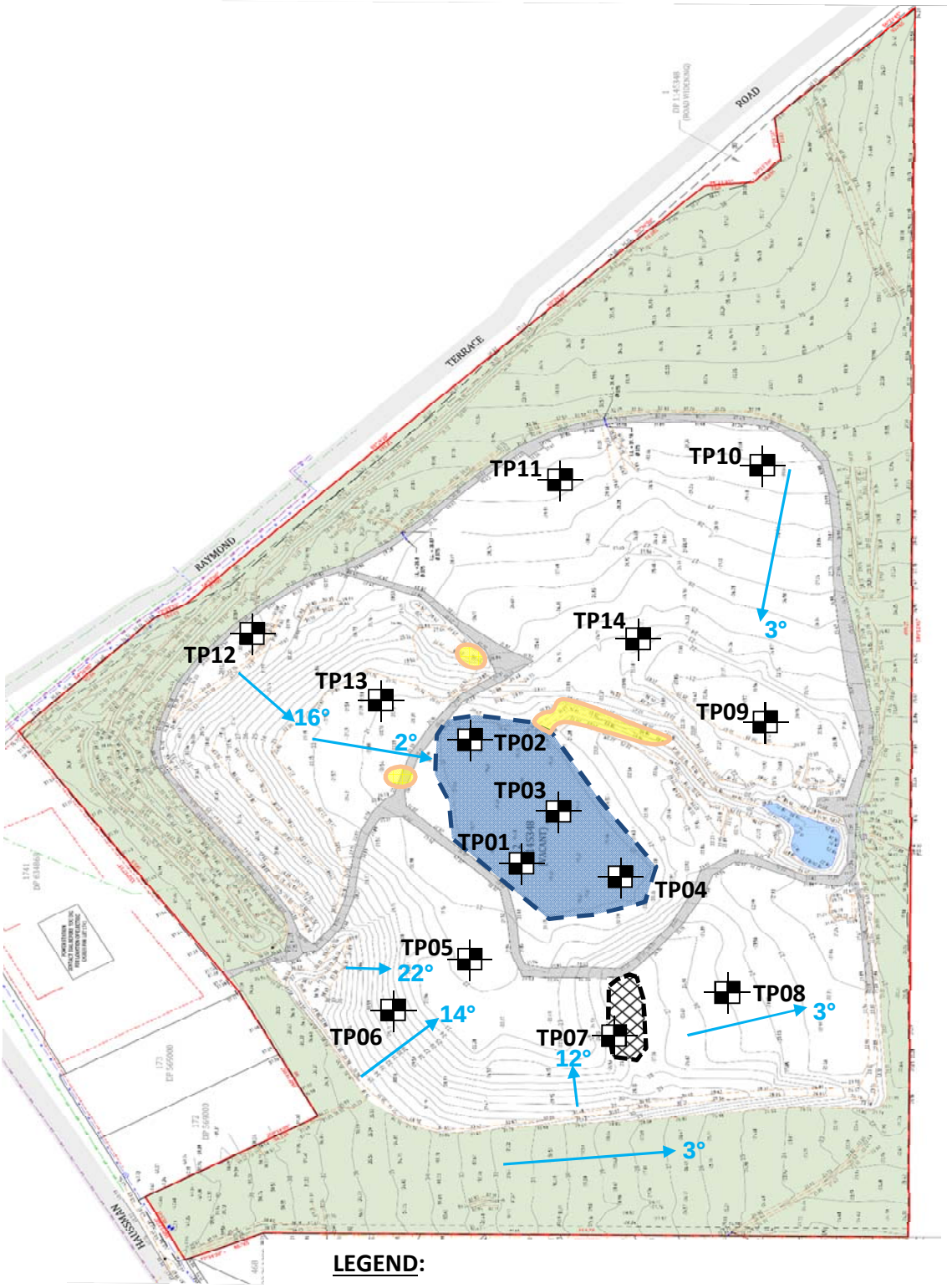
APPENDIX A:

Figures

Figure based on Sixmaps. (https://maps.six.nsw.gov.au)

Client:	McCloy Group Pty Ltd	Drawing No:	FIGURE 1
Project:	Proposed Seniors Living Development	Project No:	NEW17P-0074
Location:	107 Haussman Drive, Thornton NSW	Scale:	N.T.S.
Title:	Site Locatality Plan	Date:	21/06/2017

Qualtest LABORATORY (NSW) PTY LTD



LEGEND:

- Approximate test pit location.
- Approximate extent of filled area in base of pit.
- Approximate extent of potential topsoil fill mound.
- Approximate location of observed rock outcrop.
- 5° Approximate slope angle and direction.

Based upon contour plan prepared by Delfs Lascelles (Proj. No. 15327, Dwg No. 1, Rev. 1, dated 09/05/2017).

Qualtest LABORATORY (NSW) PTY LTD	Client:	McCLOY GROUP	Drawing No:	FIGURE 2
	Project:	PROPOSED SENIORS LIVING DEVELOPMENT	Project No:	NEW17P-0074
	Location:	107 HAUSSMAN DRIVE, THORNTON	Scale:	N.T.S.
	Title:	SITE LAYOUT AND APPROXIMATE TEST PIT LOCATIONS	Date:	28/06/2017

APPENDIX B:

Tables

McCloy Group
NEW17P-0074

Table 1: Soil Analytical Results
107 Haussman Drive, Thornton

Qualtest LABORATORY (NSW) PTY LTD

							Field ID	TP02 0.0-0.1M	TP03 0.3-0.4M	TP04 0.7-0.8M
							Date	17/05/2017	17/05/2017	17/05/2017
Analytes		Units	EQL	HIL-A [1]	HSL A [2]	EIL A/ESL A [3]				
Metals	Arsenic	mg/kg	2	100		100		4.3	5.7	25
	Cadmium	mg/kg	0.4	20				< 0.4	< 0.4	< 0.4
	Chromium	mg/kg	5	100		190*		5.1	< 5	< 5
	Copper	mg/kg	5	6000		95*		9.7	< 5	7.7
	Lead	mg/kg	5	300		1100		14	9.3	16
	Mercury	mg/kg	5	40				< 0.1	< 0.1	< 0.1
	Nickel	mg/kg	5	400		30*		< 5	< 5	< 5
	Zinc	mg/kg	5	7400		70*		19	22	36
PAHs	Acenaphthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5
	Acenaphthylene	mg/kg	0.5					< 0.5	< 0.5	< 0.5
	Anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5
	Benz(a)anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene	mg/kg	0.5			0.7		< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ	mg/kg	0.6	3				1.2	1.2	1.2
	Benzo(b&j)fluoranthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5
	Benzo(g.h.i)perylene	mg/kg	0.5					< 0.5	< 0.5	< 0.5
	Benzo(k)fluoranthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5
	Chrysene	mg/kg	0.5					< 0.5	< 0.5	< 0.5
	Dibenz(a.h)anthracene	mg/kg	0.5					< 0.5	< 0.5	< 0.5
	Fluoranthene	mg/kg	0.5					< 0.5	< 0.5	< 0.5
	Fluorene	mg/kg	0.5					< 0.5	< 0.5	< 0.5
	Indeno(1.2.3-cd)pyrene	mg/kg	0.5					< 0.5	< 0.5	< 0.5
	Naphthalene	mg/kg	0.5			170		< 0.5	< 0.5	< 0.5
	Phenanthrene	mg/kg	0.5					< 0.5	< 0.5	< 0.5
	Pyrene	mg/kg	0.5					< 0.5	< 0.5	< 0.5
	Total PAH	mg/kg	0.5	300				< 0.5	< 0.5	< 0.5
BTEX	Benzene	mg/kg	0.1		0.5	50		< 0.1	< 0.1	< 0.1
	Ethylbenzene	mg/kg	0.1		55	70		< 0.1	< 0.1	< 0.1
	Toluene	mg/kg	0.1		160	85		< 0.1	< 0.1	< 0.1
	Xylenes	mg/kg	0.3		40	105		< 0.3	< 0.3	< 0.3
TRH	Naphthalene	mg/kg	0.5		3			< 0.5	< 0.5	< 0.5
	TRH C6-C10	mg/kg	20			180		< 20	< 20	< 20
	TRH C6-C10 less BTEX (F1)	mg/kg	20		45			< 20	< 20	< 20
	TRH >C10-C16	mg/kg	50			120		< 50	< 50	< 50
	TRH >C10-C16 less Naphthalene (F2)	mg/kg	50		110			< 50	< 50	< 50
	TRH >C16-C34	mg/kg	100			300		< 100	< 100	< 100
	TRH >C34-C40	mg/kg	100			2800		< 100	< 100	< 100

Notes

* No site specific testing for pH and CEC was carried out, therefore conservative EILs have been adopted

Result Concentration exceeds adopted HIL A critieria

Result Concentration exceeds adopted HSL A criteria

Result Concentration exceeds adopted EIL/ESL A criteria

1 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 2013) - Table 1A(1): Health Investigation Levels (Residential A)

2 NEPC (2013) Soil Health Screening Levels for Vapour Intrusion, Residential A, Sand, 0m to <1m

3 NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 2013) - Ecological Investigation and Screening Levels (Urban Residential and Public Open Space, Sand)

APPENDIX C:

Groundwater Bore Search

NSW Office of Water
Work Summary

GW079948

Licence: | **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s):

Work Type: Bore
Work Status:
Construct.Method:
Owner Type:

Commenced Date: | **Final Depth:**
Completion Date: | **Drilled Depth:**

Contractor Name:
Driller:
Assistant Driller:

Property: | **Standing Water Level (m):**
GWMA: | **Salinity Description:**
GW Zone: | **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	GLOUC	GLOUC.049	
Licensed:			

Region: 20 - Hunter | **CMA Map:**
River Basin: - Unknown | **Grid Zone:** | **Scale:**
Area/District:

Elevation: 9.87 m (A.H.D.) | **Northing:** 6372613.0 | **Latitude:** 32°46'36.2"S
Elevation Source: Unknown | **Easting:** 370081.0 | **Longitude:** 151°36'46.0"E

GS Map: - | **MGA Zone:** 0 | **Coordinate Source:** Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

15/02/2000: Form A Remarks:
RZM MONITORING BORE SK 7653
01/12/2009: Reviewed data - nothing to update.

***** End of GW079948 *****

NSW Office of Water
Work Summary

GW200414

Licence: 20BL169475 **Licence Status:** ACTIVE

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s):

Work Type: Bore
Work Status:
Construct.Method:
Owner Type:

Commenced Date: **Final Depth:** 10.00 m
Completion Date: 09/09/2004 **Drilled Depth:** 10.00 m

Contractor Name:
Driller:
Assistant Driller:

Property: N/A 114 CHELMSFORD DRIVE METFORD 2323 **Standing Water Level:**
GWMA: - **Salinity:**
GW Zone: - **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	NORTH	NORTH.34	1/1001539
Licensed:	NORTHUMBERLAND	MAITLAND	Whole Lot 1//1001539

Region: 20 - Hunter **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6373761.0 **Latitude:** 32°45'58.9"S
Elevation Source: Unknown **Easting:** 369960.0 **Longitude:** 151°36'41.9"E

GS Map: - **MGA Zone:** 0 **Coordinate Source:** Map Interpretation

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	10.00	0			Unknown

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	fill (silty sand, dark brown, medium grained sand, minor medium plasticity clay inclusions	Fill	

			without)		
0.30	0.50	0.20	fill (clayey sand, light brown medium grained sand, medium plasticity clay fines)	Fill	
0.50	1.30	0.80	clay (silty, light grey, orange mottling, low plasticity fines)	Clay	
1.30	2.50	1.20	sandstone (extremely weathered, fine grained, red and grey mottled)	Clay	
2.50	4.00	1.50	sandstone (very weathered, brown orange, fine to very fine grained, trends to siltstone)	Sandstone	
4.00	6.00	2.00	sandstone (moderately weathered, orange brown, fine grained)	Sandstone	
6.00	6.50	0.50	sandstone (fine grained, minor weathering, light grey)	Sandstone	
6.50	8.00	1.50	siltstone (grey, minor unweathered carbonaceous fragments, iron stained bands throughtout)	Siltstone	
8.00	8.20	0.20	coal (black, minor carbonaceous mudstone bands, moderately hard, 90-100% dull, fresh)	Invalid Code	
8.20	10.00	1.80	sandstone (light grey, fine to medium grey, moderately hard)	Sandstone	

Remarks

***** End of GW200414 *****

NSW Office of Water
Work Summary

GW200415

Licence: 20BL169475 **Licence Status:** ACTIVE

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s):

Work Type: Bore
Work Status:
Construct.Method:
Owner Type:

Commenced Date: **Final Depth:** 20.10 m
Completion Date: 10/09/2004 **Drilled Depth:** 20.10 m

Contractor Name:
Driller:
Assistant Driller:

Property: N/A 114 CHELMSFORD DRIVE METFORD 2323 **Standing Water Level:**
GWMA: - **Salinity:**
GW Zone: - **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	NORTH	NORTH.34	1/1001539
Licensed:	NORTHUMBERLAND	MAITLAND	Whole Lot 1//1001539

Region: 20 - Hunter **CMA Map:**
River Basin: - Unknown **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6373738.0 **Latitude:** 32°45'59.7"S
Elevation Source: Unknown **Easting:** 369986.0 **Longitude:** 151°36'42.9"E

GS Map: - **MGA Zone:** 0 **Coordinate Source:** Map Interpretation

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	20.10	0			Unknown

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.30	1.30	clay (silty, sandy, light to dark brown, low plasicity, fine to medium grained sand. Some	Clay	

			grey orange mottling)		
1.30	1.50	0.20	clay (sandy silty, orange grey mottled)	Clay	
1.50	4.00	2.50	sandstone (medium grained, light grey, moderately weathered with orange brown mottling near top)	Sandstone	
4.00	6.50	2.50	sandstone (fine to very fine grained, tends to siltstone, orange, moderately weathered)	Sandstone	
6.50	7.00	0.50	coal (black, tends to claystone in part, minor weathering)	Invalid Code	
7.00	9.00	2.00	siltstone (grey, tends to fine sandstone, minor carbonaceous traces)	Siltstone	
9.00	15.00	6.00	sandstone (light grey, white, fine to medium grained, moderately hard, not weathered, minor siltstone bands)	Sandstone	
15.00	17.00	2.00	sandstone (with siltstone, interbedded, light grey, fine to medium grained sandstone, grey siltstone, minor carbonacous)	Sandstone	
17.00	20.10	3.10	sandstone (fine to medium grained, light grey/white, fresh, hard)	Sandstone	

Remarks

***** End of GW200415 *****

APPENDIX D:

Site History Documents

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)
ABN 82 147 943 842

18/36 Osborne Road,
Manly NSW 2095

Telephone: +612 9977 6713
Mobile: 0412 169 809
Email: search@alsearchers.com.au

18th May, 2017

QUALTEST LABORATORY (NSW) PTY LTD
8 Ironbark Close,
WARABROOK NSW 2304

Attention: Emma Coleman

RE: **Hausmann Drive,**
Thornton
Job no. NEW17P-0074

Current Search

Folio Identifier 2/1145348 (title attached)
DP 1145348 (plan attached)
Dated 17th May, 2017
Registered Proprietor:
CSR BUILDING PRODUCTS LIMITED

Title Tree
Lot 2 DP 1145348

Folio Identifier 2/1145348

Folio Identifier 2/867766

Folio Identifier 1742/634868

Certificate of Title Volume 15144 Folio 152

Certificate of Title Volume 12467 Folio 13

Certificate of Title Volume 11007 Folio 116

Certificate of Title Volume 4332 Folio 26

Certificate of Title Volume 4123 Folio 36

Certificate of Title Volume 3240 Folio 25

Certificate of Title Volume 3051 Folio 79

PA 19247

****

Summary of proprietor(s)
Lot 2 DP 1145348

Year	Proprietor(s)
	(**Lot 2 DP 1145348)**
2010 – todate	CSR Building Products Limited
	(**Lot 2 DP 867766)**
2010 – 2010	CSR Building Products Limited *(formerly MonierPGH Holdings Limited)*
1997 – 2010	Monier PGH Holdings Limited
	(Lot 1742 DP 634868)
1995 – 1997	Monier PGH Holdings Limited
1989 – 1995	PGH Limited *(formerly EKI Pty Limited)*
1988 – 1989	Acmil Industries Pty. Limited.
	(Lot 1742 DP 634868 – CTVol 15144 Fol 152)
1983 – 1988	Acmil Industries Pty. Limited.
	(Lot 174 DP 569000 – CTVol 12467 Fol 13)
1981 – 1983	Acmil Industries Pty. Limited.
1975 – 1981	The Housing Commission of New South Wales
1974 – 1975	Jemanapa Pty Limited
1974 – 1974	Ena Albertha Latter, married woman Ada Evelyn Burns, married woman Ernest William Green, millwright
	(Lot 174 DP 534145 – CTVol 11007 Fol 116)
1969 – 1974	Ena Albertha Latter, married woman Ada Evelyn Burns, married woman Ernest William Green, millwright
	(Lot 17 DP 10419 – Area 54 Acres 3 Roods 23 Perches – CTVol 4332 Fol 26)
1963 – 1969	Ena Albertha Latter, married woman Ada Evelyn Burns, married woman Ernest William Green, millwright
1929 – 1963	William George Green, contractor
	(Lot 17 DP 10419 and other land – Area 224 Acres 1 Rood 18 ¼ Perches – CTVol 4123 Fol 36)
1928 – 1929	William George Green, contractor
	(Lot 17 DP 10419 and other land – Area 224 Acres 1 Rood 18 ¼ Perches – CTVol 3240 Fol 25)
1921 – 1928	William George Green, contractor
	(Portion 46 Parish Alnwick and other land – Area 2814 Acres 3 Roods 25 Perches – CTVol 3051 Fol 79
1921 – 1921	George William Irving Fane De Salis, returned soldier

1920 – 1921	Rodolph Fane De Salis, esquire

****

Land & Property Information

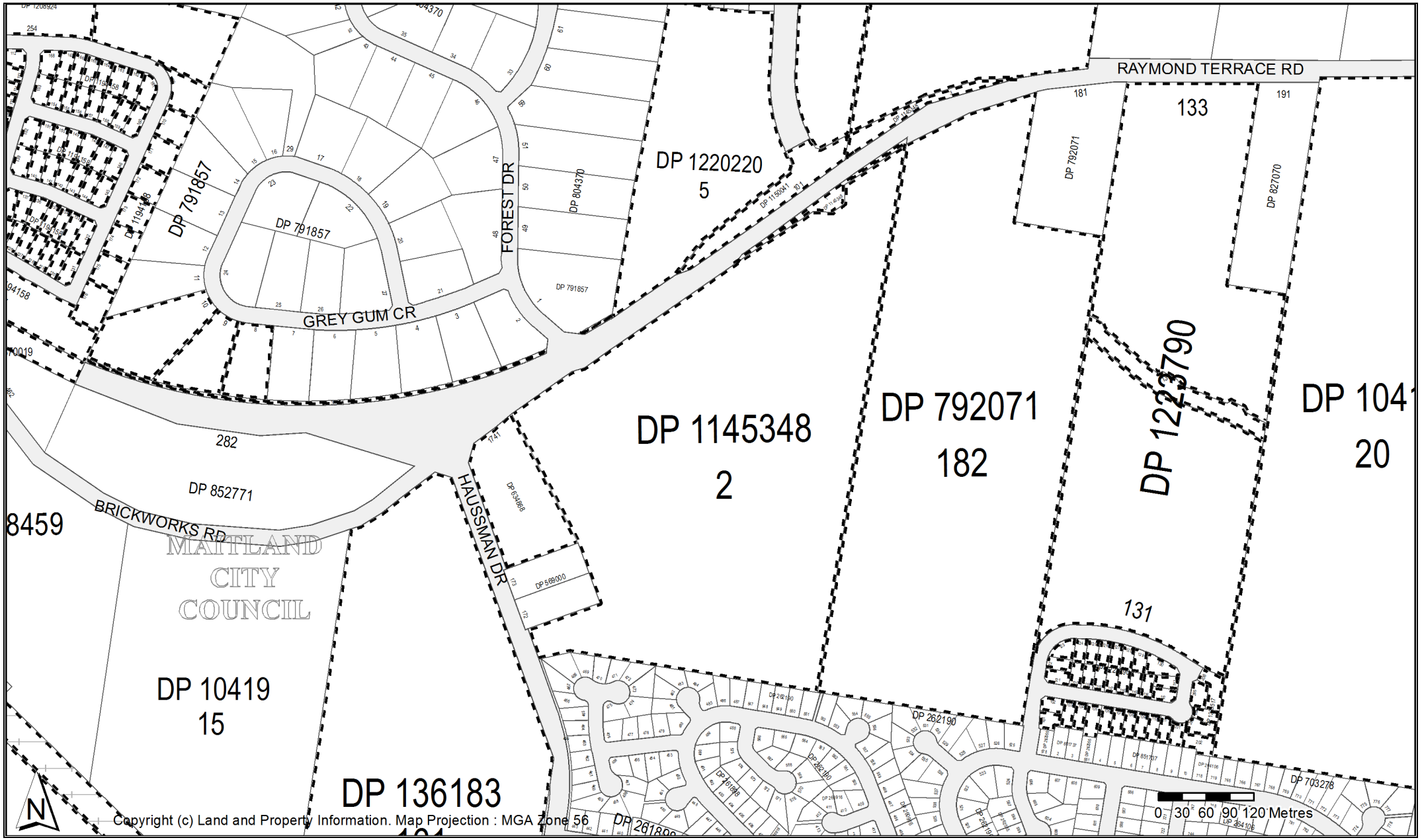
Cadastral Records Enquiry Report

Ref : qualtest - thornton

Requested Parcel : Lot 2 DP 1145348

Identified Parcel : Lot 2 DP 1145348

Locality : THORNTON **LGA :** MAITLAND **Parish :** ALNWICK **County :** NORTHUMBERLAND



	Status	Surv/Comp	Purpose
DP10419			
Lot(s): 20			
DP269213	REGISTERED	SURVEY	EASEMENT
DP1227381	REGISTERED	SURVEY	EASEMENT
DP1228517	REGISTERED	SURVEY	SUBDIVISION
DP1230998	REGISTERED	COMPILATION	EASEMENT
DP136183			
Lot(s): 161			
DP10419	HISTORICAL	SURVEY	UNRESEARCHED
DP1128210	REGISTERED	SURVEY	EASEMENT
DP634868			
Lot(s): 1741			
DP1138708	REGISTERED	SURVEY	SURVEY INFORMATION ONLY
DP791857			
Lot(s): 8, 9, 10, 30			
DP1113732	REGISTERED	SURVEY	EASEMENT
DP792071			
Lot(s): 182			
DP269213	REGISTERED	SURVEY	EASEMENT
DP832922			
Lot(s): 1538			
DP269213	REGISTERED	SURVEY	EASEMENT
DP870019			
Lot(s): 465			
CA174812 - LOT 465 DP870019			
DP1005289			
Lot(s): 609			
DP878202	HISTORICAL	SURVEY	SUBDIVISION
DP1145348			
Lot(s): 3, 4			
DP797295	HISTORICAL	COMPILATION	DEPARTMENTAL
DP1054639	REGISTERED	SURVEY	EASEMENT
Lot(s): 1, 2			
DP269213	REGISTERED	SURVEY	EASEMENT
DP867766	HISTORICAL	SURVEY	SUBDIVISION
DP1055591	REGISTERED	COMPILATION	EASEMENT
DP1150041			
Lot(s): 101			
DP1020387	HISTORICAL	COMPILATION	LIMITED FOLIO CREATION
DP1053679	REGISTERED	SURVEY	EASEMENT
DP1108020	REGISTERED	SURVEY	SUBDIVISION
DP1126415	REGISTERED	SURVEY	REDEFINITION
DP1194158			
Lot(s): 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177			
DP651132	HISTORICAL	COMPILATION	DEPARTMENTAL
DP870019	HISTORICAL	SURVEY	SUBDIVISION
DP881116	HISTORICAL	SURVEY	SUBDIVISION
DP1090329	REGISTERED	SURVEY	SUBDIVISION
DP1113732	REGISTERED	SURVEY	EASEMENT
DP1195141	REGISTERED	SURVEY	SUBDIVISION
DP1206985			
Lot(s): 1020			
CA173940 - LOT 1020 DP1206985			
CA173965 - LOT 1021 DP1207172			

	Status	Surv/Comp	Purpose
DP1208924			
Lot(s): 254			
DP651132	HISTORICAL	COMPILATION	DEPARTMENTAL
DP870019	HISTORICAL	SURVEY	SUBDIVISION
DP881116	HISTORICAL	SURVEY	SUBDIVISION
DP1090329	REGISTERED	SURVEY	SUBDIVISION
DP1113732	REGISTERED	SURVEY	EASEMENT
DP1194158	REGISTERED	SURVEY	SUBDIVISION
DP1195141	REGISTERED	SURVEY	SUBDIVISION
DP1219726			
Lot(s): 369			
DP651132	HISTORICAL	COMPILATION	DEPARTMENTAL
DP870019	HISTORICAL	SURVEY	SUBDIVISION
DP881116	HISTORICAL	SURVEY	SUBDIVISION
DP1090329	REGISTERED	SURVEY	SUBDIVISION
DP1113732	REGISTERED	SURVEY	EASEMENT
DP1194158	REGISTERED	SURVEY	SUBDIVISION
DP1195141	REGISTERED	SURVEY	SUBDIVISION
DP1208924	REGISTERED	SURVEY	SUBDIVISION
DP1220220			
Lot(s): 4, 5			
DP1020387	HISTORICAL	COMPILATION	LIMITED FOLIO CREATION
DP1053679	REGISTERED	SURVEY	EASEMENT
DP1108020	REGISTERED	SURVEY	SUBDIVISION
DP1126415	REGISTERED	SURVEY	REDEFINITION
DP1150041	REGISTERED	SURVEY	SUBDIVISION
DP1150600	REGISTERED	SURVEY	SUBDIVISION
DP1155695	REGISTERED	SURVEY	SUBDIVISION
DP1171131	REGISTERED	SURVEY	SUBDIVISION
DP1223790			
Lot(s): 131			
DP1227381	REGISTERED	SURVEY	EASEMENT
DP1228517	REGISTERED	SURVEY	SUBDIVISION
Lot(s): 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133			
DP269213	REGISTERED	SURVEY	EASEMENT
DP851737	HISTORICAL	SURVEY	SUBDIVISION
DP1228517			
Lot(s): 201, 202, 203, 204, 205, 206			
DP269213	REGISTERED	SURVEY	EASEMENT
DP851737	HISTORICAL	SURVEY	SUBDIVISION
DP1223790	REGISTERED	SURVEY	SUBDIVISION
DP1227381	REGISTERED	SURVEY	EASEMENT

Plan	Surv/Comp	Purpose
DP10419	SURVEY	UNRESEARCHED
DP136183	COMPILATION	DEPARTMENTAL
DP175278	COMPILATION	UNRESEARCHED
DP248905	SURVEY	SUBDIVISION
DP260916	SURVEY	SUBDIVISION
DP261898	SURVEY	SUBDIVISION
DP262190	SURVEY	SUBDIVISION
DP262555	SURVEY	SUBDIVISION
DP264106	SURVEY	SUBDIVISION
DP569000	SURVEY	SUBDIVISION
DP634868	SURVEY	SUBDIVISION
DP703278	SURVEY	SUBDIVISION
DP778111	SURVEY	SUBDIVISION
DP791857	SURVEY	SUBDIVISION
DP792071	SURVEY	SUBDIVISION
DP804370	SURVEY	SUBDIVISION
DP807164	SURVEY	SUBDIVISION
DP827070	SURVEY	SUBDIVISION
DP832922	SURVEY	SUBDIVISION
DP847510	SURVEY	REDEFINITION
DP851737	SURVEY	SUBDIVISION
DP852771	SURVEY	SUBDIVISION
DP870019	SURVEY	SUBDIVISION
DP1005289	SURVEY	SUBDIVISION
DP1078459	COMPILATION	DEPARTMENTAL
DP1145348	SURVEY	SUBDIVISION
DP1145348	UNRESEARCHED	SUBDIVISION
DP1150041	SURVEY	SUBDIVISION
DP1150041	UNRESEARCHED	SUBDIVISION
DP1194158	UNRESEARCHED	SUBDIVISION
DP1194158	SURVEY	SUBDIVISION
DP1194158	SURVEY	SUBDIVISION
DP1206985	COMPILATION	LIMITED FOLIO CREATION
DP1208924	SURVEY	SUBDIVISION
DP1208924	UNRESEARCHED	SUBDIVISION
DP1208924	SURVEY	SUBDIVISION
DP1219726	SURVEY	SUBDIVISION
DP1219726	UNRESEARCHED	SUBDIVISION
DP1220220	UNRESEARCHED	SUBDIVISION
DP1220220	SURVEY	SUBDIVISION
DP1223790	SURVEY	SUBDIVISION
DP1223790	UNRESEARCHED	SUBDIVISION
DP1223790	SURVEY	SUBDIVISION
DP1228517	SURVEY	SUBDIVISION

NEW SOUTH WALES

FICATE OF TITLE

ROPERTY ACT, 1900, as amended.

11007116

Application No. 19247

Prior Title Volume 4332 Folio 26

Vol. 11007 Fol. 116

EH Edition issued 13-3-1969

CANCELLED

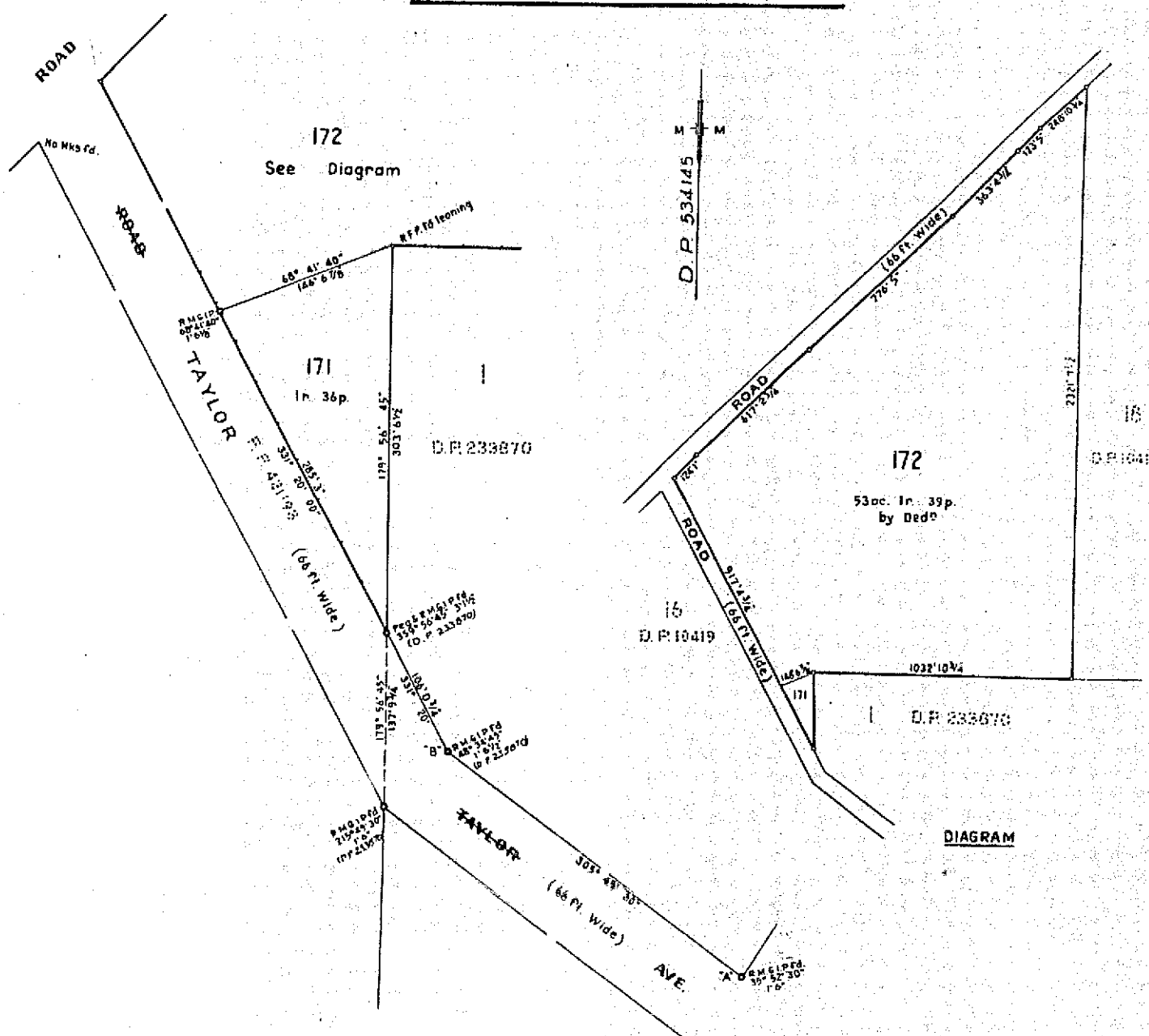
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness M.Flint

Registrar General.

(Page 1) Vol. 11007 Fol. 116

PLAN SHOWING LOCATION OF LAND



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 172 in Deposited Plan 534145 at Thornton in the City of Maitland Parish of Alnwick and County of Northumberland being part of Portion 46 granted to Joseph Moore on 6-6-1835.

FIRST SCHEDULE

ENA ALBERTHA LATTER, of Waratah, Married Woman, ADA EVELYN BURNS, of Broadmeadow, Married Woman and ERNEST WILLIAM GREEN, of Mayfield East, Millwright, as Joint Tenants.

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. Caveat No.J446972 by the Registrar General. Entered 24-9-1963.

Registrar General.

Vol. 11007 Fol 116

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General
This deed is cancelled as to the whole New Certificates of Title have issued on 21.6.1974 for lots in Deposited Plan No. 569000 as follows:- Lots 172 to 174 Vol. 12467 Fol 11 to 13 respectively. REGISTRAR GENERAL					

N373753.
Ple X.
DP 569000
6/6/74

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION
Caveat	N373753	17-7-1973		10-8-1973		

(Page 2 of 2 pages)

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED

[redacted]ICATE OF TITLE

NEW SOUTH WALES

PROPERTY ACT, 1900

12467013

Vol. 12467 Fol. 13

Appln No.19247

Prior Title Vol.11007 Fol.116

Edition issued 21-6-1974.

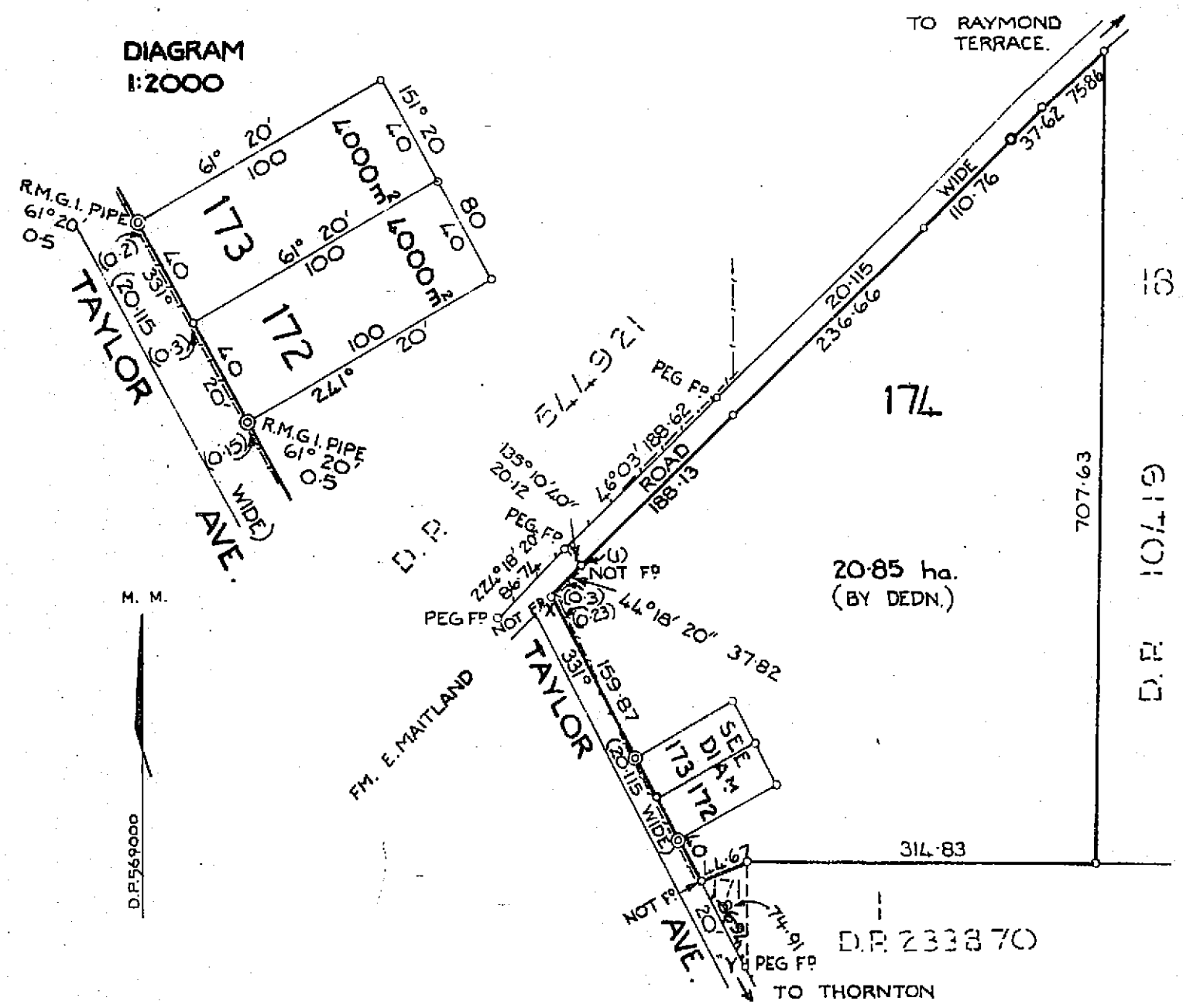
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Registrar General.

(Page 1) Vol. 12467 Fol. 13

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 174 in Deposited Plan 569000 at Thornton in the City of Maitland Parish of Alnwick and County of Northumberland being part of Portion 46 granted to Joseph Moore on 6-6-1835.

FIRST SCHEDULE

~~ENA ALBERTHA LATHAM of Waratah, Married Woman, ADA EVELYN BURNS of Broadmeadow, Married Woman and ERNEST WILLIAM GREEN of Mayfield East, Millwright, as Joint Tenants.~~

SECOND SCHEDULE

GRY
1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. ~~Caveat No.J446975 by the Registrar General. Entered 24-9-1963.~~ Withdrawn N937235
3. ~~Caveat No.N373753. Entered 10-8-1973.~~ Withdrawn N937234

N937234 w/x
- 235 Tx
N946441 D)
P259243 Dis
P339043 D
044 withdrawn
045 T
S495097 T R
DP634868
Registered 13/10/83

Vol. 12467 Fol. 13

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
~~Jemanpq Pty. Limited~~	~~Transfer~~	~~N937235~~	~~9-7-1974~~	~~26-8-1974~~	[signature]
~~The Housing Commission of New South Wales~~	~~Transfer~~	~~P339045~~	------	~~30-9-1975~~	[signature]
Acmil Industries Pty. Limited by Transfer S495097. Registered 3-6-1981					[signature]
This deed is cancelled as to WHOLE (EX ROAD)					
certificates of title have issued on 24-10-83					
for the lots in DEPOSITED Plan No. 634868 as follows:					
Lots 1741/1742 Vol. 15144 Fol. 151/152					

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION		
~~Mortgage~~	~~N946443~~	~~12-7-1974~~	~~to Custom Credit Corporation Limited~~	~~26-8-1974~~	[signature]	Discharged	P339043	[signature]
~~Writ~~	~~P259243~~			~~14-5-1975~~	[signature]	Withdrawn	P339044	[signature]
THE INTEREST OF THE COUNCIL OF THE CITY OF MAITLAND IN THE ADDITION TO EXISTING ROADS SHOWN ON DP634868				13-10-1983	[signature]			

The residue of land in this folio comprises: ROAD

REGISTRAR GENERAL

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

15144152

[redacted]ICATE OF TITLE

NEW SOUTH WALES [redacted]L PROPERTY ACT, 1900

Vol. 15144 Fol. 152

First Title : Old System

Prior Title : Vol.12467 Fol.13

EDITION ISSUED 26 10 1983

15144 152 (Page 1) Vol. ...... Fol. ......

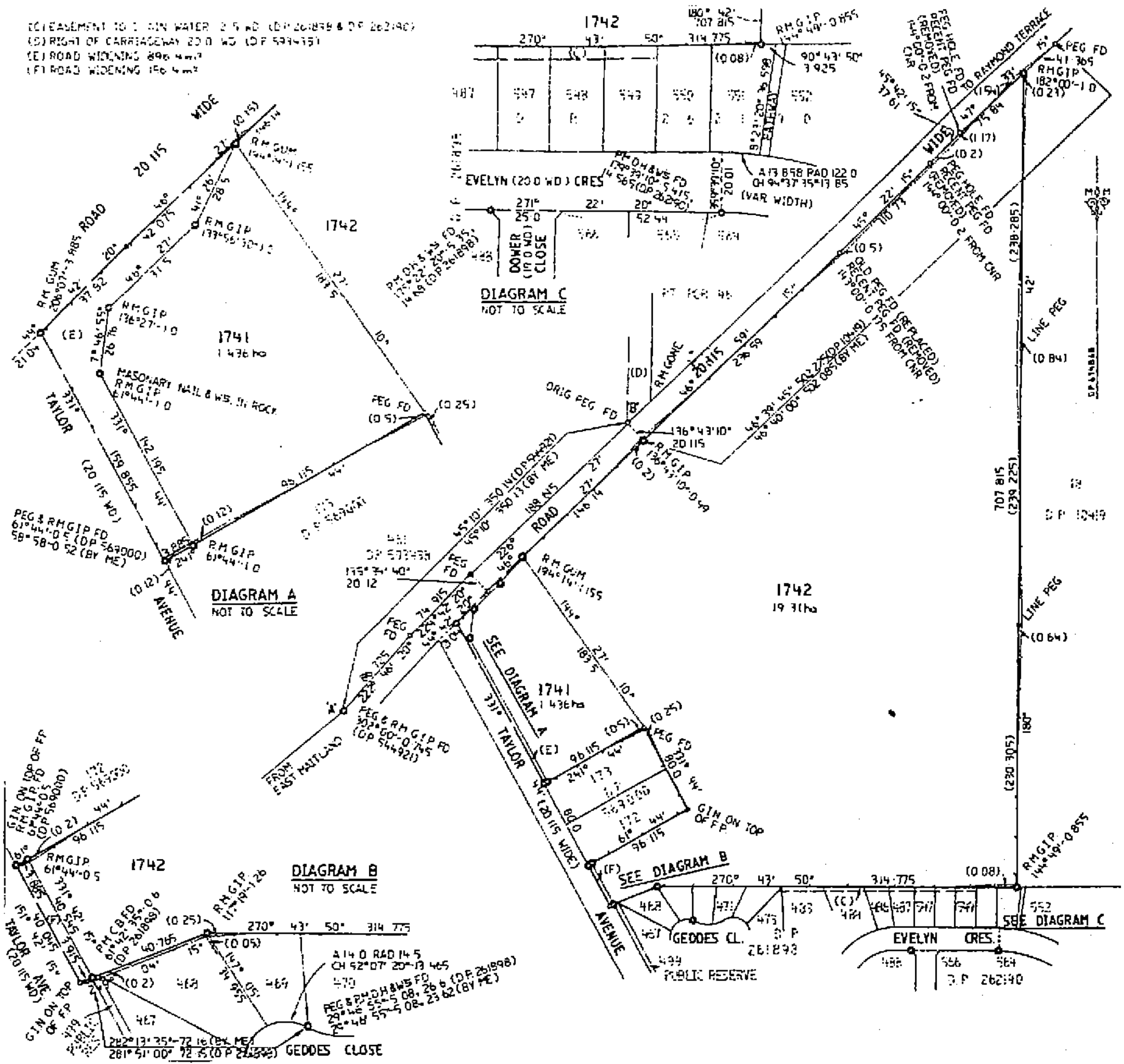
I certify that the person named in the First Schedule is the registered proprietor of an estate in fee simple (or such other estate or interest as is set out below) in the land described subject to the recordings appearing in the Second Schedule and to the provisions of the Real Property Act, 1900.

CANCELLED

SEE AUTO FOLIO

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

LAND REFERRED TO

Lot 1742 in Deposited Plan 634868 at Thornton in the City of Maitland Parish of Alnwick and County of Northumberland.

FIRST SCHEDULE

ACMIL INDUSTRIES PTY. LIMITED.

SECOND SCHEDULE

1. Reservations and conditions contained in the Crown Grant.

Vol. 15144 Fol. 152

L.O. 1066 D. West, Government Printer

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	Registrar General
CANCELLED SEE AUTO FOLIO	

SECOND SCHEDULE (continued)

PARTICULARS	Registrar General	CANCELLATION

NOTATIONS AND UNREGISTERED DEALINGS

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

Req:R693434 /Doc:CT 15144-152 CT /Rev:19-Jan-2011 /Sts:OK.SC /Pgs:ALL /Prt:17-May-2017 13:13 /Seq:2 of 2 /Ref:ALS /Src:T

97-01T

TRANSFER
Real Property Act, 1900

0
514294 L

Office of State Revenue use only

(11)

OFFICE OF STATE REVENUE
(N.S.W. TREASURY)
1994/95 P3
NO STAMP DUTY IS PAYABLE ON THIS INSTRUMENT 6632

(A) **LAND TRANSFERRED**
Show no more than 20 References to Title.
If appropriate, specify the share transferred.

FOLIO IDENTIFIERS 7/242752, 8/242752, 1742/634868, 3/232574, 16/10419, 7/239691, 67/755245, 74/755245, 1/796730, 2/796730 and VOLUME 7967 FOLIO 200 Ø
Ø NOW BEING 1/106143

(B) **LODGED BY**

L.T.O. Box	Name, Address or DX and Telephone
~~47J~~ 4/J	MALLESONS STEPHEN JAQUES 1 FARRER PLACE SYDNEY DX 113 SYDNEY Reference (max. 15 characters): ~~ALB:P104822(6)~~ ALBCSR0001-361

(C) **TRANSFEROR** PGH LIMITED (ACN 003 534 870)
(formerly EKI Pty Limited)

(D) ~~acknowledges receipt of the consideration of~~ pursuant to a corporate reconstruction
~~and~~ as regards the land specified above transfers to the transferee an estate in fee simple

(E) subject to the following **ENCUMBRANCES** 1. .... 2. .... 3. ....

(F) **TRANSFEREE** T — MONIER PGH HOLDINGS LIMITED (ACN 008 631 356)

(G) TENANCY:

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900

DATE 18 AUGUST 1995

~~Signed in my presence by the transferor who is personally known to me~~

FOR EXECUTION CLAUSES SEE ANNEXURE

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

Signature of Transferor

Signed in my presence by the transferee who is personally known to me

Signature of Witness

Name of Witness (BLOCK LETTERS)

~~Address of Witness~~

~~Signature of Transferee~~

1/796730, 7/239691
67/755245
74/755245

CFF: BA. 5797425
N 865043
P 384890

CHECKED BY (office use only)

Index card checked

INSTRUCTIONS FOR FILLING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE

This is the annexure containing execution clauses to Transfer
Between:
PGH LIMITED (as Transferor)
And:
MONIER PGH HOLDINGS LIMITED (as Transferee)

We hereby certify this dealing correct for the purposes of the Real Property Act, 1900.

DATE 18 AUGUST 1995

THE COMMON SEAL of PGH LIMITED is affixed in accordance with its articles of association in the presence of:

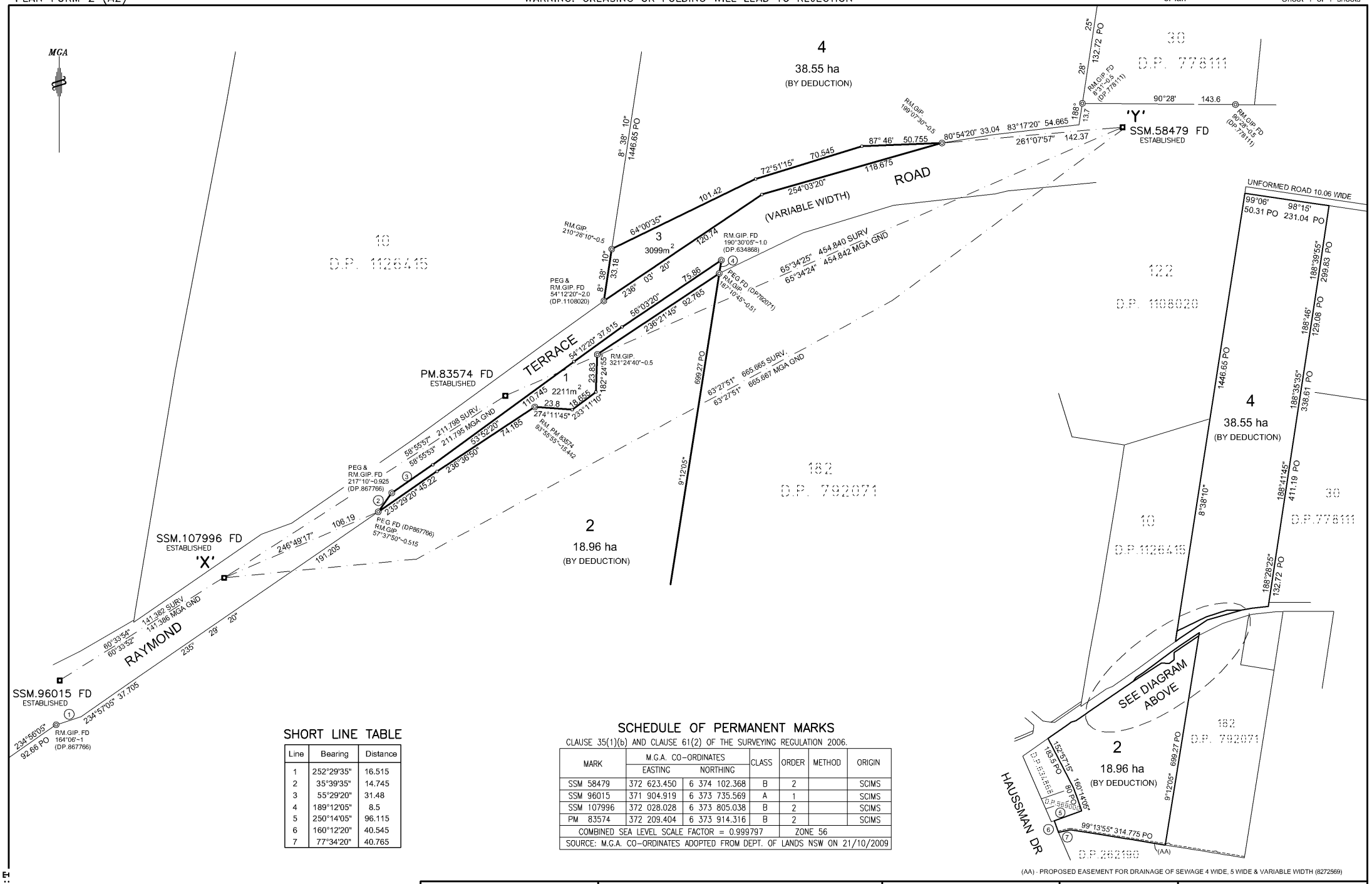
PGH LIMITED COMMON SEAL A.C.N. 003 634 870

Signature of authorised person	Signature of authorised person
DIRECTOR	SECRETARY
Office held	Office held
ANTHONY JOHN TANNER	DAVID CULLEN
Name of authorised person (block letters)	Name of authorised person (block letters)

THE COMMON SEAL of MONIER PGH HOLDINGS LIMITED is affixed in accordance with its articles of association in the presence of:

MONIER PGH HOLDINGS LIMITED A.C.N. 008 631 356 Common Seal

Signature of authorised person	Signature of authorised person
DIRECTOR	DIRECTOR
Office held	Office held
JOHN PURDIE-SMITH	DAVID CULLEN
Name of authorised person (block letters)	Name of authorised person (block letters)



SHORT LINE TABLE

Line	Bearing	Distance
1	252°29'35"	16.515
2	35°39'35"	14.745
3	55°29'20"	31.48
4	189°12'05"	8.5
5	250°14'05"	96.115
6	160°12'20"	40.545
7	77°34'20"	40.765

SCHEDULE OF PERMANENT MARKS

CLAUSE 35(1)(b) AND CLAUSE 61(2) OF THE SURVEYING REGULATION 2006.

MARK	M.G.A. CO-ORDINATES EASTING	M.G.A. CO-ORDINATES NORTHING	CLASS	ORDER	METHOD	ORIGIN
SSM 58479	372 623.450	6 374 102.368	B	2		SCIMS
SSM 96015	371 904.919	6 373 735.569	A	1		SCIMS
SSM 107996	372 028.028	6 373 805.038	B	2		SCIMS
PM 83574	372 209.404	6 373 914.316	B	2		SCIMS
COMBINED SEA LEVEL SCALE FACTOR = 0.999797			ZONE 56			
SOURCE: M.G.A. CO-ORDINATES ADOPTED FROM DEPT. OF LANDS NSW ON 21/10/2009						

(AA) - PROPOSED EASEMENT FOR DRAINAGE OF SEWAGE 4 WIDE, 5 WIDE & VARIABLE WIDTH (8272569)

Surveyor: Jason Lee Harman
Date of Survey: 28/10/2009
Surveyor's Ref: 4070-DP-RTR

PLAN OF SUBDIVISION OF LOT 1 DP 797295 & LOT 2 DP 867766

LGA: MAITLAND
Locality: CHISHOLM
Subdivision No: 072980
Lengths are in metres. Reduction Ratio 1: 1500

Registered: 30.3.2010

DP1145348

10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

PLAN FORM 6 WARNING: Creasing or folding will lead to rejection ePlan

DEPOSITED PLAN ADMINISTRATION SHEET

Sheet 1 of 2 sheet(s)

*OFFICE USE ONLY

SIGNATURES, SEALS and STATEMENTS of intention to dedicate public roads, to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants.

IT IS INTENDED TO DEDICATE LOTS 1 & 3 TO THE PUBLIC AS PUBLIC ROAD.

Use PLAN FORM 6A
for additional certificates, signatures, seals and statements

* DP1145348

Registered: 30.3.2010 *
Title System: TORRENS
Purpose: SUBDIVISION

PLAN OF SUBDIVISION OF LOT 1 DP 797295 & LOT 2 DP 867766

L G A: MAITLAND
Locality: CHISHOLM
Parish: ALNWICK
County: NORTHUMBERLAND

Crown Lands NSW/Western Lands Office Approval

I ..... in approving this plan certify
(Authorised Officer)
that all necessary approvals in regard to the allocation of the land shown herein have been given

Signature: .....
Date: .....
File Number: .....
Office: .....

Subdivision Certificate

I certify that the provisions of s.109J of the Environmental Planning and Assessment Act 1979 have been satisfied in relation to:

the proposed Road Widening set out herein
* (insert 'subdivision' or 'new road')

.....
* Authorised Person/~~General Manager/Accredited Certifier~~

Consent Authority: Maitland City Council
Date of endorsement: 18.11.09
~~Accreditation no~~: .....
Subdivision Certificate no: 072980
File no: DA 07-2980

* Delete whichever is inapplicable

Surveying Regulation, 2006

I, JASON LEE HARMAN
of LAND DEVELOPMENT SOLUTIONS PTY LTD
P.O. BOX 853 THE JUNCTION, NSW 2291

a surveyor registered under the *Surveying Act, 2002*, certify that the survey represented in this plan is accurate, has been made in accordance with the *Surveying Regulation, 2006* and was completed on 28th October 2009

The survey relates to Lots 1 & 3
(specify the land actually surveyed, or specify any land shown in the plan that is not the subject of the survey)

Signature: ..... *Dated*: 20/10/2009
Surveyor registered under the Surveying Act 2002

Datum Line: X - Y
Type: ~~*Urban*~~ / *Rural*

Plans used in the preparation of survey/~~compilation.~~

DP.10419
DP.630225
DP.634868
DP.778111
DP.792071
DP.797295
DP.867766
DP.1053679
DP.1090329
DP.1108020
DP.1126415

(if insufficient space use Plan Form 6A annexure sheet)

SURVEYOR'S REFERENCE: 4070-DP-RTR (CHECKLIST)

PLAN FORM 6A (Annexure Sheet) **WARNING: Creasing or folding will lead to rejection** ePlan

DEPOSITED PLAN ADMINISTRATION SHEET

Sheet 2 of 2 sheet(s)

PLAN OF SUBDIVISION OF
LOT 1 DP 797295 &
LOT 2 DP 867766

* DP1145348

Registered: 30.3.2010 *

*OFFICE USE ONLY

Subdivision Certificate No: 072980 Date of Endorsement: 18.11.09

CSR BUILDING PRODUCTS LIMITED
by its Attorneys who state that at the date of their execution hereof they have had no notice of the revocation of the Power of Attorney dated 23 February 2009 and Registered No. Book 4563 No. 191 under the authority of which they have executed this instrument.

Attorney PETER MARK McGUIGAN

Attorney CHRISTOPHER JOHN BERTUCH

SURVEYOR'S REFERENCE: 4070-DP-RTR (CHECKLIST)

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

17/5/2017 1:10PM

FOLIO: 2/867766

First Title(s): OLD SYSTEM
Prior Title(s): 1742/634868

Recorded	Number	Type of Instrument	C.T. Issue
27/5/1997	DP867766	DEPOSITED PLAN	FOLIO CREATED EDITION 1
26/8/1998	DP269213	DEPOSITED PLAN	
9/5/2002	8272569	TRANSFER GRANTING EASEMENT	EDITION 2
9/7/2003	DP1055591	DEPOSITED PLAN	
30/3/2010	AF394340	CHANGE OF NAME	
30/3/2010	DP1145348	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

17/5/2017 1:11PM

FOLIO: 1742/634868

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 15144 FOL 152

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
23/9/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
15/5/1989	Y361581	TRANSFER	EDITION 1
6/9/1995	O514294	TRANSFER	EDITION 2
27/5/1997	DP867766	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 2/1145348

SEARCH DATE	TIME	EDITION NO	DATE
17/5/2017	1:08 PM	1	30/3/2010

LAND

LOT 2 IN DEPOSITED PLAN 1145348
AT CHISHOLM
LOCAL GOVERNMENT AREA MAITLAND
PARISH OF ALNWICK COUNTY OF NORTHUMBERLAND
TITLE DIAGRAM DP1145348

FIRST SCHEDULE

CSR BUILDING PRODUCTS LIMITED

SECOND SCHEDULE (2 NOTIFICATIONS)

---

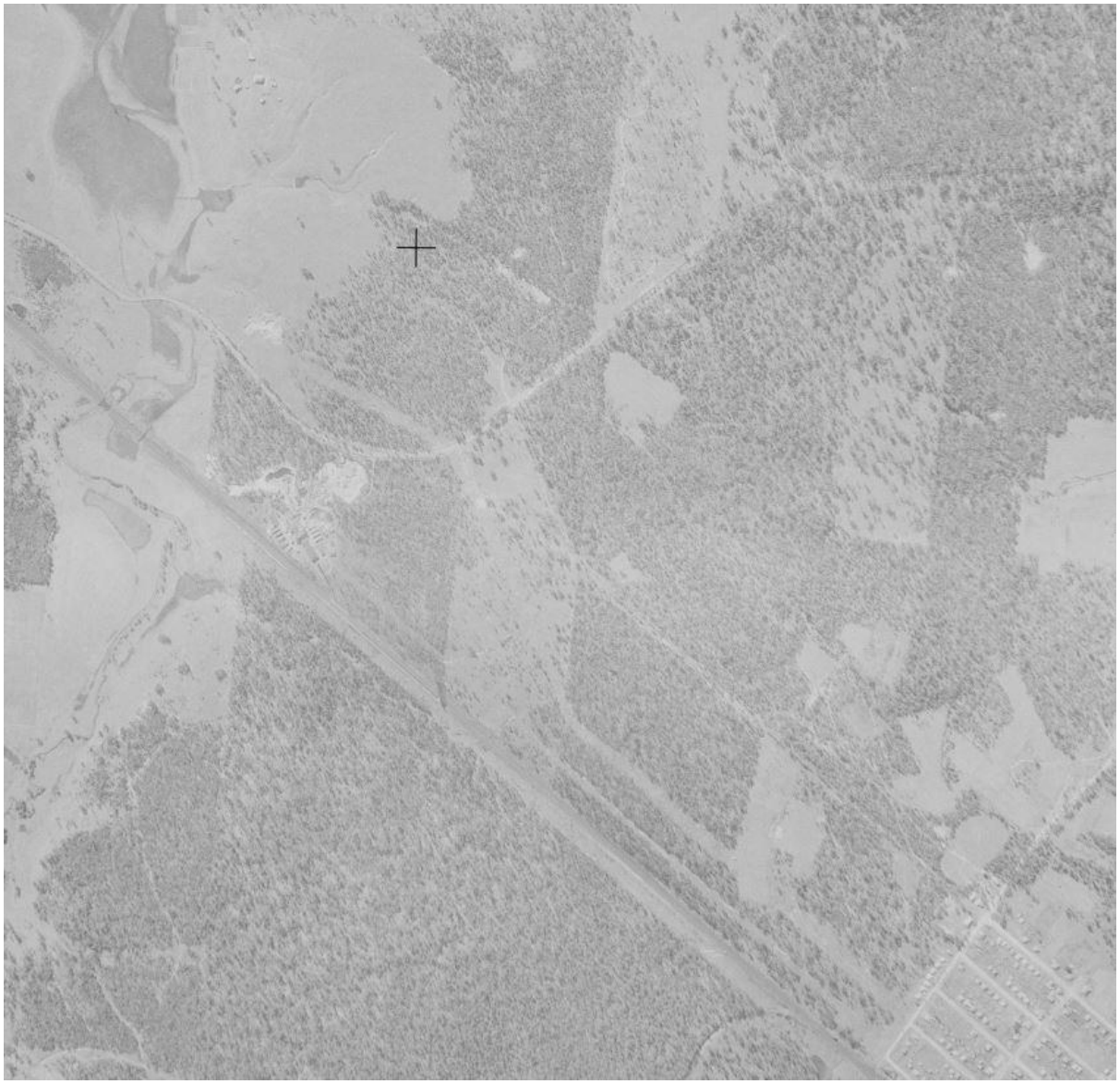
1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 8272569 DRAINAGE EASEMENT AFFECTING THE LAND SHOWN AS "PROPOSED EASEMENT FOR DRAINAGE OF SEWAGE 4 WIDE, 5 WIDE & VARIABLE WIDTH" IN THE TITLE DIAGRAM

NOTATIONS

DP1055591 NOTE: PLAN OF PROPOSED EASEMENT FOR ELECTRICITY PURPOSES 5 WIDE

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***



Aerial Photograph 1954

Aerial Photograph 1975

Aerial Photograph 1984

Aerial Photograph 2007

Aerial Photograph 2010

Aerial Photograph 2016

Contaminated land

+ Management of contaminated land
+ Consultants and site auditor scheme
+ Underground petroleum storage systems
Guidelines under the CLM Act
NEPM amendment
+ Further guidance
– Record of notices
About the record
Search the record
Search tips
Disclaimer
List of NSW contaminated sites notified to EPA
Frequently asked questions
Forms
+ Other contamination issues
+ Contaminated Land Management Program

Home Contaminated land Record of notices

Search results

Your search for: Suburb: THORNTON

Search Again Refine Search

did not find any records in our database.

Search TIP

To search for a specific site, search by LGA (local government area) and carefully review all sites listed.

... more search tips

If a site does not appear on the record it may still be affected by contamination. For example:

- Contamination may be present but the site has not been regulated by the EPA under the Contaminated Land Management Act 1997 or the Environmentally Hazardous Chemicals Act 1985.
- The EPA may be regulating contamination at the site through a licence or notice under the Protection of the Environment Operations Act 1997 (POEO Act).
- Contamination at the site may be being managed under the planning process.

More information about particular sites may be available from:

- The POEO public register
- The appropriate planning authority: for example, on a planning certificate issued by the local council under section 149 of the Environmental Planning and Assessment Act.

See What's in the record and What's not in the record.

If you want to know whether a specific site has been the subject of notices issued by the EPA under the CLM Act, we suggest that you search by Local Government Area only and carefully review the sites that are listed.
This public record provides information about sites regulated by the EPA under the Contaminated Land Management Act 1997, including sites currently and previously regulated under the Environmentally Hazardous Chemicals Act 1985. Your inquiry using the above search criteria has not matched any record of current or former regulation. You should consider searching again using different criteria. The fact that a site does not appear on the record does not necessarily mean that it is not affected by contamination. The site may have been notified to the EPA but not yet assessed, or contamination may be present but the site is not yet being regulated by the EPA. Further information about particular sites may be available from the appropriate planning authority, for example, on a planning certificate issued

APPENDIX E:

Site Photographs

Photograph 1 - Overall site with vacant lower area in central portion visible

Photograph 2 - Typical photograph of site showing bushland and access track

Client:	MCCLOY GROUP PTY LTD	Photo No:	1 to 2
Project:	PROPOSED SENIORS LIVING DEVELOPMENT	Project No:	NEW17P-0062
Location:	107 HAUSSMAN DRIVE, THORNTON	Date Taken:	17/05/2017
Title:	SITE PHOTOGRAPHS	Date Compiled:	21/06/2017

Photograph 3 - Vacant lower-lying area in central portion of site

Photograph 4 - Fill material including bricks in access road on western entry to site

Client:	MCCLOY GROUP PTY LTD	Photo No:	3 to 4
Project:	PROPOSED SENIORS LIVING DEVELOPMENT	Project No:	NEW17P-0074
Location:	107 HAUSSMAN DRIVE, THORNTON	Date Taken:	17/05/2017
Title:	SITE PHOTOGRAPHS	Date Compiled:	21/06/2017

Photograph 5 - Stockpile of bricks observed on site

Photograph 6 - Surface water pond on eastern side of site, with drainage channel visible in background

Client:	MCCLOY GROUP PTY LTD	Photo No:	5 to 6
Project:	PROPOSED SENIORS LIVING DEVELOPMENT	Project No:	NEW17P-0074
Location:	107 HAUSSMAN DRIVE, THORNTON	Date Taken:	17/05/2017
Title:	SITE PHOTOGRAPHS	Date Compiled:	21/06/2017

Qualtest LABORATORY (NSW) PTY LTD

Photograph 7 - Surface water pond on eastern side of site

Photograph 8 - Surface water pond on eastern side of site

Qualtest LABORATORY (NSW) PTY LTD	Client:	Photo No:	7 to 8
	Project:	Project No:	NEW17P-0074
	Location:	Date Taken:	17/05/2017
	Title: SITE PHOTOGRAPHS	Date Compiled:	21/06/2017

APPENDIX F:

Test Pit Logs

ENGINEERING LOG - TEST PIT

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP01
PAGE: 1 OF 2
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 19.5 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered		19.5	0.0		CL	FILL-TOPSOIL: CLAY - low plasticity, dark brown, some fine to medium grained sand, root affected with trace organic matter (plant debris).	M > w_P				FILL - TOPSOIL
				0.10m		CI	FILL: Sandy CLAY - medium plasticity, pale grey, fine to medium grained sand, some fine to medium grained sub-angular to sub-rounded gravel.	M ~ w_P	St / VSt	HP	200 - 300	FILL
				0.30m			CLAY - medium to high plasticity, dark grey to black.					RESIDUAL SOIL
			19.0	0.5		CH		M < w_P - M < w_P	H	HP	500	
										HP	550	
										HP	520	
										HP	500	
										HP	>600	
			18.5	1.0								
				1.00m			SHALE - dark grey to black with brown leaf fossils, estimated very low to low strength.					EXTREMELY TO HIGHLY WEATHERED ROCK
				1.40m			COAL - black, highly fractured, some CLAY between joints, estimated very low to low strength.	D				HIGHLY WEATHERED ROCK
			18.0	1.5								
			17.5	2.0								
				2.20m		CH	Silty CLAY - medium to high plasticity, pale orange-grey.	M < w_P	St - VSt			RESIDUAL SOIL
				2.30m			COAL - black, highly fractured, some CLAY between joints, estimated very low to low strength.					HIGHLY WEATHERED ROCK
			17.0	2.5				D				

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP01
PAGE: 2 OF 2
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 19.5 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E							COAL - black, highly fractured, some CLAY between joints, estimated very low to low strength. *(continued)*	D				HIGHLY WEATHERED ROCK
							3.30m Hole Terminated at 3.30 m					
			16.0	3.5								
			15.5	4.0								
			15.0	4.5								
			14.5	5.0								
			14.0	5.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

Qualtest LABORATORY (NSW) PTY LTD

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP02
PAGE: 1 OF 1
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 19.5 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered	E 0.10m				CI	FILL-TOPSOIL: Sandy CLAY - medium plasticity, dark grey, fine to medium grained sand, some fine to medium grained sub-angular to sub-rounded gravel, root affected.	M > w_P		HP	550	FILL - TOPSOIL
							0.20m					
						CI	FILL: Sandy CLAY - medium plasticity, grey to pale grey, fine to medium grained sand, trace fine to medium grained sub-angular to sub-rounded gravel.		St / VSt	HP	220	FILL
							0.40m					
			19.0	0.5		SP	FILL: SAND - fine to medium grained, brown, some fines of low plasticity.	M	MD	HP	300	
							0.50m					RESIDUAL SOIL
						CH	Sandy CLAY - medium to high plasticity, grey to pale grey with some orange, fine to medium grained sand.	M ~ w_P	H / VD	HP	>600	
							0.60m					EXTREMELY WEATHERED ROCK
						CH	Extremely Weathered SANDSTONE with soil properties; breaks down into Sandy CLAY - medium to high plasticity, grey to pale grey with some orange, fine to medium grained sand. Sand content increasing with depth.					
							0.80m					HIGHLY WEATHERED ROCK
							0.90m					
							SANDSTONE - fine to medium grained, orange to dark orange-red (ironstained), estimated low to medium strength.					
			18.5	1.0			Hole Terminated at 0.90 m Refusal					
			18.0	1.5								
			17.5	2.0								
			17.0	2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

Qualtest LABORATORY (NSW) PTY LTD

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP03
PAGE: 1 OF 1
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 19.4 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	0.30m E 0.40m	19.0	0.5		CI	FILL-TOPSOIL: Sandy CLAY - low to medium plasticity, pale brown, fine to medium grained sand, some fine to medium grained sub-angular to sub-rounded gravel, root affected.					FILL - ROOT AFFECTED
							0.50m FILL: CLAY - high plasticity, dark grey, with pockets and lenses of Gravelly Silty SAND - grey to brown.	M > w_P	F	HP	70 - 110	FILL
			18.5	1.0		CH				HP	50 - 90	
									S - F	HP	30 - 60	
							1.30m FILL: Sandy CLAY - medium plasticity, grey to brown, fine to medium sand, some fine to medium sub-angular to sub-rounded gravel.		St / VSt	HP	220	
			18.0	1.5		CI				HP	250	
						SM	1.50m Silty SAND - fine to coarse grained, black, fines of medium plasticity. Residual Soil from COAL.	M	MD	HP	>600	RESIDUAL SOIL
						CH	1.60m Sandy CLAY - high plasticity, pale grey, fine to medium grained sand.	M < w_P	H	HP	>600	
			17.5	2.0			1.70m SHALE - pale grey-green, very low to low strength.					EXTREMELY TO HIGHLY WEATHERED ROCK
							2.20m					
			17.0	2.5			Hole Terminated at 2.20 m					
			16.5									

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP04
PAGE: 1 OF 1
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 19.7 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	0.70m E 0.80m	19.5	0.5		CL	0.10m FILL-TOPSOIL: Sandy CLAY - low plasticity, dark grey, fine to medium sand, root affected.					FILL - TOPSOIL
			19.0	1.0		CI	FILL: Sandy CLAY - low to medium plasticity, pale orange-brown, fine to medium grained sand, some fine to medium grained sub-angular to sub-rounded gravel. With pockets and lenses of Silty SAND - fine to medium grained, brown, fines of low plasticity.	$M > w_P$	St	HP	170	FILL
			18.5	1.5		CH	1.30m FILL: Sandy CLAY - medium to high plasticity, dark grey to black, fine to medium grained sand, some fine to medium grained angular to sub-angular gravel.		F	HP	150	
			18.0	2.0		CH	1.50m Sandy CLAY - medium to high plasticity, dark grey to black, fine to medium grained sand, some fine to medium grained angular gravel.	$M \sim w_P$	VSt	HP	90	RESIDUAL SOIL
			17.5				2.00m SILTSTONE - pale grey to grey banded, estimated very low to low strength.	D		HP	320	EXTREMELY TO HIGHLY WEATHERED ROCK
			17.0	2.5			2.20m Hole Terminated at 2.20 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP05
PAGE: 1 OF 1
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 21.5 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered					CL	0.10m FILL: Sandy CLAY - low plasticity, dark grey-brown, fine to medium grained sand, some fine to medium grained sub-angular to sub-rounded gravel, root affected.	M < w_P				FILL - ROOT AFFECTED
						CI	0.30m FILL: Sandy CLAY / Gravelly Clayey SAND - medium plasticity, grey with some orange, fine to medium grained sand, fine to medium grained sub-angular to angular gravel.		St - VSt	HP	250	FILL
			21.0	0.5		SC	Clayey SAND - fine to medium grained, pale grey with some orange, fines of medium to high plasticity.	M	D			RESIDUAL SOIL
		0.70m					0.70m					
		B 0.90m				CH	CLAY - high plasticity, grey with dark grey banding, some orange.	M < w_P	H	HP	>600	RESIDUAL SOIL WITH RELICT ROCK STRUCTURE
			20.5	1.0								
			20.0	1.5			1.60m					
							SILTSTONE - grey and pale grey banded, estimated very low to low strength.	D				EXTREMELY TO HIGHLY WEATHERED ROCK
			19.5	2.0			2.30m					
			19.0	2.5			Hole Terminated at 2.30 m					

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP06
PAGE: 1 OF 1
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 26.5 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
						SM	FILL-TOPSOIL: Silty SAND - fine to medium grained, dark brown, fines of low plasticity, some fine to medium grained sub-angular to sub-rounded gravel, root affected.	D				FILL - TOPSOIL
							0.40m					
			26.0	0.5		CI	FILL: Sandy CLAY - medium plasticity, pale grey to grey, fine to medium grained sand, some fine to medium grained sub-angular to sub-rounded gravel, some roots.		St			FILL
		0.90m					0.90m					
		B	25.5	1.0		CI	FILL: Sandy CLAY - medium plasticity, pale grey to grey, fine to medium grained sand, some fine to medium grained sub-angular to sub-rounded gravel.			HP	320	FILL possibly RESIDUAL SOIL
E	Not Encountered	1.10m						M ~ w_P	VSt / Fb	HP	360	
			25.0	1.5		CI	FILL: Sandy CLAY - medium plasticity, grey with some orange, fine to medium grained sand, some fine to medium grained sub-angular to angular gravel.			HP	350	
							1.80m			HP	350 - 420	
			24.5	2.0		CH	Gravelly CLAY - high plasticity, pale grey to white some orange, fine rounded to sub-rounded gravel, some fine to medium grained sand.		VSt - H	HP	>600	RESIDUAL SOIL / EXTREMELY WEATHERED ROCK
							2.20m					
							Hole Terminated at 2.20 m					
			24.0	2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP07
PAGE: 1 OF 1
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 27.8 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered		27.5	0.5		SM	FILL-TOPSOIL: Silty SAND - fine to medium grained, dark brown, fines of low plasticity, some fine to medium grained sub-angular to sub-rounded gravel, root affected.	D M				FILL - MOUND CONTAINING TOPSOIL
		0.70m B 0.80m	27.0			CH	0.60m CLAY - high plasticity, pale grey to grey, some fine to medium grained sand.	M > w_P	VSt	HP HP	200 220	RESIDUAL SOIL
				1.0		CH	0.90m Sandy CLAY - high plasticity, pale grey to white some orange, fine to medium grained sand, some fine angular to sub-angular gravel.	M ~ w_P	VSt - H	HP HP	350 >600	
			26.5	1.5			1.20m SILTSTONE - pale grey to grey, estimated very low to low strength.					EXTREMELY TO HIGHLY WEATHERED ROCK
			26.0	2.0			becoming dark grey-brown	D				
			25.5	2.5								
			25.0				3.00m					

Hole Terminated at 3.00 m

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP08
PAGE: 1 OF 1
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 24.0 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered					CL	TOPSOIL: Sandy CLAY - low plasticity, dark grey-brown, fine to medium grained sand, root affected.	M < w_P				TOPSOIL
		0.40m					0.30m					
		B	23.5	0.5		CH	CLAY - high plasticity, pale grey to grey, some fine to medium grained sand, some fine grained sub-rounded to rounded gravel.	M > w_P	VSt	HP	250	RESIDUAL SOIL
		0.70m					0.70m			HP	320	
							SILTSTONE - grey, estimated very low to low strength.	D		HP	>600	EXTREMELY TO HIGHLY WEATHERED ROCK
							0.90m					
							0.95m SANDSTONE - fine to medium grained, pale grey to orange, estimated very low to medium strength.					HIGHLY WEATHERED ROCK
			23.0	1.0			Hole Terminated at 0.95 m Refusal					
			22.5	1.5								
			22.0	2.0								
			21.5	2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Moisture Condition	
D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

Density		
V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

ENGINEERING LOG - TEST PIT

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP09
PAGE: 1 OF 1
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 20.5 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	0.70m B 0.90m	20.0	0.5		SC	FILL: Gravelly Clayey SAND - fine to medium grained, grey-brown, fine to medium grained sub-angular to sub-rounded gravel, fines of low to medium plasticity.	M / M > w_P				FILL
							0.60m					
			19.5	1.0		CH	Sandy CLAY - high plasticity, pale grey to white some orange, fine to medium grained sand, some fine to medium grained rounded to sub-rounded gravel.	M > w_P	H	HP HP	>600 >600	RESIDUAL SOIL
			19.0	1.5			1.50m					
							SHALE - pale grey-green, estimated very low to low strength.	D				HIGHLY TO MODERATELY WEATHERED ROCK
							1.60m					
							Hole Terminated at 1.60 m Refusal					
			18.5	2.0								
			18.0	2.5								

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP10
PAGE: 1 OF 1
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 30.6 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered		30.5			CL	TOPSOIL: Sandy CLAY - low plasticity, dark grey-brown, fine to medium grained sand, some fine to medium grained sub-angular to sub-rounded gravel, root affected.	M < w_P				TOPSOIL
							0.30m					
		0.50m		0.5		CH	CLAY - high plasticity, dark grey with some pale orange, some fine to medium grained sand, trace fine to medium grained sub-angular to angular gravel (content increasing with depth).	M > w_P	St - VSt	HP	180	RESIDUAL SOIL possibly COLLUVIUM
		U50	30.0							HP	200	
		0.90m								HP	190	
							0.90m					
				1.0		CH	Sandy CLAY - high plasticity, pale grey to white some orange, fine to medium grained sand, some fine grained sub-angular to sub-rounded gravel.	M < w_P	VSt	HP	350	RESIDUAL SOIL
			29.5									
				1.5					H	HP	480	
			29.0									
				2.0						HP	520	
							2.00m					
			28.5				SHALE - pale grey-green, estimated very low to low strength.	D				EXTREMELY TO HIGHLY WEATHERED ROCK
							2.40m					
				2.5			Hole Terminated at 2.40 m					
			28.0									

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP11
PAGE: 1 OF 1
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 30.3 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		Structure and additional observations
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	
E	Not Encountered		30.0	0.0		CH	FILL-TOPSOIL: CLAY - medium to high plasticity, dark grey-brown, some fine to medium grained sand, some fine to medium grained sub-rounded to sub-angular gravel, trace brick and plant debris, root affected.	M > w_P		HP	280	FILL - TOPSOIL
										HP	220	
				0.5			0.50m					
						SM	TOPSOIL (BURIED): Silty SAND - fine to medium grained, dark brown, fines of low plasticity, root affected.	M		HP	500	BURIED TOPSOIL
		0.70m					0.70m					
			29.5			CH	CLAY - high plasticity, pale grey to grey, some fine to medium grained sand.	M > w_P	VSt	HP	350	RESIDUAL SOIL
		U50								HP	220	
				1.0						HP	290	
		1.10m					1.10m					
			29.0			CH	Sandy CLAY - high plasticity, pale grey to white some orange, fine to medium grained sand, some fine grained rounded to sub-rounded gravel.	M ~ w_P	H	HP	450	
				1.5						HP	550	
							1.70m					
			28.5				SANDSTONE - fine to medium grained, pale grey to orange, estimated very low to medium strength.	D		HP	>600	EXTREMELY TO HIGHLY WEATHERED ROCK
				2.0			2.10m					
							Hole Terminated at 2.10 m					
			28.0									
				2.5								
			27.5									

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP12
PAGE: 1 OF 1
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 32.8 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	0.30m B 0.40m	32.5	0.5		CL	TOPSOIL: Sandy CLAY - low plasticity, dark grey-brown, fine to medium grained sand, some fine to medium grained sub-angular to sub-rounded gravel, root affected.	M < w_P				TOPSOIL
						CH	0.30m Sandy CLAY - medium to high plasticity, red-brown, fine to medium grained sand.		H	HP	>600	RESIDUAL SOIL
			32.0			SC	0.40m Clayey SAND - fine to medium grained, pale grey with some orange, fines of medium to high plasticity. Becoming extremely weathered sandstone.	M	VD			
				1.0			0.90m 0.95m SANDSTONE - fine to medium grained, pale grey to orange, estimated medium strength. Hole Terminated at 0.95 m Refusal	D				HIGHLY WEATHERED ROCK
			31.5	1.5								
			31.0	2.0								
			30.5	2.5								
			30.0									

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP13
PAGE: 1 OF 1
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 21.3 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered	0.90m CBR 1.20m	21.0 20.5 20.0 19.5 19.0 18.5	0.5 1.0 1.5 2.0 2.5		CL CH SC	FILL-TOPSOIL: Sandy CLAY - low plasticity, dark grey-brown, fine to medium grained sand, some fine to medium grained sub-angular to sub-rounded gravel, root affected. 0.30m FILL: Sandy CLAY - high plasticity, grey, fine to medium grained sand, some fine grained rounded to sub-rounded gravel. 0.50m FILL: Clayey SAND - fine to medium grained, orange, fines of medium plasticity. 0.80m SANDSTONE - fine to medium grained, pale grey, estimated very low to medium strength. 1.70m Hole Terminated at 1.70 m Refusal	M ~ w_P M > w_P M M - D	 St - VSt D	HP HP	150 - 250 >600	FILL - TOPSOIL FILL FILL possibly RESIDUAL SOIL HIGHLY WEATHERED ROCK

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

ENGINEERING LOG - TEST PIT

CLIENT: McCLOY GROUP
PROJECT: PROPOSED RESIDENTIAL SUBDIVISION
LOCATION: 107 HAUSSMAN DRIVE, THORNTON

TEST PIT NO: TP14
PAGE: 1 OF 1
JOB NO: NEW17P-0074
LOGGED BY: BB
DATE: 17/5/17

EQUIPMENT TYPE: 14 TONNE EXCAVATOR
TEST PIT LENGTH: 3.0 m **WIDTH:** 1.1 m
SURFACE RL: 23.4 m
DATUM: AHD

Drilling and Sampling					Material description and profile information					Field Test		
METHOD	WATER	SAMPLES	RL (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION: Soil type, plasticity/particle characteristics,colour,minor components	MOISTURE CONDITION	CONSISTENCY DENSITY	Test Type	Result	Structure and additional observations
E	Not Encountered		23.4	0.0		SM	TOPSOIL: Silty SAND - fine to medium grained, dark brown, fines of low plasticity, some fine to medium grained sub-angular to sub-rounded gravel, root affected.	D - M				TOPSOIL possibly FILL
				0.20m								
			23.0	0.5		SC	Clayey Gravelly SAND - fine to medium grained, red, white and orange, fine to coarse garined angular to sub angular gravel, with cobble and boulder sized rock fragments up to ~400mm dia.	M	D			RESIDUAL SOIL possibly FILL
				0.50m			SANDSTONE - fine to medium grained, orange red and white, fractured with some Clayey SAND in the joints, estimated very low to low strength.					EXTREMELY TO HIGHLY WEATHERED ROCK
			22.5	1.0				D	D			
				1.10m			SILTSTONE - dark grey-brown, estimated low to medium strength.					HIGHLY WEATHERED ROCK
			22.0	1.5								
				1.60m			Hole Terminated at 1.60 m Refusal					
			21.5	2.0								
			21.0	2.5								
			20.5									

LEGEND:

Water
- Water Level (Date and time shown)
- Water Inflow
- Water Outflow

Strata Changes
- Gradational or transitional strata
- Definitive or distict strata change

Notes, Samples and Tests

U_{50}	50mm Diameter tube sample
CBR	Bulk sample for CBR testing
E	Environmental sample (Glass jar, sealed and chilled on site)
ASS	Acid Sulfate Soil Sample (Plastic bag, air expelled, chilled)
B	Bulk Sample

Field Tests

PID	Photoionisation detector reading (ppm)
DCP(x-y)	Dynamic penetrometer test (test depth interval shown)
HP	Hand Penetrometer test (UCS kPa)

Consistency

		UCS (kPa)
VS	Very Soft	<25
S	Soft	25 - 50
F	Firm	50 - 100
St	Stiff	100 - 200
VSt	Very Stiff	200 - 400
H	Hard	>400
Fb	Friable	

Density

V	Very Loose	Density Index <15%
L	Loose	Density Index 15 - 35%
MD	Medium Dense	Density Index 35 - 65%
D	Dense	Density Index 65 - 85%
VD	Very Dense	Density Index 85 - 100%

Moisture Condition

D	Dry
M	Moist
W	Wet
W_p	Plastic Limit
W_L	Liquid Limit

APPENDIX G:

Laboratory Reports

eurofins | mgt

☐ **Sydney**
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Phone: +613 8564 5000 Fax: +613 8564 5090
Email: EnviroSampleVic@eurofins.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS

Company Name :	Qualtest	**Contact Name:**	Emma Coleman	**Purchase Order :**	**COC Number :**
Office Address :	8 Ironbark Close	**Project Manager :**	Emma Coleman	**PROJECT Number :** NEW17P-0074	**Eurofins | mgt quote ID :** 170411QUAL
	Warabrook NSW 2304	**Email for results :**	emmacoleman@qualtest.com	**PROJECT Name :** McCloy, Thornton	**Data output format:**

Special Directions & Comments :

Eurofins | mgt DI water batch number:

Analytes

	Sample ID	Date	Matrix	Suite B7
1	TP02 0.0 - 0.1m	17/05/2017	Soil	✓
2	TP03 0.3 - 0.4m	17/05/2017	Soil	✓
3	TP03 0.8 - 0.9m	17/05/2017	Soil	
4	TP04 0.7 - 0.8m	17/05/2017	Soil	✓
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				

Some common holding times (with correct preservation).
For further information contact the lab

Waters		Soils	
BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

1LP	250P	125P	1LA	40mL vial	125mL A	Jar	Bag	Sample comments:
						1	1	
						1	1	
						1	1	
						1	1	
						1	1	
						1	1	
						1	1	
						1	1	
						1	1	
						1	1	
						1	1	
						1	1	
						1	1	
						1	1	
						1	1	
						1	1	

	Laboratory Staff	Turn around time	Method Of Shipment	
Relinquished By: Emma Coleman	**Received By:** SUE	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	**Temperature on arrival:**
Date & Time:: 19/5/17	**Date & Time:** 19/5/17 2-30pm	5 DAY ☑ 10 DAY ☐ Other: Standard	☐ Hand Delivered	**Report number:** 547036
Signature:	**Signature:**		☐ Postal	
			Courier Consignment # :	

Jalpa Patel
22/5/17 8:49 Am

eurofins | mgt

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NATA # 1261 Site # 18217

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Sample Receipt Advice

Company name:	**Qualtest**
Contact name:	Emma Coleman
Project name:	MCCLOY THORNTON
Project ID:	NEW17P-0074
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	May 22, 2017 8:49 AM
Eurofins | mgt reference:	**547036**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Andrew Black on Phone : (+61) 2 9900 8490 or by e.mail: AndrewBlack@eurofins.com

Results will be delivered electronically via e.mail to Emma Coleman - emmacoleman@qualtest.com.au.

Note: A copy of these results will also be delivered to the general Qualtest email address.

eurofins | mgt

Certificate of Analysis

Qualtest
8 Ironbark Close
Warabrook
NSW 2304

NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Emma Coleman**

Report **547036-S**
Project name MCCLOY THORNTON
Project ID NEW17P-0074
Received Date May 22, 2017

Client Sample ID			**TP02 0.0-0.1M**	**TP03 0.3-0.4M**	**TP04 0.7-0.8M**
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M17-My20607**	**M17-My20608**	**M17-My20609**
Date Sampled			**May 17, 2017**	**May 17, 2017**	**May 17, 2017**
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50
BTEX					
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	81	70	72
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5

Client Sample ID			TP02 0.0-0.1M	TP03 0.3-0.4M	TP04 0.7-0.8M
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**M17-My20607**	**M17-My20608**	**M17-My20609**
Date Sampled			**May 17, 2017**	**May 17, 2017**	**May 17, 2017**
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	68	72	76
p-Terphenyl-d14 (surr.)	1	%	54	57	59
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100
Heavy Metals					
Arsenic	2	mg/kg	4.3	5.7	25
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	5.1	< 5	< 5
Copper	5	mg/kg	9.7	< 5	7.7
Lead	5	mg/kg	14	9.3	16
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5
Zinc	5	mg/kg	19	22	36
% Moisture	1	%	18	19	20

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

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

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B7			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	May 22, 2017	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Melbourne	May 22, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 22, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	May 22, 2017	14 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	May 22, 2017	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Melbourne	May 22, 2017	28 Days
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Melbourne	May 22, 2017	14 Day
- Method: LTM-GEN-7080 Moisture			

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NATA # 1261
Site # 1254 & 14271

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Lane Cove West NSW 2066
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NATA # 1261 Site # 18217

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NATA # 1261 Site # 20794

Perth
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Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 18217

Company Name: Qualtest
Address: 8 Ironbark Close
Warabrook
NSW 2304

Project Name: MCCLOY THORNTON
Project ID: NEW17P-0074

Order No.:
Report #: 547036
Phone: 02 4968 4468
Fax: 02 4960 9775

Received: May 22, 2017 8:49 AM
Due: May 29, 2017
Priority: 5 Day
Contact Name: Emma Coleman

Eurofins | mgt Analytical Services Manager : Andrew Black

Sample Detail						HOLD	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 18217								
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	TP02 0.0-0.1M	May 17, 2017		Soil	M17-My20607		X	X
2	TP03 0.3-0.4M	May 17, 2017		Soil	M17-My20608		X	X
3	TP04 0.7-0.8M	May 17, 2017		Soil	M17-My20609		X	X
4	TP03 0.8-0.9M	May 17, 2017		Soil	M17-My20610	X		
Test Counts						1	3	3

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. All biota results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. This report replaces any interim results previously issued.

Holding Times

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

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

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

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

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands. In the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
Batch Duplicate	A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.
Batch SPIKE	Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

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

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs 20-130%

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	124			70-130	Pass	
TRH C10-C14	%	99			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	107			70-130	Pass	
Toluene	%	116			70-130	Pass	
Ethylbenzene	%	121			70-130	Pass	
m&p-Xylenes	%	121			70-130	Pass	
Xylenes - Total	%	121			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	86			70-130	Pass	
TRH C6-C10	%	117			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	87			70-130	Pass	
Acenaphthylene	%	73			70-130	Pass	
Anthracene	%	93			70-130	Pass	
Benz(a)anthracene	%	83			70-130	Pass	
Benzo(a)pyrene	%	83			70-130	Pass	
Benzo(b&j)fluoranthene	%	89			70-130	Pass	
Benzo(g.h.i)perylene	%	93			70-130	Pass	
Benzo(k)fluoranthene	%	79			70-130	Pass	
Chrysene	%	78			70-130	Pass	
Dibenz(a.h)anthracene	%	101			70-130	Pass	
Fluoranthene	%	73			70-130	Pass	
Fluorene	%	89			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	94			70-130	Pass	
Naphthalene	%	89			70-130	Pass	
Phenanthrene	%	92			70-130	Pass	
Pyrene	%	76			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	100			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	92			80-120	Pass	
Cadmium	%	107			80-120	Pass	
Chromium	%	94			80-120	Pass	
Copper	%	87			80-120	Pass	
Lead	%	116			80-120	Pass	
Mercury	%	88			75-125	Pass	
Nickel	%	87			80-120	Pass	
Zinc	%	94			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M17-My19630	NCP	%	93			70-130	Pass	
TRH C10-C14	A17-My19570	NCP	%	102			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M17-My19630	NCP	%	84			70-130	Pass	
Toluene	M17-My19630	NCP	%	88			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Ethylbenzene	M17-My19630	NCP	%	88			70-130	Pass	
m&p-Xylenes	M17-My19630	NCP	%	90			70-130	Pass	
o-Xylene	M17-My19630	NCP	%	91			70-130	Pass	
Xylenes - Total	M17-My19630	NCP	%	91			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M17-My19630	NCP	%	74			70-130	Pass	
TRH C6-C10	M17-My19630	NCP	%	98			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M17-My20744	NCP	%	76			70-130	Pass	
Acenaphthylene	M17-My20744	NCP	%	74			70-130	Pass	
Anthracene	M17-My20744	NCP	%	81			70-130	Pass	
Benz(a)anthracene	M17-My20744	NCP	%	71			70-130	Pass	
Benzo(a)pyrene	M17-My20744	NCP	%	83			70-130	Pass	
Benzo(b&j)fluoranthene	M17-My20744	NCP	%	94			70-130	Pass	
Benzo(g.h.i)perylene	M17-My20744	NCP	%	80			70-130	Pass	
Benzo(k)fluoranthene	M17-My20744	NCP	%	72			70-130	Pass	
Chrysene	M17-My20744	NCP	%	72			70-130	Pass	
Dibenz(a.h)anthracene	M17-My20744	NCP	%	92			70-130	Pass	
Fluoranthene	M17-My20744	NCP	%	71			70-130	Pass	
Fluorene	M17-My20744	NCP	%	78			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M17-My20744	NCP	%	85			70-130	Pass	
Naphthalene	M17-My20744	NCP	%	78			70-130	Pass	
Phenanthrene	M17-My20744	NCP	%	82			70-130	Pass	
Pyrene	M17-My20744	NCP	%	72			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	A17-My19570	NCP	%	104			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M17-My19542	NCP	%	91			75-125	Pass	
Cadmium	M17-My19542	NCP	%	106			75-125	Pass	
Chromium	M17-My19542	NCP	%	96			75-125	Pass	
Copper	M17-My19542	NCP	%	91			75-125	Pass	
Lead	M17-My19542	NCP	%	75			75-125	Pass	
Mercury	M17-My19542	NCP	%	94			70-130	Pass	
Nickel	M17-My19542	NCP	%	90			75-125	Pass	
Zinc	M17-My19542	NCP	%	95			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M17-My20748	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	A17-My19569	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	A17-My19569	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	A17-My19569	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M17-My20748	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M17-My20748	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M17-My20748	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M17-My20748	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M17-My20748	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M17-My20748	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M17-My20748	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M17-My20748	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M17-My20614	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M17-My20614	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M17-My20614	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M17-My20614	NCP	mg/kg	0.8	< 0.5	67	30%	Fail	Q15
Benzo(a)pyrene	M17-My20614	NCP	mg/kg	0.9	< 0.5	57	30%	Fail	Q15
Benzo(b&j)fluoranthene	M17-My20614	NCP	mg/kg	1.1	< 0.5	78	30%	Fail	Q15
Benzo(g.h.i)perylene	M17-My20614	NCP	mg/kg	0.7	0.5	33	30%	Fail	Q15
Benzo(k)fluoranthene	M17-My20614	NCP	mg/kg	0.9	< 0.5	59	30%	Fail	Q15
Chrysene	M17-My20614	NCP	mg/kg	0.8	< 0.5	54	30%	Fail	Q15
Dibenz(a.h)anthracene	M17-My20614	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M17-My20614	NCP	mg/kg	1.7	0.6	91	30%	Fail	Q15
Fluorene	M17-My20614	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M17-My20614	NCP	mg/kg	0.7	< 0.5	58	30%	Fail	Q15
Naphthalene	M17-My20614	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M17-My20614	NCP	mg/kg	1.0	0.8	26	30%	Pass	
Pyrene	M17-My20614	NCP	mg/kg	1.5	0.6	88	30%	Fail	Q15
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	A17-My19569	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	A17-My19569	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	A17-My19569	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M17-My19541	NCP	mg/kg	2.8	2.6	7.0	30%	Pass	
Cadmium	M17-My19541	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M17-My19541	NCP	mg/kg	16	15	9.0	30%	Pass	
Copper	M17-My19541	NCP	mg/kg	9.6	8.7	10	30%	Pass	
Lead	M17-My19541	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
Mercury	M17-My19541	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M17-My19541	NCP	mg/kg	12	11	9.0	30%	Pass	
Zinc	M17-My19541	NCP	mg/kg	24	24	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M17-My20618	NCP	%	6.4	7.1	11	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Andrew Black	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Alex Petridis	Senior Analyst-Organic (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Huong Le	Senior Analyst-Inorganic (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)

Glenn Jackson
National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please click here.