STAGE 1 AND 2
ENVIRONMENTAL SITE ASSESSMENT

87 – 91 NUWARRA ROAD
MOOREBANK NSW

PREPARED FOR ST GEORGE COMMUNITY HOUSING
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EXECUTIVE SUMMARY

Geo-Environmental Engineering Pty Ltd (GEE) was commissioned by St. George Community Housing Limited (SGCH) to carry out a preliminary and detailed site contamination investigation at 87 - 91 Nuwarra Road Moorebank, New South Wales (herein referred to as the 'site'). The site covers an area of 2,010m^2 and comprises three allotments which are legally referred to as Lot 110 in Deposited Plan (DP) 235787 and Lots 5 and 6 in DP 236405.

The ESA was required to support a Development Application with Liverpool Council (Council) which relates to the proposed construction of a six storey residential apartment building with on grade parking.

The objective of the ESA was to address the requirements of *State Environmental Planning Policy No. 55 – Remediation of Land* by determining the suitability of the site for the proposed land-use and possible constraints on future site development.

The scope of work completed by GEE was as follows:

- A review of the previous investigation reports relevant to the site and this investigation,
- A review of the environmental and physical setting in which the site lies, including geology, hydrogeology and topography,
- A review of the history of the site using readily available records and historical aerial photographs,
- A detailed site inspection for potential sources of contamination,
- Field investigations including:
    - The drilling of two boreholes and the excavation of six testpits across accessible areas of the site,
    - Sampling of soil from the boreholes and testpits.
- Laboratory analysis of selected soil samples for a broad suite of potential contaminants, and

◊ Comparison of the laboratory analytical results against relevant Office of Environment and Heritage (OEH)[1] endorsed guidelines to evaluate potential contamination risk to human health and the environment.

A summary of the information obtained and results of this assessment is presented below.

Site History and Potential For Contamination

The historical information indicates that the site was originally part of the same, much larger, parcel of land up until the mid-1940s and during this time the site was vacant and undeveloped. Between the mid-1940s and the mid-1960s, the site was part of two separate, 3 acre, parcels of land with the northern parcel of land potentially used as a motor vehicle mechanical workshop and/or storage yard for earthmoving machinery. The southern parcel of land was likely used as a poultry farm. In the mid to late-1960s, the site was further subdivided into the existing low-density residential parcels of land and the existing dwelling were constructed shortly thereafter.

Based on GEE's knowledge of the site, including review of the site's history and physical and environmental setting, the main sources of potential contamination include:

◊ *Potential use of the northern part of the site (No. 87) as a motor vehicle repair workshop and/or storage yard for earthmoving machinery (Circa 1945 to 1965)*

This could have resulted in 'top down' contamination of the site through fuel and oil leaks from cars, or if part of the site was ever used to service vehicles. However, any surface concrete would have minimised any migration of contaminants into the ground and therefore the risk of contamination is considered to be low. Additionally, the clay soil profile would restrict any further migration of potential contaminants.

◊ *Past demolition works.*

With any demolition work there is a possibility that Asbestos Containing Materials (ACM), if present in former structures, were not cleared from site.

◊ *Past development of the site, specifically the potential for contaminated fill.*

With any site development works there is a possibility that fill material was used to raise site levels above predicted flood levels, or to create a level building platform.

[1] The OEH incorporates the NSW Environment Protection Authority (EPA) and was formerly known as the NSW Department of Environment and Climate Change and Water (DECCW), the NSW Department of Environment and Climate Change (DECC) and NSW Department of Environment and Conservation (DEC).

When sourced from an unknown origin, the quality of the fill is also unknown and potentially contaminated.

Soil Assessment

Soil conditions across the site were assessed at two boreholes (BH1 and BH2) and six testpit (TP1 to TP6) locations positioned in accessible areas across the site and targeting areas of potential contamination. The number of sampling points (boreholes and testpits) exceeds the minimum number of sampling points required for adequate site characterisation as defined by the EPA NSW and Australian Standards. The boreholes and testpits were positioned in accordance with a systematic sampling pattern to provide broadly even coverage across the site, subject to the constraints of existing buildings and buries services.

The boreholes were drilled using an 85mm diameter stainless steel hand auger and were positioned in the rear yards of No. 87 and 91 Nuwarra Road, where the mini-excavator could not access. Both of the boreholes were advanced through any surface fill and into the underlying natural soil profile before refusing on weathered bedrock at 1.25m below ground surface (bgs). The testpits were excavated with a 2-tonne excavator equipped with a 400mm wide bucket and were advanced through any surface filling and at least 0.3m into the underlying natural soil profile.

During the drilling of boreholes, there were no unusual odours (that could be potentially associated with contamination) noted. With respect to asbestos, a single fragment of bonded Asbestos Containing Material (ACM) was observed within the fill layer at testpit TP4 located at the front of No. 89. The subsurface conditions encountered by the borehole and testpits typically comprised a surface layer of topsoil and/or fill material (i.e. imported material or previously disturbed soils) over natural silty gravelly sand and silty clay soils, which was underlain by siltstone and/or sandstone bedrock.

GEE submitted a total of 30 primary soil samples from the 8 sampling points to Envirolab for NATA accredited laboratory analysis of metals (arsenic, cadmium, chromium, copper, nickel, lead, mercury and zinc), TRH, BTEX, PAHs, OCPs, PCBs and asbestos. The analytical results were compared against relevant set of ecological and health-based Site Acceptance Criteria (SAC) appropriate for the proposed land-use (residential with limited accessible soil).

In summary, the fill and natural soil was found to be free of significant contamination which would impact on the proposed development, future users of the site and the environment.

Groundwater Conditions

GEE acknowledges that groundwater conditions beneath the site were not assessed as part of this investigation. However, this is considered to be acceptable given that:

- The regional groundwater in the vicinity of the site is likely to be confined or partly confined, discrete, water-bearing zones within the underlying bedrock formation.
- Permanent groundwater was not encountered during field investigations,
- The natural soil beneath the site predominately comprises silty clay which has a relatively low permeability and would restrict the vertical migration of contaminants through the soil profile, and
- There was no significant chemical contamination identified during the detailed soil sampling and analysis program.

Conclusion and Recommendations

Based on observations made during the field investigations, the sampling and analysis program conducted at the site, the proposed land-use and with respect to relevant statutory guidelines, it is the opinion of GEE that the site, in its current condition, is suitable for the proposed development and associated land-use.

Notwithstanding this, it is pointed out that a single fragment of bonded ACM was encountered in the fill material at sampling point TP4. The fragment was in sound condition, the concentration of asbestos was below the relevant site assessment criteria and further sampling did not identify and asbestos fines or friable asbestos. However, because the proposed development will comprise the demolition of existing structures that may, or may not, contain ACM, and some level of ground disturbance is expected, GEE recommends that a licenced asbestos assessor, or an occupational hygienist, inspect the site after demolition and provide a clearance certificate.

If superficial soils are to be stripped and removed from site, they will need to be classified in accordance with the NSW EPA Waste Assessment Guidelines (reference 14) and any asbestos impacted fill materials will be classified as 'Special waste – asbestos'. To minimise the amount of special waste it is considered prudent to delineate of the presence of ACM in the fill material.

1 PROJECT INFORMATION

1.1 INTRODUCTION AND OBJECTIVES

Geo-Environmental Engineering Pty Ltd (GEE) was commissioned by St. George Community Housing Limited (SGCH) to carry out a preliminary and detailed site contamination investigation at 87 - 91 Nuwarra Road Moorebank, New South Wales (herein referred to as the 'site'). The site covers an area of 2010m^2 and comprises three allotments which are legally referred to as Lot 110 in Deposited Plan (DP) 235787 and Lots 5 and 6 in DP 236405. A site survey plan is provided for reference in **Appendix A**, while a site location map is provided as **Figure 1**.

The ESA was required to support a Development Application with Liverpool Council (Council) which relates to the proposed construction of a six storey residential apartment building with on grade parking. Preliminary plans of the proposed development are provided for reference in **Appendix A**.

The objective of the ESA was to address the requirements of *State Environmental Planning Policy No. 55 – Remediation of Land* (reference 1) by determining the suitability of the site for the proposed land-use and possible constraints on future site development. In this regard, GEE has completed a *Stage 1 - Preliminary Site Investigation* (Stage 1 - PSI) and a Stage *2 – Detailed Site Investigation* (Stage 2 – DSI) in accordance with the NSW Environment Protection Authority (NSW EPA) in the *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (reference 2) and NEPM (2013) Schedule B(2) *Guideline on Site Characterisation* (reference 3).

1.2 PREVIOUS INVESTIGATIONS

GEE is not aware of any previous environmental site assessments having been conducted at the site, or part thereof.

1.3 SCOPE OF WORKS

The scope of works completed by GEE, to achieve the above objectives, is provided below:

- ◊ A review of the environmental and physical setting in which the site lies, including geology, hydrogeology and topography,
- ◊ A review of the history of the site using readily available records and historical aerial photographs,

- A detailed site inspection for potential sources of contamination,
- Field investigations including:
  - The drilling of two boreholes and the excavation of six testpits across accessible areas of the site,
  - Sampling of soil from the boreholes and testpits.
- Laboratory analysis of selected soil samples for a broad suite of potential contaminants, and
- Preparation of this report including the comparison of the laboratory analytical results against relevant Office of Environment and Heritage (OEH)[2] endorsed guidelines to evaluate potential contamination risk to human health and the environment.

[2] The OEH incorporates the NSW Environment Protection Authority (EPA) and was formerly known as the NSW Department of Environment and Climate Change and Water (DECCW), the NSW Department of Environment and Climate Change (DECC) and NSW Department of Environment and Conservation (DEC).

2 SITE IDENTIFICATION

A summary of the site location details is provided below, while a site location map is provided as **Figure 1**:

Street Address:	87 - 91 Nuwarra Road, Moorebank NSW 2170 (**Figure 1**)
Legal Description:	Lot 110 in Deposited Plan (DP) 235787 Lots 5 and 6 in DP 236405
Coordinates (MGA 56):	310885m E, 6243520m N
Local Government Area:	Liverpool
Site Area:	2010m^2
Current Zoning:	R4 – High Density Residential[3]
Current Use:	Low Density Residential
Proposed Zoning:	R4 – High Density Residential
Proposed Use:	High Density Residential
Current Owners:	Jose Teddy Sugpatan & Teresita Sugpatan (Lot 110), Dionissios Chronopoulos & Sophia Chronopoulos (Lot 5) and Faizal Frederic Nair & Vikashni Nand (Lot 6)

[3] Liverpool Local Environment Plan (LEP) 2008

3 SITE HISTORY

The history of the site was researched to provide an understanding of past and present site activities, which in turn may indicate sources and areas of potential contamination as well as potential chemicals of concern.

Information obtained and reviewed included:

- ◊ Historical aerial photographs dating back to 1943, as supplied by Lotsearch Pty Ltd using sources including the NSW Land and Property Information, or online aerial photography such as Google Earth, and Nearmap Limited (**Appendix B**).
- ◊ Historical title information, dating back to 1924 which were obtained from Hazlett Information Services (**Appendix C**).
- ◊ Historical business directory records which is provided in the Lotsearch Report (**Appendix B**).
- ◊ A search of the contaminated land database, which is available on the OEH website and reiterated in the Lotsearch report (**Appendix B**). This search reveals if there has been any past records of written notices issued on the site by OEH under the Contaminated Land Management Act 1997 (CLM Act), including preliminary investigation orders. Additionally, the search can reveal if the site has ever been notified to the OEH under Section 60 duty to report contaminated sites, of the CLM Act.

3.1 HISTORICAL AERIAL PHOTOGRAPHS

Historical aerial photographs were examined for the years 1943, 1955, 1961, 1965, 1970, 1982, 1991, 2004, 2009 and 2014. A description of the site from each photograph is provided below while a copy of the aerial photography is provided in **Appendix B**:

1951 The earliest available aerial image reveals that the site was vacant and undeveloped and part of a much larger parcel of rural land. The site was covered by grass with some mature trees.

Surrounding land was also predominately rural except for a residential dwelling to the north-east. Also Nuwarra Road had been constructed although appeared to be unpaved.

1955 By 1955 the site had been cleared of the majority of the trees and was partially developed. The site appeared to be part of two larger parcels of land

and there was a structure present in the north-western and south-western corners of the site. The structure in the north western corner appears to a shed which is likely to be associated with a dwelling immediately to the north of the site. The structure in the south-western corner also appears to be part of a residential dwelling which also extends beyond the site to the west.

On surrounding land the majority of trees had been removed and some similar development had occurred although nothing of significance to this investigation.

1961 In this photo the central portion of the site appears to have been cultivated into some form of gardens. Elsewhere there appears to be little change to the site when compared to the 1955 image.

On surrounding land there appears to be an increase in market gardens.

1965 There appears to be little change to the site and surrounding land when compared to the 1961 image.

1970 By 1970 the site and surrounding land to the north, west and south has been cleared and subdivided into low density residential allotments. The three allotments which make up the site are now formed and there is a dwelling present on No. 89 and 91 Nuwarra Road.

There appears to be little change to the land on the eastern side of Nuwarra Road.

1982 By 1982 the dwelling on No. 87 has been constructed and there appears to be an above ground pool at the rear of No. 89.

On surrounding land there has been increased residential development to the north, west and south, while the land to the east of Nuwarra Road has now been subdivided and developed for low density residential land-use.

1991 There appears to be little change to the site and the surrounding land when compared to the 1982 image.

2004 The only significant change to the site since 1991 is the construction of a shed at the rear of No. 89 which replaces the former pool.

Elsewhere, additional residential development has occurred and the majority of the former vacant allotments have now been developed.

2009 There appears to be little change to the site and the surrounding land when compared to the 2004 image.

2014 There appears to be little change to the site and the surrounding land when compared

to the 2009 image.

Based on review of the aerial photographs, the site was vacant, undeveloped land in the earliest available photograph taken in 1943. Between 1943 and 1955 the majority of the site and surrounding land had been cleared and developed into smaller rural properties which appear to have been used as market gardens. This continued until sometime between 1965 and 1970 when the site and surrounding land was further subdivided into the existing residential parcels of land. The dwellings on No. 89 and 91 had been constructed by 1970, while the dwelling on No. 87 was constructed between 1970 and 1982.

3.2 BUSINESS DIRECTORY LISTINGS

A search of the historical business directory listings from 1950, 1965, 1970, 1975, 1978 and 1982 were completed by Lotsearch (**Appendix B**) to assist with determining any past land-use activities. In summary there were no business listings directly associated with the site and there were no business activities of significance noted on the land immediately surrounding the site.

3.3 HISTORICAL TITLE INFORMATION

A copy of the historical title information obtained from circa 1924 to present is provided for reference in **Appendix C,** along with a summary table listing the past proprietors (owners) and leaseholders of the allotments.

The title information indicates that the site was originally part of the same, much larger, parcel of land up until circa 1944 and according to aerial photographs the site and surrounding land was predominately vacant and undeveloped.

Between 1944 and the mid-1960s, the site was part of two parcels of land with No. 87 Nuwarra Road (existing Lot 110) part of 3 acres of land extending to the north and west of the site and referred to as Lot 200 in DP 19128. No.s 89 and 91 Nuwarra Road (existing Lots 5 and 6) were part of a separate 3 acre parcel of land extending to the south and west which was referred to as Lot 199 in DP 19128.

Lot 200 DP19128 was owned by various individuals including a motor mechanic and bulldozer contractor and therefore may have been used as a motor vehicle mechanical workshop and/or storage yard for earthmoving machinery. Lot 199 DP 19128 was owned by a poultry farmer and therefore likely used as a poultry farm.

From mid to late-1960s the site was subdivided into the existing three allotments while owned by either Harvey & Lucas Pty Ltd or Wood Green Estates Pty Ltd. Since then the site has been owned by various individuals and with reference to the aerial photographs have been used for residential land-use.

3.4 CONTAMINATED LAND DATABASE

A search of the contaminated land database, which is available on the Office of Environment and Heritage (OEH) website, was conducted and revealed there has been no past record of written notices issued on the site, by OEH, under the Contaminated Land Management Act 1997 (CLM Act), including preliminary investigation orders. Additionally, the site has never been notified to the OEH under Section 60 duty to report contaminated sites, of the CLM Act.

Beyond the subject site, there were no properties within 150m of the site that have been notified to the OEH under the CLM Act.

3.5 SUMMARY OF SITE HISTORY INFORMATION

The historical information indicates that the site was originally part of the same, much larger, parcel of land up until the mid-1940s and during this time the site was vacant and undeveloped.

Between the mid-1940s and the mid-1960s, the site was part of two separate 3 acre parcels of land with the northern parcel of land potentially used as a motor vehicle mechanical workshop and/or storage yard for earthmoving machinery. The southern parcel of land was likely used as a poultry farm.

In the mid to late-1960s, the site was further subdivided into the existing low-density residential parcels of land and the existing dwelling were constructed shortly thereafter.

4 SITE CONDITION AND SURROUNDING ENVIRONMENT

4.1 SITE DESCRIPTION

The site is bounded by Nuwarra Road to the east, a residential townhouse to the north, and by low-density residential dwellings elsewhere. At the time of the investigation, the centre of each allotment was occupied by a residential dwelling. At the rear of No. 89 was also a metal shed while there were two sheds at the rear of No. 91. A driveway extends along the southern boundary of each allotment, while the remaining site surface was predominantly covered by grass, with the exception of some concrete footpaths, shrubs and garden beds.

Photographs taken during the field investigation are provided in **Plate 1** to **Plate 4** for reference.

Plate 1 – View from Nuwarra Road, facing north-west, depicting No. 91

Plate 2 – View from Nuwarra Road, facing west, depicting No. 89

Plate 3 – View from Nuwarra Road, facing west, depicting No. 87

Plate 4 – View from Nuwarra Street, facing north, depicting front of site

4.1.1 Tanks and Associated Services

During the inspection, GEE did not observe any evidence indicating the presence of under-ground, or above-ground, fuel or chemical, storage tanks. Such tanks would be highly unusual given the site's history.

4.1.2 Fill

Based on the regional topography and the site inspection, it was considered unlikely that the site has been subjected to any substantial filling. However, as mentioned in Section ???, with any developed site there is potential for fill to have been introduced to site either for levelling the surface prior to construction works or to raise site levels in flood prone land. In this regard, a detailed sampling program was undertaken and the soil was analysed for a broad suite of contaminants.

4.1.3 Odours and Staining

No unusual odours that could be potentially associated with contamination were noted during the site inspection or intrusive field investigations.

4.2 TOPOGRAPHY

Spot heights available on the survey plan (**Appendix A**) indicate the site surface elevation is between approximately 25.8m and 27.5m AHD. The highest ground is in the south-eastern corner of the site, dipping towards the north, north-west with an average gradient of approximately 2%.

4.3 REGIONAL GEOLOGY AND SOILS

A review of the regional geological map (reference 4) indicates that the site is underlain by the Middle Triassic aged Bringelly Shale formation of the Wianamatta Group which typically consists of "*shale, carbonaceous claystone, claystone, laminite, fine to medium-grained lithic sandstone, rare coal and tuff*". The site is also near the similarly aged Ashfield Shale formation, with Minchinbury Sandstone often found at the contact between Bringelly Shale and Ashfield Shale. Ashfield shale typically comprises dark grey to black claystone-siltstone and fine sandstone-siltstone laminite, while the Minchinbury sandstone formation typically comprises fine to medium grained lithic-quartz sandstone.

A review of the regional soils map indicates that the site is located within the Blacktown Soil Landscape Group (reference 5), recognised by gently undulating rises on the underlying shale formation. Local reliefs are up to 30m and slopes are usually less than 5% in gradient. Soils of the Blacktown Group typically comprise heavy clays that have

been derived from the weathering process of shale bedrock, have low fertility and are often strongly acidic.

4.4 REGIONAL HYDROGEOLOGY

The regional and permanent groundwater in the vicinity of the site is expected to be confined or partly confined, discrete, water-bearing zones within the bedrock formation. However, intermittent 'perched' water seepage is likely to occur at the soil / bedrock interface following heavy and prolonged rainfall events.

5 CONCEPTUAL SITE MODEL

The conceptual site model (CSM) is a representation, or summary, of information obtained regarding potential contamination sources, receptors and exposure pathways between the sources and receptors. The key elements of a CSM include:

- known and potential sources of contamination and contaminants of concern, including the mechanisms of contamination (such as 'top down' spills or sub-surface releases from corroded tanks or pipes),
- potentially affected media (such as soil, sediment, groundwater, surface water, indoor and ambient air),
- human and ecological receptors, and
- potential and complete exposure pathways.

GEE notes that this CSM is based on existing information (i.e. the historical information and the review of the site physical and environmental setting).

5.1 CONTAMINANT SOURCES

Based on GEE's knowledge of the site, including review of the site's history and physical and environmental setting, the main sources of potential contamination include:

- *Potential use of the northern part of the site (No. 87) as a motor vehicle repair workshop and/or storage yard for earthmoving machinery (Circa 1945 to 1965)*

  This could have resulted in 'top down' contamination of the site through fuel and oil leaks from cars, or if part of the site was ever used to service vehicles. However, any surface concrete would have minimised any migration of contaminants into the ground and therefore the risk of contamination is considered to be low. Additionally, the clay soil profile would restrict any further migration of potential contaminants.

- *Past demolition works.*

  With any demolition work there is a possibility that Asbestos Containing Materials (ACM), if present in former structures, were not cleared from site.

- *Past development of the site, specifically the potential for contaminated fill.*

  With any site development works there is a possibility that fill material was used to raise site levels above predicted flood levels, or to create a level building platform. When sourced from an unknown origin, the quality of the fill is also unknown and potentially contaminated.

5.2 POTENTIAL CONTAMINANTS OF CONCERN

A summary of the potential contaminants of concern attributed to the fill is summarised below in **Table 1**.

Table 1: Summary of Potential Contamination

Potential Contaminating Activity	Area of Environmental Concern (AEC)	Chemical of Potential Concern (CoPC)
Motor Vehicle Repair. Mechanical Workshop	Northern Part of the Site (No. 87)	Lead, Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX), Polycyclic Aromatic Hydrocarbons (PAHs) incl. Naphthalene
Demolition of former structures/sheds	Northern and Southern Parts of the Site (No. 87 and 91)	Asbestos
Past filling	Entire Site	Metals, TRH, Polycyclic Aromatic Hydrocarbons (PAHs), BTEX, Organochlorine Pesticides (OCPs), Polychlorinated Biphenyls (PCBs) and Asbestos[4]

5.3 POTENTIAL OR KNOWN CONTAMINATED MEDIA

The main potential contaminated media is the fill layer across the site. To a lesser extent is the upper portion of the natural soil profile because there is always potential for contaminants in the fill layer to impact on the upper portion of the underlying natural soil profile via leaching.

Groundwater also has the potential for contamination although the low permeability soil and bedrock beneath the site is expected to have restricted the migration of contaminants from the surface.

[4] These are common contaminants of concern for developed areas across Sydney.

5.4 CONTAMINANT RECEPTORS

Potential receptors to the contamination include:

- ◊ Existing users of the site,
- ◊ Workers engaged to construct the proposed development including earthworks contractors, and
- ◊ Future users of the site, although the majority of the site will be excavated to facilitate the construction of a basement and therefore any contamination is likely to be removed.

5.5 POTENTIAL EXPOSURE PATHWAYS

At this preliminary stage, potential exposure pathways include direct contact for workers on site and future users of the site.

6 SAMPLING AND ANALYSIS PROGRAM

The sampling and analysis program was designed with reference to the site's history and a recent site inspection. The purpose of the program was to characterise the soil conditions across the site in accordance with relevant EPA NSW endorsed guidelines to determine whether it would be suitable for the proposed land-use.

In accordance with the NSW DEC *Contaminated Sites: Guidelines for NSW Site Auditor Scheme* (reference 4), the Data Quality Objectives (DQOs) process was used to define the type, quantity and quality of the data needed to support decisions relating to the environmental condition of a site. Details of the DQO process adopted for the soil sampling and analysis program is provided in **Appendix D**.

6.1 SAMPLING PROGRAM

The sampling program was undertaken by Andy Chiem from GEE on the 21st June 2017 and comprised:

- ◊ The drilling of two boreholes (BH1 and BH2) and the excavation of six pits (TP01 to TP06) in accessible areas across the site, and
- ◊ The collection of soil samples from each borehole/testpit for subsequent selective laboratory analysis.

6.1.1 Borehole Drilling Operations and Logging

The boreholes and testpits were drilled / excavated in accessible areas across the site and positioned to provide even coverage (subject to existing obstructions). The number of sampling points (testpits and boreholes) exceeds the minimum number of sampling points required for adequate site characterisation as defined by the EPA NSW and Australian Standards (reference 9 and 10) and was considered by GEE to be appropriate for the current and past land-use. The boreholes and testpits were positioned in accordance with a systematic sampling pattern to provide broadly even coverage across the site, subject to the constraints of existing buildings and buries services.

The boreholes were drilled using an 85mm diameter stainless steel hand auger and were positioned in the rear yards of No. 87 and 91 Nuwarra Road, where the mini-excavator could not access. Both of the boreholes were advanced through any surface fill and into the underlying natural soil profile before refusing on weathered bedrock at 1.25m below ground surface (bgs). The testpits were excavated with a 2-tonne

excavator equipped with a 400mm wide bucket and were advanced through any surface filling and at least 0.3m into the underlying natural soil profile.

To minimise cross contamination between sampling locations, the hand auger was washed with Decon90, a laboratory grade cleaning agent and decontaminant, at the start of the fieldwork and after each boreholes. The auger was then rinsed vigorously with water after to ensure the removal of all traces of contamination as well as the cleaning agent. When sampling from test pits, care was undertaken to not sample soil in contact with the excavator bucket / shovel.

During drilling and or excavation works, the encountered fill material and any natural soil was geologically logged, taking care to describe the presence and depth of any adverse aesthetics such as discolouration or odours, of which there were none.

The location of the borehole and testpits was measured from existing site features and is shown on **Figure 2**.

6.1.2 Subsurface Conditions

The subsurface conditions encountered by the borehole and testpits typically comprised a surface layer of topsoil and/or fill material (i.e. imported material or previously disturbed soils) over natural silty gravelly sand and silty clay soils, which was underlain by siltstone and/or sandstone bedrock.

Detailed descriptions of the subsurface conditions on site are provided in the borehole/testpit logs provided in **Appendix E**, while the soil profile is also summarised in **Table 2**.

Table 2: Summary of Subsurface Conditions

Layer / Unit	Description	Depth to Base of Layer (m)[1]	Consistency / Relative Density[1]
FILL	Silty SAND / Gravelly Clayey SAND: dark grey, fine to coarse grained, trace fine to coarse gravels, tile, brick, fibro	0.2 – 0.7	Loose
	Gravelly CLAY: grey / brown, medium to high plasticity, fine to medium gravels, sheet metal	1.0	Firm
NATURAL SOIL	Silty Gravelly SAND: grey-brown, low to medium plasticity, fine to coarse grained, fine to medium gravels, charcoal	0.45	Loose to medium dense
	Silty CLAY: light grey mottled orange, medium plasticity, some sand	1.0 – 1.25	Firm to stiff
BEDROCK	SILTSTONE / SANDSTONE:	>1.25	--

Note 1: Determined from the borehole and DCP observations

Permanent groundwater was not encountered during the drilling of the boreholes or the excavation of the testpits, and was also not encountered during the short time that they remained open. The only water encountered was minor seepage within testpits TP2 and TP4. Seepage within TP2 was observed at the base of the pit following completion and was assessed to be perched water flowing at the interface of soil and bedrock interface. Seepage observed at TP4 occurred within the fill unit littered with broken clay pipes. This water was also considered to be perched above the low permeable clay profile and recharged by rainfall events. Therefore its presence is intermittent.

6.1.3 Soil Sampling

A total of 30 primary samples were collected from the 8 sampling points (borehole and testpits). This included a near-surface sample (100 – 200mm) sample, followed by samples at regular intervals or changes in soils type. Each sample was collected by hand using dedicated, disposable nitrile gloves in general accordance with techniques described in Australian Standard AS4482.2 (reference 7) and NEPM (2013 – reference 3), to maintain the representativeness and integrity of the samples. The soil was then placed in laboratory supplied, acid washed glass jars.

For the assessment of asbestos in the fill materials, sampling for was conducted in the testpits in general accordance with techniques described in the WA DoH (2009) *Guidelines for the Assessment, Remediation and Management of Asbestos - Contaminated Sites in Western Australia* (reference 8). In this regard sub-samples were collected within zip-lock bags in a wetted state from a sample volume of approximately 10L and following manual on-site screening through a ≤7mm sieve or inspection on a contrasting colour material. GEE notes that potential bonded ACM was encountered within the fill material at testpit TP4, while there was no potential ACM encountered at the remaining sampling locations.

The samples for laboratory analysis were each labelled with a unique sample identification number, in addition to the date of collection and project number, before being placed on ice within an esky. The sample identification number was repeated on the borehole/testpit logs (**Appendix E**).

At the completion of each borehole, including logging and the sampling of soils, each borehole was backfilled with soil cuttings.

A summary of the samples collected and analysed during this investigation and the sampling depths are provided in **Table 3**.

Table 3: Summary of the Sampling and Analysis Program

Location	Depth (m)	Sample Id	Material Type	Analytical Program				
				Metals	TRH/ BTEX	PAHs	OCPs / PCBs	Asbestos
Primary Samples								
TP01	0.1 – 0.2	AC210617-01	TOPSOIL / FILL	✓	✓	✓	✓	---
TP01	0.0 – 0.3	AC210617-TP01	TOPSOIL / FILL	---	---	---	---	✓
TP01	0.4 – 0.5	AC210617-02	Silty CLAY	✓	✓	✓	---	---
TP01	0.9 – 1.0	AC210617-03	Silty CLAY	---	---	---	---	---
TP02	0.1 – 0.2	AC210617-04	TOPSOIL / FILL	✓	✓	✓	✓	---
TP02	0.0 – 0.3	AC210617-TP01	TOPSOIL / FILL	---	---	---	---	✓
TP02	0.3 – 0.4	AC210617-06	Silty CLAY	✓	---	---	---	---
TP02	0.9 – 1.0	AC210617-07	Silty CLAY	---	---	---	---	---
TP03	0.1 – 0.2	AC210617-08	TOPSOIL / FILL	✓	✓	✓	---	---
TP03	0.0 – 0.3	AC210617-TP03	TOPSOIL / FILL	---	---	---	---	✓
TP03	0.5 – 0.6	AC210617-09	Silty CLAY	✓	---	---	---	---
TP03	0.9 – 1.0	AC210617-10	Silty CLAY	---	---	---	---	---
TP04	0.1 – 0.2	AC210617-11	TOPSOIL / FILL	✓	✓	✓	✓	---

TP04	0.0 – 0.3	AC210617-TP04	TOPSOIL / FILL	---	---	---	---	✓
TP04	0.7 – 0.8	AC210617-12	Silty CLAY	✓	✓	✓	---	---
TP05	0.1 – 0.2	AC210617-13	TOPSOIL / FILL	✓	✓	✓	---	---
TP05	0.0 – 0.3	AC210617-TP05	TOPSOIL / FILL	---	---	---	---	✓
TP05	0.4 – 0.5	AC210617-14	FILL	✓	✓	✓	✓	---
TP05	0.9 – 1.0	AC210617-15	FILL	---	---	---	---	---
TP05	1.1 – 1.2	AC210617-16	Silty CLAY	✓	---	---	---	---
TP06	0.1 – 0.2	AC210617-17	TOPSOIL / FILL	✓	✓	✓	---	---
TP06	0.0 – 0.3	AC210617-TP06	TOPSOIL / FILL	---	---	---	---	✓
TP06	0.3 – 0.4	AC210617-19	Silty CLAY	✓	---	---	---	---
TP06	0.9 – 1.0	AC210617-20	Silty CLAY	---	---	---	---	---
BH01	0.1 – 0.2	AC210617-21	TOPSOIL / FILL	✓	✓	✓	---	---
BH01	0.2 – 0.3	AC210617-22	Silty CLAY	✓	---	---	---	---
BH01	0.5 – 0.6	AC210617-23	Silty CLAY	✓	---	---	---	---
BH02	0.1 – 0.2	AC210617-24	TOPSOIL / FILL	✓	✓	✓	✓	---
BH02	0.4 – 0.5	AC210617-25	Silty CLAY	---	---	---	---	---
BH02	0.6 – 0.7	AC210617-26	Silty CLAY	✓	✓	✓	---	---
		Total		18	12	12	5	6
			Quality Control Samples					
TP02	0.1 – 0.2	AC210617-05	Duplicate of 'AC210617-04'	✓	✓	✓	---	---
TP06	0.1 – 0.2	AC210617-18	Duplicate of 'AC210617-17'	✓	---	---	---	---
20/6/17	--	Trip Blank	Sand	---	✓[1]	---	---	---
20/6/17	--	Trip Spike	Sand	---	✓[2]	---	---	---

Note 1: BTEX and TRH (C6-C9) only
Note 2: BTEX only

6.2 ANALYTICAL PROGRAM

In accordance with Section 5, selected soil samples were analysed for a broad suite of potential contaminants, including:

- ◊ Metals (Arsenic, Cadmium, Chromium, Copper, Nickel, Lead and Zinc)
- ◊ TRH
- ◊ BTEX
- ◊ PAH
- ◊ OCPs
- ◊ PCBs
- ◊ Asbestos.

GEE notes that the samples selected for analysed were primarily from the fill layer because this was the primary concern. GEE also analysed some samples for pH and Cation Exchange Capacity (CEC) to assist with determining the most appropriate ecological assessment criteria for some metals.

All the tests were carried out by Envirolab Services, which is National Association of Testing Authorities (NATA) registered for the testing undertaken.

A summary of the soil analytical program, including which samples were selected for analysis and the chemicals analysed, is provided in **Table 3.**

7 DATA QUALITY ASSESSMENT

A detailed Quality Assurance (QA) assessment, including the analysis of Quality Control (QC) samples, was carried out by GEE to determine the suitability and reliability of field procedures and analytical results. In accordance with NSW DEC (reference 6), the QA assessment used Data Quality Indicators (DQIs) which included:

- precision.
- accuracy (or bias).
- representativeness.
- completeness.
- comparability.

The detailed QA assessment report is provided in **Appendix F**, and concludes that the field procedures and analytical data presented herein are of suitable quality for making conclusions and recommendations regarding the contamination status of the site.

8 ASSESSMENT CRITERIA

For any contamination assessment, it is necessary to evaluate the human health and ecological risks associated with the presence of site contamination. Also, in accordance with Appendix I of DEC, 2006 guidelines (reference 4), residential sites need to address aesthetics such as highly malodorous soils.

8.1 AESTHETICS

Aesthetics was continually assessed in the field during borehole drilling and logging and no significant observations were noted.

8.2 ECOLOGICAL RISK

To address potential ecological risks, GEE has compared the soil analytical results against the Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) appropriate for the land-use as detailed in NEPM (2013), *Schedule B(1) – Guidelines on Investigation Levels for Soil and Groundwater* (reference 12).

8.2.1 Ecological Investigation Levels (EILs)

EILs were derived for common contaminants in soil (specifically Arsenic, Copper, Chromium (III), DDT, naphthalene, Nickel, Lead and Zinc) and are based on a species sensitivity distribution (SSD) model developed for Australian conditions. They consider the physicochemical properties of soil (e.g. Cation Exchange Capacity, pH and clay content), contaminants and the capacity of the local ecosystem to accommodate increases in contaminant levels (referred to as the 'added contaminant limit' or ACL) above ambient background. Additionally, EILs only apply to the upper 2m of soil profile and the soil profile that will be exposed by the proposed development (i.e. a narrow strip of land around the site perimeter).

Finally, different EILs apply for 'fresh' contamination and 'aged' contamination. 'Fresh' contamination is usually associated with current activity and chemical spills, while a contaminant that has been incorporated into a soil for more than 2 years is considered to be 'aged'. For the purpose of this report 'aged' EILs have been adopted because any contamination present at the site is likely to have been present for more than 2 years.

To assist with determining appropriate EILs to screen the soil analytical results, particularly for Copper, Chromium -III, Nickel and Zinc, the Cation Exchange Capacity (CEC) and pH of the soil was analysed for each of the samples. The CEC values for each sample ranged from 2.9 to 22 meq/100g, while the pH values ranged from 5.1 to

8.3. For the purpose of this report, and to screen the analytical results, GEE has adopted the lowest values for both CEC and pH which was a CEC of 2.9 meq/100g and pH of 5.1. Additionally, a value of 1% clay composition has been adopted when determining the EIL for chromium (III) which is considered to be conservative.

When determining the EILs for Copper, Nickel, Chromium and Zinc, ambient background concentrations can be used to increase the final EIL, however, for the purpose of this investigation zero ambient background concentrations have been adopted to be conservative.

The broad land-use scenarios are areas of ecological significance, urban residential/ public space, and commercial/industrial. Each land-use scenario assumes different exposure scenarios and are generally based on the land-use at ground floor level which includes living quarters and therefore urban/residential criteria has been adopted.

A summary of the EILs adopted for the site is provided in **Table 4**.

8.2.2 Ecological Screening Levels (ESLs)

ESLs have been developed for selected petroleum hydrocarbon compounds (specifically TRH[5], BTEX and Benzo(a)pyrene) and are applicable for assessing risk to terrestrial ecosystems. ESLs broadly apply to coarse- and fine-grained soils and like EILs, the ESLs consider various land use scenarios, only apply to the upper 2m of exposed soils and differ for 'fresh' contamination and 'aged' contamination. For the purpose of this report, fine-grained soil and 'aged' ESLs have been adopted because they are considered to be most appropriate for site conditions.

With respect to land-use, urban/residential ESLs have been adopted because there are living quarters proposed on the ground floor.

A summary of the ESLs appropriate for the site is provided in **Table 4.** GEE notes that screening levels are the concentrations of a contaminant above which will require further evaluation and consideration.

[5] ESLs for the various carbon fractions are based on TRH analysis with F1 (C6-C9) being obtained after subtraction of BTEX.

8.3 HUMAN HEALTH RISK

To address potential health impacts at the site, GEE has compared the analytical results against Health Investigation Levels (HILs) and Health Screening Levels (HSLs), provided in NEPM (2013), *Schedule B(1) – Guidelines on Investigation Levels for Soil and Groundwater* (reference 12).

8.3.1 Health Investigation Levels (HILs)

The HILs are scientifically based, generic assessment criteria to be used as a first stage (or tier 1) screening of potential risks to human health from chronic exposure to contaminants. They are intentionally conservative and are based on four different and generic land use scenarios (i.e. HIL-A described as residential with accessible soils, HIL-B which includes residential with minimal opportunities for soil access, HIL-C for public space such as parks and HIL-D for commercial/industrial sites). Each land-use scenario assumes different exposure scenarios and when land is used for more than one purpose, the HILs that are relevant to the more sensitive land-use should be adopted. In this regard, the most appropriate land use scenario is HIL-B.

HILs for soil contaminants are provided in Table 1A(1) of the NEPM guidelines and includes metals, PAHs, Pesticides and PCBs. Petroleum hydrocarbons are not included.

A summary of the HILs appropriate for the site is provided in **Table 4**.

8.3.2 Health Screening Levels (HSLs)

Health Screening Levels (HSLs) were developed for selected petroleum hydrocarbons (specifically TRH C_6 – C_{10} or F1 fraction, TRH >C_{10} – C_{16} or F2 fraction and BTEX) by the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) and have been adopted and are referenced in Schedule B(1) of NEPM (2013 – reference 12) and Friebel & Nadebaum (2011 – reference 13). HSLs were also developed for asbestos in soil by the WA DoH (reference 8) and have been adopted in Schedule B(1) of NEPM (2013 – reference 12).

Petroleum Hydrocarbons

The assessment of petroleum hydrocarbon contamination is primarily driven by human health concerns relating to volatile components (e.g. TRH C_6 – C_{10}, TRH >C_{10} – C_{16} and Benzene) which have the potential to cause health issues via vapour intrusion. HSLs also apply for direct human contact (Table A4 – reference 13) but only where this is likely.

For vapour intrusion and direct contact, different HSLs apply for different land use scenarios, different soil types (i.e. sand, silt and clay) and different depths. For the purpose of this investigation, criteria relevant for shallow (0m to 1m) sandy soils has been adopted to screen the soil analytical results because they are most conservative. If a sample exceedance occurs at greater depth then the criteria will be adjusted to suit.

With respect to land-use there are four scenarios:

- HSL-A for low density residential sites
- HSL-B for high density residential sites
- HSL-C for recreational/open space areas
- HSL-D for commercial and industrial sites

The land use setting is based on ground floor occupation because if the vapour exposure is acceptable at ground level then it can be assumed to be acceptable on the floors above. As previously mentioned it is proposed to construct a residential apartment building and residential apartments will exist on the ground floor. In this regard HSL-B has been adopted.

Where there is a HSL for vapour intrusion as well as direct contact, the lowest criteria has been adopted, which is the vapour intrusion HSLs. Where there are no direct contact or vapour intrusion HSLs available, GEE has adopted management limits (Table 1B(7) – reference 12) which apply for TRH. The management limits are designed to avoid or minimise potential effects of petroleum hydrocarbons including:

- The formation of observable light non-aqueous phase liquids (LNAPL),
- Fire and explosive hazards, and
- The effects on buried infrastructure e.g. penetration of, or damage to, in-ground services by hydrocarbons.

Again, there are different management limits for the various land use scenarios and GEE has adopted the management limits appropriate for high density residential sites have been adopted. Finally, where there are HILs or management limits available for a particular contaminant, GEE has adopted HSLs recommended for direct contact on high density residential sites (Table A4 – reference 17). A summary of the petroleum hydrocarbon HSLs adopted for the site is provided in **Table 4**.

Asbestos is Soil

The asbestos in soil screening levels are based on scenario-specific likely exposure levels associated with land-use. Considering the proposed land-use GE has adopted criteria for Residential – B which includes minimal access to soil.

Table 4: Soil Site Assessment Criteria (SAC)

Analyte	Health Investigation/Screening Levels (HILs/HSLs) (mg/kg)		Ecological Investigation/Screening Levels (EILs/ESLs) (mg/kg)	
	HIL-B / HSL-B	Reference	**Residential/Urban**	Reference
Total Metals				
Arsenic	500	Table 1A – Reference 12	100	Table 1B(5) – Reference 12
Cadmium	150	Table 1A – Reference 12	--	--
Chromium (VI)	500	Table 1A – Reference 12	--	--
Chromium (III)	--	--	190	Table 1B(3) – Reference 12
Copper	30,000	Table 1A – Reference 12	70	Table 1B(2) – Reference 12
Lead	1,200	Table 1A – Reference 12	1,100	Table 1B(4) – Reference 12
Mercury (inorganic)	120	Table 1A – Reference 12	--	--
Nickel	1,200	Table 1A – Reference 12	15	Table 1B(3) – Reference 12
Zinc	60,000	Table 1A – Reference 12	170	Table 1B(1) – Reference 12
Total Polychlorinated Biphenyls (PCBs)				
Total PCBs	1	Table 1A – Reference 12	--	--
Polycyclic Aromatic Hydrocarbons (PAHs)				
Naphthalene	3	Table 1A(3) – Reference 12	170	Table 1B(5) – Reference 12
Benzo(a)pyrene	--	--	0.7	Table 1B(6) – Reference 12
Benzo(a)pyrene TEQ	4	Table 1A – Reference 12	--	--
TOTAL PAHs	400	Table 1A – Reference 12	--	--
Organochlorine Pesticides (OCP)				
Heptachlor	10	Table 1A – Reference 12	--	--
Aldrin + Dieldrin	10	Table 1A – Reference 12	--	--
Endrin	20	Table 1A – Reference 12	--	--
Chlordane	90	Table 1A – Reference 12	--	--
Endosulfan	400	Table 1A – Reference 12	--	--
HCB	15	Table 1A – Reference 12	--	--
Methoxychlor	500	Table 1A – Reference 12	--	--
DDE + DDD + DDT	600	Table 1A – Reference 12	--	--
DDT	--	--	180	Table 1B(5) – Reference 12
BTEX				
Benzene	0.5	Table 1A(3) – Reference 12	50	Table 1B(6) – Reference 12
Toluene	160	Table 1A(3) – Reference 12	85	Table 1B(6) – Reference 12
Ethylbenzene	55	Table 1A(3) – Reference 12	70	Table 1B(6) – Reference 12
Xylenes	40	Table 1A(3) – Reference 12	45	Table 1B(6) – Reference 12
Total Recoverable Hydrocarbons (TRH)				
(F1) C6 – C10	45	Table 1A(3) – Reference 12	180	Table 1B(6) – Reference 12
(F2) >C10 - C16	110	Table 1A(3) – Reference 12	120	Table 1B(6) – Reference 12
(F3) >C16 – C34	2,500	Table 1B(7) – Reference 12	300	Table 1B(6) – Reference 12
(F4) >C34 – C40	10,000	Table 1B(7) – Reference 12	2,800	Table 1B(6) – Reference 12
Asbestos				
Surface Soil	No visible Asbestos	Table 7 – Reference 12	--	--
Buried Bonded	0.04%	Table 7 – Reference 12	--	--
Buried Friable Asbestos/Asbestos Fines	0.001%	Table 7 – Reference 12	--	--

9 ANALYTICAL RESULTS

A copy of the laboratory report is provided in **Appendix G**, while a summary of the results is provided in **Table 5** and discussed in the following sections.

9.1 METALS

A total of 18 primary samples were analysed for the presence of metals, specifically, arsenic, cadmium, chromium, copper, nickel, lead, zinc and mercury. A summary of the results is provided below:

Metal	Number of Samples Analysed	Minimum Value	Maximum Value	SAC		Exceedances	
				Health	Ecological	Health	Ecological
Arsenic	18	<4	19	500	100	0	0
Cadmium	18	<0.4	0.6	150	--	0	0
Chromium	18	5	54	500	190	0	0
Copper	18	3	43	30,000	70	0	0
Lead	18	6	71	1,200	1,100	0	0
Mercury	18	<0.1	<0.1	120	--	0	0
Nickel	18	<1	18	1,200	15	0	1
Zinc	18	3	93	60,000	170	0	0

In summary, there were no concentrations above the health-based SAC, while there was one sample (AC210617-17) which contained a concentration of nickel above the ecological SAC. As previously mentioned, the ecological-based SAC are dependent on the CEC and/or pH of the individual samples. The SAC provided in **Table 4** are based on the lowest values of CEC and pH for all samples (i.e. 5.1 pH and 2.9 meq/100g) and was done as the 'first pass' assessment of the results. The actual CEC and pH results for this samples was 14.0 meq/100g and 7.0 pH units, respectively. When using the actual CEC and pH values for the sample, the ecological SAC increases to 210 mg/kg which is higher than the sample concentration of 18mg/kg. In this regard, GEE considers that metals do not pose an ecological contamination issue for the proposed development.

9.2 TRH AND BTEX

Twelve primary samples were selected for TRH and BTEX analysis. A summary of the results is provided below:

Analyte	Number of Samples Analysed	Minimum Value	Maximum Value	SAC		Number of Exceedances
				Health	Ecological	
TRH C6-C10 (F1)	12	<25	<25	45	180	0
TRH >C10 – C16 (F2)	12	<50	<50	110	120	0
TRH >C16 – C34 (F3)	12	<100	<100	2,500	300	0
TRH >C34 – C40 (F4)	12	<100	110	10,000	2,800	0
Benzene	12	<0.2	<0.2	0.5	50	0
Toluene	12	<0.5	<0.5	160	85	0
Ethylbenzene	12	<1	<1	55	70	0
Xylenes	12	<2	<2	40	45	0

On the basis of the soil analytical results and the fact that there was no obvious hydrocarbon odour noted during the fieldwork, GEE considers that TRH and BTEX does not to pose a contamination issue for the proposed development.

9.3 PAHs

A total of 12 primary samples were analysed for PAHs. A summary of the results is provided below:

Analyte	Number of Samples Analysed	Minimum Value	Maximum Value	SAC		Number of Exceedances
				Health	Ecological	
Naphthalene	12	<0.1	<0.1	3	170	0
Benzo(a)pyrene	12	<0.05	0.3	--	0.7	0
Benzo(a)pyrene TEQ	12	<0.5	<0.5	4	--	0
Total PAHs	12	<0.05	2.6	400	--	0

Based on the soil analytical results, GEE considers that PAHs do not pose a contamination issue for the proposed development.

9.4 OCPs AND PCBs

Eight primary samples were analysed for OCPs and PCBs. A summary of the results is provided below:

Analyte	Number of Samples Analysed	Minimum Value	Maximum Value	SAC		Number of Exceedances
				Health	Ecological	
Heptachlor	8	<0.1	<0.1	10	--	0
Aldrin	8	<0.1	<0.1	15	--	0
Dieldrin	8	<0.1	<0.1	15	--	0
Endrin	8	<0.1	<0.1	20	--	0
Chlordane	8	<0.1	<0.1	90	--	0
Endosulfan	8	<0.1	<0.1	400	--	0
HCB	8	<0.1	<0.1	15	--	0
Methoxychlor	8	<0.1	<0.1	500	--	0
DDE + DDD + DDT	8	<0.1	<0.1	600	--	0
DDT	8	<0.1	<0.1	--	180	0
Total PCBs	8	<0.1	<0.1	1	--	0

On the basis of the soil analytical results, OCPs and PCBs are not considered to be a contamination issue for the development.

9.5 ASBESTOS

A single fragment of bonded ACM was encountered during the excavation of testpit TP4 which was located at the front of the dwelling at No. 89 and analysis confirmed the presence of asbestos. The other sampling points did not encounter any bonded ACM.

When adopting the calculation for determining soil asbestos concentrations (reference 8) the concentration of asbestos was 0.0003%, and this assumes 15% asbestos by weight in the ACM and a soil density of 1.5 kg/L.

Asbestos in the form of friable fibres were not detected in each of the fill samples submitted for analysis.

In summary, GEE considers that asbestos is unlikely to be a contamination issue for the soils across the site. However, in accordance with the WA DoH guidelines (reference 8), which have been adopted nationally (reference 12), further assessment is warranted.

TABLE 5 - Summary of Analytical Results (Soil)

Sample ID		AC210617-01	AC210617-TP01	AC210617-02	AC210617-04	AC210617-05	AC210617-TP02	AC210617-06	AC210617-08	AC210617-TP03	AC210617-09	AC210617-11	AC210617-TP04	AC210617-12	Site Acceptance Criteria	
Analyte	Location	TP01	TP01	TP01	TP02	Blind	TP02	TP02	TP03	TP03	TP03	TP04	TP04	TP04	Health	Ecological
	Depth	0.1 – 0.2	0.0 – 0.3	0.4 – 0.5	0.1 – 0.2	Replicate	0.0 – 0.3	0.3 – 0.4	0.1 – 0.2	0.0 – 0.3	0.5 – 0.6	0.1 – 0.2	0.0 – 0.3	0.7 – 0.8		
	Type	TOPSOIL / FILL	TOPSOIL / FILL	Silty CLAY	TOPSOIL / FILL	of '04'	TOPSOIL / FILL	Silty CLAY	TOPSOIL / FILL	TOPSOIL / FILL	Silty CLAY	TOPSOIL / FILL	TOPSOIL / FILL	Silty CLAY		
Asbestos																
Bonded Asbestos	%	--	<0.01	--	--	--	<0.01	--	--	<0.01	--	--	<0.01	--	**0.04%**	**--**
FA & AF	%	--	<0.001	--	--	--	<0.001	--	--	<0.001	--	--	<0.001	--	**0.001%**	**--**
Metals																
Arsenic	mg/kg	8	--	6	10	6	--	8	<4	--	7	5	--	6	**500**	**100**
Cadmium	mg/kg	<0.4	--	<0.4	<0.4	<0.4	--	<0.4	<0.4	--	<0.4	<0.4	--	<0.4	**150**	**--**
Chromium[1]	mg/kg	20	--	24	18	14	--	23	9	--	20	13	--	23	**500**	**190**
Copper	mg/kg	12	--	13	23	25	--	10	7	--	8	18	--	13	**30,000**	**70**
Lead	mg/kg	40	--	11	43	47	--	11	14	--	12	71	--	14	**1,200**	**1,100**
Mercury	mg/kg	<0.1	--	<0.1	<0.1	<0.1	--	<0.1	<0.1	--	<0.1	<0.1	--	<0.1	**120**	**--**
Nickel	mg/kg	3	--	2	5	4	--	2	4	--	1	6	--	1	**1,200**	**15**
Zinc	mg/kg	34	--	5	53	64	--	6	32	--	14	51	--	6	**60,000**	**170**
BTEX																
Benzene	mg/kg	<0.2	--	<0.2	<0.2	<0.2	--	--	<0.2	--	--	<0.2	--	<0.2	**0.5**	**50**
Toluene	mg/kg	<0.5	--	<0.5	<0.5	<0.5	--	--	<0.5	--	--	<0.5	--	<0.5	**160**	**85**
Ethylbenzene	mg/kg	<1	--	<1	<1	<1	--	--	<1	--	--	<1	--	<1	**55**	**70**
Total Xylenes	mg/kg	<1	--	<1	<1	<1	--	--	<1	--	--	<1	--	<1	**40**	**45**
TRH																
TRH C_6 - C_{10} (F1)	mg/kg	<25	--	<25	<25	<25	--	--	<25	--	--	<25	--	<25	**45**	**180**
TRH >C_{10} - C_{16} (F2)	mg/kg	<50	--	<50	<50	<50	--	--	<50	--	--	<50	--	<50	**110**	**120**
TRH >C_{16}-C_{34} (F3)	mg/kg	<100	--	<100	<100	<100	--	--	<100	--	--	<100	--	<100	**2,500**	**300**
TRH >C_{34}-C_{40} (F4)	mg/kg	<100	--	<100	<100	<100	--	--	<100	--	--	<100	--	<100	**10,000**	**2,800**
PAHs																
Naphthalene	mg/kg	<0.1	--	<0.1	<0.1	<0.1	--	--	<0.1	--	--	<0.1	--	<0.1	**3**	**170**
Benzo(a)pyrene	mg/kg	<0.05	--	<0.05	<0.05	<0.05	--	--	<0.05	--	--	<0.05	--	<0.05	**--**	**0.7**
Benzo(a)pyrene TEQ	mg/kg	<0.5	--	<0.5	<0.5	<0.5	--	--	<0.5	--	--	<0.5	--	<0.5	**4**	**--**
Total PAHs	mg/kg	<0.05	--	<0.05	<0.05	<0.05	--	--	<0.05	--	--	<0.05	--	<0.05	**400**	**--**
OCPs																
Heptachlor	mg/kg	<0.1	--	--	<0.1	--	--	--	--	--	--	<0.1	--	--	**10**	**--**
Aldrin	mg/kg	<0.1	--	--	<0.1	--	--	--	--	--	--	<0.1	--	--	**15**	**--**
Dieldrin	mg/kg	<0.1	--	--	<0.1	--	--	--	--	--	--	<0.1	--	--		
Endrin	mg/kg	<0.1	--	--	<0.1	--	--	--	--	--	--	<0.1	--	--	**20**	**--**
gamma-Chlordane	mg/kg	<0.1	--	--	<0.1	--	--	--	--	--	--	<0.1	--	--	**90**	**--**
alpha-chlordane	mg/kg	<0.1	--	--	<0.1	--	--	--	--	--	--	<0.1	--	--		**--**
Endosulfan I	mg/kg	<0.1	--	--	<0.1	--	--	--	--	--	--	<0.1	--	--	**400**	**--**
Endosulfan II	mg/kg	<0.1	--	--	<0.1	--	--	--	--	--	--	<0.1	--	--		**--**
HCB	mg/kg	<0.1	--	--	<0.1	--	--	--	--	--	--	<0.1	--	--	**15**	**--**
Methoxychlor	mg/kg	<0.1	--	--	<0.1	--	--	--	--	--	--	<0.1	--	--	**500**	**--**
pp-DDE	mg/kg	<0.1	--	--	<0.1	--	--	--	--	--	--	<0.1	--	--		**--**
pp-DDD	mg/kg	<0.1	--	--	<0.1	--	--	--	--	--	--	<0.1	--	--	**600**	**--**
pp-DDT	mg/kg	<0.1	--	--	<0.1	--	--	--	--	--	--	<0.1	--	--		**180**
PCBs																
Total +ve PCBs	mg/kg	<0.1	--	--	<0.1	--	--	--	--	--	--	<0.1	--	--	**1**	**--**
Other Tests																
CEC	mg/kg	6.9	--	13	12	--	--	12	2.9	--	12	22	--	9.3	**--**	**--**
pH	mg/kg	5.8	--	5.3	6.6	--	--	5.5	5.7	--	5.1	8.3	--	5.2	**--**	**--**

TABLE NOTES:

Analytical results which exceed any of the Health-based Investigation Levels (HILs) are shown as **bold** text.

Analytical results which exceed any of the Ecological-based Investigation Levels (PILs) are shown as boxed text.

1 – Total Chromium analytical result includes chromium (III) and (VI).

TABLE 5 - Summary of Analytical Results (Soil)

Sample ID		AC210617-13	AC210617-TP05	AC210617-14	AC210617-16	AC210617-17	AC210617-18	AC210617-19	AC210617-TP06	AC210617-21	AC210617-22	AC210617-23	AC210617-24	AC210617-26	Site Acceptance Criteria	
Analyte	Location	TP05	TP05	TP05	TP05	TP06	Blind	TP06	TP06	BH01	BH01	BH01	BH02	BH02	Health	Ecological
	Depth	0.1 – 0.2	0.0 – 0.3	0.4 – 0.5	1.1 – 1.2	0.1 – 0.2	Replicate	0.3 – 0.4	0.0 – 0.3	0.1 – 0.2	0.2 – 0.3	0.5 – 0.6	0.1 – 0.2	0.6 – 0.7		
	Type	TOPSOIL / FILL	TOPSOIL / FILL	FILL	Silty CLAY	TOPSOIL / FILL	of '17'	Silty CLAY	TOPSOIL / FILL	TOPSOIL / FILL	Silty CLAY	Silty CLAY	TOPSOIL / FILL	Silty CLAY		
Asbestos																
Bonded Asbestos	%	--	<0.01	--	--	--	--	--	<0.01	--	--	--	--	--	**0.04%**	**--**
FA & AF	%	--	<0.001	--	--	--	--	--	<0.001	--	--	--	--	--	**0.001%**	**--**
Metals																
Arsenic	mg/kg	12	--	11	<4	16	19	9	--	5	10	9	<4	8	**500**	**100**
Cadmium	mg/kg	<0.4	--	<0.4	<0.4	0.5	0.6	<0.4	--	<0.4	<0.4	<0.4	<0.4	<0.4	**150**	**--**
Chromium[1]	mg/kg	20	--	21	5	54	51	25	--	14	18	29	8	21	**500**	**190**
Copper	mg/kg	38	--	8	6	33	43	12	--	20	3	8	18	8	**30,000**	**70**
Lead	mg/kg	48	--	22	6	40	51	11	--	43	13	13	18	8	**1,200**	**1,100**
Mercury	mg/kg	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	--	<0.1	<0.1	<0.1	<0.1	<0.1	**120**	**--**
Nickel	mg/kg	9	--	2	<1	18	11	2	--	9	2	2	2	1	**1,200**	**15**
Zinc	mg/kg	65	--	12	3	90	93	7	--	69	4	5	19	3	**60,000**	**170**
BTEX																
Benzene	mg/kg	<0.2	--	<0.2	--	<0.2	--	--	--	<0.2	--	--	<0.2	<0.2	**0.5**	**50**
Toluene	mg/kg	<0.5	--	<0.5	--	<0.5	--	--	--	<0.5	--	--	<0.5	<0.5	**160**	**85**
Ethylbenzene	mg/kg	<1	--	<1	--	<1	--	--	--	<1	--	--	<1	<1	**55**	**70**
Total Xylenes	mg/kg	<1	--	<1	--	<1	--	--	--	<1	--	--	<1	<1	**40**	**45**
TRH																
TRH C_6 - C_{10} (F1)	mg/kg	<25	--	<25	--	<25	--	--	--	<25	--	--	<25	<25	**45**	**180**
TRH >C_{10} - C_{16} (F2)	mg/kg	<50	--	<50	--	<50	--	--	--	<50	--	--	<50	<50	**110**	**120**
TRH >C_{16}-C_{34} (F3)	mg/kg	<100	--	<100	--	<100	--	--	--	<100	--	--	<100	<100	**2,500**	**300**
TRH >C_{34}-C_{40} (F4)	mg/kg	<100	--	<100	--	110	--	--	--	<100	--	--	<100	<100	**10,000**	**2,800**
PAHs																
Naphthalene	mg/kg	<0.1	--	<0.1	--	<0.1	--	--	--	<0.1	--	--	<0.1	<0.1	**3**	**170**
Benzo(a)pyrene	mg/kg	0.3	--	<0.05	--	<0.05	--	--	--	0.07	--	--	<0.05	<0.05	**--**	**0.7**
Benzo(a)pyrene TEQ	mg/kg	<0.5	--	<0.5	--	<0.5	--	--	--	<0.5	--	--	<0.5	<0.5	**4**	**--**
Total PAHs	mg/kg	2.6	--	<0.05	--	<0.05	--	--	--	0.07	--	--	<0.05	<0.05	**400**	**--**
OCPs																
Heptachlor	mg/kg	--	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--	**10**	**--**
Aldrin	mg/kg	--	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--	**15**	**--**
Dieldrin	mg/kg	--	--	<0.1	--	--	--	--	--	--	--	--	0.2	--		
Endrin	mg/kg	--	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--	**20**	**--**
gamma-Chlordane	mg/kg	--	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--	**90**	**--**
alpha-chlordane	mg/kg	--	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--		**--**
Endosulfan I	mg/kg	--	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--	**400**	**--**
Endosulfan II	mg/kg	--	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--		**--**
HCB	mg/kg	--	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--	**15**	**--**
Methoxychlor	mg/kg	--	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--	**500**	**--**
pp-DDE	mg/kg	--	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--		**--**
pp-DDD	mg/kg	--	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--	**600**	**--**
pp-DDT	mg/kg	--	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--		**180**
PCBs																
Total +ve PCBs	mg/kg	--	--	<0.1	--	--	--	--	--	--	--	--	<0.1	--	**1**	**--**
Other Tests																
CEC	mg/kg	12	--	7.5	8.9	14	--	11		10	4	13	5	15	**--**	**--**
pH	mg/kg	7.7	--	7.5	5.2	7	--	5.2		6.5	6.3	5.8	5.8	7	**--**	**--**

TABLE NOTES:

Analytical results which exceed any of the Health-based Investigation Levels (HILs) are shown as **bold** text.

Analytical results which exceed any of the Ecological-based Investigation Levels (PILs) are shown as boxed text.

1 – Total Chromium analytical result includes chromium (III) and (VI).

10 SITE CHARACTERISATION

A summary of the information obtained and results of this assessment is presented below.

10.1 SITE HISTORY AND POTENTIAL FOR CONTAMINATION

The historical information indicates that the site was originally part of the same, much larger, parcel of land up until the mid-1940s and during this time the site was vacant and undeveloped. Between the mid-1940s and the mid-1960s, the site was part of two separate, 3 acre, parcels of land with the northern parcel of land potentially used as a motor vehicle mechanical workshop and/or storage yard for earthmoving machinery. The southern parcel of land was likely used as a poultry farm. In the mid to late-1960s, the site was further subdivided into the existing low-density residential parcels of land and the existing dwelling were constructed shortly thereafter.

Based on GEE's knowledge of the site, including review of the site's history and physical and environmental setting, the main sources of potential contamination include:

◊ *Potential use of the northern part of the site (No. 87) as a motor vehicle repair workshop and/or storage yard for earthmoving machinery (Circa 1945 to 1965)*

This could have resulted in 'top down' contamination of the site through fuel and oil leaks from cars, or if part of the site was ever used to service vehicles. However, any surface concrete would have minimised any migration of contaminants into the ground and therefore the risk of contamination is considered to be low. Additionally, the clay soil profile would restrict any further migration of potential contaminants.

◊ *Past demolition works.*

With any demolition work there is a possibility that Asbestos Containing Materials (ACM), if present in former structures, were not cleared from site.

◊ *Past development of the site, specifically the potential for contaminated fill.*

With any site development works there is a possibility that fill material was used to raise site levels above predicted flood levels, or to create a level building platform. When sourced from an unknown origin, the quality of the fill is also unknown and potentially contaminated.

10.2 SOIL ASSESSMENT

Soil conditions across the site were assessed at two boreholes (BH1 and BH2) and six testpit (TP1 to TP6) locations positioned in accessible areas across the site and targeting areas of potential contamination. The number of sampling points (boreholes and testpits) exceeds the minimum number of sampling points required for adequate site characterisation as defined by the EPA NSW and Australian Standards. The boreholes and testpits were positioned in accordance with a systematic sampling pattern to provide broadly even coverage across the site, subject to the constraints of existing buildings and buries services.

The boreholes were drilled using an 85mm diameter stainless steel hand auger and were positioned in the rear yards of No. 87 and 91 Nuwarra Road, where the mini-excavator could not access. Both of the boreholes were advanced through any surface fill and into the underlying natural soil profile before refusing on weathered bedrock at 1.25m below ground surface (bgs). The testpits were excavated with a 2-tonne excavator equipped with a 400mm wide bucket and were advanced through any surface filling and at least 0.3m into the underlying natural soil profile.

During the drilling of boreholes, there were no unusual odours (that could be potentially associated with contamination) noted. With respect to asbestos, a single fragment of bonded Asbestos Containing Material (ACM) was observed within the fill layer at testpit TP4 located at the front of No. 89. The subsurface conditions encountered by the borehole and testpits typically comprised a surface layer of topsoil and/or fill material (i.e. imported material or previously disturbed soils) over natural silty gravelly sand and silty clay soils, which was underlain by siltstone and/or sandstone bedrock.

GEE submitted a total of 30 primary soil samples from the 8 sampling points to Envirolab for NATA accredited laboratory analysis of metals (arsenic, cadmium, chromium, copper, nickel, lead, mercury and zinc), TRH, BTEX, PAHs, OCPs, PCBs and asbestos. The analytical results were compared against relevant set of ecological and health-based Site Acceptance Criteria (SAC) appropriate for the proposed land-use (residential with limited accessible soil).

In summary, the fill and natural soil was found to be free of significant contamination which would impact on the proposed development, future users of the site and the environment.

10.3 GROUNDWATER ASSESSMENT

GEE acknowledges that groundwater conditions beneath the site were not assessed as part of this investigation. However, this is considered to be acceptable given that:

- ◊ The regional groundwater in the vicinity of the site is likely to be confined or partly confined, discrete, water-bearing zones within the underlying bedrock formation.
- ◊ Permanent groundwater was not encountered during field investigations,
- ◊ The natural soil beneath the site predominately comprises silty clay which has a relatively low permeability and would restrict the vertical migration of contaminants through the soil profile, and
- ◊ There was no significant chemical contamination identified during the detailed soil sampling and analysis program.

11 CONCLUSION AND RECOMMENDATIONS

Geo-Environmental Engineering Pty Ltd (GEE) was commissioned by St. George Community Housing Limited (SGCH) to undertake a preliminary and detailed site contamination assessment, otherwise referred to as a Stage 1 PSI and Stage 2 DSI, at the property identified as 87 - 91 Nuwarra Road Moorebank, New South Wales. The site covers an area of 2010m^2 and comprises three allotments which are legally referred to as Lot 110 in Deposited Plan (DP) 235787 and Lots 5 and 6 in DP 236405.

The property is currently occupied by three detached single storey dwellings and it is proposed to demolish these dwellings and associated structures and construct a six storey apartment building with parking on existing grade.

The assessment was required to support a Development Application for the proposed development and the assessment comprised a:

- A review of the previous investigation reports relevant to the site and this investigation,
- A review of the environmental and physical setting in which the site lies, including geology, hydrogeology and topography,
- A review of the history of the site using readily available records and historical aerial photographs,
- A detailed site inspection for potential sources of contamination,
- Field investigations including:
    - The drilling of two boreholes and the excavation of six testpits across accessible areas of the site,
    - Sampling of soil from the boreholes and testpits.
- Laboratory analysis of selected soil samples for a broad suite of potential contaminants, and
- Comparison of the laboratory analytical results against relevant Office of Environment and Heritage (OEH)[6] endorsed guidelines to evaluate potential contamination risk to human health and the environment.

[6] The OEH incorporates the NSW Environment Protection Authority (EPA) and was formerly known as the NSW Department of Environment and Climate Change and Water (DECCW), the NSW Department of Environment and Climate Change (DECC) and NSW Department of Environment and Conservation (DEC).

Based on observations made during the field investigations, the sampling and analysis program conducted at the site, the proposed land-use and with respect to relevant statutory guidelines, it is the opinion of GEE that the site, in its current condition, is suitable for the proposed development and associated land-use.

Notwithstanding this, it is pointed out that a single fragment of bonded ACM was encountered in the fill material at sampling point TP4. The fragment was in sound condition, the concentration of asbestos was below the relevant site assessment criteria and further sampling did not identify and asbestos fines or friable asbestos. However, because the proposed development will comprise the demolition of existing structures that may, or may not, contain ACM, and some level of ground disturbance is expected, GEE recommends that a licenced asbestos assessor, or an occupational hygienist, inspect the site after demolition and provide a clearance certificate.

If superficial soils are to be stripped and removed from site, they will need to be classified in accordance with the NSW EPA Waste Assessment Guidelines (reference 14) and any asbestos impacted fill materials will be classified as 'Special waste – asbestos'. To minimise the amount of special waste it is considered prudent to delineate of the presence of ACM in the fill material.

12 GENERAL LIMITATIONS OF THIS REPORT

This report has been prepared in general accordance with guidelines endorsed by the NSW Office of Environment and Heritage, and the conclusions of this report are based on a limited scope of work described herein, which was considered appropriate based on the same regulatory guidelines.

It is the intention of GEE that the report reflect actual subsurface site conditions, and the contamination status, of the entire site (within the depths investigated). However, regardless of the level of investigation undertaken, there will always be uncertainty when dealing with land contamination. For instance, the sampling points (boreholes and/or testpits) represent a relatively small portion of the site, and ground conditions may vary between sampling locations. The cause of such variation may include, but are not limited to, complex geological settings, the fate and transport characteristics of certain chemicals, the distribution of existing contamination, physical limitations imposed by the location of utilities and other man-made structures, and the limitations of assessment technologies.

Furthermore, the laboratory analytical results contained in this report, upon which conclusions are drawn, relate only to a discrete sample submitted for analysis. Also, not all chemicals have been assessed as part of this investigation. The chemical analytes targeted by this investigation are based on either the site's history, or represent a suite of common soil contaminants.

This report is based on site conditions which existed at the time of the field investigation and subsurface conditions may change over time, either through natural processes, or via ongoing activities on the site. Should additional information become available regarding conditions at the site (such as during construction), including evidence of previously unknown sources of contamination, then additional advice should be sought from GEE.

Finally, this report has been prepared for use by the client who has commissioned the works in accordance with the project brief only. Any reliance assumed by third parties on this report shall be at their own risk. This report should not be reproduced without prior approval by the client, or amended in any way without prior approval by GEE.

13 REFERENCES

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5. Soil Conservation Service of NSW, 1990: *Penrith 1:100,000 Soil Landscape Series Sheet 9030 (first edition)*.
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10. Australian Standard AS4482.1 – 2005 Guide to the sampling and investigation of potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds.
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12. NEPC, 2013: National Environment Protection Council (1999*).* National Environment Protection (Assessment of Site Contamination) Measure. *Schedule B(1) Guideline on the Investigation Levels for Soil and Groundwater.*
13. Friebel & Nadebaum (2011): *Technical Report No. 10 - Health screening levels for petroleum hydrocarbons in soil and groundwater Part 1: Technical development document*. CRC for Contamination Assessment and Remediation of the Environment.
14. New South Wales Environment Protection Authority (NSW EPA), 2014: *Waste classification guidelines – Part 1 classifying waste.* November 2014.

FIGURES

1 – Site Location Map
2 – Site Plan

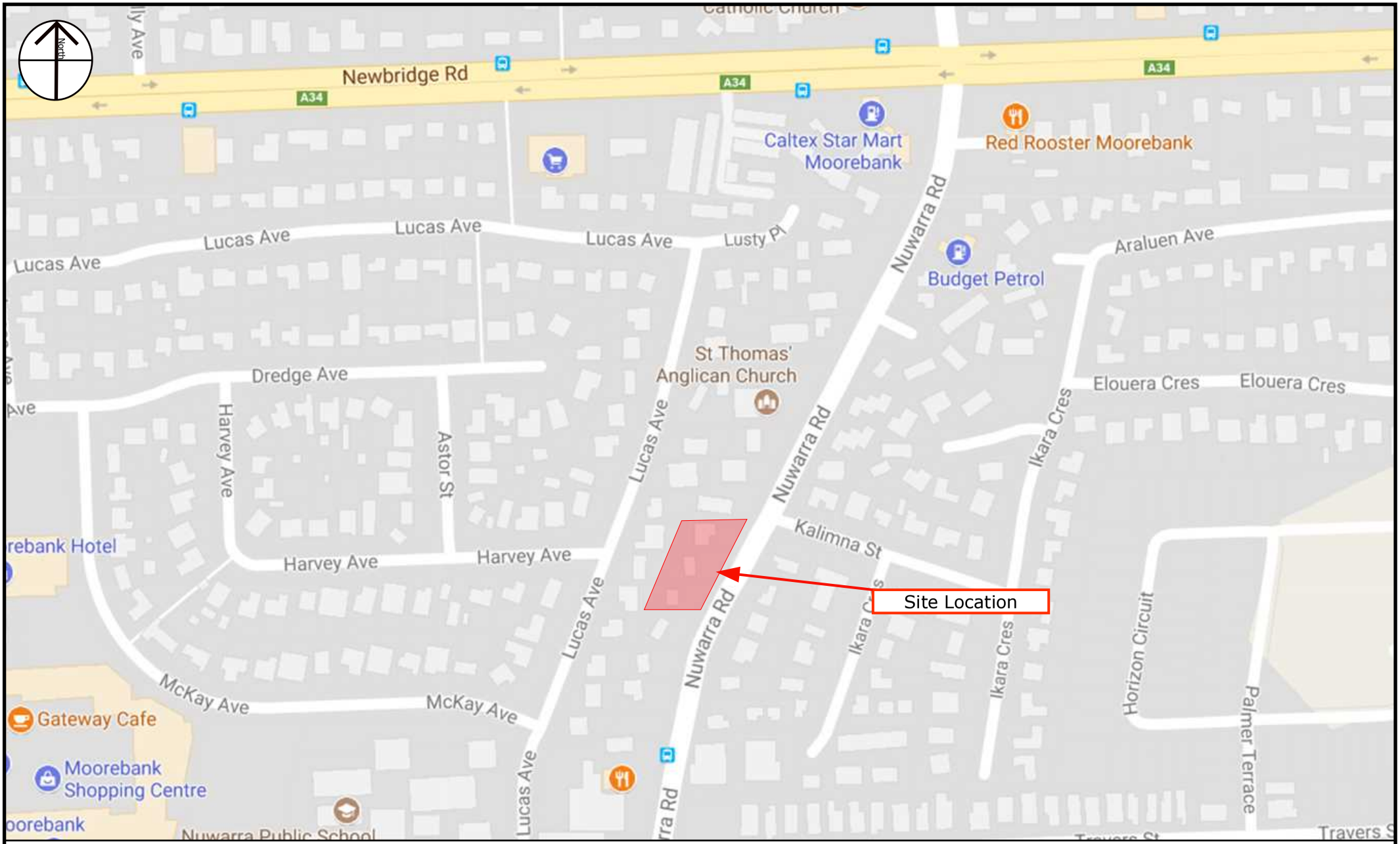

Image Source: provided by Google (www.google.com/maps) - retrieved 23/06/2017

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TITLE:	SCALE:	DATE:	FIGURE No.
SITE LOCATION 87-91 Nuwarra Road, Moorebank NSW	N.T.S	23 Jun 2017	1
	DRAWN: A. Chiem	JOB No.: E17013MOR	REVISION: A

Aerial image: provided by SIXmaps (NSW LPI) - retrieved 23/06/2017

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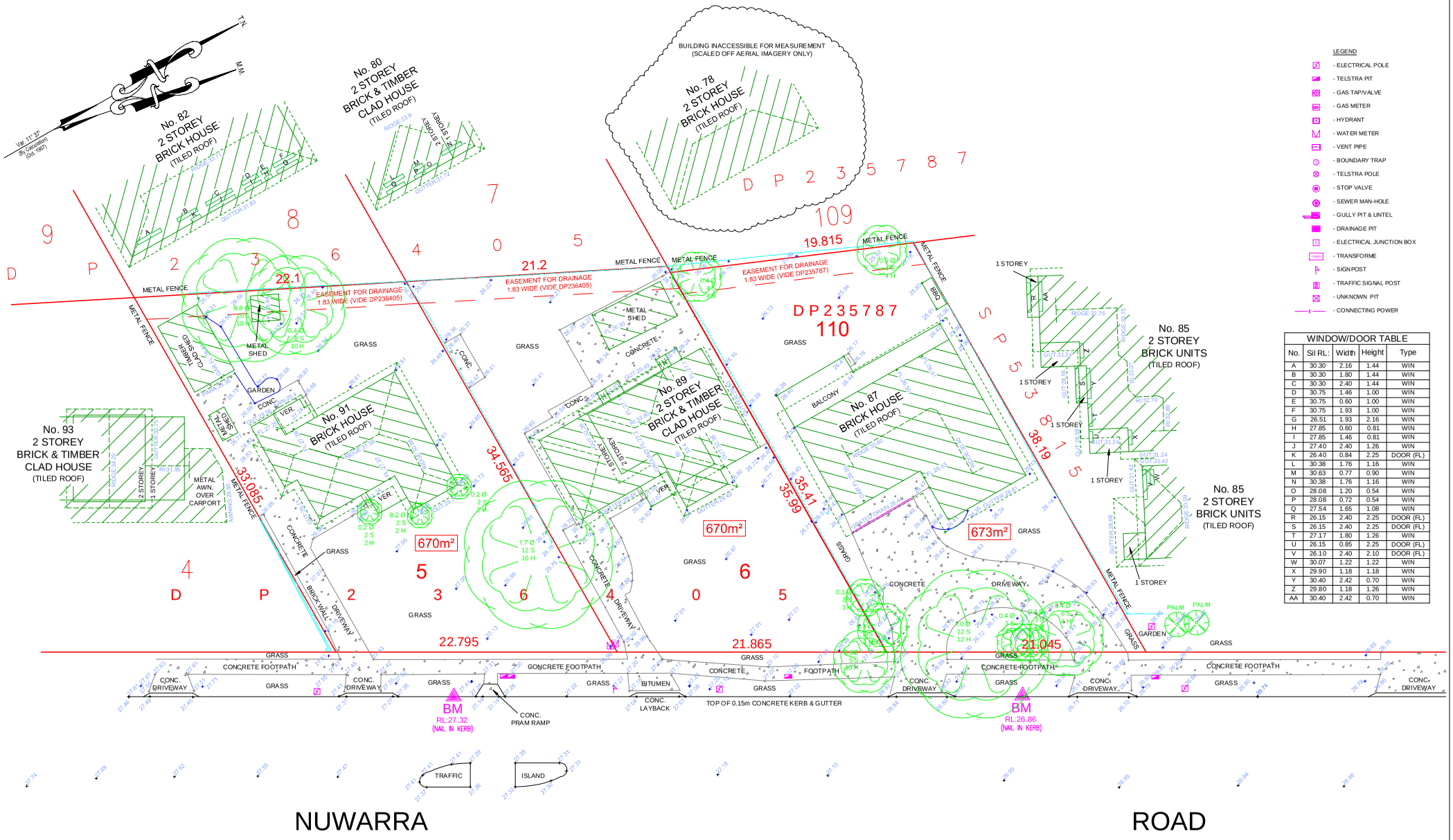
TITLE:	SCALE:	DATE:	FIGURE No.
SITE PLAN 87-91 Nuwarra Road, Moorebank NSW	N.T.S	3 Jul 2017	2
	DRAWN: A. Chiem	JOB No.: E17013MOR	REVISION: A

APPENDIX A

Site Survey and Preliminary Development Plans



LEGEND

- ELECTRICAL POLE
- TELSTRA PIT
- GAS TAP/VALVE
- GAS METER
- HYDRANT
- WATER METER
- VENT PIPE
- BOUNDARY TRAP
- TELSTRA POLE
- STOP VALVE
- SEWER MAN-HOLE
- GULLY PIT & LINTEL
- DRAINAGE PIT
- ELECTRICAL JUNCTION BOX
- TRANSFORME
- SIGNPOST
- TRAFFIC SIGNAL POST
- UNKNOWN PIT
- CONNECTING POWER

WINDOW/DOOR TABLE

No.	Sil RL:	Width	Height	Type
A	30.30	2.16	1.44	WIN
B	30.30	1.80	1.44	WIN
C	30.30	2.40	1.44	WIN
D	30.75	1.46	1.00	WIN
E	30.75	0.60	1.00	WIN
F	30.75	1.93	1.00	WIN
G	26.51	1.93	2.16	WIN
H	27.85	0.60	0.81	WIN
I	27.85	1.46	0.81	WIN
J	27.40	2.40	1.26	WIN
K	26.40	0.84	2.25	DOOR (FL)
L	30.38	1.76	1.16	WIN
M	30.63	0.77	0.90	WIN
N	30.38	1.76	1.16	WIN
O	28.08	1.20	0.54	WIN
P	28.08	0.72	0.54	WIN
Q	27.54	1.65	1.08	WIN
R	26.15	2.40	2.25	DOOR (FL)
S	26.15	2.40	2.25	DOOR (FL)
T	27.17	1.80	1.26	WIN
U	26.15	0.85	2.25	DOOR (FL)
V	26.10	2.40	2.10	DOOR (FL)
W	30.07	1.22	1.22	WIN
X	29.90	1.18	1.18	WIN
Y	30.40	2.42	0.70	WIN
Z	29.80	1.18	1.26	WIN
AA	30.40	2.42	0.70	WIN

NOTES

- TREE SPREADS SHOWN 'APPROXIMATELY' ONLY
- VISIBLE SERVICES (AT TIME OF SURVEY) SHOWN ONLY
- NO SERVICE PITS ACCESSED/OPENED SHOWN AS LABELED
- BOUNDARIES BY TITLE DIAGRAM ONLY, NOT SURVEYED
- ALL PITS SHOULD BE ACCESSED, CONFIRMED AND HAVE SUBSURFACE EXTENTS MEASURED BY THE RELEVANT AUTHORITIES, PRIOR TO ADOPTION.
- ALL PIPES, CABLES & DUCTS IN THE EXCAVATION AREA SHOULD BE ACCURATELY LOCATED BY A "PIPE LOCATOR" OR BY THE RELEVANT AUTHORITY, PRIOR TO ANY EXCAVATION IS UNDERTAKEN.
- THE SUBJECT TITLE'S ARE BURDENED BY EASEMENTS FOR DRAINAGE (VIDE DP236405 & DP235787) AND CAVEAT'S (VIDE AK673585, AK673586 & AK673587)

THE SITE FOREMAN
Architects + Project Managers

Peak Surveying
ABN 14 357 738 834

Peak Surveying Services
Engineering Surveyors
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Email: martin@peaksurveying.com.au

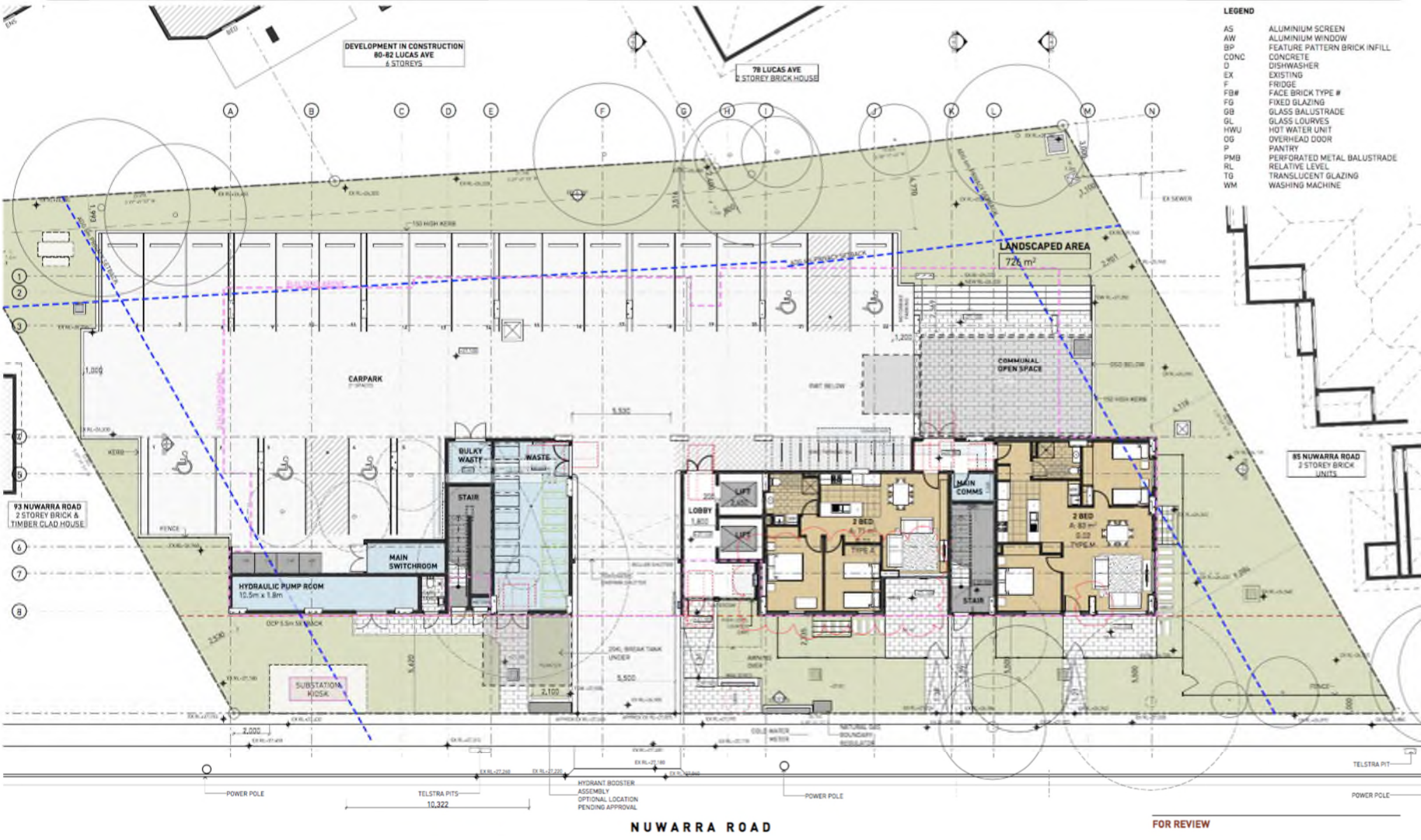
DETAIL SURVEY @
87-91 Nuwarra Road,
Moorebank, NSW, 2170

CLIENT: The Site Foreman

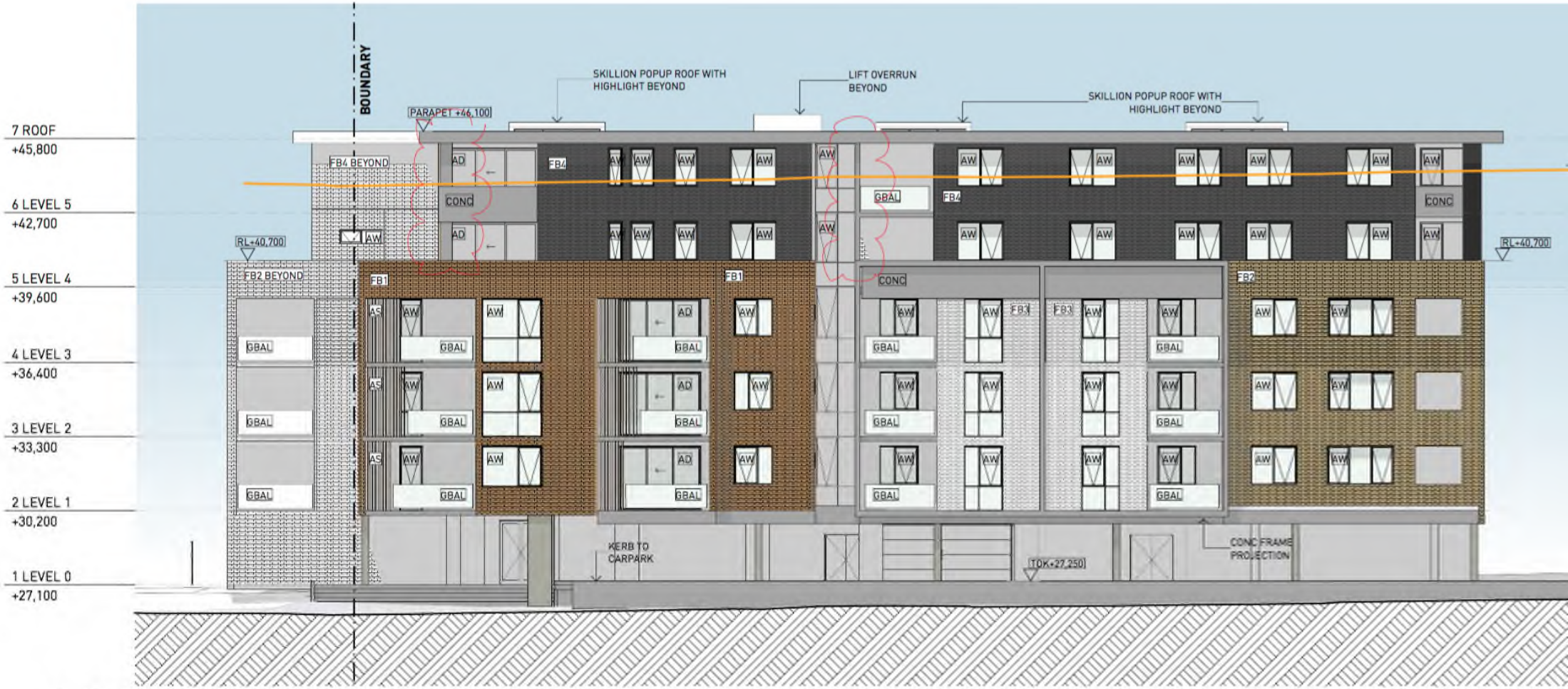
JOB No: 16-842
SURVEYED ON: 13/09/2016
BY: M ELLIOTT & V WANG
DRAWN ON: 20/09/2016
BY: T PELL

SCALE: 1:150 (@A1)/ 1:300 (@A3)
NORTH: Magnetic (by DP236405)
DATUM: SSM67438 RL:29.432(AHD)
CONTOUR INT: N/A

SHEET 1/1


DEVELOPMENT IN CONSTRUCTION
80-82 LUCAS AVE
4 STOREYS
78 LUCAS AVE
2 STOREY BRICK HOUSE
LEGEND
AS ALUMINIUM SCREEN
AW ALUMINIUM WINDOW
BP FEATURE PATTERN BRICK INFILL
CONC CONCRETE
D DISHWASHER
EX EXISTING
F FRIDGE
FB# FACE BRICK TYPE #
FG FIXED GLAZING
GB GLASS BALUSTRADE
GL GLASS LOURVES
HWU HOT WATER UNIT
OG OVERHEAD DOOR
P PANTRY
PMB PERFORATED METAL BALUSTRADE
RL RELATIVE LEVEL
TG TRANSLUCENT GLAZING
WM WASHING MACHINE
LANDSCAPED AREA
726 m²
COMMUNAL OPEN SPACE
CARPARK
BULKY WASTE
WASTE
STAIR
LIFT
LOBBY
MAIN SWITCHROOM
HYDRAULIC PUMP ROOM
10.5m x 1.8m
SUBSTATION KIOSK
2 BED
TYPE A
2 BED
TYPE M
MAIN COMMS
STAIR
93 NUWARRA ROAD
2 STOREY BRICK & TIMBER CLAD HOUSE
85 NUWARRA ROAD
2 STOREY BRICK UNITS
POWER POLE
TELSTRA PITS
10,322
HYDRANT BOOSTER ASSEMBLY OPTIONAL LOCATION PENDING APPROVAL
POWER POLE
TELSTRA PIT
POWER POLE
NUWARRA ROAD

FOR REVIEW



1 WEST ELEVATION
1:200

APPENDIX B

Lotsearch Report

Environmental Risk and Planning Report

87-91 Nuwarra Road, Moorebank, NSW 2170

Report Date: **30 Jun 2017 10:10:57**

Disclaimer:
The purpose of this report is to provide an overview of some of the site history, environmental risk and planning information available, affecting an individual address or geographical area in which the property is located. It is not a substitute for an on-site inspection or review of other available reports and records. It is not intended to be, and should not be taken to be, a rating or assessment of the desirability or market value of the property or its features.
You should obtain independent advice before you make any decision based on the information within the report.
The detailed terms applicable to use of this report are set out at the end of this report.

Table of Contents

Location Confidences

Where Lotsearch has had to georeference features from supplied addresses, a location confidence has been assigned to the data record. This indicates a confidence to the positional accuracy of the feature. Where applicable, a code is given under the field heading “LC” or “LocConf”. These codes lookup to the following location confidences:

LC Code	Location Confidence
1	Georeferenced to the site location / premise or part of site
2	Georeferenced with the confidence of the general/approximate area
3	Georeferenced to the road or rail
4	Georeferenced to the road intersection
5	Feature is a buffered point
6	Land adjacent to Georeferenced Site
7	Georeferenced to a network of features

Dataset Listing

Datasets contained within this report, detailing their source and data currency:

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	Land and Property Information	30/06/2017	30/06/2017	Daily	-	-	-	-
Topographic Data	Land and Property Information	10/04/2015	01/04/2015	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	22/06/2017	13/06/2017	Monthly	1000	0	0	3
Contaminated Land: Records of Notice	Environment Protection Authority	22/06/2017	22/06/2017	Monthly	1000	0	0	1
Former Gasworks	Environment Protection Authority	22/06/2017	16/01/2017	Monthly	1000	0	0	0
National Waste Management Site Database	Geoscience Australia	07/03/2017	15/11/2012	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	22/06/2017	22/06/2017	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	22/06/2017	22/06/2017	Quarterly	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	13/06/2017	13/06/2017	Monthly	1000	0	0	7
Delicensed POEO Activities still Regulated by the EPA	Environment Protection Authority	13/06/2017	13/06/2017	Monthly	1000	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	13/06/2017	13/06/2017	Monthly	1000	0	0	5
UPSS Environmentally Sensitive Zones	Department of Environment, Climate Change and Water (NSW)	14/04/2015	12/01/2010	As required	1000	0	0	1
UBD Business to Business Directory 1991 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business to Business Directory 1991 (Road & Area Matches)	Hardie Grant			Not required	150	-	3	3
UBD Business to Business Directory 1986 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	10
UBD Business to Business Directory 1986 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	1
UBD Business Directory 1982 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	11
UBD Business Directory 1982 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1978 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	2
UBD Business Directory 1978 (Road & Area Matches)	Hardie Grant			Not required	150	-	3	3
UBD Business Directory 1975 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1975 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1970 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1970 (Road & Area Matches)	Hardie Grant			Not required	150	-	10	10
UBD Business Directory 1965 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1965 (Road & Area Matches)	Hardie Grant			Not required	150	-	10	10
UBD Business Directory 1950 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1950 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	1000	0	0	4
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	1000	-	3	23
Points of Interest	Land and Property Information	01/02/2017	01/02/2017	Annually	1000	0	1	33

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Tanks (Areas)	Land and Property Information	01/02/2017	01/02/2017	Annually	1000	0	0	0
Tanks (Points)	Land and Property Information	01/02/2017	01/02/2017	Annually	1000	0	0	0
Major Easements	Land and Property Information	01/02/2017	01/02/2017	As required	1000	0	0	2
State Forest	Land and Property Information	01/02/2017	29/06/2016	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment and Heritage	01/02/2017	31/12/2016	Annually	1000	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	1
Groundwater Boreholes	NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation; Commonwealth of Australia (Bureau of Meteorology) 2015	21/03/2016	01/12/2015	Annually	2000	0	0	31
Geological Units 1:100,000	NSW Department of Industry, Resources & Energy	20/08/2014		None planned	1000	1	-	6
Geological Structures 1:100,000	NSW Department of Industry, Resources & Energy	20/08/2014		None planned	1000	0	-	1
Naturally Occurring Asbestos Potential	NSW Department of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Soil Landscapes	NSW Office of Environment and Heritage	12/08/2014		None planned	1000	1	-	4
Standard Local Environmental Plan Acid Sulfate Soils	NSW Planning and Environment	07/10/2016	07/10/2016	As required	500	0	-	-
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000	0	0	0
Dryland Salinity Potential of Western Sydney	NSW Office of Environment and Heritage	12/05/2017	01/01/2002	None planned	1000	1	1	1
Mining Subsidence Districts	Land and Property Information	31/08/2016	31/08/2016	As required	1000	0	0	0
SEPP 14 - Coastal Wetlands	NSW Planning and Environment	17/12/2015	24/10/2008	Annually	1000	0	0	0
SEPP 26 - Littoral Rainforest	NSW Planning and Environment	17/12/2015	05/02/1988	Annually	1000	0	0	0
SEPP 71 - Coastal Protection	NSW Planning and Environment	17/12/2015	01/08/2003	Annually	1000	0	0	0
SEPP Major Developments 2005	NSW Planning and Environment	09/03/2013	25/05/2005	Under Review	1000	0	0	0
SEPP Strategic Land Use Areas	NSW Planning and Environment	06/07/2016	28/01/2014	Annually	1000	0	0	0
Local Environmental Plan - Land Zoning	NSW Planning and Environment	21/04/2017	13/04/2017	Quarterly	1000	1	3	34
Local Environmental Plan - Minimum Subdivision Lot Size	NSW Planning and Environment	21/04/2017	13/04/2017	Quarterly	0	1	-	-
Local Environmental Plan - Height of Building	NSW Planning and Environment	20/04/2017	13/04/2017	Quarterly	0	1	-	-
Local Environmental Plan - Floor Space Ratio	NSW Planning and Environment	20/04/2017	07/04/2017	Quarterly	0	2	-	-
Local Environmental Plan - Land Application	NSW Planning and Environment	20/04/2017	03/03/2017	Quarterly	0	1	-	-
Local Environmental Plan - Land Reservation Acquisition	NSW Planning and Environment	20/04/2017	13/04/2017	Quarterly	0	0	-	-
State Heritage Items	NSW Office of Environment and Heritage	20/04/2017	30/09/2016	Quarterly	1000	0	0	0
Local Heritage Items	NSW Planning and Environment	20/04/2017	13/04/2017	Monthly	1000	0	0	0
Bush Fire Prone Land	NSW Rural Fire Service	28/03/2017	17/02/2017	Quarterly	1000	0	0	2
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment and Heritage	01/03/2017	16/12/2016	As required	1000	0	1	9
RAMSAR Wetlands	Commonwealth of Australia Department of the Environment	08/10/2014	24/06/2011	As required	1000	0	0	0
ATLAS of NSW Wildlife	NSW Office of Environment and Heritage	30/06/2017	30/06/2017	Daily	10000	-	-	-

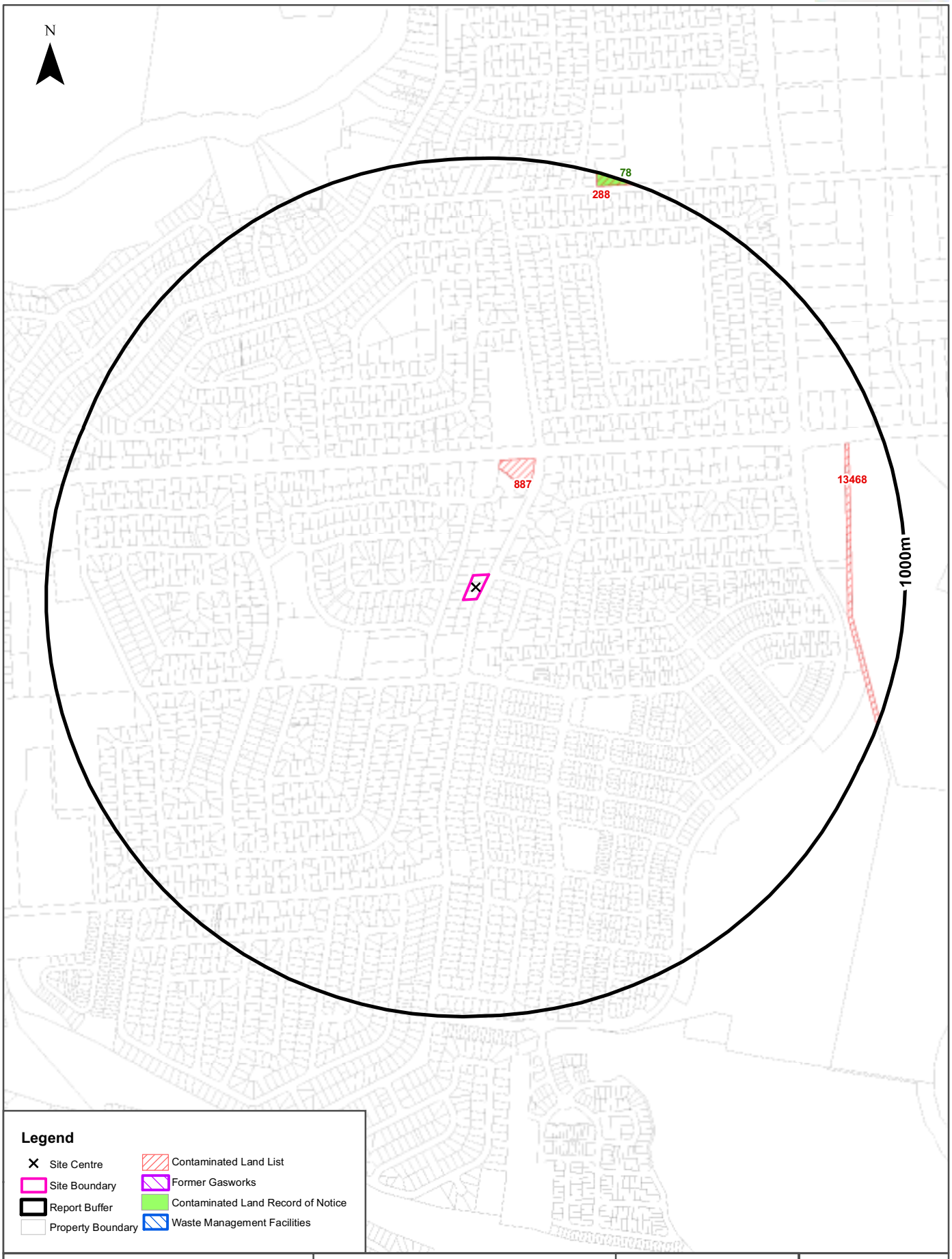
Aerial Imagery 2015

87-91 Nuwarra Road, Moorebank, NSW 2170

Scale: 0 25 50 100 Meters	Data Sources: Aerial Imagery © 2017 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.	Coordinate System: GDA 1994 MGA Zone 56	Date: 30 June, 2017

Contaminated Land & Waste Management Facilities

87-91 Nuwarra Road, Moorebank, NSW 2170



Data Sources: Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2017

Coordinate System: GDA 1994 MGA Zone 56

Date: 30June 2017

Contaminated Land & Waste Management Facilities

87-91 Nuwarra Road, Moorebank, NSW 2170

List of NSW contaminated sites notified to EPA

Records from the NSW EPA Contaminated Land list within the dataset buffer:

Map Id	Site	Address	Suburb	Activity	Management Class	Status	Location Confidence	Dist (m)	Direction
887	Caltex Service Station	216 Newbridge Road	Moorebank	Service Station	Under assessment	Current EPA List	Premise Match	230m	North
13468	Former Landfill Site	Newbridge ROAD	MOOREBANK	Landfill	Under assessment	Current EPA List	Premise Match	861m	South East
288	Former ACR	85-107 Alfred Street	Chipping Norton	Chemical Industry	Contamination currently regulated under CLM Act	Current EPA List	Premise Match	967m	North

The values within the EPA site management class in the table above, are given more detailed explanations in the table below:

EPA site management class	Explanation
Contamination being managed via the planning process (EP&A Act)	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the Environmental Planning and Assessment Act 1979 (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment.
Contamination currently regulated under CLM Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record of Notices.
Contamination currently regulated under POEO Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. Management of the contamination is regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA's regulatory actions under the POEO Act are available on the POEO public register.
Contamination formerly regulated under the CLM Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). The contamination was addressed under the CLM Act.
Contamination formerly regulated under the POEO Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed under the Protection of the Environment Operations Act 1997 (POEO Act).
Contamination was addressed via the planning process (EP&A Act)	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A Act).
Ongoing maintenance required to manage residual contamination (CLM Act)	The EPA has determined that ongoing maintenance, under the Contaminated Land Management Act 1997 (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record of Notices.
Regulation being finalised	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997. A regulatory approach is being finalised.
Regulation under the CLM Act not required	The EPA has completed an assessment of the contamination and decided that regulation under the Contaminated Land Management Act 1997 is not required.
Under assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment Operations Act 1997. Alternatively, the EPA may require information via a notice issued under s77 of the Contaminated Land Management Act 1997 or issue a Preliminary Investigation Order.

NSW EPA Contaminated Land List Data Source: Environment Protection Authority

Contaminated Land & Waste Management Facilities

87-91 Nuwarra Road, Moorebank, NSW 2170

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
78	Former Australian Chemical Refiners	85-107 Alfred Road	Chipping Norton	3 current	3375	Premise Match	967m	North

Contaminated Land Records of Notice Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority
Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit
http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm

Former Gasworks

Former Gasworks within the dataset buffer:

Map Id	Location	Council	Further Info	Location Confidence	Distance	Direction
N/A	No records in buffer					

Former Gasworks Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

National Waste Management Site Database

Sites on the National Waste Management Site Database within the dataset buffer:

Site Id	Owner	Name	Address	Suburb	Landfill	Reprocess	Transfer	Location Confidence	Distance	Direction
N/A	No records in buffer									

Wate Management Facilities Data Source: Australian Governement Geoscience Australia
Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

EPA PFAS Investigation Program

87-91 Nuwarra Road, Moorebank, NSW 2170

EPA PFAS Investigation Program

Sites that are part of the EPA PFAS investigation program, within the dataset buffer:

Id	Site	Address	Location Confidence	Distance	Direction
N/A	No records in buffer				

EPA PFAS Investigation Program: Environment Protection Authority

EPA Other Sites with Contamination Issues

87-91 Nuwarra Road, Moorebank, NSW 2170

EPA Other SIte with Contamination Issues

This dataset contains other sites identified on the EPA website as having contamination issues. This dataset currently includes:

- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill

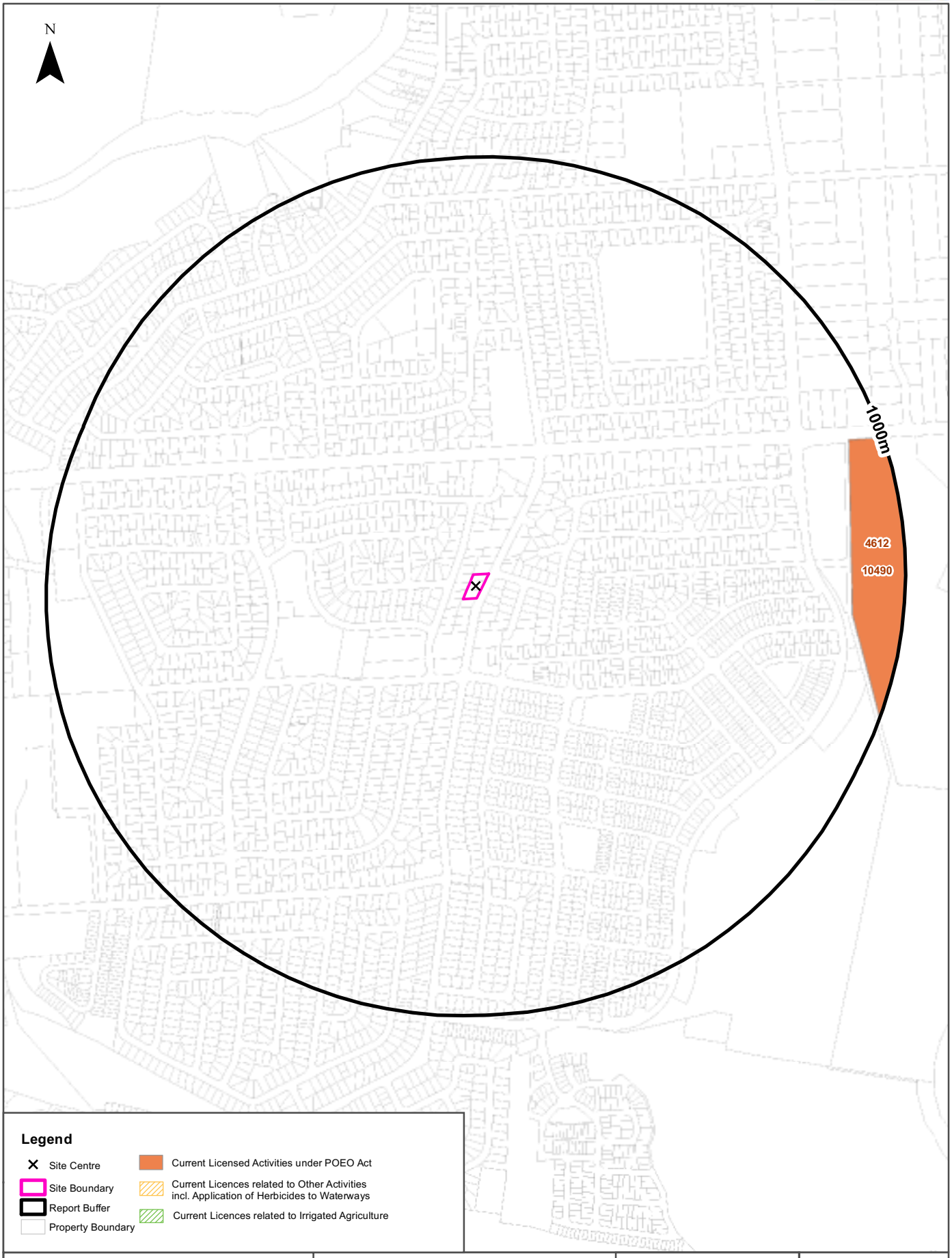
Sites within the dataset buffer:

Site Id	Site Name	Site Address	Dataset	Comments	Location Confidence	Distance	Direction
N/A	No records in buffer						

EPA Other Sites with Contamination Issues: Environment Protection Authority

Current EPA Licensed Activities

87-91 Nuwarra Road, Moorebank, NSW 2170



EPA Activities

87-91 Nuwarra Road, Moorebank, NSW 2170

Licensed Activities under the POEO Act 1997

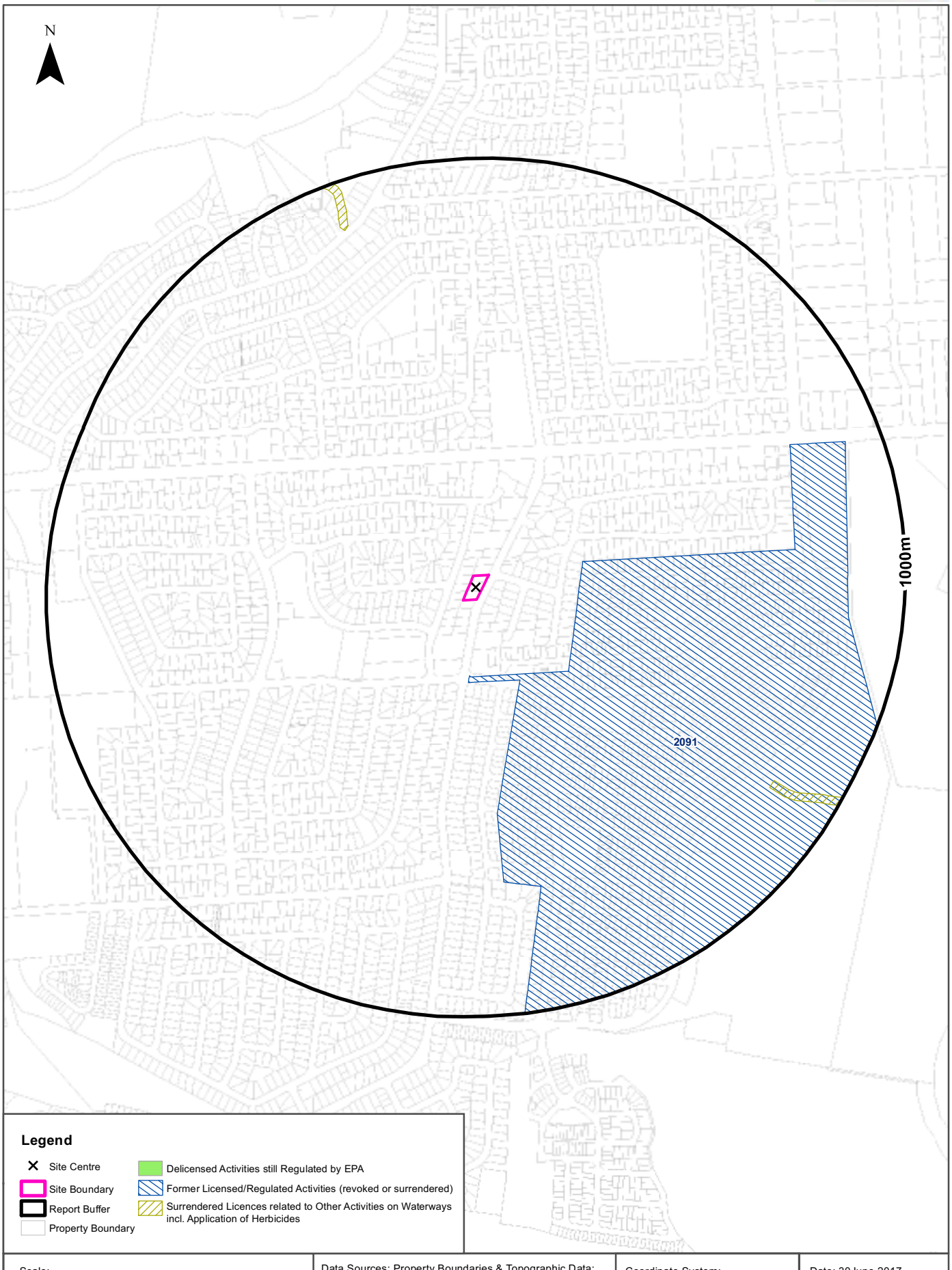
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
4612	BENEDICT INDUSTRIES PTY LIMITED	BENEDICT RECLAMATIONS	146 NEWBRIDGE ROAD	MOOREBANK	Crushing, grinding or separating	1	872m	East
4612	BENEDICT INDUSTRIES PTY LIMITED	BENEDICT RECLAMATIONS	146 NEWBRIDGE ROAD	MOOREBANK	Land-based extractive activity	1	872m	East
4612	BENEDICT INDUSTRIES PTY LIMITED	BENEDICT RECLAMATIONS	146 NEWBRIDGE ROAD	MOOREBANK	Water-based extractive activity	1	872m	East
10490	BENEDICT INDUSTRIES PTY LIMITED	BENEDICT RECLAMATIONS	146 Newbridge Road	MOOREBANK	Recovery of general waste	1	872m	East
10490	BENEDICT INDUSTRIES PTY LIMITED	BENEDICT RECLAMATIONS	146 Newbridge Road	MOOREBANK	Recovery of waste tyres	1	872m	East
10490	BENEDICT INDUSTRIES PTY LIMITED	BENEDICT RECLAMATIONS	146 Newbridge Road	MOOREBANK	Waste storage - other types of waste	1	872m	East
10490	BENEDICT INDUSTRIES PTY LIMITED	BENEDICT RECLAMATIONS	146 Newbridge Road	MOOREBANK	Waste storage - waste tyres	1	872m	East

POEO Licence Data Source: Environment Protection Authority

Delicensed & Former Licensed EPA Activities

87-91 Nuwarra Road, Moorebank, NSW 2170



EPA Activities

87-91 Nuwarra Road, Moorebank, NSW 2170

Delicensed Activities still regulated by the EPA

Delicensed activities still regulated by the EPA, within the dataset buffer:

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
N/A	No records in buffer							

Delicensed Activities Data Source: Environment Protection Authority

Former Licensed Activities under the POEO Act 1997, now revoked or surrendered

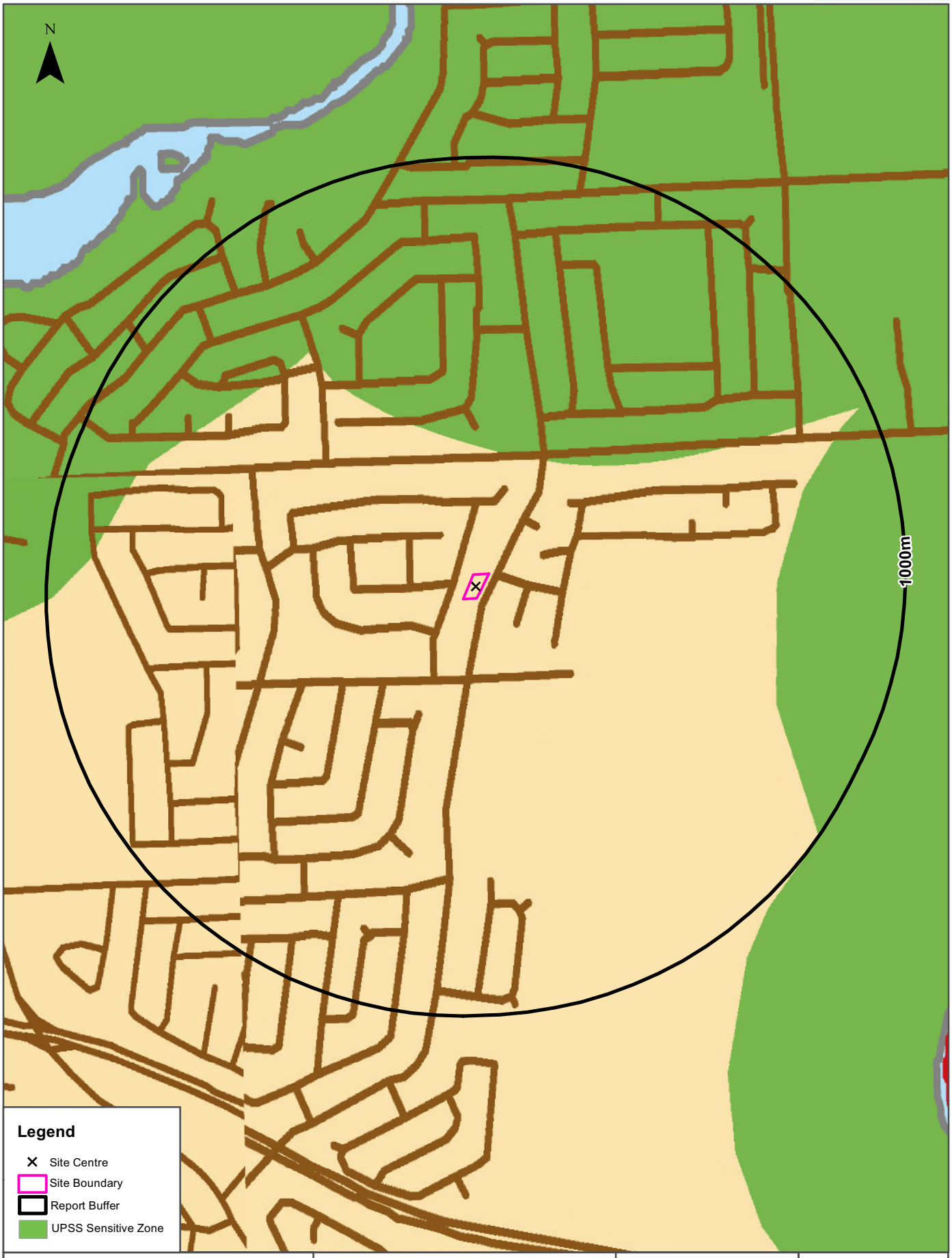
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
2091	BORAL RECYCLING PTY LIMITED	NUWARRA ROAD, MOOREBANK, NSW 2170	Surrendered	11/11/1999	Crushing, grinding or separating	1	182m	South East
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	835m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	835m	-
5176	LIVERPOOL CITY COUNCIL	WATERWAYS OF LIVERPOOL CITY	Surrendered	17/04/2001	Other Activities / Non Scheduled Activity - Application of Herbicides	7	835m	-
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	835m	-

Former Licensed Activities Data Source: Environment Protection Authority

UPSS Sensitive Zones

87-91 Nuwarra Road, Moorebank, NSW 2170



Scale: 0 100 200 400 Meters	UPSS Data Source: Environment Protection Authority © Dept of Environment, Climate Change & Water (NSW)	Coordinate System: GDA 1994 MGA Zone 56	Date: 30June 2017

1991 Historical Business Directory Records

87-91 Nuwarra Road, Moorebank, NSW 2170

Data Sources: Universal Business Directories (UBD) - Derived Data Licensed from Hardie Grant.
Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2017

Coordinate System: GDA 1994 MGA Zone 56

Date: 30 June 2017

Historical Business Directories

87-91 Nuwarra Road, Moorebank, NSW 2170

1991 Business to Business Directory Records Premise or Road Intersection Matches

Records from the 1991 UBD Business to Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Organisation	Address	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer					

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1991 Business to Business Directory Records Road or Area Matches

Records from the 1991 UBD Business to Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Organisation	Address	Ref No.	Location Confidence	Distance to Road Corridor or Area
Brick Mfrs &/or Dists	Boral Brick Limited, Quarry Rd.	Nuwarra Rd, Moorebank 2170	36590	Road Match	0m
Brick Mfrs &/or Dists	Boral Bricks (N.S.W.) Pty. Ltd	Nuwarra Rd., Moorebank 2170.	36591	Road Match	0m
Real Estate Agents	Grant & Castrission All State Real Estate Pty. Ltd.	Nuwarra Rd., Moorebank 2170	60223	Road Match	0m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1986 Historical Business Directory Records

87-91 Nuwarra Road, Moorebank, NSW 2170

Data Sources: Universal Business Directories (UBD) - Derived Data Licensed from Hardie Grant.
Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2017

Coordinate System: GDA 1994 MGA Zone 56

Date: 30 June 2017

Historical Business Directories

87-91 Nuwarra Road, Moorebank, NSW 2170

1986 Business to Business Directory Records
Premise or Road Intersection Matches

Records from the 1986 UBD Business to Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
FRUITERERS &/OR GREENGROCERS.	All Seasons Fruit Market, 101 Nuwarra Rd., Moorebank.	35744	Premise Match	116m	South
HAIRDRESSERS-LADIES &/OR BEAUTY SALONS.	His & Hers, 101 Nuwarra Rd., Moorebank.	42375	Premise Match	116m	South
HAIRDRESSERS-MENS.	His & Hers, 101 Nuwarra Rd., Moorebank.	43781	Premise Match	116m	South
CHEMISTS-PHARMACEUTICAL.	Moorebank Pharmacy, 101 Nuwarra Rd., Moorebank.	14596	Premise Match	116m	South
BUTCHERS-RETAIL.	Nuwarra Butchery, 101 Nuwarra R., Moorebank.	10378	Premise Match	116m	South
NEWSAGENTS.	Nuwarra Newsagency, 101 Nuwarra Rd., Moorebank.	69569	Premise Match	116m	South
TAKE-AWAY FOODS.	Patras, J. & Tzlkas, M., 101 Nuwarra Rd., Moorebank,.	91496	Premise Match	116m	South
WINE &/OR SPIRIT MERCHANTS RETAIL.	Robbs Food Master, 101 Nuwarra Rd., Moorebank.	99518	Premise Match	116m	South
GROCERS-RETAIL.	Robbs Food Master, 101 Nuwarra Rd., Moorebank.	41082	Premise Match	116m	South
BRICKLAYERS.	Edwards, J., 27 Harvey Ave. Moorebank.	7729	Premise Match	126m	West

1986 Business to Business Directory Records
Road or Area Matches

Records from the 1986 UBD Business to Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
BRICK MFRS. &/OR DISTS.	Clark Bricks Umited, Nuwarra Rd., Moorebank.	7633	Road Match	0m

1982 Historical Business Directory Records

87-91 Nuwarra Road, Moorebank, NSW 2170

Data Sources: Universal Business Directories (UBD) - Derived Data Licensed from Hardie Grant.
Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2017

Coordinate System: GDA 1994 MGA Zone 56

Date: 30 June 2017

Historical Business Directories

87-91 Nuwarra Road, Moorebank, NSW 2170

1982 Business Directory Records
Premise or Road Intersection Matches

Records from the 1982 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
MEDICAL PRACTITIONERS. (M2020)	Lai, K. T., 101 Nuwarra Rd., Moorebank. 2170.	48947	Premise Match	116m	South
MEDICAL PRACTITIONERS. (M2020)	Lau, E. C. W., 101 Nuwarra Rd., Mooebank. 2170.	48991	Premise Match	116m	South
CHEMISTS - PHARMACEUTICAL. (C4110)	Moorebank Pharmacy, 101 Nuwarra Rd., Moorebank. 2170.	15404	Premise Match	116m	South
BEAUTY SALONS &/OR LADIES HAIRDRESSERS. (B2000)	Mr. Jonah's, 101 NuwarraRd., Moorebank. 2170.	6233	Premise Match	116m	South
HAIRDRESSERS - GENTS. (H0550)	Mr. Jonah's, 101 NuwarraRd., Moorebank. 2170.	38659	Premise Match	116m	South
BUTCHERS - RETAIL. (B8040)	Nuwarra Butchery, 101 Nuwarra R., Moorebank. 2170.	11327	Premise Match	116m	South
NEWSAGENTS. (N0800)	Nuwarra Newsagency, 101 Nuwarra Rd., Moorebank. 2170.	60727	Premise Match	116m	South
TAKE-AWAY FOODS. (T0235)	Patras, J & Tzikas, M., 101 Nuwarra Rd., Moorebank. 2170.	78774	Premise Match	116m	South
WINE &/OR SPIRIT MERCHANTS -. RETAIL. (W5960)	Robbs Food Stores, 101 Nuwarra Rd., Moorebank. 2170.	84923	Premise Match	116m	South
GROCERS - RETAIL. (G7850)	Robbs Food Stores, 101 NuwarraRd., Moorebank. 2170.	37961	Premise Match	116m	South
BRICKLAYERS. (B6260)	Edwards, J., 27 Harvey Ave.,Moorebank, 2170.	8596	Premise Match	126m	West

1982 Business Directory Records
Road or Area Matches

Records from the 1982 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	BP Moorebank, Nuwarra Rd., Moorebank. 2170.	56258	Road Match	0m
BRICK MFRS. &/OR DISTS. (B6120)	Clark Bricks (N.S.W.) Ltd., Nuwarra Rd., Moorebank. 2170.	8453	Road Match	0m

1978 Historical Business Directory Records

87-91 Nuwarra Road, Moorebank, NSW 2170

Data Sources: Universal Business Directories (UBD) - Derived Data Licensed from Hardie Grant.
Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2017

Coordinate System: GDA 1994 MGA Zone 56

Date: 30 June 2017

Historical Business Directories

87-91 Nuwarra Road, Moorebank, NSW 2170

1978 Business Directory Records
Premise or Road Intersection Matches

Records from the 1978 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
BEAUTY SALONS &/OR LADIES HAIRDRESSERS.	Glendas Beauty Salon, 101 Nuwarra Rd.. Moorebank.	5036	Premise Match	116m	South
TAKE-AWAY FOODS.	Patras, J. & Tzikas, M, 101 Nuwarra Rd., Moorebank.	69477	Premise Match	116m	South

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1978 Business Directory Records
Road or Area Matches

Records from the 1978 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Moorebank, Nuwarra Rd., Moorebank.	49489	Road Match	0m
BRICK MFRS. &/OR DISTS.	Clark Bricks (N.S.W.) Pty. Ltd., Nuwarra Rd., Moorebank.	7373	Road Match	0m
CHEMISTS-PHARMACEUTICAL.	Moorebank Pharmacy. Nuwarra Rd., Moorebank.	13563	Road Match	0m

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1975 Historical Business Directory Records

87-91 Nuwarra Road, Moorebank, NSW 2170

Data Sources: Universal Business Directories (UBD) - Derived Data Licensed from Hardie Grant.
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Coordinate System: GDA 1994 MGA Zone 56

Date: 30 June 2017

Historical Business Directories

87-91 Nuwarra Road, Moorebank, NSW 2170

1975 Business Directory Records
Premise or Road Intersection Matches

Records from the 1975 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1975 Business Directory Records
Road or Area Matches

Records from the 1975 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
MOTOR SERVICE STATIONS - PETROL, OIL	BP Moorebank. Nuwarra Rd., Moorebank.	61465	Road Match	0m
BRICK MFRS.	Clark Kilns (N S W.) Pty. Ltd., Nuwarra Rd., Moorebank.	8127	Road Match	0m

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1970 Historical Business Directory Records

87-91 Nuwarra Road, Moorebank, NSW 2170

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Coordinate System: GDA 1994 MGA Zone 56

Date: 30 June 2017

Historical Business Directories

87-91 Nuwarra Road, Moorebank, NSW 2170

1970 Business Directory Records
Premise or Road Intersection Matches

Records from the 1970 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1970 Business Directory Records
Road or Area Matches

Records from the 1970 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
HARDWARE DEALERS/IRONMONGERS (H230)	Barms,Russell,Nuwarra Rd.MOOREBANK	314899	Road Match	0m
BRICK MFRS. (B716)	Clark Kilns (NSW) Pty. Ltd., Nuwarra Rd., Moorebank	269623	Road Match	0m
ENGINEERS-FABRICATING (E580)	King Herbert Engineering Co.,Nuwarra Rd.,Moonbank	298539	Road Match	0m
SHEET METAL WORKERS (S230)	King Herbert Engineering Co.,Nuwarra Rd.,Moorebank	360656	Road Match	0m
FENCE/GATE MFRS. (F090)	King,H.Engineering Co.,Nuwarra Rd.,Moorehank	302250	Road Match	0m
ENGi NEERS-CONSTRUCTIONAL (E545)	King,Herbert Engineering Co.,Nuwarra Rd.,Moorebank	296940	Road Match	0m
ORNAMENTAL METAL WORKERS(O 310)	King,Herbert Engineering Co.,Nuwarra Rd.,Moorebank	345527	Road Match	0m
WELDERS-ELECTRIC &/OR OXY(W145)	King,Herbert Engineering Co.,Nuwarra Rd.,Moorebank	373757	Road Match	0m
WROUGHT IRON WORKERS (W545)	King,Herbert Engineering Co.,Nuwarra Rd.,Moorebank	375514	Road Match	0m
CLUBS & SPORTING BODIES (C487)	New Brighton Golf Club Ltd., Nuwarra Rd., Moorebaak	284485	Road Match	0m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1965 Historical Business Directory Records

87-91 Nuwarra Road, Moorebank, NSW 2170

Data Sources: Universal Business Directories (UBD) - Derived Data Licensed from Hardie Grant.
Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2017

Coordinate System: GDA 1994 MGA Zone 56

Date: 30 June 2017

Historical Business Directories

87-91 Nuwarra Road, Moorebank, NSW 2170

1965 Business Directory Records
Premise or Road Intersection Matches

Records from the 1965 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1965 Business Directory Records
Road or Area Matches

Records from the 1965 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
Hardware Dealers &/or Iron Mongers - Moorebank	Barnes, Russell, Nuwarra Rd.	99336	Road Match	0m
Brick Mfrs.	Clark Kilns (N.S.W.) Pty. Ltd. , Nuwarra Rd , Moorebank	54159	Road Match	0m
Wrought Iron Workers	Icing, Herbert Engineering Ltd.Co. , Nuwarra Rd., Moorebank	158452	Road Match	0m
Engineers - Fabricating	King Herbert Engineering Co. , Nuwarra Rd., Moorebank	81794	Road Match	0m
Sheet Metal Workers	King Herbert Engineering Co. , Nuwarra Rd., Moorebank	143971	Road Match	0m
Fence/Gate Mfrs.	King, H. Engineering Co., Nuwarra Rd., Moorebank	85648	Road Match	0m
Engineers - Constructional	King, Herbert Engineering Co. , Nuwarra Rd., Moorebank	80997	Road Match	0m
ORNAMENTAL METAL WORKERS	King, Herbert Engineering Co., Nuwarra Rd., Meorebank	130108	Road Match	0m
Welders - Electric &/or Oxy	King, Herbert Engineering Ltd.Co. , Nuwarra Rd., Moorebank	156580	Road Match	0m
Clubs & Sporting Bodies	New Brighton Golf Club Ltd., Nuwarra Rd., Moorebank	69155	Road Match	0m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

87-91 Nuwarra Road, Moorebank, NSW 2170

1950 Business Directory Records
Premise or Road Intersection Matches

Records from the 1950 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Feature Point	Direction
N/A	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1950 Business Directory Records
Road or Area Matches

Records from the 1950 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
N/A	No records in buffer			

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

87-91 Nuwarra Road, Moorebank, NSW 2170

Dry Cleaners, Motor Garages & Service Stations Premise or Road Intersection Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a premise or road intersection, within the dataset buffer:

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Feature Point	Direction
MOTOR GARAGES & SERVICE STATIONS.	BP Moorebank, 68 Nuwarra Rd., Moorebank.	64182	1986	Premise Match	223m	North East
MOTOR GARAGES & SERVICE STATIONS.	Caltex Self Serve Moorebank Cnr. Newbridge & Nuwarra Roads, Moorebank.	63827	1986	Road Intersection	316m	North East
MOTOR GARAGES & SERVICE STATIONS.	Esso Moorebank Service Station, 30 Stockton Ave., Moorebank.	64645	1986	Premise Match	389m	West
DRY CLEANERS, PRESSERS &/OR DYERS	Our 1 Our, Stockton Ave., Moorebank.	20901	1978	Premise Match	405m	West

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

87-91 Nuwarra Road, Moorebank, NSW 2170

Dry Cleaners, Motor Garages & Service Stations Road or Area Matches

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	BP Moorebank, Nuwarra Rd., Moorebank.	49489	1978	Road Match	0m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	BP Moorebank, Nuwarra Rd., Moorebank. 2170.	56258	1982	Road Match	0m
MOTOR SERVICE STATIONS - PETROL, OIL	BP Moorebank. Nuwarra Rd., Moorebank.	61465	1975	Road Match	0m
MOTOR GARAGES & SERVICE STATIONS.	Caltex Moorebank Self Serve, Newbridge Rd., Moorebank.	64364	1986	Road Match	272m
MOTOR GARAGES &/OR ENGINEERS.	Epsom Service Station, Newbridge Rd., Moorebank.	58804	1975	Road Match	272m
MOTOR GARAGES & SERVICE STATIONS.	Esso Moorebank Service Station, 148 Newbridge Rd., Moorebank.	64646	1986	Road Match	272m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Esso Moorebank Service Station, 148 Newbridge Rd., Moorebank.2170.	56716	1982	Road Match	272m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Esso Servicenter (Moorebank), 148 Newbridge Rd., Moorebank.	49980	1978	Road Match	272m
MOTOR SERVICE STATIONS - PETROL, OIL	Esso Servicenter (Moorebank), 148 Newbridge Rd., Moorebank.	61704	1975	Road Match	272m
MOTOR SERVICE STATIONS-PETROL,OIL,Etc. (M716)	Esso Servicenter,148 Newbridge Rd.MILPERRA	341060	1970	Road Match	272m
MOTOR GARAGES & SERVICE STATIONS.	Golden Fleece Service Station Moorebank, Newbridge Rd., Moorebank.	64787	1986	Road Match	272m
Motor Service Stations - Petrol, Oil, Etc. - Moorebank	Golden Fleece Service Station, 112 Newbridge Rd.	125936	1965	Road Match	272m
MOTOR GARAGES & SERVICE STATIONS.	Mickey Duck Automotive, Newbridge Rd., Moorebank.	65075	1986	Road Match	272m
MOTOR GARAGES & SERVICE STATIONS.	Newbridge Auto Centre, (Solo Service Station), Newbridge Rd., Moorebank.	65182	1986	Road Match	272m
Motor Garages & Service Stations	Shell Moorabnak Self Service Newbridge Rd., Moorebank	53865	1991	Road Match	272m
MOTOR GARAGES & SERVICE STATIONS.	Shell Moorebank Self Service, Newbridge Rd., Moorebank.	65433	1986	Road Match	272m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Volvo Australia Pty. Ltd, Newbridge Rd, Moorebank.	51043	1978	Road Match	272m
MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Volvo Car Centre, Newbridga Rd., Moorebank. 2170.	57800	1982	Road Match	272m
MOTOR GARAGES & SERVICE STATIONS.	Mobil Moorebank Service Station, Stockton Ave., Moorebank.	65111	1986	Road Match	442m
DRY CLEANERS & PRESSERS.	Our 1 Our, Shop 11, Stockton Ave., Moorebank.	25466	1986	Road Match	442m
DRY CLEANERS & PRESSERS. (D8500)	Our 1 Our, Shop 11, Stockton Ave., Moorebank. 2170.	23997	1982	Road Match	442m
MOTOR GARAGES &/OR ENGINEERS	“Ivanhoe” (I, T. Foat), Gordon Rd., Moorebank	83342	1950	Road Match	803m
MOTOR SERVICE STATIONS-PETROL, Etc.	Moorebank Service Station, Epsom Rd., Moorebank	86221	1950	Road Match	825m

Aerial Imagery 2014

87-91 Nuwarra Road, Moorebank, NSW 2170

Scale:	Data Sources:Aerial Imagery © Land and Property Information (a division of the Department of Finance and Services)	Coordinate System: GDA 1994 MGA Zone 56	Date: 30June 2017

0 25 50 100
Meters

Aerial Imagery 2009

87-91 Nuwarra Road, Moorebank, NSW 2170

Scale: 0 25 50 100 Meters	Data Sources: Aerial Imagery © 2017 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.	Coordinate System: GDA 1994 MGA Zone 56	Date: 30 June, 2017

Aerial Imagery 2004

87-91 Nuwarra Road, Moorebank, NSW 2170

Scale:
0 25 50 100
Meters

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Coordinate System:
GDA 1994 MGA Zone 56

Date: 30 June, 2017

Aerial Imagery 1991

87-91 Nuwarra Road, Moorebank, NSW 2170

Scale:	Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)	Coordinate System: GDA 1994 MGA Zone 56	Date: 30 June, 2017

Aerial Imagery 1982

87-91 Nuwarra Road, Moorebank, NSW 2170

Scale: 0 25 50 100 Meters	Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)	Coordinate System: GDA 1994 MGA Zone 56	Date: 30 June, 2017

Aerial Imagery 1970

87-91 Nuwarra Road, Moorebank, NSW 2170

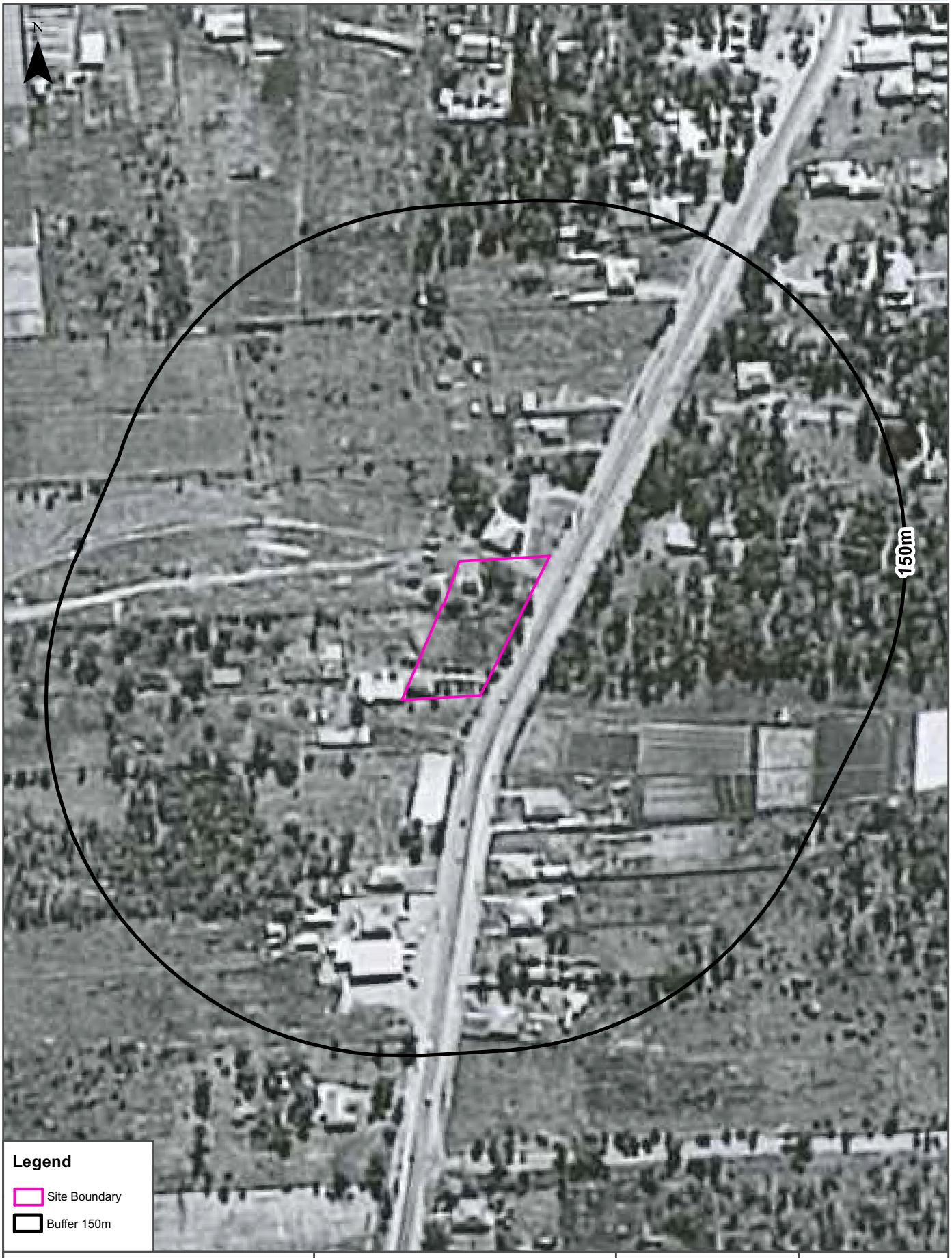
Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)

Coordinate System: GDA 1994 MGA Zone 56

Date: 30 June, 2017

Aerial Imagery 1965

87-91 Nuwarra Road, Moorebank, NSW 2170



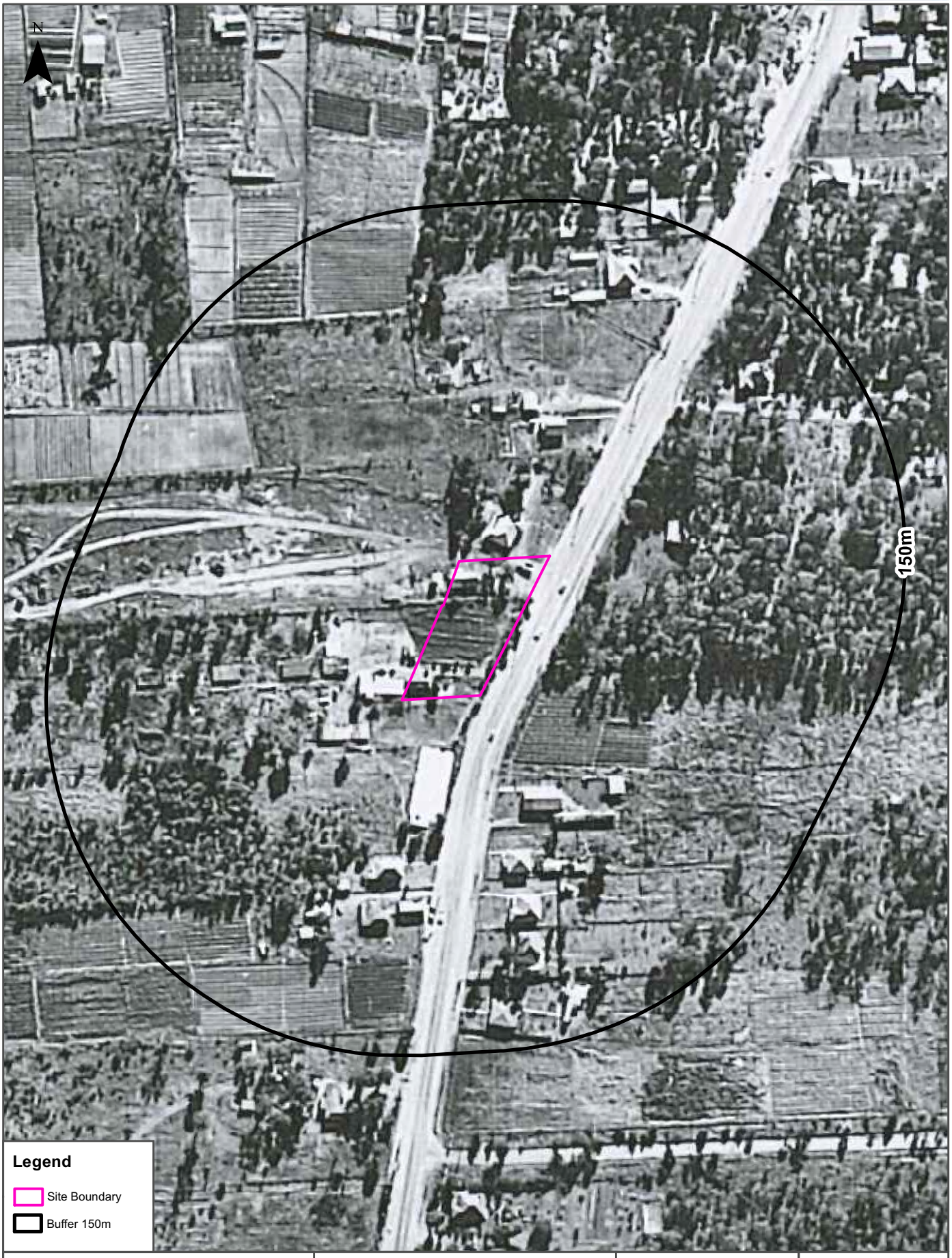
Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)

Coordinate System: GDA 1994 MGA Zone 56

Date: 30 June, 2017

Aerial Imagery 1961

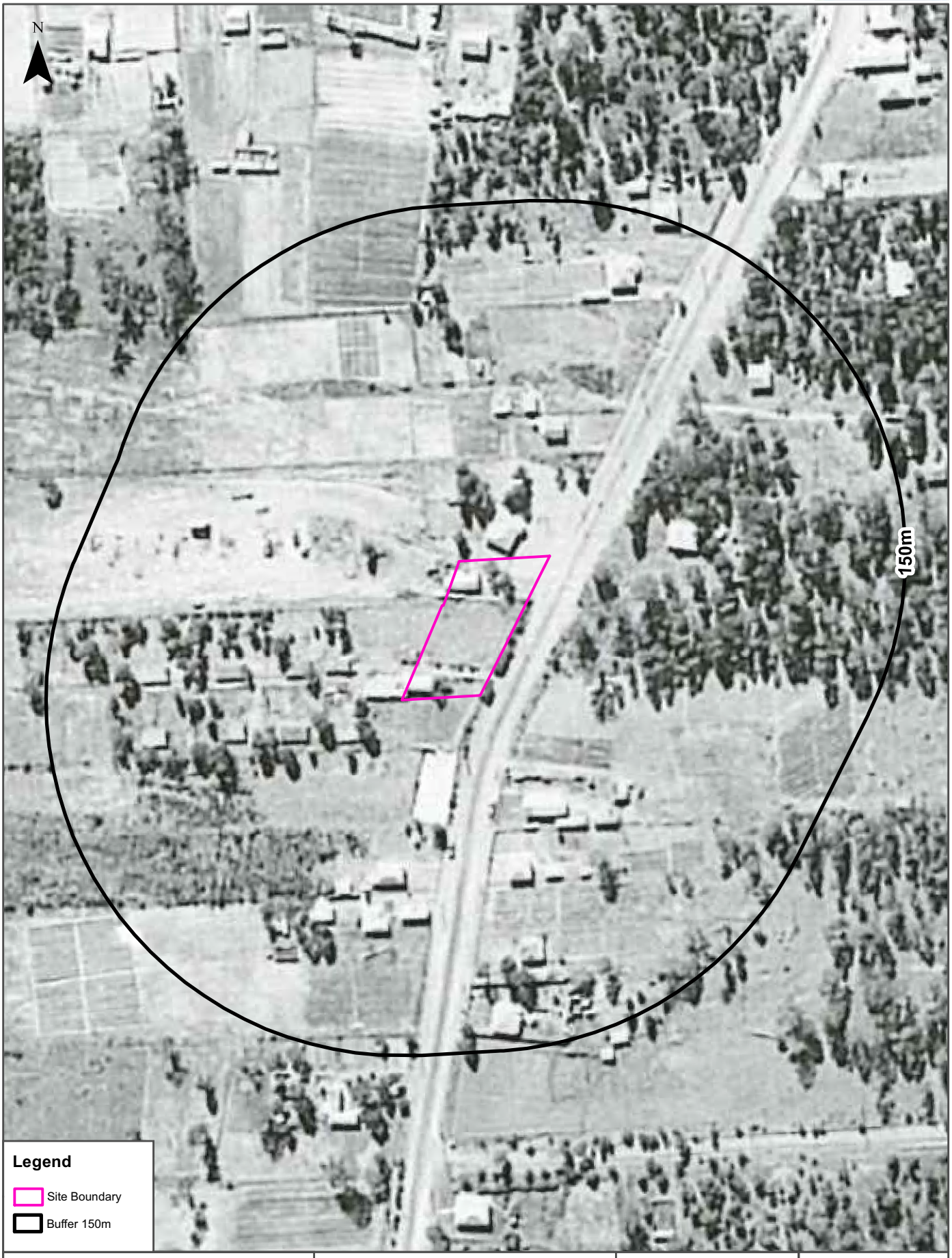
87-91 Nuwarra Road, Moorebank, NSW 2170



Scale: 0 25 50 100 Meters	Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)	Coordinate System: GDA 1994 MGA Zone 56	Date: 30 June, 2017

Aerial Imagery 1955

87-91 Nuwarra Road, Moorebank, NSW 2170



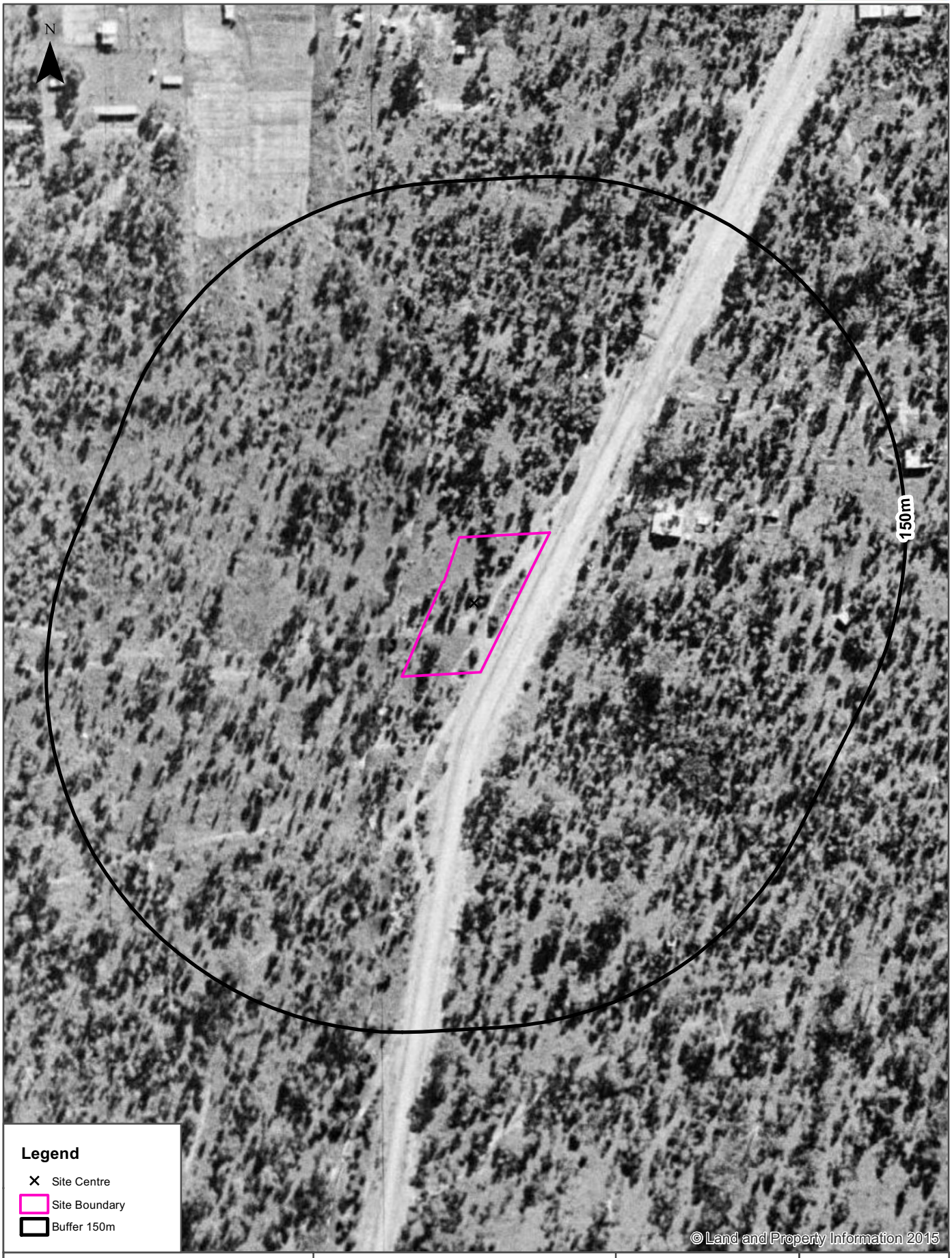
Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)

Coordinate System: GDA 1994 MGA Zone 56

Date: 30 June, 2017

Aerial Imagery 1943

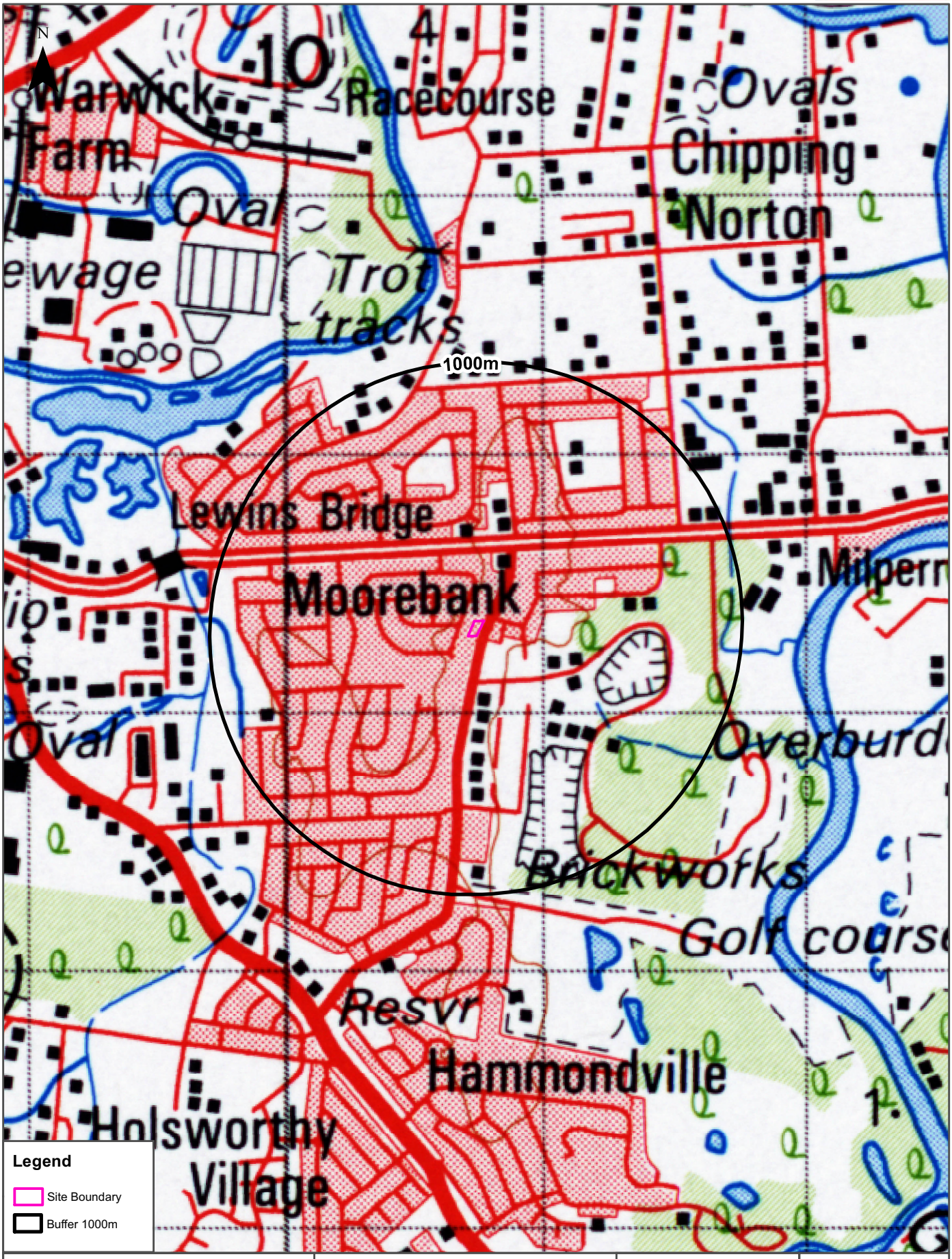
87-91 Nuwarra Road, Moorebank, NSW 2170



Scale:	Data Sources:Aerial Imagery © Land and Property Information (a division of the Department of Finance and Services)	Coordinate System: GDA 1994 MGA Zone 56	Date: 30June 2017

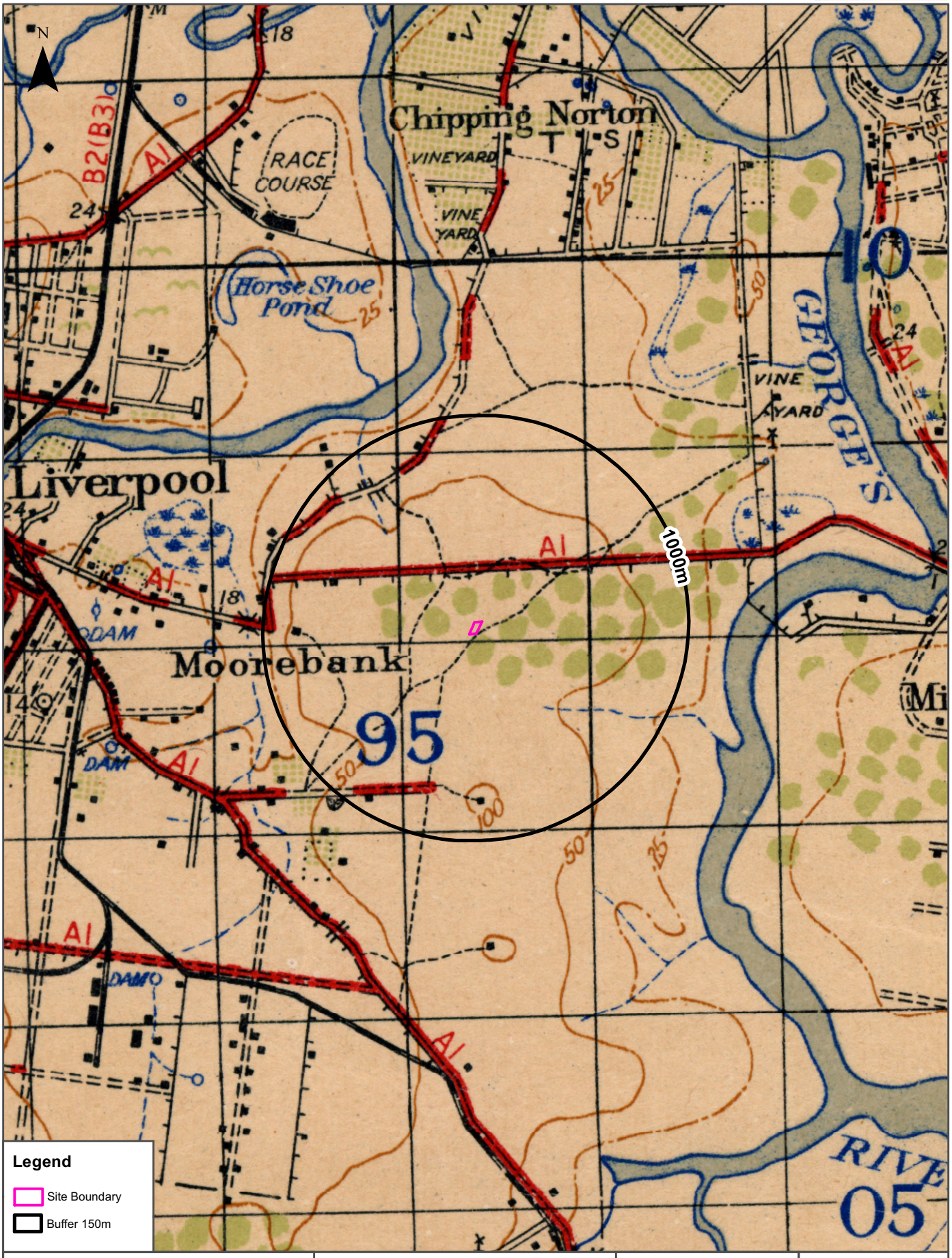
Historical Map 1975

87-91 Nuwarra Road, Moorebank, NSW 2170



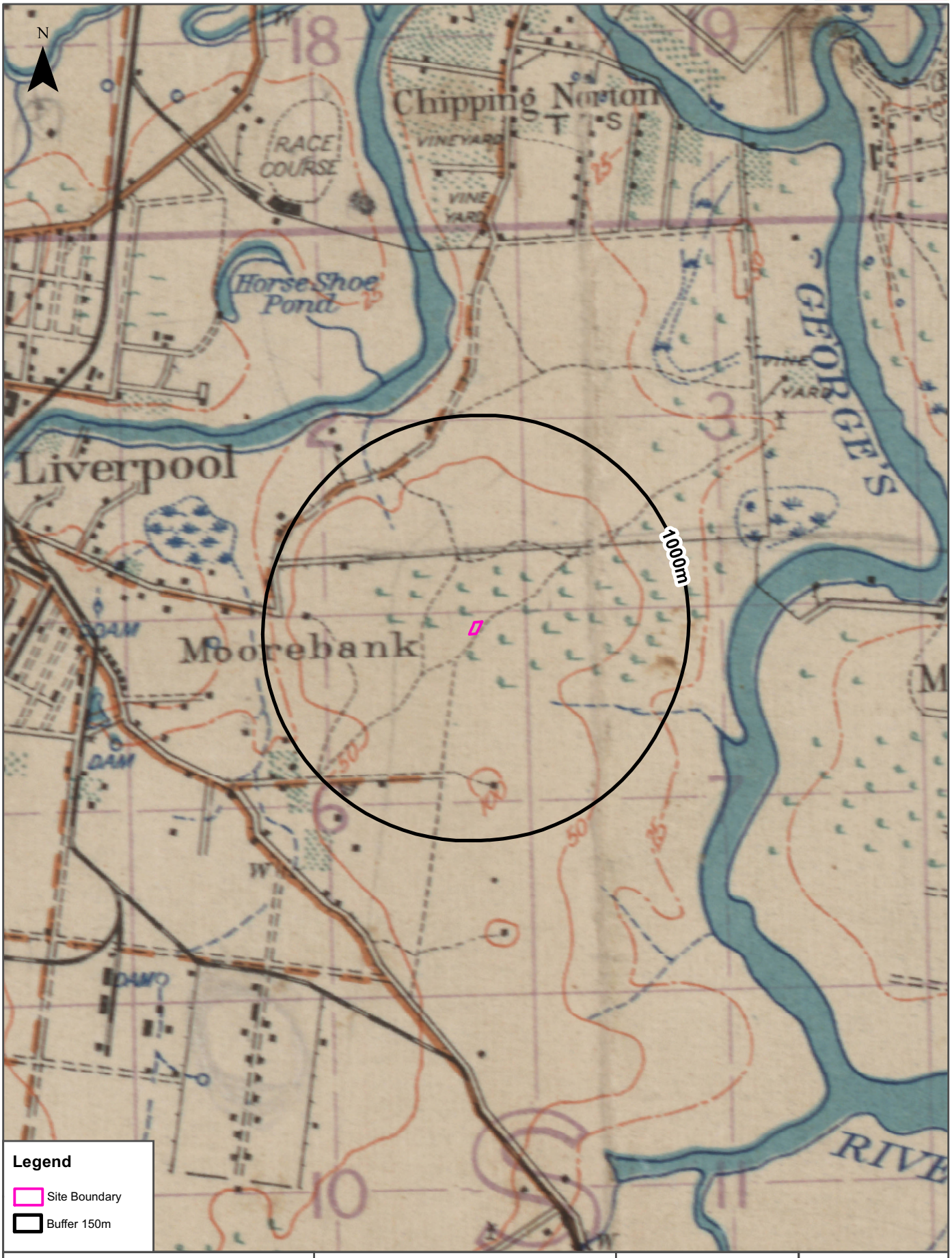
Historical Maps ca.1942

87-91 Nuwarra Road, Moorebank, NSW 2170



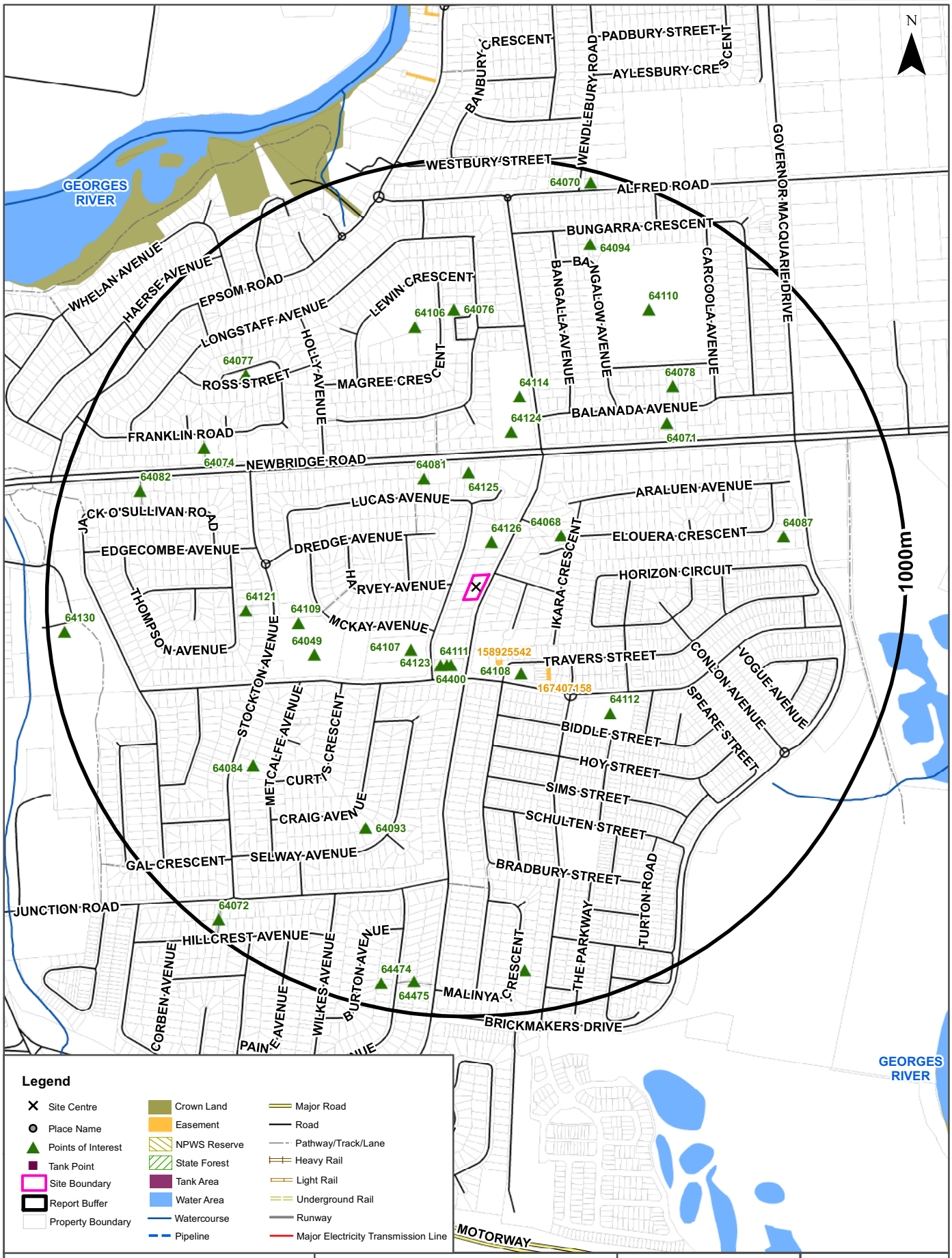
Historical Maps ca.1929

87-91 Nuwarra Road, Moorebank, NSW 2170



Topographic Features

87-91 Nuwarra Road, Moorebank, NSW 2170



Topographic Features

87-91 Nuwarra Road, Moorebank, NSW 2170

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
64126	Place Of Worship	ST THOMAS' ANGLICAN CHURCH	78m	North
64400	Community Facility	MOOREBANK COMMUNITY CENTRE	159m	South
64111	Library	MOOREBANK LIBRARY	162m	South
64123	Medical Centre	MOOREBANK EARLY CHILDHOOD HEALTH CENTRE	167m	South West
64107	Primary School	NUWARRA PUBLIC SCHOOL	174m	South West
64068	Park	COLE PARK	195m	North East
64108	Park	PHIL TOLHURST PARK	207m	South East
64125	Place Of Worship	CONGREGATIONAL CHRISTIAN CHURCH IN SAMOA	247m	North
64081	Park	REGAN PARK	261m	North West
64124	Place Of Worship	ST JOSEPH'S CHURCH	346m	North
64049	Shopping Centre	MOOREBANK SHOPPING COMPLEX	381m	South West
64109	Post Office	MOOREBANK POST OFFICE	400m	West
64112	Park	LIVERPOOL BICENTENARY PARK	420m	South East
64114	Primary School	ST JOSEPH'S CATHOLIC PRIMARY SCHOOL	433m	North
64121	Park	EDGECOMBE PARK	522m	West
64071	Park	FIELD PARK	559m	North East
64093	Park	SYME PARK	596m	South West
64106	Primary School	NEWBRIDGE HEIGHTS PUBLIC SCHOOL	612m	North
64078	Park	COWAN PARK	630m	North East
64076	Park	WILLIAMS PARK	640m	North
64084	Park	METCALFE PARK	642m	South West
64087	Park	PAINE PARK	711m	East
64074	Park	GOLLINS RESERVE	715m	North West
64077	Park	ROBERTS PARK	728m	North West
64110	High School	MOOREBANK HIGH SCHOOL	742m	North East
64082	Park	MAC MACARTNEY RESERVE	818m	West
64094	Park	MOLLY MOORE PARK	828m	North
64462	Park	MALINYA PARK	898m	South
64475	Park	RENTON PARK	923m	South
64474	Park	ONLY PARK	940m	South
64130	Park	ERNIE SMITH RESERVE	959m	West
64072	Park	HILLCREST PARK	966m	South West

Map Id	Feature Type	Label	Distance	Direction
64070	Park	WENDLEBURY PARK	972m	North

Topographic Features

87-91 Nuwarra Road, Moorebank, NSW 2170

Tanks (Areas)

What are the Tank Areas located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
	No records in buffer					

Tanks (Points)

What are the Tank Points located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
	No records in buffer					

Major Easements

What Major Easements exist within the dataset buffer?
Note. Easements provided by LPI are not at the detail of local governments. They are limited to major easements such as Right of Carriageway, Electrical Lines (66kVa etc.), Easement to drain water & Significant subterranean pipelines (gas, water etc.).

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
158925542	Primary	Right of way	12m and Var	155m	South
167407158	Primary	Right of way	6.7m	228m	South East

Topographic Features

87-91 Nuwarra Road, Moorebank, NSW 2170

State Forest

What State Forest exist within the dataset buffer?

State Forest Number	State Forest Name	Distance	Direction
N/A	No records in buffer		

National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

Reserve Number	Reserve Type	Reserve Name	Gazetted Date	Distance	Direction
N/A	No records in buffer				

Elevation Contours (m AHD)

87-91 Nuwarra Road, Moorebank, NSW 2170

Legend

- Site Centre
- Elevation Contour (m AHD)
- Site Boundary
- Report Buffer
- Property Boundary

Accuracy & Currency: This contour data can be up to 0.4 of the contour interval out in height and must therefore not be used for any design or engineering works, but only as a general guide to topography. Gaps may occur along contour lines due to vertical topography, obscured topography in the source photography such as buildings, dense vegetation or dead ground, or the fact that original buildings have been replaced in the intervening thirty years since the original contour capture.

Scale: 0 100 200 400 Meters

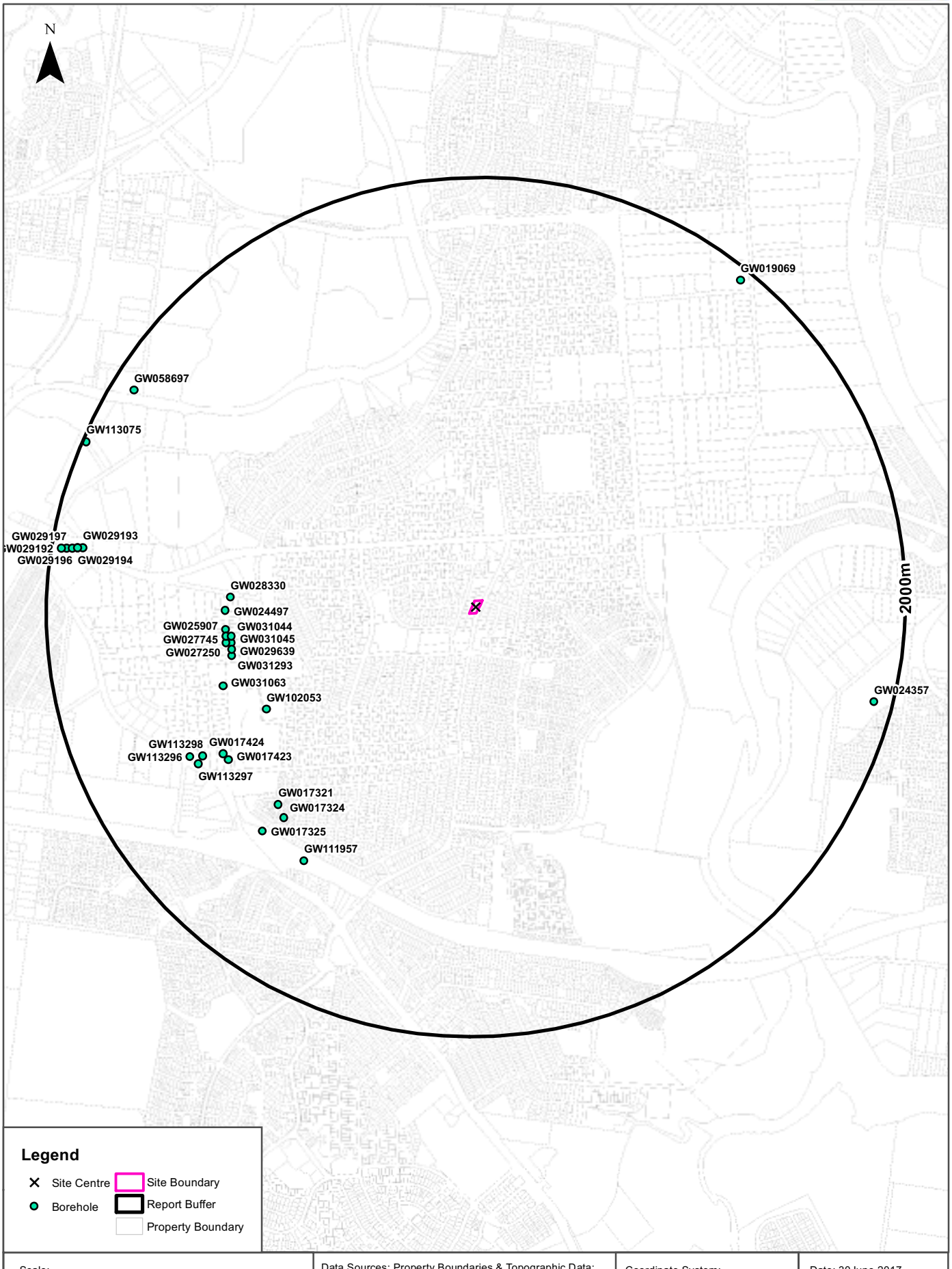
Data Sources: Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2017

Coordinate System: GDA 1994 MGA Zone 56

Date: 30June 2017

Groundwater Boreholes

87-91 Nuwarra Road, Moorebank, NSW 2170



Hydrogeology & Groundwater

87-91 Nuwarra Road, Moorebank, NSW 2170

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive aquifers of low to moderate productivity

Description of aquifers within the dataset buffer:

Description
Porous, extensive aquifers of low to moderate productivity

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia)

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Purpose	Contractor	Complete Date	Final Depth	Drilled Depth	Salinity	SWL	Yield	Elev	Dist	Dir
GW102053	10BL156683, 10WA109383	Bore		Recreation		14/06/1995		12.00		2.40	0.300		1059m	South West
GW031044	10BL100566	Well	Private	Waste disposal		01/10/1968	2.40	2.40					1128m	West
GW028330	10BL019162, 10BL133976, 10WA108144	Well	Private	Waste disposal		01/01/1966	6.40	6.40					1130m	West
GW031045	10BL100567	Well	Private	Waste disposal		01/10/1968	2.40	2.40					1131m	West
GW029639	10BL023364	Well	Private	Waste disposal		01/02/1969	2.50	2.50					1135m	West
GW031293	10BL100885, 10WA108166	Well	Private	Waste disposal		01/12/1968	2.40	2.40					1139m	West
GW024497	10BL015943, 10WA108118	Bore	Private	Waste disposal		01/10/1965	3.00	3.00					1151m	West
GW025907	10BL016624	Well	Private	Waste disposal		01/04/1966	2.40	2.40					1152m	West
GW027249	10BL019853	Well	Private	Waste disposal		01/07/1967	2.40	2.40					1154m	West
GW027745	10BL021438	Well	Private	Waste disposal		01/02/1968	2.40	2.40					1154m	West
GW027250	10BL019852	Well	Private	Waste disposal		01/07/1967	2.40	2.40					1157m	West
GW031063	10BL100684, 10WA108164	Well	Private	Waste disposal		01/05/1969	2.40	2.40					1213m	West
GW017321	10BL007906	Bore	Private	Irrigation		01/01/1943	5.40	5.50	Good				1277m	South West
GW017324	10BL008194	Bore	Private	Irrigation		01/09/1954	6.70	6.70					1303m	South West
GW017423	10BL007915, 10WA108082	Well	Private	General Use			3.00						1332m	South West
GW017424	10BL007916	Excavation	Private	Irrigation		01/03/1958	7.60						1339m	South West
GW111957	10BL605234	Bore	Other Govt	Monitoring		08/08/2012	17.70	17.70		4.40			1407m	South West
GW017325	10BL007929	Bore	Private	Irrigation		01/01/1942	9.10	9.10	Good				1419m	South West
GW113298	10BL604308	Bore	Private	Monitoring		01/01/2011	7.50	7.50					1429m	South West

GW No.	Licence No	Work Type	Owner Type	Purpose	Contractor	Complete Date	Final Depth	Drilled Depth	Salinity	SWL	Yield	Elev	Dist	Dir
GW113297	10BL604308	Bore	Private	Monitoring		01/01/2011	6.00	6.00					1464m	South West
GW113296	10BL604308	Bore	Private	Monitoring		01/01/2011	8.00	8.00					1484m	South West
GW029193	10BL022598	Well	Private	Waste disposal		01/11/1968	2.40	2.40					1851m	West
GW029195	10BL023675	Well	Private	Waste disposal		01/11/1968	2.40	2.40					1876m	West
GW029194	10BL023674	Well	Private	Waste disposal		01/11/1968	2.40	2.40					1876m	West
GW058697	10BL130184	Bore	Private	GW Exploration		01/07/1984	19.20	19.20					1891m	North West
GW029196	10BL023676	Well	Private	Waste disposal		01/11/1968	2.40	2.40					1902m	West
GW024357	10BL018551	Excavation	Private	Irrigation			3.00	3.00	501-1000 ppm				1913m	East
GW029197	10BL023677	Well	Private	Waste disposal		01/11/1968	2.40	2.40					1927m	West
GW019069		Bore	Private	Irrigation		01/09/1962	15.20	15.20	Fresh				1945m	North East
GW029192	10BL022597	Well	Private	Waste disposal		01/11/1968	2.40	2.40					1952m	West
GW113075	10BL163955	Bore	Private	Monitoring	Macquarie Drilling	11/07/2003	9.50	9.50					1982m	North West

Hydrogeology & Groundwater

87-91 Nuwarra Road, Moorebank, NSW 2170

Driller's Logs

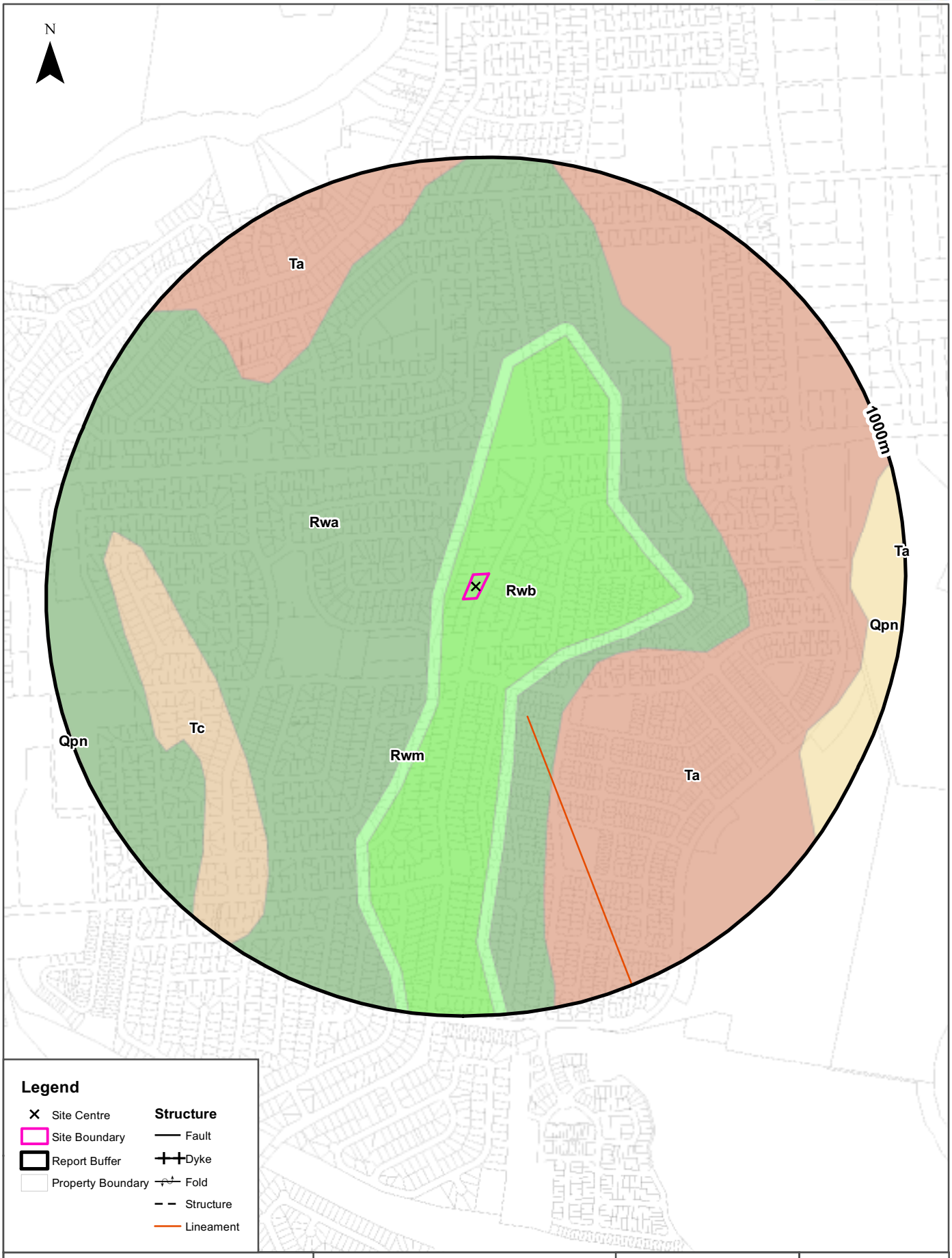
Drill log data relevant to the boreholes within the dataset buffer:

Groundwater No	Drillers Log	Distance	Direction
GW102053	0.00m-1.00m Brown Clay 1.00m-3.00m Clay 3.00m-6.00m Sandy Clay 6.00m-9.00m Sandy 9.00m-10.00m Sandy Clay 10.00m-12.00m Black Clay	1059m	South West
GW031044	0.00m-2.44m Loam Sandy	1128m	West
GW028330	0.00m-5.48m Driller 5.48m-6.40m Sand Nominal Water Supply	1130m	West
GW031045	0.00m-2.44m Loam Sandy	1131m	West
GW031293	0.00m-1.83m Clay 1.83m-2.44m Loam Sandy	1139m	West
GW024497	0.00m-0.30m Topsoil 0.30m-1.21m Clay 1.21m-2.43m Loam Sandy 2.43m-3.04m Sand	1151m	West
GW025907	0.00m-0.91m Clay 0.91m-1.52m Loam Sandy 1.52m-2.43m Sand	1152m	West
GW027249	0.00m-1.52m Clay Soil 1.52m-2.43m Sand	1154m	West
GW027745	0.00m-1.52m Loam Sandy 1.52m-2.43m Sand	1154m	West
GW027250	0.00m-1.52m Clay Soil 1.52m-2.43m Sand	1157m	West
GW031063	0.00m-1.52m Clay 1.52m-2.13m Loam Sandy 2.13m-2.43m Sand Water Supply	1213m	West
GW017321	0.00m-5.48m Topsoil Nominal Water Supply 0.00m-5.48m Clay Nominal 0.00m-5.48m Sand Nominal	1277m	South West
GW017324	0.00m-1.52m Clay 1.52m-6.70m Sand White Water Supply	1303m	South West
GW111957	0.00m-6.90m CLAY 6.90m-17.70m ROCK, SHALE	1407m	South West
GW017325	0.00m-2.13m Topsoil 2.13m-7.31m Sand Clean Water Supply 7.31m-9.14m Sand Fossils:shell Fragments Water Supply	1419m	South West
GW029193	0.00m-2.43m Loam Sandy	1851m	West
GW029194	0.00m-2.43m Loam Sandy	1876m	West
GW029195	0.00m-2.43m Loam Sandy	1876m	West
GW058697	0.00m-5.00m Clay Stiff 5.00m-6.00m Sand Soft Silty 6.00m-8.00m Sand Coarse Silty, Wood Charcoal 8.00m-14.00m Sand Grey Silty Coarse Water Supply 14.00m-16.00m Clay Grey Silty, Some Coarse Sand 16.00m-18.30m Clay Grey Silty 18.30m-19.20m Slate Clayey	1891m	North West
GW029196	0.00m-2.43m Loam Sandy	1902m	West
GW024357	0.00m-3.04m Loam Sand Water Supply	1913m	East
GW029197	0.00m-2.43m Loam Sandy	1927m	West

Groundwater No	Drillers Log	Distance	Direction
GW019069	0.00m-0.91m Clay Red 0.91m-3.04m Sand 0.91m-3.04m Clay Bands 3.04m-7.92m Clay Mixed 3.04m-7.92m Sand Dry 7.92m-12.19m Sand Wet Water Supply 7.92m-12.19m Clay 12.19m-15.24m Mud Sand Mixed Water Supply	1945m	North East
GW029192	0.00m-2.43m Loam Sandy	1952m	West

Geology 1:100,000

87-91 Nuwarra Road, Moorebank, NSW 2170



Geology

87-91 Nuwarra Road, Moorebank, NSW 2170

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Rwb	Shale, carbonaceous claystone,claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff	Bringelly Shale	Wianamatta Group (undifferentiated)		Middle Triassic		Penrith	1:100,000

What are the Geological Units within the dataset buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Qpn	Medium-grained sand, clay and silt				Quaternary		Penrith	1:100,000
Rwa	Dark-grey to black claystone-siltstone and fine sandstone -siltstone laminate	Ashfield Shale	Wianamatta Group (undifferentiated)		Middle Triassic		Penrith	1:100,000
Rwb	Shale, carbonaceous claystone,claystone, laminate, fine to medium-grained lithic sandstone, rare coal and tuff	Bringelly Shale	Wianamatta Group (undifferentiated)		Middle Triassic		Penrith	1:100,000
Rwm	Fine to medium-grained quartz-lithic sandstone	Minchinbury Sandstone	Wianamatta Group (undifferentiated)		Middle Triassic		Penrith	1:100,000
Ta	Clayey quartzose sand, and clay				Tertiary		Penrith	1:100,000
Tc	Laterized sand and clay with ferricrete bands, includes silcrete sandstone and shale boulders				Tertiary		Penrith	1:100,000

Geological Structures

What are the Geological Structures onsite?

Feature	Name	Description	Map Sheet	Dataset
No features				1:100,000

What are the Geological Structures within the dataset buffer?

Feature	Name	Description	Map Sheet	Dataset
Lineament			Penrith	1:100,000

Geological Data Source : NSW Department of Industry, Resources & Energy

Naturally Occurring Asbestos Potential

87-91 Nuwarra Road, Moorebank, NSW 2170

Naturally Occurring Asbestos Potential

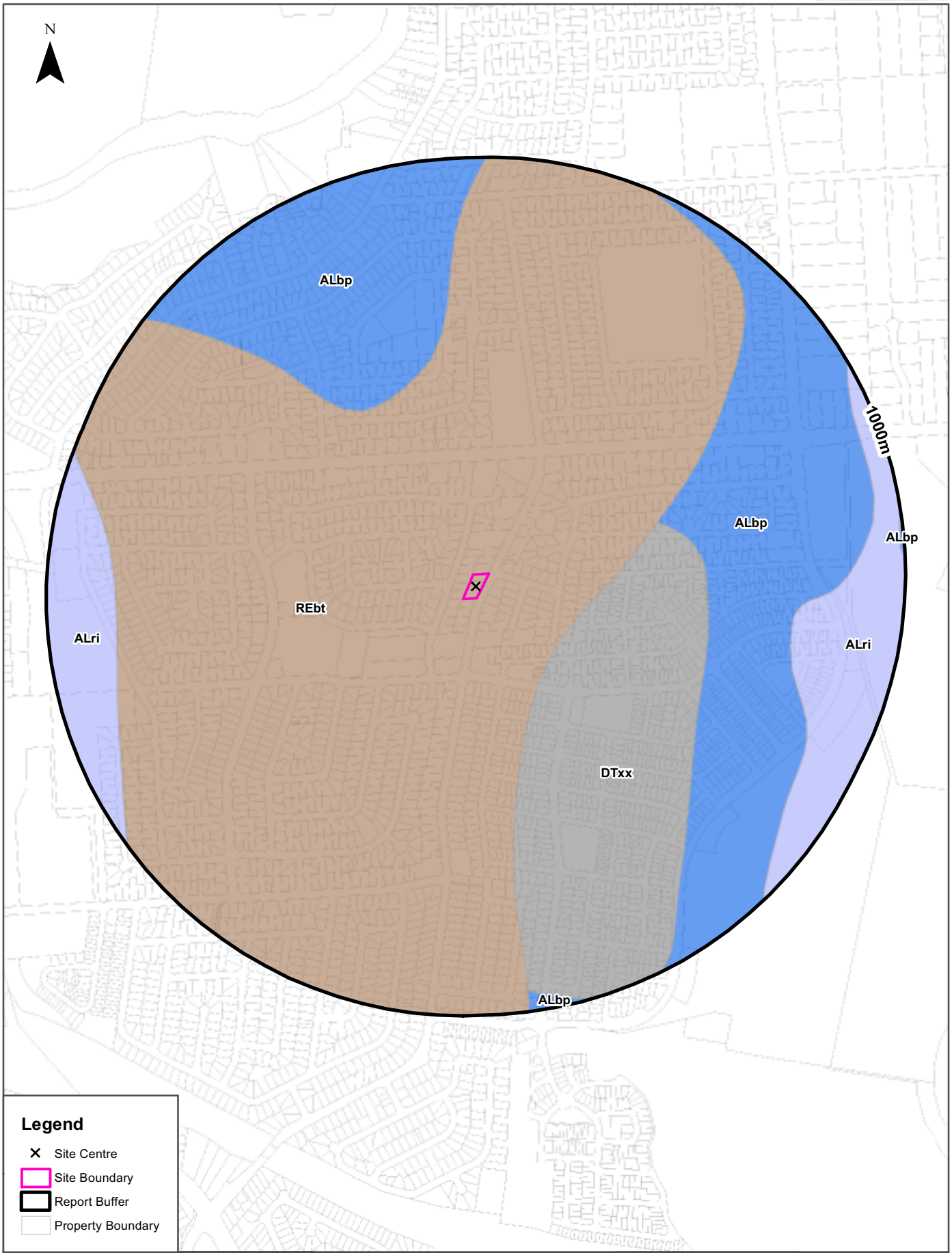
Naturally Occurring Asbestos Potential within the dataset buffer:

Potential	Sym	Strat Name	Group	Formation	Scale	Min Age	Max Age	Rock Type	Dom Lith	Description	Dist	Dir
No records in buffer												

Mining Subsidence District Data Source: © State of New South Wales through NSW Department of Industry, Resources & Energy

Soil Landscapes

87-91 Nuwarra Road, Moorebank, NSW 2170



Soils

87-91 Nuwarra Road, Moorebank, NSW 2170

Soil Landscapes

What are the onsite Soil Landscapes?

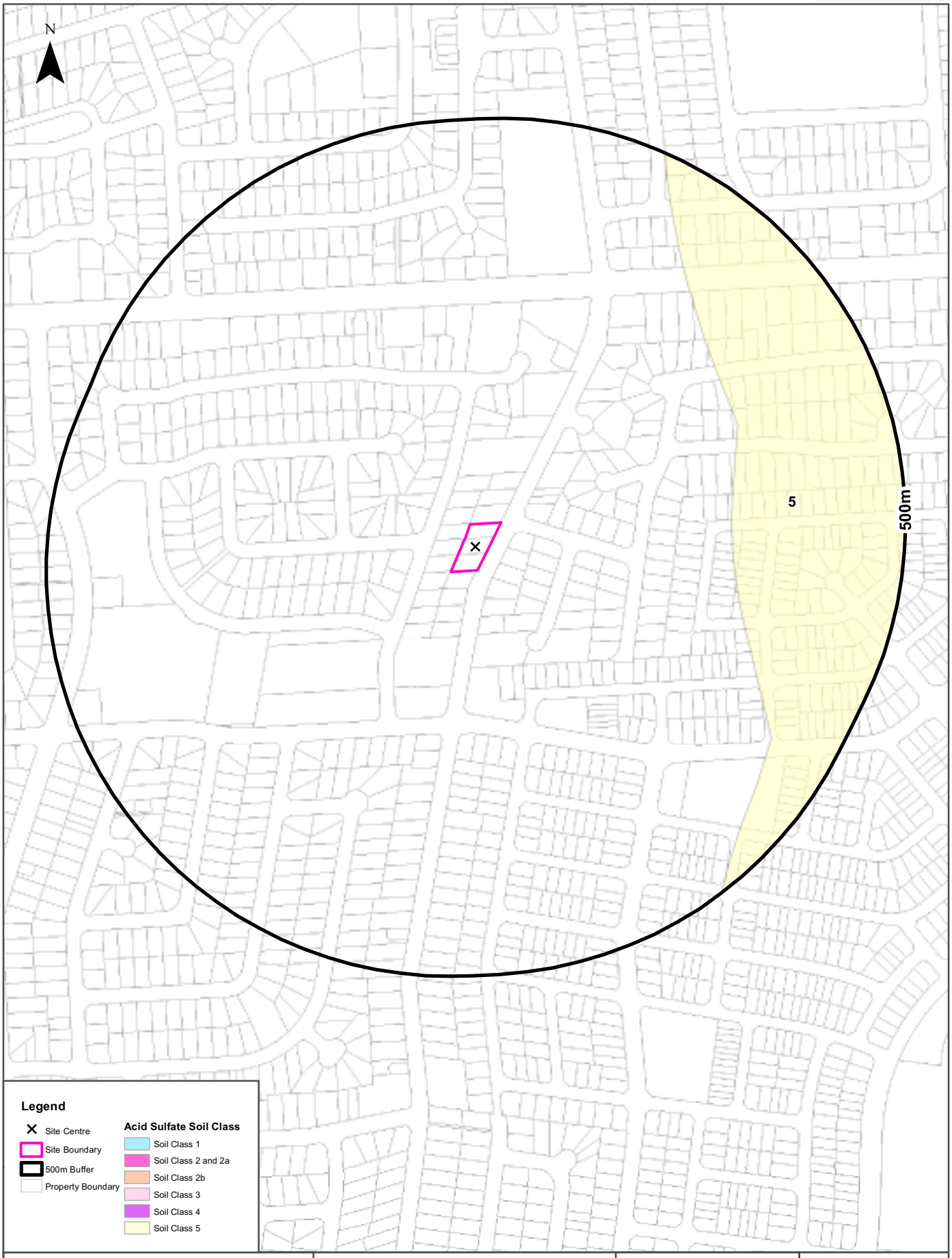
Soil Code	Name	Group	Process	Map Sheet	Scale
REbt	BLACKTOWN		RESIDUAL	Penrith	1:100,000

What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
ALbp	BERKSHIRE PARK		ALLUVIAL	Penrith	1:100,000
ALri	RICHMOND		ALLUVIAL	Penrith	1:100,000
DTxx	DISTURBED TERRAIN		DISTURBED TERRAIN	Penrith	1:100,000
REbt	BLACKTOWN		RESIDUAL	Penrith	1:100,000

Acid Sulfate Soils

87-91 Nuwarra Road, Moorebank, NSW 2170



Standard Local Environmental Plan Acid Sulfate Soils

87-91 Nuwarra Road, Moorebank, NSW 2170

Standard Local Environmental Plan Acid Sulfate Soils

What is the on-site Acid Sulfate Soil Plan Class that presents the largest environmental risk?

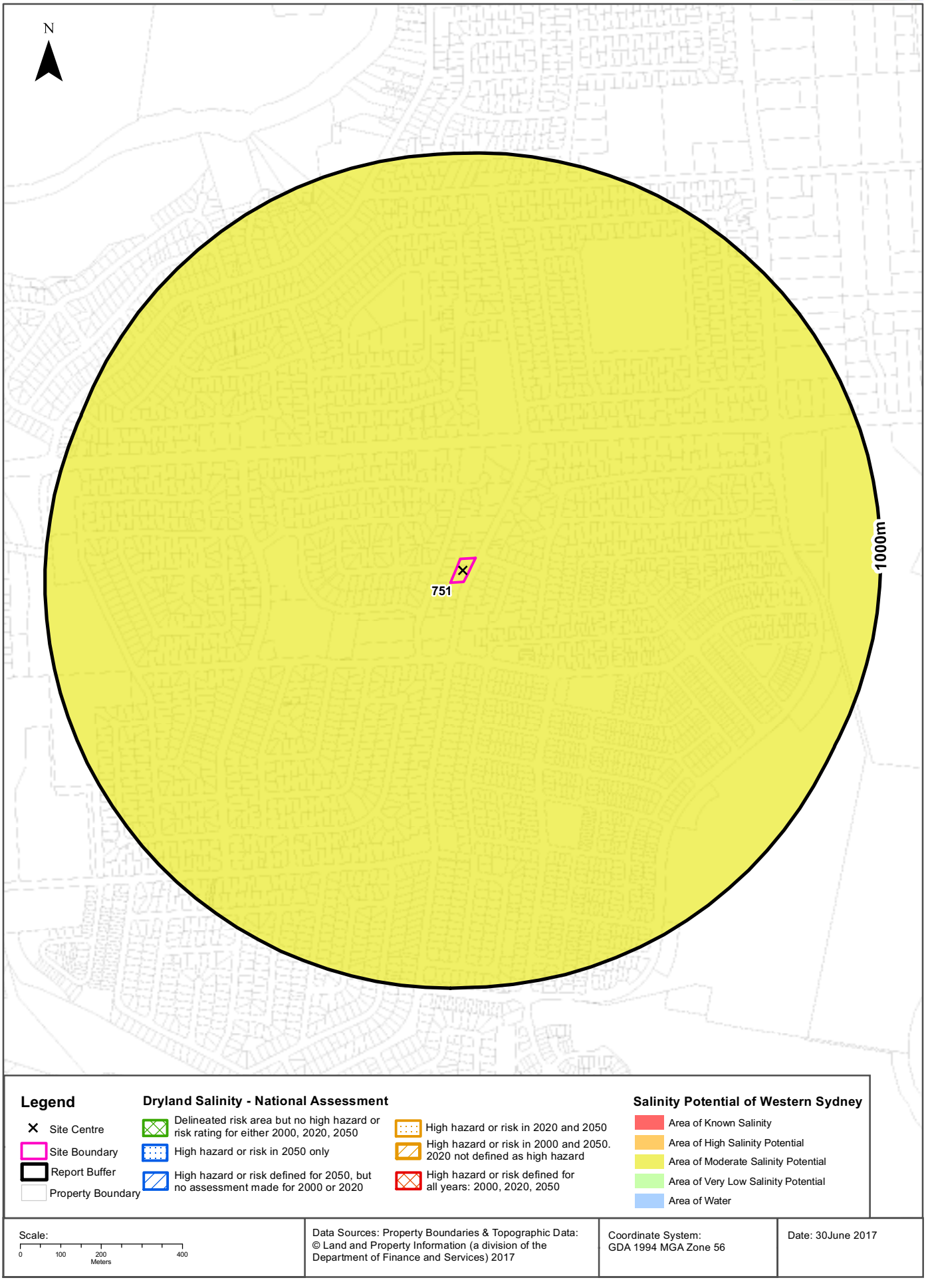
Soil Class	Description	LEP
N/A		

If the on-site Soil Class is 5, what other soil classes exist within 500m?

Soil Class	Description	LEP	Distance	Direction
N/A				

Dryland Salinity

87-91 Nuwarra Road, Moorebank, NSW 2170



Dryland Salinity

87-91 Nuwarra Road, Moorebank, NSW 2170

Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

No

Is there Dryland Salinity - National Assessment data within the dataset buffer?

No

What Dryland Salinity assessments are given?

Assessment 2000	Assessment 2020	Assessment 2050	Distance	Direction
N/A	N/A	N/A	N/A	N/A

Dryland Salinity Data Source : National Land and Water Resources Audit
The Commonwealth and all suppliers of source data used to derive the maps of "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050" do not warrant the accuracy or completeness of information in this product. Any person using or relying upon such information does so on the basis that the Commonwealth and data suppliers shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. Any persons using this information do so at their own risk.
In many cases where a high risk is indicated, less than 100% of the area will have a high hazard or risk.

Dryland Salinity Potential of Western Sydney

Dryland Salinity Potential of Western Sydney within the dataset buffer?

Feature Id	Classification	Description	Distance	Direction
751	MODERATE	Area of Moderate Salinity Potential	0m	Onsite

Dryland Salinity Potential of Western Sydney Data Source : NSW Office of Environment and Heritage

Mining Subsidence Districts

87-91 Nuwarra Road, Moorebank, NSW 2170

Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

District	Distance	Direction
There are no Mining Subsidence Districts within the report buffer		

Environmental Zoning

87-91 Nuwarra Road, Moorebank, NSW 2170

State Environmental Planning Policy Protected Areas

Are there any State Environmental Planning Policy Protected Areas onsite or within the dataset buffer?

Dataset	Onsite	Within Site Buffer	Distance
SEPP14 - Coastal Wetlands	No	No	N/A
SEPP26 - Littoral Rainforests	No	No	N/A
SEPP71 - Coastal Protection Zone	No	No	N/A

SEPP Protected Areas Data Source: NSW Department of Planning & Environment

State Environmental Planning Policy Major Developments (2005)

State Environmental Planning Policy Major Developments within the dataset buffer:

Map Id	Feature	Effective Date	Distance	Direction
N/A	No records within buffer			

SEPP Major Development Data Source: NSW Department of Planning & Environment

State Environmental Planning Policy Strategic Land Use Areas

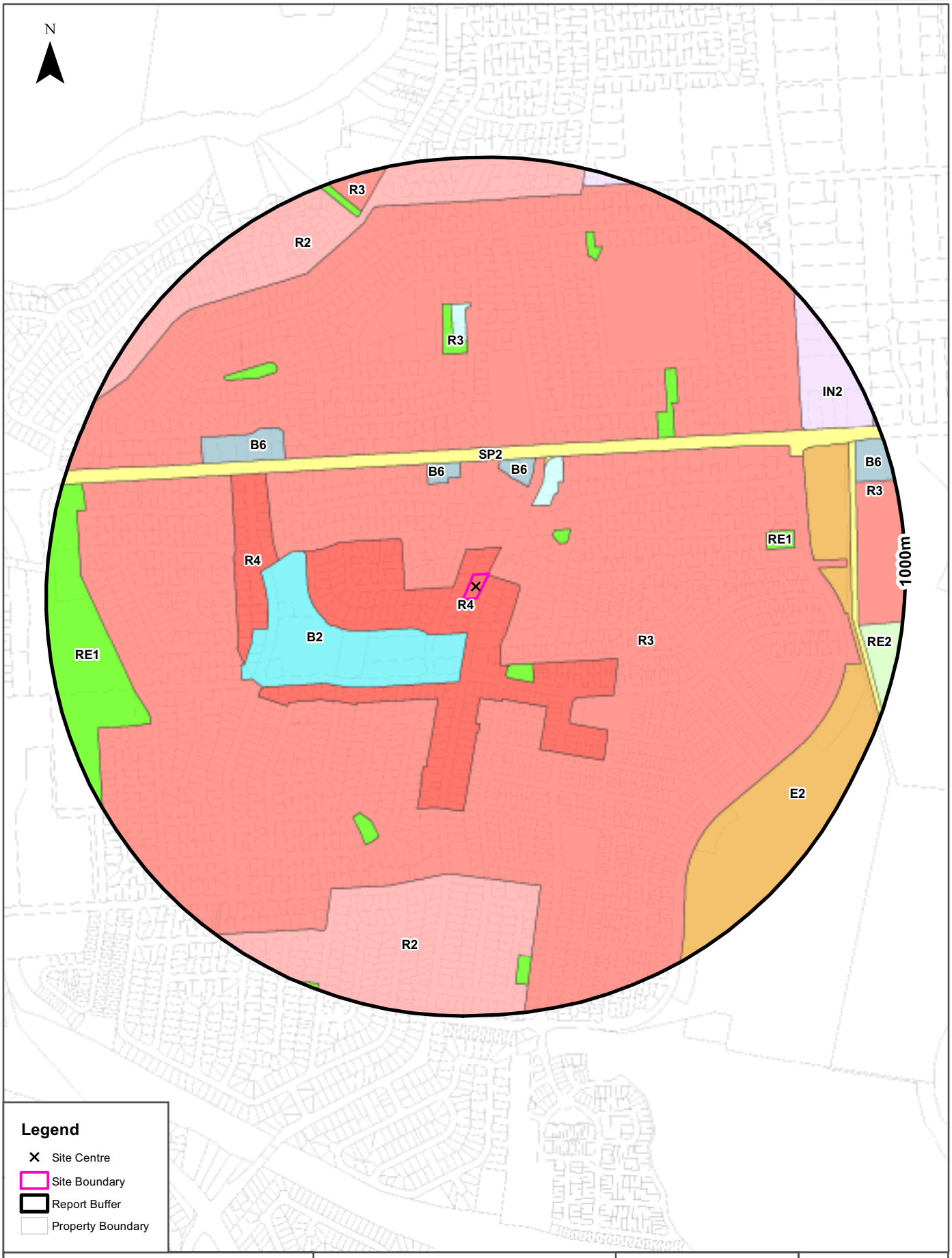
State Environmental Planning Policy Strategic Land Use Areas onsite or within the dataset buffer:

Strategic Land Use	SEPPNo	Effective Date	Amendment	Amendment Year	Distance	Direction
No records within buffer						

SEPP Strategic Land Use Data Source: NSW Department of Planning & Environment

LEP Planning Zones

87-91 Nuwarra Road, Moorebank, NSW 2170



Local Environmental Plan

87-91 Nuwarra Road, Moorebank, NSW 2170

Land Zoning

What Local Environmental Plan Land Zones exist within the dataset buffer?

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
R4	High Density Residential		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		0m	Onsite
R3	Medium Density Residential		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		0m	South
B2	Local Centre		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		80m	South West
RE1	Public Recreation		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		178m	North East
RE1	Public Recreation		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		180m	South East
B1	Neighbourhood Centre		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		194m	North East
B6	Enterprise Corridor		Liverpool Local Environmental Plan 2008	08/06/2012	08/06/2012	21/12/2016	Amendment No 16	228m	North
B6	Enterprise Corridor		Liverpool Local Environmental Plan 2008	08/06/2012	08/06/2012	21/12/2016	Amendment No 16	230m	North
SP2	Infrastructure	Classified Road	Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		272m	North
SP2	Infrastructure	Local Road	Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		289m	North East
R3	Medium Density Residential		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		302m	North
R4	High Density Residential		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		451m	West
RE1	Public Recreation		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		522m	North East
B6	Enterprise Corridor		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		529m	North West
RE1	Public Recreation		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		532m	North
B1	Neighbourhood Centre		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		562m	North
RE1	Public Recreation		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		569m	South West
R2	Low Density Residential		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		661m	South
RE1	Public Recreation		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		671m	East
RE1	Public Recreation		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		678m	North West
E2	Environmental Conservation		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		776m	South East
RE1	Public Recreation		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		793m	North
RE1	Public Recreation		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		801m	West
R2	Low Density Residential		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		825m	North
IN2	Light Industrial		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		831m	North East
RE1	Public Recreation		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		862m	South
SP2	Infrastructure	Drainage	Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		871m	East
R3	Medium Density Residential		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		886m	East
RE2	Private Recreation		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		898m	East
RE1	Public Recreation		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		900m	North West

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
B6	Enterprise Corridor		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		909m	East
R3	Medium Density Residential		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		912m	North
RE1	Public Recreation		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		985m	South West
IN3	Heavy Industrial		Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	21/12/2016		990m	North East

Local Environmental Plan

87-91 Nuwarra Road, Moorebank, NSW 2170

Minimum Subdivision Lot Size

What are the onsite Local Environmental Plan Minimum Subdivision Lot Sizes?

Symbol	Minimum Lot Size	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
U	1000 m²	Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	10/06/2016		99.96

Maximum Height of Building

What are the onsite Local Environmental Plan Maximum Height of Buildings?

Symbol	Maximum Height of Building	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
16	18.00 m	Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	12/08/2016		100

Floor Space Ratio

What are the onsite Local Environmental Plan Floor Space Ratios?

Symbol	Floor Space Ratio	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
16	1.20	LEP	29/08/2008	29/08/2008	12/08/2016		99.9
4	0.50	LEP	29/08/2008	29/08/2008	12/08/2016		0.1

Land Application

What are the onsite Local Environmental Plan Land Applications?

Application Type	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
Included	Liverpool Local Environmental Plan 2008	29/08/2008	29/08/2008	12/06/2015		100

Land Reservation Acquisition

What are the onsite Local Environmental Plan Land Reservation Acquisitions?

Reservation	LEP	Published Date	Commenced Date	Currency Date	Amendment	Comments	Percentage of Site Area
No Data							

Heritage

87-91 Nuwarra Road, Moorebank, NSW 2170

State Heritage Items

What are the State Heritage Items located within the dataset buffer?

Map Id	Name	Address	LGA	Listing Date	Listing No	Plan No	Distance	Direction
N/A	No records in buffer							

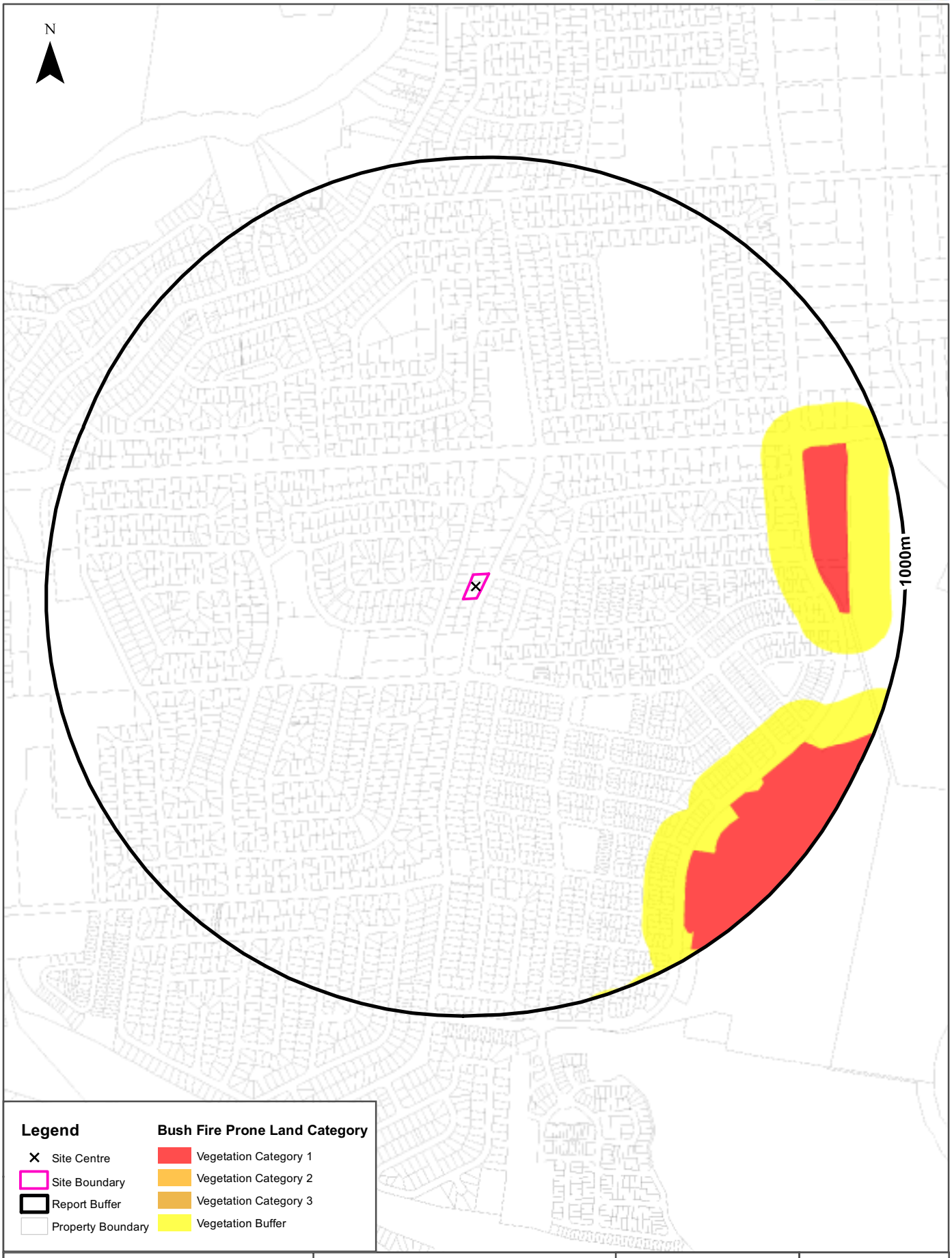
Local Heritage Items

What are the Local Heritage Items located within the dataset buffer?

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
N/A	No records in buffer								

Natural Hazards - Bush Fire Prone Land

87-91 Nuwarra Road, Moorebank, NSW 2170



Data Sources: Bush Fire Prone Land: © NSW Rural Fire Service 2017. Property Boundaries: © Land and Property Information (a division of the Department of Finance and Services) 2017

Coordinate System: GDA 1994 MGA Zone 56

Date: 30 June 2017

Natural Hazards

87-91 Nuwarra Road, Moorebank, NSW 2170

Bush Fire Prone Land

What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

Bush Fire Prone Land Category	Distance	Direction
Vegetation Buffer	675m	East
Vegetation Category 1	775m	East

Ecological Constraints - Native Vegetation & RAMSAR Wetlands

87-91 Nuwarra Road, Moorebank, NSW 2170

Data Sources: Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2017

Coordinate System: GDA 1994 MGA Zone 56

Date: 30June 2017

Ecological Constraints

87-91 Nuwarra Road, Moorebank, NSW 2170

Native Vegetation

What native vegetation exists within the dataset buffer?

Map ID	Map Unit Name	Threatened Ecological Community NSW	Threatened Ecological Community EPBC Act	Understorey	Disturbance	Disturbance Index	Dominant Species	Dist	Direction
Weed_Ex	Weed_Ex: Weeds and Exotics			00: Not assessed	00: Not assessed	0: Not assessed	Exotic Species >90%cover	36m	North
S_DSF02	S_DSF02: Castlereagh Shale-Gravel Transition Forest	Shale Gravel Transition Forest	Cumberland Plain Woodland/ Shale Gravel Forest (possible)	15: Grassy natives and exotics	24: Urban mixed use	4: Very high	E.fibrosa/E.moluccanna/M.decora/E.longifolia	111m	South West
Urban_E/N	Urban_E/N: Urban Exotic/Native			00: Not assessed	00: Not assessed	0: Not assessed	Urban Exotic/Native	139m	South East
S_DSF19	S_DSF19: Castlereagh Scribbly Gum Woodland	Castlereagh Scribbly Gum Woodland		15: Grassy natives and exotics	24: Urban mixed use	4: Very high	E.sclerophylla/E.parramattensis/A.bakeri	523m	North
S_FoW06	S_FoW06: Cumberland Riverflat Forest	River Flat Eucalypt Forest		30: Melaleuca dominant	15: Regrowth	1: Low	M.decora/M.linariifolia/C.glauca	789m	South East
S_FoW07	S_FoW07: Cumberland Swamp Oak Riparian Forest	River Flat Eucalypt Forest		18: Swampy sedges, shrubs, ferns and herbs	15: Regrowth	2: Moderate	C.glaucaEucalypts	822m	South East
S_GW03	S_GW03: Cumberland Shale Plains Woodland	Cumberland Plain Woodland	Cumberland Plain Woodland/ Shale Gravel Forest (possible)	13: Dry shrubs and grasses	25: Edge disturbances only	1: Low	E.tereticornis/E.moluccannaE.crebra/E.eugeinioides	878m	South
S_FrW03	S_FrW03: Coastal Freshwater Wetland	Freshwater Wetlands on Coastal Floodplains		18: Swampy sedges, shrubs, ferns and herbs	13: Weeds	3: High	T.orientalis/fresh water sedges	900m	South East
Water	Water			00: Not assessed	00: Not assessed	0: Not assessed	Water	942m	East

Native Vegetation of the Sydney Metropolitan Area : NSW Office of Environment and Heritage

RAMSAR Wetlands

What RAMSAR Wetland areas exist within the dataset buffer?

Map Id	RAMSAR Name	Wetland Name	Designation Date	Source	Distance	Direction
N/A	No records in buffer					

Ecological Constraints

87-91 Nuwarra Road, Moorebank, NSW 2170

ATLAS of NSW Wildlife

Endangered &Vulnerable Species on the ATLAS of NSW Wildlife database, within 10km of the site?

Class	Family	Scientific	Common	Exotic	NSW Status	Commonwealth Status
Amphibia	Hylidae	Litoria aurea	Green and Golden Bell Frog	No	Endangered, Protected	Vulnerable
Amphibia	Myobatrachidae	Pseudophryne australis	Red-crowned Toadlet	No	Vulnerable, Protected	
Aves	Acanthizidae	Chthonicola sagittata	Speckled Warbler	No	Vulnerable, Protected	
Aves	Accipitridae	Circus assimilis	Spotted Harrier	No	Vulnerable, Protected	
Aves	Accipitridae	Haliaeetus leucogaster	White-bellied Sea-Eagle	No	Vulnerable, Protected	CAMBA
Aves	Accipitridae	Hieraaetus morphnoides	Little Eagle	No	Vulnerable, Protected	
Aves	Accipitridae	Lophoictinia isura	Square-tailed Kite	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Accipitridae	Pandion cristatus	Eastern Osprey	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Ardeidae	Botaurus poiciloptilus	Australasian Bittern	No	Endangered, Protected	Endangered
Aves	Ardeidae	Ixobrychus flavicollis	Black Bittern	No	Vulnerable, Protected	
Aves	Artamidae	Artamus cyanopterus cyanopterus	Dusky Woodswallow	No	Vulnerable, Protected	
Aves	Burhinidae	Burhinus grallarius	Bush Stone-curlew	No	Endangered, Protected	
Aves	Cacatuidae	Callocephalon fimbriatum	Gang-gang Cockatoo	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Cacatuidae	Calyptorhynchus lathami	Glossy Black-Cockatoo	No	Vulnerable, Protected, Category 2 Sensitive Species	
Aves	Ciconiidae	Ephippiorhynchus asiaticus	Black-necked Stork	No	Endangered, Protected	
Aves	Climacteridae	Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	No	Vulnerable, Protected	
Aves	Falconidae	Falco subniger	Black Falcon	No	Vulnerable, Protected	
Aves	Meliphagidae	Anthochaera phrygia	Regent Honeyeater	No	Critically Endangered Species, Protected	Critically Endangered
Aves	Meliphagidae	Epthianura albifrons	White-fronted Chat	No	Vulnerable, Protected	
Aves	Meliphagidae	Epthianura albifrons	White-fronted Chat population in the Sydney Metropolitan Catchment Management Area	No	Endangered Population, Vulnerable, Protected	
Aves	Meliphagidae	Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	No	Vulnerable, Protected	
Aves	Neosittidae	Daphoenositta chrysoptera	Varied Sittella	No	Vulnerable, Protected	
Aves	Petroicidae	Petroica boodang	Scarlet Robin	No	Vulnerable, Protected	
Aves	Petroicidae	Petroica phoenicea	Flame Robin	No	Vulnerable, Protected	
Aves	Petroicidae	Petroica rodinogaster	Pink Robin	No	Vulnerable, Protected	
Aves	Psittacidae	Glossopsitta pusilla	Little Lorikeet	No	Vulnerable, Protected	
Aves	Psittacidae	Lathamus discolor	Swift Parrot	No	Endangered, Protected, Category 3 Sensitive Species	Critically Endangered
Aves	Strigidae	Ninox connivens	Barking Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	

Class	Family	Scientific	Common	Exotic	NSW Status	Commonwealth Status
Aves	Strigidae	Ninox strenua	Powerful Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Tytonidae	Tyto tenebricosa	Sooty Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Gastropoda	Camaenidae	Meridolum corneovirens	Cumberland Plain Land Snail	No	Endangered	
Mammalia	Burramyidae	Cercartetus nanus	Eastern Pygmy-possum	No	Vulnerable, Protected	
Mammalia	Dasyuridae	Dasyurus maculatus	Spotted-tailed Quoll	No	Vulnerable, Protected	Endangered
Mammalia	Emballonuridae	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	No	Vulnerable, Protected	
Mammalia	Macropodidae	Petrogale penicillata	Brush-tailed Rock-wallaby	No	Endangered, Protected	Vulnerable
Mammalia	Molossidae	Mormopterus norfolkensis	Eastern Freetail-bat	No	Vulnerable, Protected	
Mammalia	Petauridae	Petaurus australis	Yellow-bellied Glider	No	Vulnerable, Protected	
Mammalia	Petauridae	Petaurus norfolcensis	Squirrel Glider	No	Vulnerable, Protected	
Mammalia	Phascolarctidae	Phascolarctos cinereus	Koala	No	Vulnerable, Protected	Vulnerable
Mammalia	Pteropodidae	Pteropus poliocephalus	Grey-headed Flying-fox	No	Vulnerable, Protected	Vulnerable
Mammalia	Vespertilionidae	Chalinolobus dwyeri	Large-eared Pied Bat	No	Vulnerable, Protected	Vulnerable
Mammalia	Vespertilionidae	Falsistrellus tasmaniensis	Eastern False Pipistrelle	No	Vulnerable, Protected	
Mammalia	Vespertilionidae	Miniopterus australis	Little Bentwing-bat	No	Vulnerable, Protected	
Mammalia	Vespertilionidae	Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	No	Vulnerable, Protected	
Mammalia	Vespertilionidae	Myotis macropus	Southern Myotis	No	Vulnerable, Protected	
Mammalia	Vespertilionidae	Scoteanax rueppellii	Greater Broad-nosed Bat	No	Vulnerable, Protected	
Reptilia	Elapidae	Hoplocephalus bungaroides	Broad-headed Snake	No	Endangered, Protected, Category 2 Sensitive Species	Vulnerable
Reptilia	Varanidae	Varanus rosenbergi	Rosenberg's Goanna	No	Vulnerable, Protected	
Flora	Anthericaceae	Caesia parviflora var. minor	Small Pale Grass-lily	No	Endangered, Protected	
Flora	Apocynaceae	Marsdenia viridiflora subsp. viridiflora	Marsdenia viridiflora R. Br. subsp. viridiflora population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	No	Endangered Population	
Flora	Campanulaceae	Wahlenbergia multicaulis	Tadgell's Bluebell in the local government areas of Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield	No	Endangered Population	
Flora	Casuarinaceae	Allocasuarina diminuta subsp. mimica	Allocasuarina diminuta subsp. mimica L.A.S.Johnson population in the Sutherland and Liverpool local government areas	No	Endangered Population	
Flora	Casuarinaceae	Allocasuarina glareicola		No	Endangered, Protected	Endangered
Flora	Convolvulaceae	Wilsonia backhousei	Narrow-leafed Wilsonia	No	Vulnerable, Protected	
Flora	Dilleniaceae	Hibbertia fumana		No	Critically Endangered Species, Protected	
Flora	Dilleniaceae	Hibbertia puberula		No	Endangered, Protected	
Flora	Dilleniaceae	Hibbertia sp. Bankstown		No	Critically Endangered Species, Protected	Critically Endangered
Flora	Dilleniaceae	Hibbertia stricta subsp. furcatula		No	Endangered, Protected	
Flora	Ericaceae	Epacris purpurascens var. purpurascens		No	Vulnerable, Protected	
Flora	Ericaceae	Leucopogon exolasius	Woronora Beard-heath	No	Vulnerable, Protected	Vulnerable
Flora	Fabaceae (Faboideae)	Dillwynia tenuifolia		No	Vulnerable, Protected	

Class	Family	Scientific	Common	Exotic	NSW Status	Commonwealth Status
Flora	Fabaceae (Faboideae)	Pultenaea aristata	Prickly Bush-pea	No	Vulnerable, Protected	Vulnerable
Flora	Fabaceae (Faboideae)	Pultenaea parviflora		No	Endangered, Protected	Vulnerable
Flora	Fabaceae (Faboideae)	Pultenaea pedunculata	Matted Bush-pea	No	Endangered, Protected	
Flora	Fabaceae (Mimosoideae)	Acacia bynoeana	Bynoe's Wattle	No	Endangered, Protected	Vulnerable
Flora	Fabaceae (Mimosoideae)	Acacia prominens	Gosford Wattle, Hurstville and Kogarah Local Government Areas	No	Endangered Population	
Flora	Fabaceae (Mimosoideae)	Acacia pubescens	Downy Wattle	No	Vulnerable, Protected	Vulnerable
Flora	Gyrostemonaceae	Gyrostemon thesioides		No	Endangered, Protected, Category 3 Sensitive Species	
Flora	Lamiaceae	Prostanthera saxicola	Prostanthera saxicola population in Sutherland and Liverpool local government areas	No	Endangered Population	
Flora	Myrtaceae	Callistemon linearifolius	Netted Bottle Brush	No	Vulnerable, Protected, Category 3 Sensitive Species	
Flora	Myrtaceae	Eucalyptus camfieldii	Camfield's Stringybark	No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Eucalyptus nicholii	Narrow-leaved Black Peppermint	No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Melaleuca deanei	Deane's Paperbark	No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Syzygium paniculatum	Magenta Lilly Pilly	No	Endangered, Protected	Vulnerable
Flora	Orchidaceae	Diuris aequalis	Buttercup Doubletail	No	Endangered, Protected, Category 2 Sensitive Species	Vulnerable
Flora	Orchidaceae	Pterostylis gibbosa	Illawarra Greenhood	No	Endangered, Protected, Category 2 Sensitive Species	Endangered
Flora	Orchidaceae	Pterostylis nigricans	Dark Greenhood	No	Vulnerable, Protected, Category 2 Sensitive Species	
Flora	Orchidaceae	Pterostylis saxicola	Sydney Plains Greenhood	No	Endangered, Protected, Category 2 Sensitive Species	Endangered
Flora	Poaceae	Deyeuxia appressa		No	Endangered, Protected	Endangered
Flora	Proteaceae	Grevillea parviflora subsp. parviflora	Small-flower Grevillea	No	Vulnerable, Protected	Vulnerable
Flora	Proteaceae	Persoonia hirsuta	Hairy Geebung	No	Endangered, Protected, Category 3 Sensitive Species	Endangered
Flora	Proteaceae	Persoonia nutans	Nodding Geebung	No	Endangered, Protected	Endangered
Flora	Rhamnaceae	Pomaderris prunifolia	P. prunifolia in the Parramatta, Auburn, Strathfield and Bankstown Local Government Areas	No	Endangered Population	
Flora	Thymelaeaceae	Pimelea spicata	Spiked Rice-flower	No	Endangered, Protected	Endangered

Data does not include records not defined as either endangered or vulnerable, and category 1 sensitive species are also excluded. NSW Office of Environment and Heritage's Atlas of NSW Wildlife, which holds data from a number of custodians. Data obtained 29/06/2017

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      (i) content provided to Lotsearch by third party content suppliers with whom Lotsearch has contractual arrangements or content which is freely available (**Third Party Content Suppliers**);
      (j) content which is derived from content described in paragraph (i);
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   (e) Lotsearch does not warrant that all land uses or features whether past or current are identified in the Report;
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   (i) the End User should undertake its own inspection s of the Property to satisfy itself that there are no defects or failures.
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APPENDIX C

Historical Land Titles

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

03rd July 2017

LOTSEARCH PTY LIMITED
Level 3, 68 Alfred Street,
MILSONS POINT, NSW 2061

Attention: Howard Waldron,

RE: **87 – 91 Nuwarra Road,**
Moorebank
Reference: LS001771

Note 1:

Current Search

Folio Identifier 110/235787 (title attached)
DP 235787 (plan attached)
Dated 30th June 2017
Registered Proprietor:
JOSE TEDDY SUGPATAN
TEREITA SUGPATAN

Title Tree
Lot 110 DP 235787

Folio Identifier 110/235787

Certificate of Title Volume 10746 Folio 140

Certificate of Title Volume 10249 Folio 241

Certificate of Title Volume 9843 Folio 249

Certificate of Title Volume 5169 Folio 183

Certificate of Title Volume 3646 Folio 136

Certificate of Title Volume 2720 Folio 70

****

Summary of Proprietor(s)
Lot 110 DP 235787

Year	Proprietor(s)
	(Lot 110 DP 235787)
2002 – todate	Jose Teddy Sugpatan Teresita Sugpatan
1999 – 2002	Robert Peter Zoghbi Mary Zoghbi
1995 – 1999	Hala Naghi
1994 – 1995	Willem Sterrenberg Ann Dorothy Sterrenberg
1987 – 1994	Cheryl Lynette Best Janet Lorraine Davy
	(**Lot 110 DP 235787 – CTVol 10746 Fol 140)**
1986 – 1987	Cheryl Lynette Best Janet Lorraine Davy
1979 – 1986	John Patrick Szybiak, clerk Dorothy Anne Szybiak, his wife
1974 – 1979	Nicholas John Gaudio, manager Louise Mary Gaudio, his wife
1968 – 1974	Harvey & Lucas Pty Limited
	(Lot 65 DP 228324 – CTVol 10249 Fol 241)
1966 – 1968	Harvey & Lucas Pty Limited
	(Lot3 DP511193 – CTVol 9843 Fol 249)
1965 – 1966	Harvey & Lucas Pty Limited Albert Max Lucas, bulldozer contractor John Fitzroy Harvey, bulldozer contractor George Frederick Edgecombe, rubberworker
	(Lot 200 DP 19128 – Area 3 Acres 3 Roods 30 ½ Perches – CTVol 5510 Fol 123)
1964 – 1965	Harvey & Lucas Pty Limited
1951 – 1964	John Fitzroy Harvey, bulldozer contractor Emily Harvey, widow
1947 – 1951	Ronald Lynton Maher, motor mechanic Mabel Pearce Maher, his wife
1947 – 1947	Elizabeth Jane McEllrath Hume, married woman
1945 – 1947	John Irvine, boiler maker

Cont.

Cont.

	(Lots 136 to 202 DP 19128 and other lands – CTVol 5169 Fol 183)
1940 – 1944	New Bankstown Limited
	(Part Portion 31 Parish Holsworthy and other lands – Area 1125 Acres 7 ¾ Perches – CTVol 3646 Fol 136)
1930 – 1940	New Bankstown Limited
1924 – 1930	The Greenacre Park Limited
	(Part Portion 31 Parish Holsworthy and other lands – Area 908 Acres 35 ¾ Perches – CTVol 2720 Fol 70)
1916 – 1924	The Church of England Property Trust Diocese of Sydney

****

Note 2:

Current Search

Folio Identifier 5/236405 (title attached)
DP 236405 (plan attached)
Dated 30th June 2017
Registered Proprietor:
DIONISSIOS CHRONOPOULOS
SOPHIA CHRONOPOULOS

Title Tree
Lot 5 DP 236405

Folio Identifier 5/236405

Certificate of Title Volume 10837 Folio 154

Certificate of Title Volume 10420 Folio 72

Certificate of Title Volume 5435 Folio 219

Certificate of Title Volume 5169 Folio 183

Certificate of Title Volume 3646 Folio 136

Certificate of Title Volume 2720 Folio 70

****

Summary of Proprietor(s)
Lot 5 DP 236405

Year	Proprietor(s)
	(Lot 5 DP 236405)
1988 – todate	Dionissios Chronopoulos Sophia Chronopoulos
	(Lot 5 DP 236405 – CTVol 10837 Fol 154)
1984 – 1988	Dionissios Chronopoulos Sophia Chronopoulos
1979 – 1984	Almad Hebous, welder Salam Hebous, his wife
1975 – 1979	Naef Boumar, baker Samira Boumar, his wife
1973 – 1975	Santosh Kumar Mukherje, medical practioner Suzanne Kay Mukherje, his wife
1969 – 1973	Ronald Frank Thomas, production manager Anne Denise Thomas, stenographer
1968 – 1969	Rodlin Pty Limited
1968 – 1968	Wood Green Estates Pty. Limited
	(Lot 2 DP 230908 – CTVol 10420 Fol 72)
1967 – 1968	Wood Green Estates Pty. Limited.
1966 – 1967	Charles Joseph Nelson Pashley, poultry farmer
	(Lot 199 DP 19128 – Area 3 Acres 2 Roods 23 ¼ Perches – CTVol 5435 Fol 219)
1944 – 1966	Charles Joseph Nelson Pashley, poultry farmer
	(Lots 136 to 202 DP 19128 and other lands – CTVol 5169 Fol 183)
1940 – 1944	New Bankstown Limited
	(Part Portion 31 Parish Holsworthy and other lands – Area 1125 Acres 7 ¾ Perches – CTVol 3646 Fol 136)
1930 – 1940	New Bankstown Limited
1924 – 1930	The Greenacre Park Limited
	(Part Portion 31 Parish Holsworthy and other lands – Area 908 Acres 35 ¾ Perches – CTVol 2720 Fol 70)
1916 – 1924	The Church of England Property Trust Diocese of Sydney

****

Note 3:

Current Search

Folio Identifier 6/236405 (title attached)
DP 236405 (plan attached)
Dated 30th June 2017
Registered Proprietor:
FAIZAL FREDERIC NAIR
VIKASHNI NAND

Title Tree
Lot 6 DP 236405

Folio Identifier 6/236405

Certificate of Title Volume 10837 Folio 155

Certificate of Title Volume 10420 Folio 72

Certificate of Title Volume 5603 Folio 29

Certificate of Title Volume 5169 Folio 183

Certificate of Title Volume 3646 Folio 136

Certificate of Title Volume 2720 Folio 70

****

Summary of Proprietor(s)
Lot 6 DP 236405

Year	Proprietor(s)
	(Lot 6 DP 236405)
2006 – todate	Faizal Frederic Nair Vikashni Nand
1995 – 2006	Yana Segran Nair Samson Cedric Nair Maimum Nisha
1988 – 1995	Edward James Childs Carole Ann Childs
	(Lot 6 DP 236405 – CTVol 10837 Fol 155)
1970 – 1988	Edward James Childs Carole Ann Childs
1968 – 1970	Rodlin Pty Limited
1968 – 1968	Wood Green Estates Pty. Limited
	(Lot 2 DP 230908 – CTVol 10420 Fol 72)
1967 – 1968	Wood Green Estates Pty. Limited.
1966 – 1967	Daphne Maud Pashley, wife of Charles Joseph Nelson Pashley, poultry farmer
	(Lot 198 DP 19128 – Area 3 Acres 1 Rood 38¼ Perches – CTVol 5603 Fol 29)
1947 – 1966	Daphne Maud Pashley, wife of Charles Joseph Nelson Pashley, poultry farmer
1946 – 1947	Glen William Gardner, iron worker
	(Lots 136 to 202 DP 19128 and other lands – CTVol 5169 Fol 183)
1940 – 1946	New Bankstown Limited
	(Part Portion 31 Parish Holsworthy and other lands – Area 1125 Acres 7 ¾ Perches – CTVol 3646 Fol 136)
1930 – 1940	New Bankstown Limited
1924 – 1930	The Greenacre Park Limited
	(Part Portion 31 Parish Holsworthy and other lands – Area 908 Acres 35 ¾ Perches – CTVol 2720 Fol 70)
1916 – 1924	The Church of England Property Trust Diocese of Sydney

****

Land & Property Information

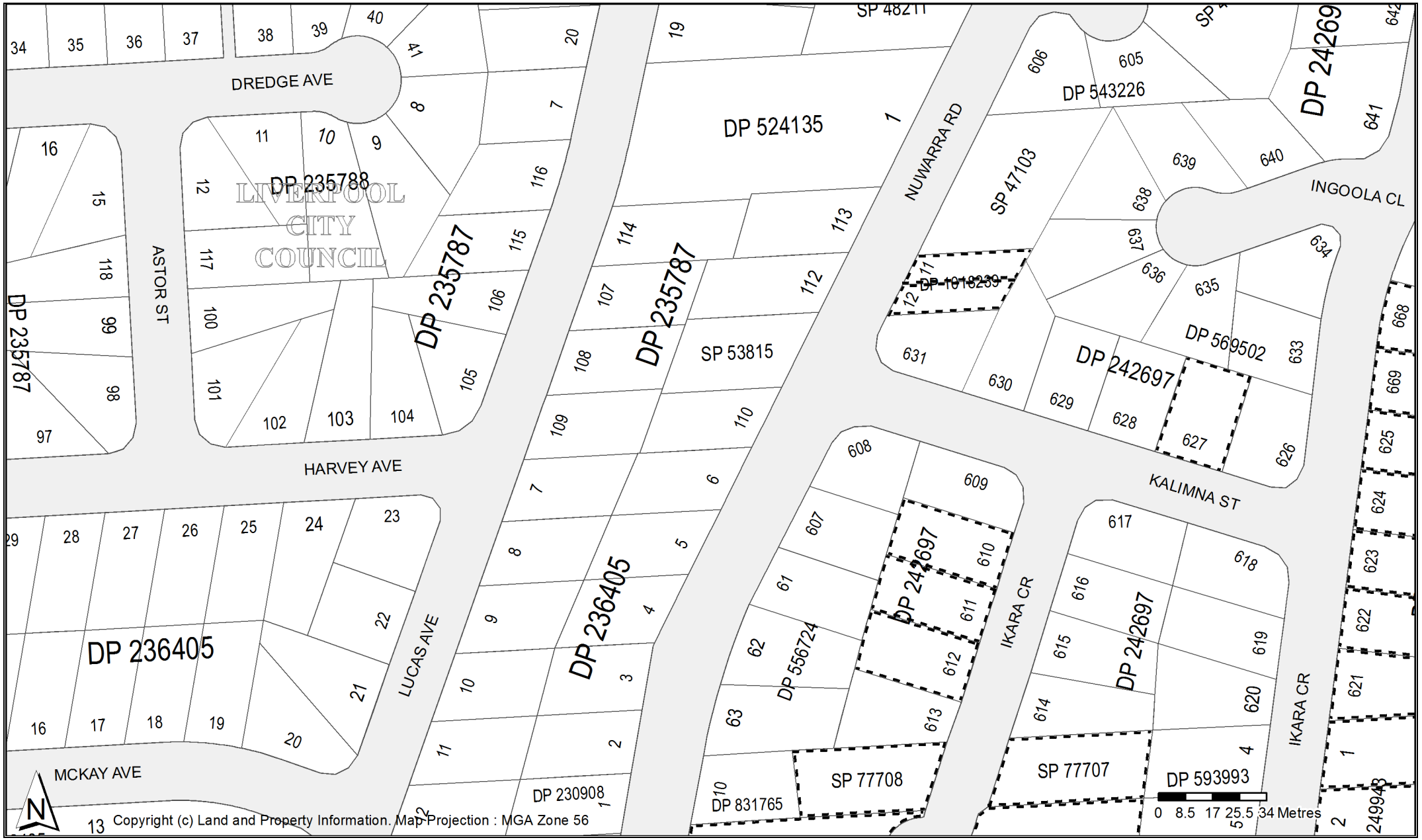
Cadastral Records Enquiry Report

Ref : Lotsearch - Smeaton Grange

Requested Parcel : Lot 110 DP 235787

Identified Parcel : Lot 110 DP 235787

Locality : MOOREBANK **LGA :** LIVERPOOL **Parish :** HOLSWORTHY **County :** CUMBERLAND



Report Generated 4:38:42 PM, 30 June, 2017

This information is provided as a searching aid only. While every endeavour is made to ensure the current cadastral pattern is accurately reflected, the Registrar General cannot guarantee the information provided. For all ACTIVITY PRIOR to SEPT 2002 you must refer to the RGs Charting and Reference Maps.

Requested Parcel : Lot 110 DP 235787 **Identified Parcel :** Lot 110 DP 235787

Locality : MOOREBANK **LGA :** LIVERPOOL **Parish :** HOLSWORTHY **County :** CUMBERLAND

	Status	Surv/Comp	Purpose
DP242697			
Lot(s): 610, 611, 612			
DP1231943	PRE-ALLOCATED	UNAVAILABLE	CONSOLIDATION
SP95652	PRE-ALLOCATED	UNAVAILABLE	STRATA PLAN
Lot(s): 627			
DP1224372	PRE-ALLOCATED	UNAVAILABLE	SUBDIVISION
Lot(s): 621, 622, 623, 624, 625			
DP1179067	REGISTERED	SURVEY	SUBDIVISION
DP242698			
Lot(s): 668, 669			
DP1179067	REGISTERED	SURVEY	SUBDIVISION
DP249943			
Lot(s): 1, 2			
DP1179067	REGISTERED	SURVEY	SUBDIVISION
DP1185023	REGISTERED	SURVEY	EASEMENT
DP1018239			
Lot(s): 11, 12			
DP788919	HISTORICAL	SURVEY	SUBDIVISION
SP77707			
DP831765	HISTORICAL	SURVEY	SUBDIVISION
DP1055037	REGISTERED	COMPILATION	EASEMENT
DP1102615	REGISTERED	SURVEY	SUBDIVISION
SP77708			
DP831765	HISTORICAL	SURVEY	SUBDIVISION
DP1055037	REGISTERED	COMPILATION	EASEMENT
DP1102615	REGISTERED	SURVEY	SUBDIVISION
SP87494			
DP382444	HISTORICAL	COMPILATION	UNRESEARCHED
DP569246	HISTORICAL	SURVEY	SUBDIVISION
DP1055037	REGISTERED	COMPILATION	EASEMENT
DP1158289	REGISTERED	SURVEY	SUBDIVISION
SP88958			
DP382444	HISTORICAL	COMPILATION	UNRESEARCHED
DP569246	HISTORICAL	SURVEY	SUBDIVISION
DP1055037	REGISTERED	COMPILATION	EASEMENT
DP1158289	REGISTERED	SURVEY	SUBDIVISION

Caution: For all **ACTIVITY PRIOR to SEPT 2002** you must refer to the RGs Charting and Reference Maps.

Requested Parcel : Lot 110 DP 235787 **Identified Parcel :** Lot 110 DP 235787

Locality : MOOREBANK **LGA :** LIVERPOOL **Parish :** HOLSWORTHY **County :** CUMBERLAND

Plan	Surv/Comp	Purpose
DP230908	SURVEY	SUBDIVISION
DP235787	SURVEY	SUBDIVISION
DP235788	SURVEY	SUBDIVISION
DP236405	SURVEY	SUBDIVISION
DP237025	SURVEY	SUBDIVISION
DP242697	SURVEY	SUBDIVISION
DP242698	SURVEY	SUBDIVISION
DP249943	SURVEY	SUBDIVISION
DP524135	COMPILATION	SUBDIVISION
DP543226	SURVEY	SUBDIVISION
DP556724	SURVEY	SUBDIVISION
DP569502	COMPILATION	SUBDIVISION
DP593993	COMPILATION	SUBDIVISION
DP831765	SURVEY	SUBDIVISION
DP1018239	SURVEY	SUBDIVISION
SP45939	COMPILATION	STRATA PLAN
SP47103	COMPILATION	STRATA PLAN
SP48211	COMPILATION	STRATA PLAN
SP53815	COMPILATION	STRATA PLAN
SP77707	COMPILATION	STRATA PLAN
SP77708	COMPILATION	STRATA PLAN
SP87494	COMPILATION	STRATA PLAN
SP88958	COMPILATION	STRATA PLAN

[redacted]

CERTIFICATE OF TITLE

NEW SOUTH WALES : ...OPERTY ACT, 1900, as amended.

Application No. 7206
Prior Titles Volume 5510 Folio 1[redacted]
Volume 6871 Folios 78 and 79
Volume 9398 Folio 130

Vol. 9843 Fol. 249
1st Edition issued 19-10-1964

ID

CANCELLED

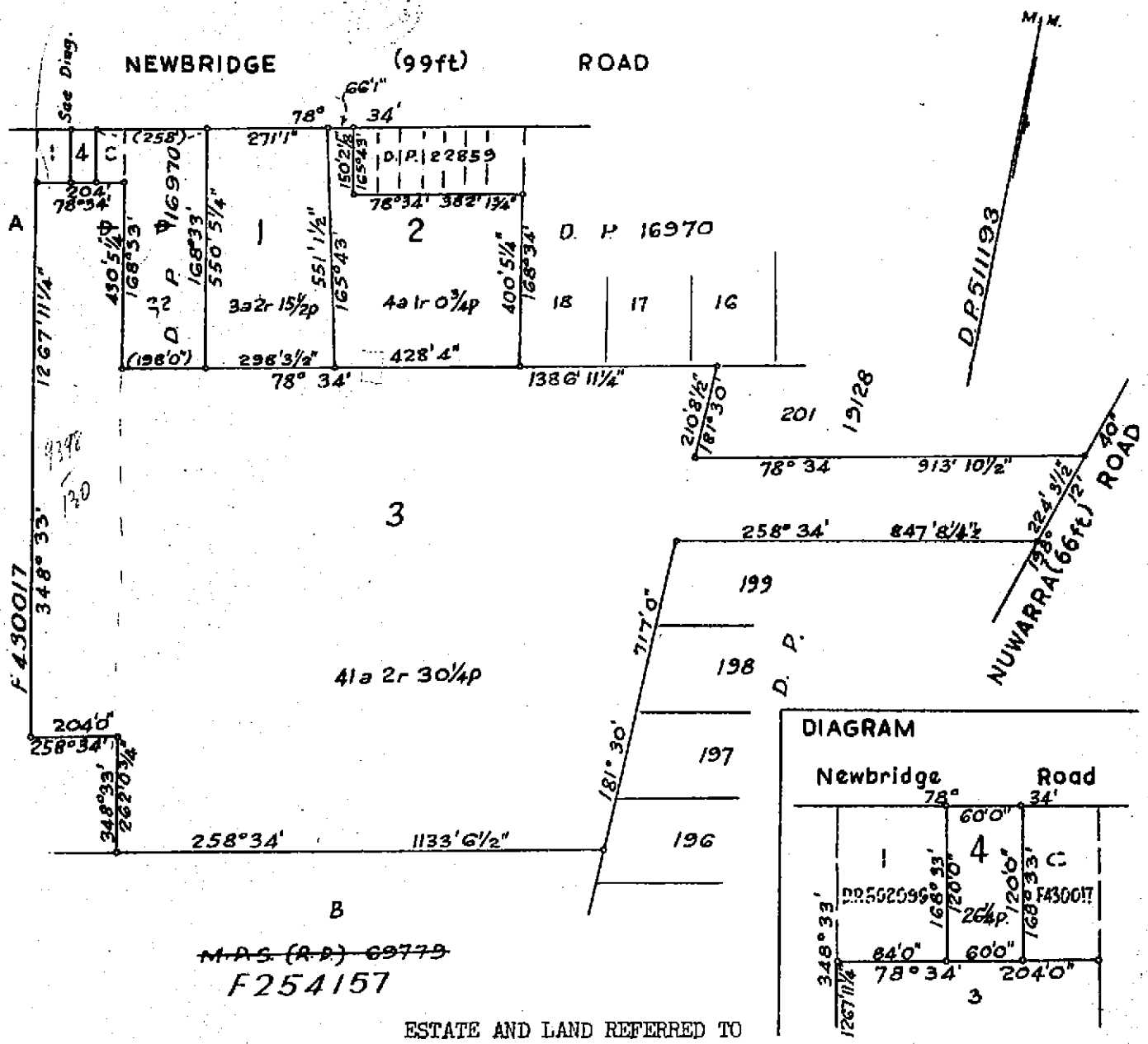
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness A.B. Cohen

Registrar General.

(Page 1) Vol. 9843 Fol. 249

PLAN SHOWING LOCATION OF LAND



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 3 in Deposited Plan 511193 at Moorebank in the City of Liverpool Parish of Holsworthy and County of Cumberland being part of Portion 33 granted to Lawrence Richards on 12-3-1800, part of Portion 32 granted to Andrew Cunningham on 11-8-1804, part of Portion 56 granted to Thomas Moore on 18-12-1805 and part of Portion 31 granted to Thomas Moore on 26-11-1818.

FIRST SCHEDULE (continued overleaf)

~~HARVEY & LUCAS PTY. LIMITED as to that part of the land above described formerly comprised in Certificate of Title Volume 5510 Folio 123, JOHN FITZROY HARVEY and ALBERT MAX LUCAS, both of Moorebank, Bulldozer Contractors, as Tenants in Common as to that part formerly comprised in Certificates of Title Volume 6871 Folios 78 and 79 respectively and GEORGE FREDERICK EDGECOMBE, of Moorebank, Rubber Worker, as to that part formerly comprised in Certificate of Title Volume 9398 Folio 130.~~

Registrar General

SECOND SCHEDULE (continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grants above referred to.
2. Covenant created by Transfer No.B221743 affecting part.
3. ~~Mortgage No.H790320 of that part of the land above described formerly comprised in Certificates of Title Volume 6871 Folios 78 and 79 to Raymond Eric Cottrill of Gampsie, Business Controller Entered 23-6-1961.~~ Discharged K3231
4. ~~Mortgage No. H790322 of that part of the land above described formerly comprised in Certificate of Title Volume 5510 Folio 123 to Raymond Eric Cottrill of Gampsie, Business Controller Entered 23-6-1961.~~ Discharged K7001
5. ~~Caveat No.J654080 as regards the part of the land above described formerly comprised in Certificate of Title Volume 9398 Folio 130 Entered 23-6-1964.~~ Withdrawn dee J885348

Registrar General

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

ST 1608 V. C. N. BLIGHT, GOVERNMENT PRINTER

Vol. 9843 Fol. 249

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
Harvey & Lucas Pty Limited as to that part of the land above described formerly comprised in Certificate of Title Volume 5510 Folio 123 John Fitzroy Harvey and Albert Mace Lucas, both of Moorebank, Bulldozer Contractors, as Tenants in Common as to that part formerly comprised in Certificates of Title Volume 6871 Folios 78 and 79 respectively and W. J. Burke Investments Pty. Limited, as to that part formerly comprised in Certificate of Title Volume 9398 Folio 130.	Transfer	J805887	22-10-1964	24-5-1965	
This deed is cancelled as to the lots covered					
New Certificates of Title have ~~issued for lots in~~					
~~Deposited~~ Plan No. 228324 as follows:-					
Lots 1 to 65 Vol. 10249 Fols. 177-241 respectively					

REGISTRAR GENERAL

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar General	CANCELLATION		
~~Mortgage~~ Mortgage	K32332	15.2.1965	to Goodacre Development Pty. Limited being those parts formerly comprised in Certificate of Title Vol. 6871 Fols. 78 and 79 and Vol. 9398 Fol. 130	16.8.1965				
Mortgage	K47782	13.7.1965	to Goodacre Development Pty Limited of part being the land formerly comprised in Certificate of Title Vol. 9398 Fol. 130	16.8.1965				
	K233163.		Interests created pursuant to Section 88B Conveyancing Act, 1919 by the registration of Deposited Plan 228324	2-2-1966.				
			The interest of the Council of the City of Liverpool in the new roads shown on D.P. 228324	2-2-1966				
			~~West Terrace~~ on D.P. 228324. No dealing to be regd. without ref. to S.B.					

(Page 2 of 2 pages)

FORM No. 62

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

CT. folio in front from J805887(H) J815348 K7001 K32332 (H) K47782 K Enc. K200951 Lots 1-65 DPs D.P. 228324 5-8-66 Encl. for D.P. 228324 which see

[redacted]FICATE OF TITLE

NEW SOUTH WALES

RTY ACT, 1900, as amended.

Application No. 7206
Prior Title Vol. 9843 Fol. 249

Vol. 10249 Fol. 241

CANCELLED

Edition issued 25-2-1966

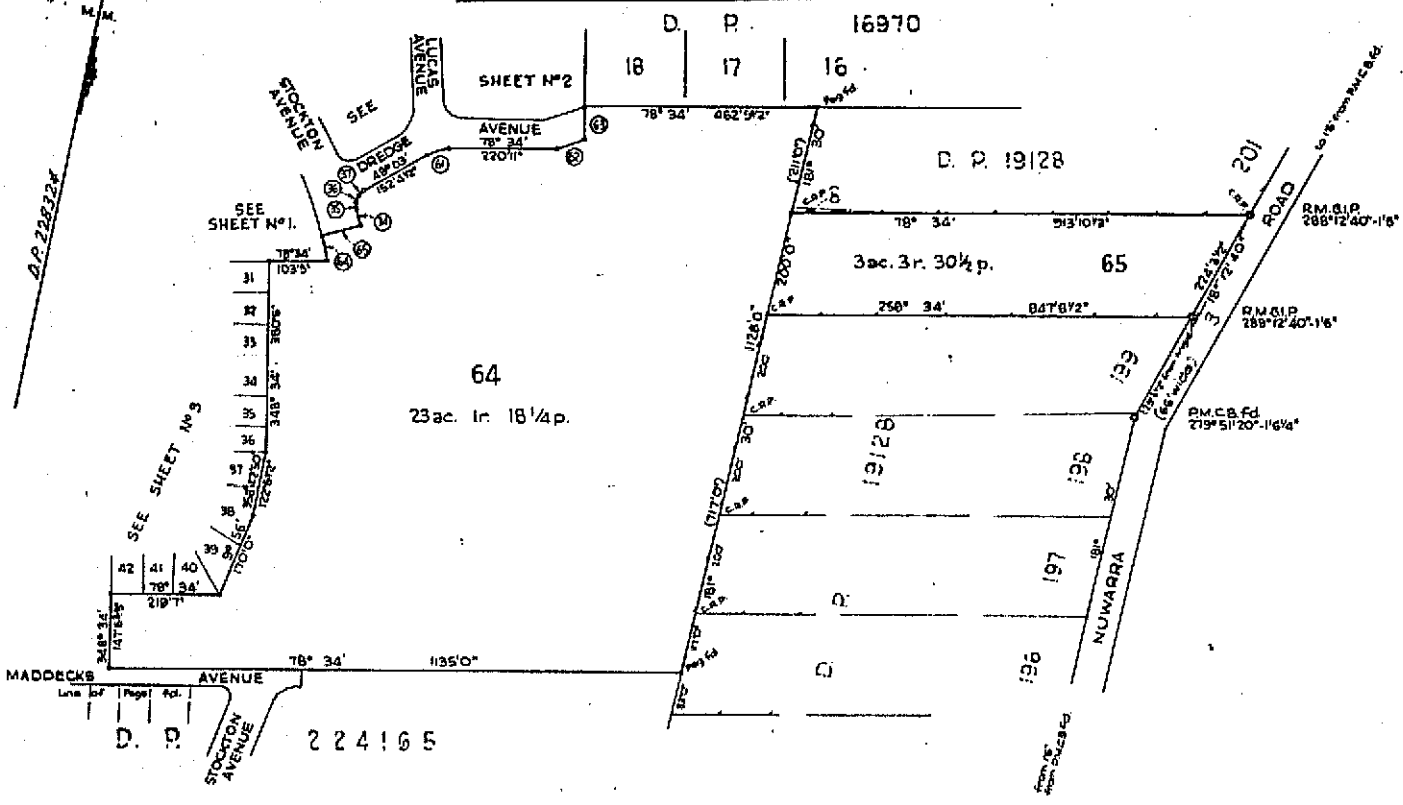
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness J. Charles

Registrar General.

REGISTRAR GENERAL N.S.W. SOUTH WALES

PLAN SHOWING LOCATION OF LAND



SCHEDULE OF SHORT BOUNDARIES

N°	BEARING	DIST.
53	164° 40'20"	16'10¾"
54	190° 01' 25"	"
55	215° 22' 30"	"
62	60° 30'40"	53'1"
63	348° 34'	65'13⅛"
64	63° 18' 10"	80'0"

SCHEDULE OF CURVED BOUNDARIES

N°	CHORD	ARC.	RAD.
60	152° 39'35" 23'11"	23'11"	1033'9"
61	63° 18' 30" 38'7¼"	39'0⅝"	73'4"
66	334° 46' 45" 31'8"	31'3"	953'9"

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 65 in Deposited Plan 228324 at Moorebank in the City of Liverpool Parish of Holsworthy and County of Cumberland being part of Portion 31 granted to Thomas Moore on 26-11-1818.

FIRST SCHEDULE (continued overleaf)

HARVEY & LUCAS PTY. LIMITED.

Registrar General.

SECOND SCHEDULE (continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.

Registrar General.

– PT 1 , 17 V.C.N. Blight, Government Printer

Vol. 10249 Fol 241

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR

This deed is cancelled as to PART
New Certificates of Title have issued on 28-2-1968
for lots in Deposited Plan No. 235786 as follows:-
Lots 79 to 91 Vol. 10746 Fol 113 to 125 respectively.
REGISTRAR GENERAL

This deed is cancelled as to the Remainder of Road
New Certificates of Title have issued on 28-2-1968
for lots in Deposited Plan No. 235787 as follows:-
Lots 96 to 118 Vol. 10746 Fol 126 to 148 respectively.
REGISTRAR GENERAL

This deed is cancelled as to the remainder of Road
New Certificates of Title have issued on 28-2-68
for lots in Deposited Plan No. 235788 as follows:-
Lots 12 Vol 10746 Fol 156 respectively.
REGISTRAR GENERAL

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION		
Encumbrance	K208933	10-12-1965	To the Council of the City of Liverpool The interest of the Council of the City of Liverpool in the land shown on DP235787	10-3-1966				
	K553996		Interests created pursuant to Section 888 Conveyancing Act, 1919, by the registration of Deposited Plan 235787	16-2-1968				
				16-2-1968				

(Page 2 of 2 pages)

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

[redacted]

TIFICATE OF TITLE

NEW SOUTH WALES — PERTY ACT, 1900, as amended.

Application No.7206

Prior Titles Vol.5435 Fol.219
Vol.5603 Fol. 29

MA

Vol. 10420 Fol. 72

Edition issued 20-10-1966

(Page 1) Vol. 10420 Fol. 72

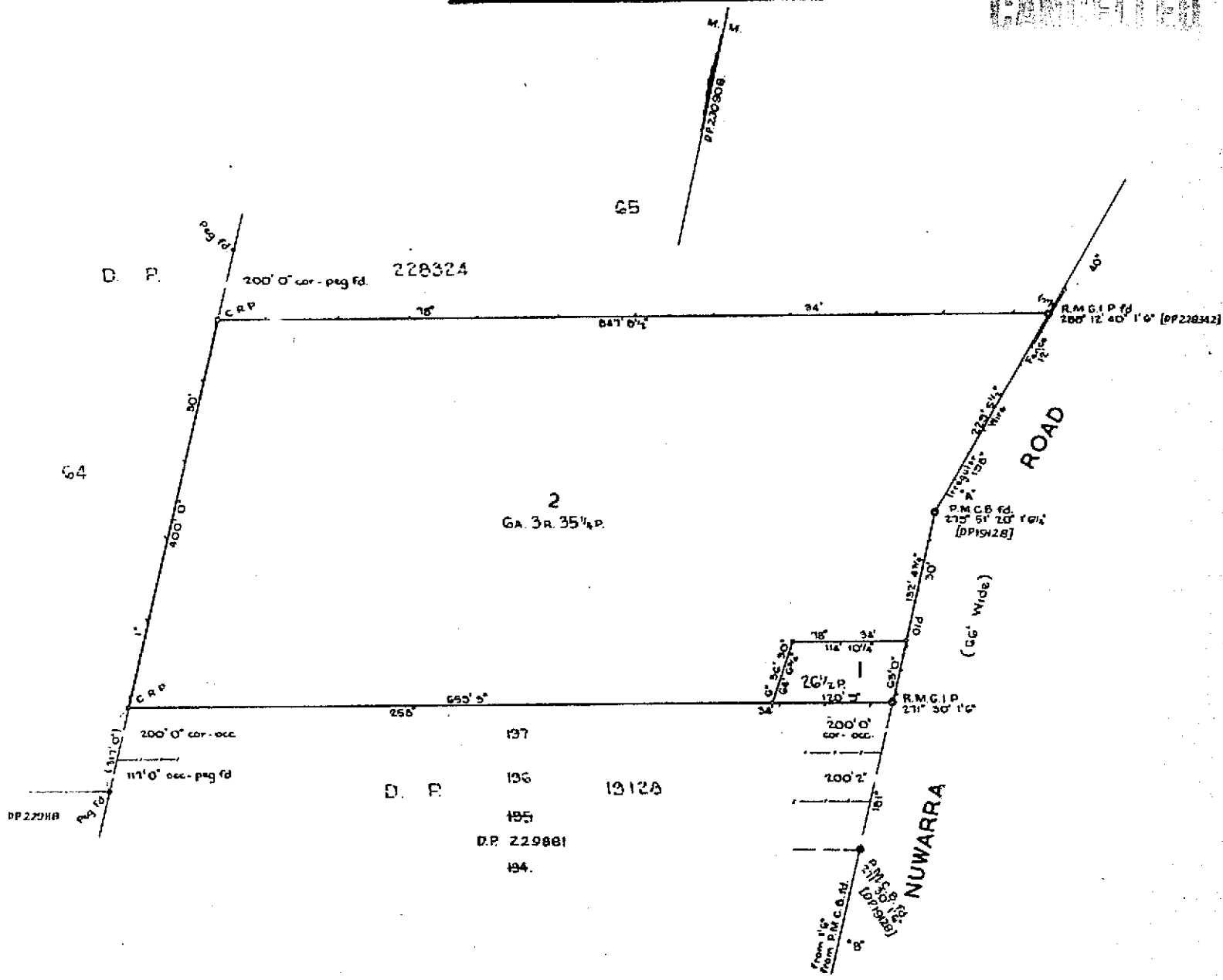
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness D. O'Sullivan.

Registrar General.

CANCELLED

PLAN SHOWING LOCATION OF LAND



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 2 in Deposited Plan 230908 at Moorebank in the City of Liverpool Parish of Holsworthy and County of Cumberland being part of Portion 31 granted to Thomas Moore on 26-11-1818.

FIRST SCHEDULE (continued overleaf)

~~CHARLES JOSEPH NELSON PASHLEY, of Moorebank, Poultry Farmer, as to that part of the land~~ above described ~~formerly comprised in Certificate of Title Volume 5435 Folio 219 and DAPHNE MAUD PASHLEY, wife of Charles Joseph Nelson Pashley, as to that part formerly comprised in Certificate of Title Volume 5603 Folio 29.~~

Registrar General.

SECOND SCHEDULE (continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.

Registrar General.

PT 1, 17 V.C.N. Blight, Government Printer

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General
Woodgreen Estates Pty. Limited	Transfers	K 601529 K 601530	2-8-1966	6-3-1967	

This deed is cancelled as to the whole/~~the residue~~ of the land therein described on 10-7-1968.

New folio(s) of title have been issued for lots in Deposited Plan No 236405 as follows:-

Lots 21030 Vol. 10837 Fol 151 to 179 respectively.

REGISTRAR GENERAL

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION		
Mortgage	K 601531	1-9-1966	to Charles Joseph Nelson Pashley of Moorebank Labourer of that part of the land within described formerly comprised in Certificate of Title Vol 5436 Fol 219	6-3-1967				
Mortgage	K 601532	1-9-1966	to Winifred Maud Pashley of Moorebank Married Woman of that part of the land without described formerly comprised in Certificate of Title Vol 5663 Fol 29	6-3-1967		Discharged	L 21020	
Mortgage	L 20574	5.4.1968	To Bank of New South Wales	6-3-1967		Discharged	L 21021	
			Interest of the Council of the city of Liverpool in the new roads shown on D.P. 236405	18-6-1968				
	L 82511		Interests created pursuant to Section 88B Conveyancing Act, 1919, by the registration of Deposited Plan 236405	19-6-1968				
				19-6-1968				

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

NEW SOUTH WALES

CATE OF TITLE

PERTY ACT, 1900, as amended.

Application No. 7206
Prior Title Vol. 10249 Fol. 241

Vol. 10746 Fol. 140

Edition issued 28-2-1968

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

SEE AUTO FOLIO

Registrar General.

PLAN SHOWING LOCATION OF LAND

SCHEDULE OF SHORT BOUNDARIES

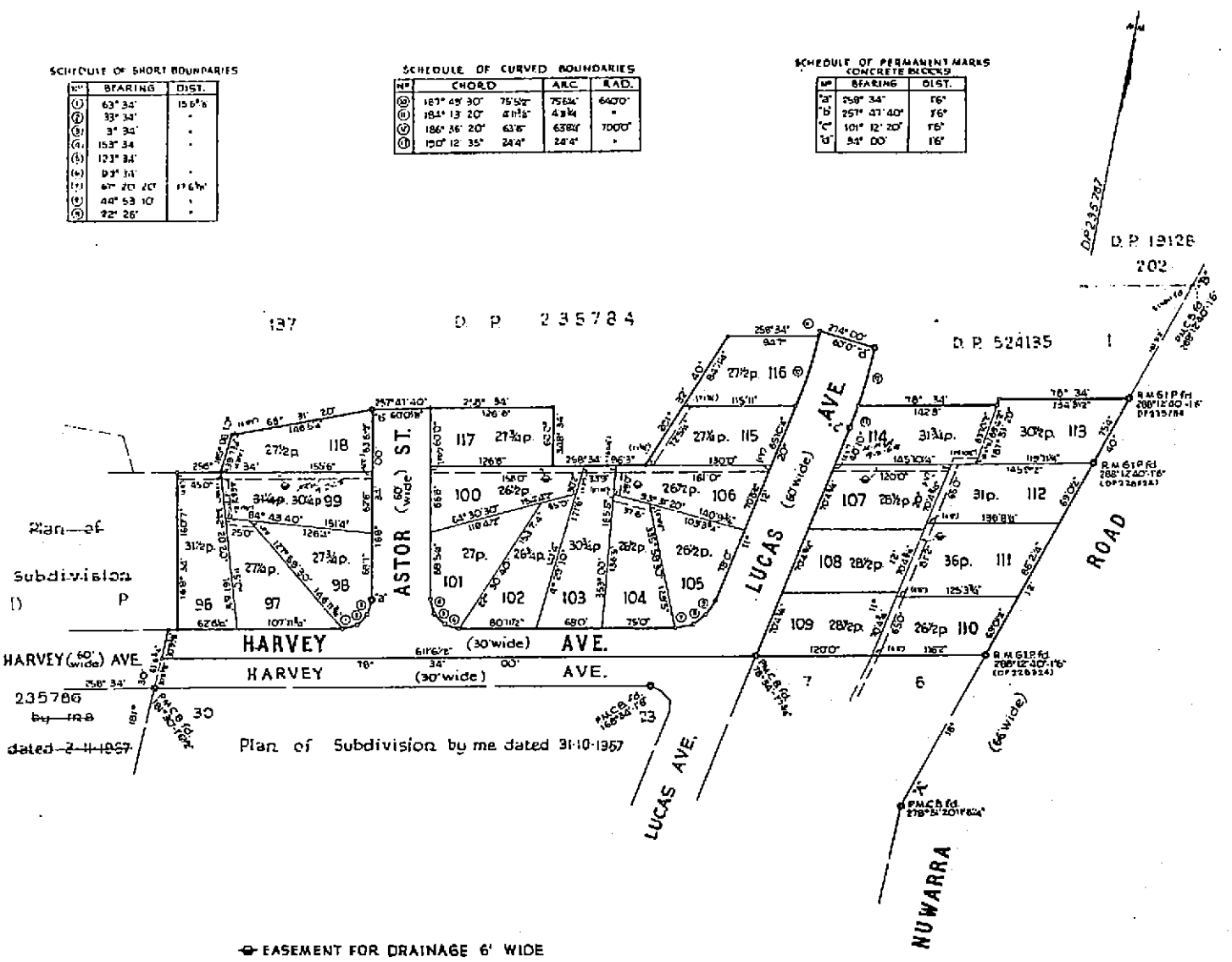
No.	BEARING	DIST.
(C)	63° 34'	15.6
(D)	33° 34'	"
(E)	3° 34'	"
(A)	153° 34'	"
(B)	123° 34'	"
(F)	93° 34'	"
(G)	67° 20' 20"	17.6
(H)	44° 53' 10"	"
(I)	22° 26'	"

SCHEDULE OF CURVED BOUNDARIES

No.	CHORD	ARC	RAD.
(J)	161° 49' 30"	75.52	6400
(K)	184° 13' 20"	41.18	"
(L)	186° 36' 20"	63.86	7000
(M)	150° 12' 35"	24.4	24.4

SCHEDULE OF PERMANENT MARKS CONCRETE BLOCKS

No.	BEARING	DIST.
"a"	258° 34'	16
"b"	257° 41' 40"	16
"c"	101° 12' 20"	16
"d"	94° 00'	16



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 110 in Deposited Plan 235787 at Moorebank in the City of Liverpool, Parish of Holsworthy and County of Cumberland being part of Portion 31 granted to Thomas Moore on 26-11-1818.

FIRST SCHEDULE (continued overleaf)

~~HARVEY & LUCAS PTY. LIMITED.~~

SECOND SCHEDULE (continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. ~~Encumbrance No. K208933 to The Council of the City of Liverpool. Entered 10-3-1966.~~ Discharged L86591
3. Easement for drainage affecting the part of the land above described 6 feet wide shown in plan hereon created by the registration of Deposited Plan 235787 See K953996.

Registrar General.

V. C. N. BLIGHT, GOVERNMENT PRINTER

Vol. 10746 Fol 140

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General
~~Nicholas John Gaudio of Cabramatta, Manager and Louise Mary Gaudio his wife as joint tenants~~	~~Transfers~~	~~N633657~~ N633658	~~12.11.1971~~ 30.11.1973	~~27.2.1974~~	
~~John Patrick Szybiak of Mount Pritchard, Clerk and Deborah Anne Szybiak his wife as joint tenants~~	~~Transfer~~	~~R216558~~	~~-----~~	~~17.5.1979~~	
Cheryl Lynette Best and Janet Lorraine Davy as joint tenants by Transfer W669954. Registered 23.12.1986.					

CANCELLED

SEE AUTO FOLIO

L865912 D/Enc. - 12 Encs. R

N633656 D/Enc. 7 Te. 8 Te. 9 mtge. P534501 D/mtge 2 mtge

R216557 D/mtge 5 Te R

R936318 mtge

W669953 D/mtge 5 Te R 55 mtge

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION		
~~Encumbrance~~	~~186592~~	~~20.12.1967~~	~~To the Council of the City of Bankstown~~	~~25-6-1968~~		Discharged	N633656	
~~Mortgage~~	~~N633659~~	~~30.11.1973~~	~~to Finance Corporation of Australia Limited~~	~~27.2.1974~~		Discharged	P534501	
~~Mortgage~~	~~P534502~~	~~-----~~	~~to Finance Corporation of Australia Limited~~	~~22-12-1975~~		Discharged	R216557	
~~Mortgage~~	~~R936318~~	~~-----~~	~~to The National Bank Savings Bank Limited.~~	~~23-7-1980~~		Discharged	W669953	
MC W669955 Mortgage to Commonwealth Savings Bank of Australia. Registered 23.12.1986								

(Page 2 of 2 pages)

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

NEW SOUTH WALES

CERTIFICATE OF TITLE

REAL PROPERTY ACT, 1900, as amended.

Appln. No. 7206
Prior Title Vol. 10420 Fol. 72

Vol. 10837 Fol. 154

RW Edition issued 10-7-1968

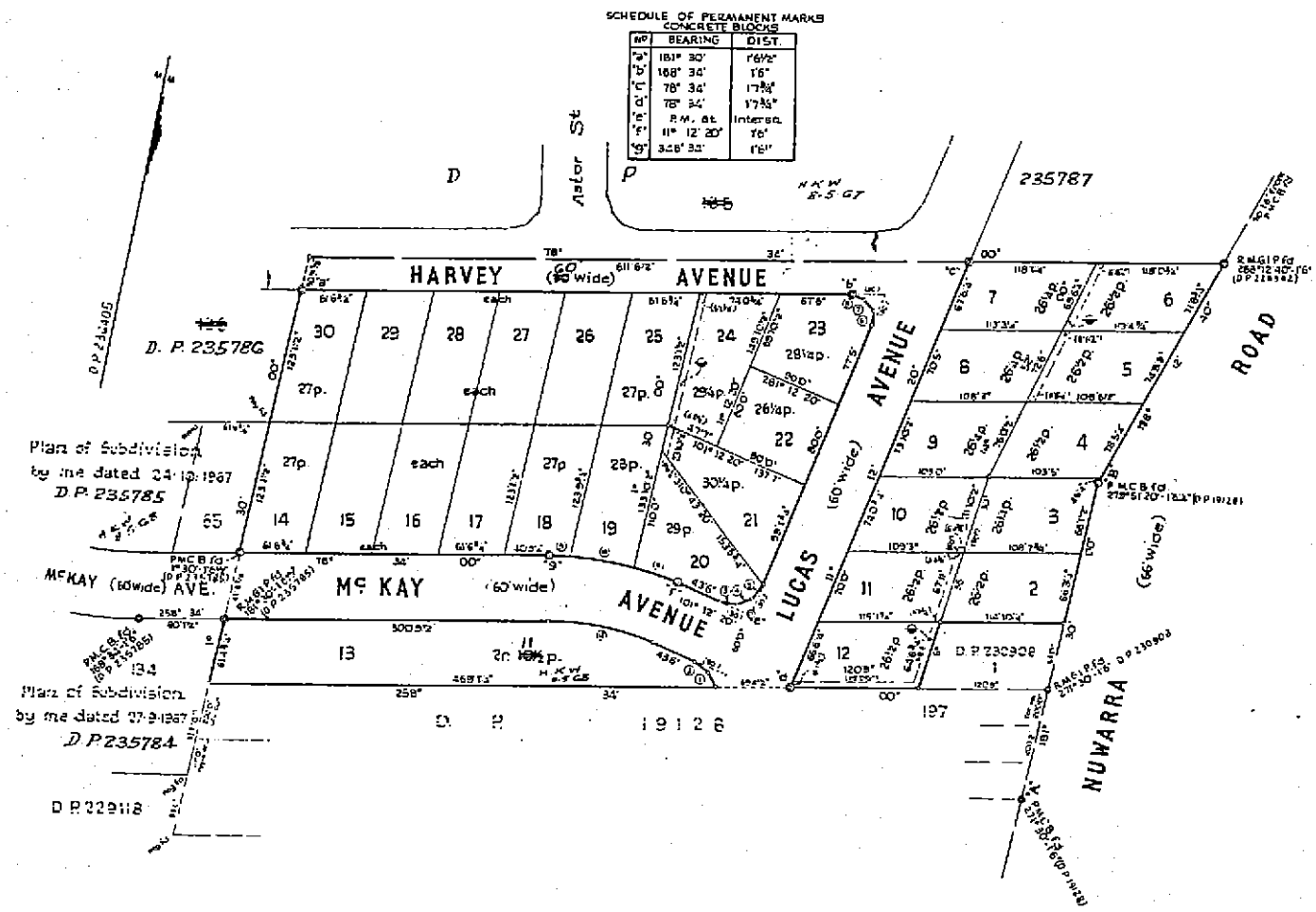
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness M Flint

CANCELLED
Registrar General.

SEE AUTO FOLIO

PLAN SHOWING LOCATION OF LAND



SCHEDULE OF SHORT BOUNDARIES

No	BEARING	DIST
①	326° 12' 20"	15·6½"
②	296° 12' 20"	"
③	86° 12' 20"	"
④	56° 12' 20"	"
⑤	26° 12' 20"	"
⑥	352° 26' 00"	12·10½"
⑦	314° 53' 10"	"
⑧	237° 20' 20"	"

SCHEDULE OF CURVED BOUNDARIES

No	CHORD	ARC	RAD
⑨	60° 28' 30"	20·7⅝"	310'0"
⑩	87° 56' 50"	60·1⅝"	60·2½"
⑪	87° 21' 30"	41·7½"	41·7½"
⑫	89° 53' 10"	98·1½"	250'0"

EASEMENT FOR DRAINAGE 6FT. WIDE.

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 5 in Deposited Plan 236405 at Moorebank in the City of Liverpool, Parish of Holsworthy, and County of Cumberland being part of Portion 31 granted to Thomas Moore on 26-11-1818.

~~WOOD GREEN ESTATES PTY. LIMITED.~~

FIRST SCHEDULE (Continued overleaf)

SECOND SCHEDULE (Continued overleaf)

GRY 1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
~~2. Mortgage No. L20574 to Bank of New South Wales. Entered 18-6-1968.~~ Discharged L163535
ED(SB) 3. Easement for drainage affecting the part of the land above described 6ft. wide shown in the plan hereon created by the registration of Deposited Plan 236405 See L82511.

Registrar General.

Vol. 10837 Fol 154

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General
~~Rodin Pty. Limited.~~	~~Transfer~~	~~L276329~~	~~12-12-1968~~	~~20-12-1968~~	
~~Ronald Frank Thomas, Production Manager and Ann Denise Thomas, Stenographer both of Beverley North as joint tenants.~~	~~Transfer~~	~~L617476~~	~~22-10-1969~~	~~30-10-1969~~	
~~Santosh Kumar Mukherjee of Liverpool, Medical Practitioner and Suzanne Kay Mukherjee his wife, as joint tenants.~~	~~Transfer~~	~~N284771~~	~~25-5-1973~~	~~14-6-1973~~	
~~Naef Bouomar of Bankstown, Baker and Samira Bouomar, his wife, as joint tenants~~	~~Transfer~~	~~P245845~~	~~——~~	~~15-5-1975~~	
~~Ahmad Hebous of Moorebank, Welder and Salam Hebous his wife as joint tenants.~~	~~Transfer~~	~~R276762~~	~~——~~	~~21-6-1979~~	
Dionissios Chronopoulos and Sophia Chronopoulos as joint tenants by Transfer V296597. Registered 27-8-1984.					

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION		
~~Caveat~~	~~L188274~~	~~14-5-1965~~		~~30-5-1965~~		Withdrawn	L276328	
~~Mortgage~~	~~L276329~~	~~6-12-1968~~	~~to Florence Anne Rogers of Coogee, Marageese.~~	~~20-12-1968.~~		~~Discharged~~	~~L566025~~	
~~Mortgage~~	~~L566026~~	~~20. 8. 1969~~	~~to Pontiac Pty Limited and Chevrolet Investments Pty Limited~~	~~18. 9. 1969~~		~~Discharged~~	~~L617475~~	
~~Mortgage~~	~~L617477~~	~~25.9.1969~~	~~to St. George & Granville Permanent Building Society Limited~~	~~30.10.1969~~		Discharged	N284770.	
~~Mortgage~~	~~N284772~~	~~1-5-1973~~	~~to Commonwealth Savings Bank of Australia.~~	~~14-6-1973~~		Discharged	P245844	
~~Mortgage~~	~~P245846~~	~~——~~	~~to Australia and New Zealand Savings Bank Limited~~	~~15-5-1975~~		Discharged	R276761	
~~Mortgage~~	~~R276763~~	~~——~~	~~to Commonwealth Savings Bank of Australia.~~	~~21-6-1979~~		Discharged	S115884	
V296598. Mortgage to Commonwealth Savings Bank of Australia. Registered 27-8-1984.								

CANCELLED

SEE AUTO-FOLIO

(Page 2 of 2 pages)

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

NEW SOUTH WALES

CERTIFICATE OF TITLE

ERTY ACT, 1900, as amended.

Appln. No. 7206
Prior Title Vol. 10420 Fol. 72

Vol. 10837 Fol. 155

RW

Edition issued 10-7-1968

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 *MFlint*

CANCELLED

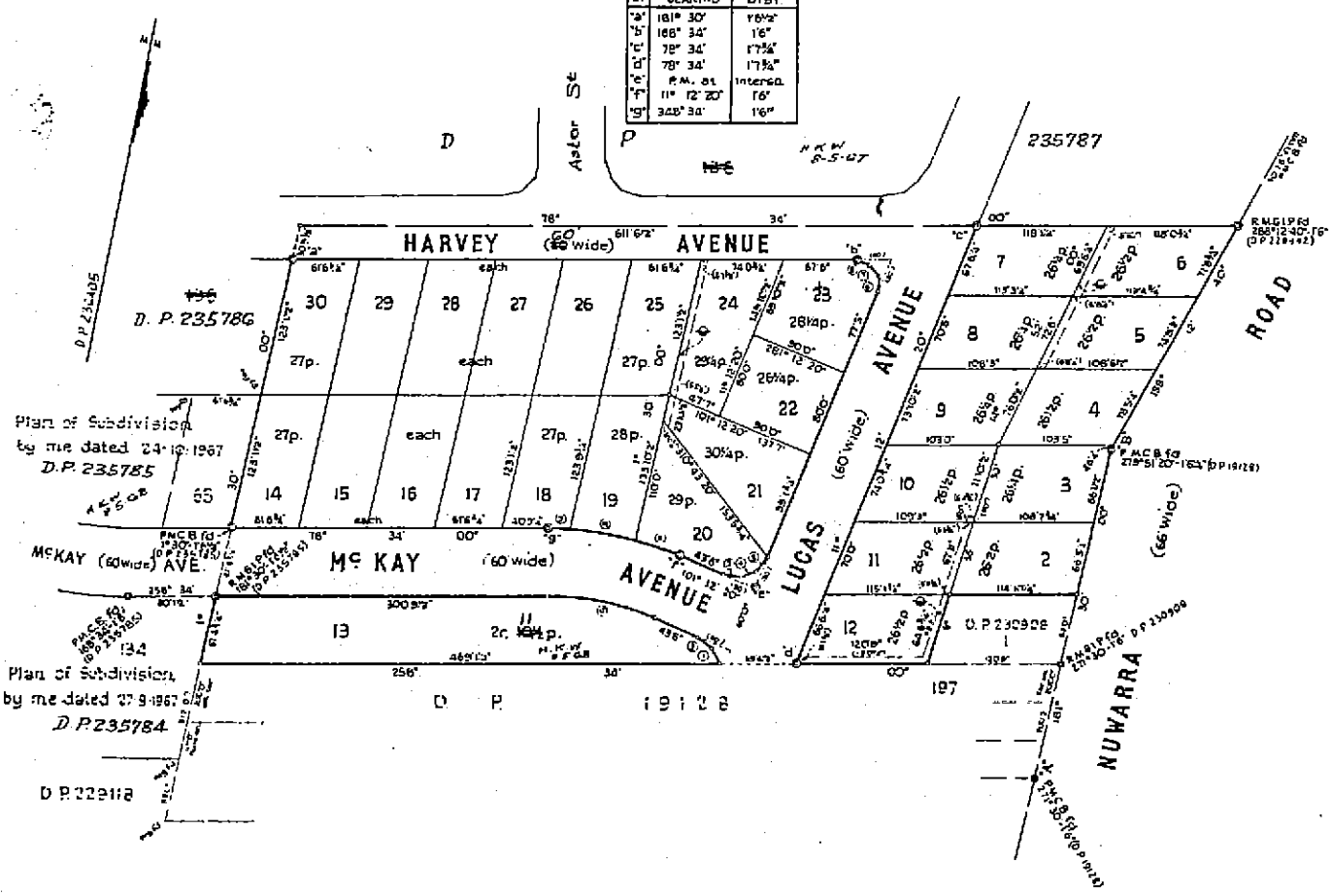
Registrar General.

SEE AUTO FOLIO

PLAN SHOWING LOCATION OF LAND

SCHEDULE OF PERMANENT MARKS CONCRETE BLOCKS

No	BEARING	DIST
'a'	181° 30'	176½"
'b'	168° 34'	176"
'c'	78° 34'	177¾"
'd'	78° 34'	177¾"
'e'	P.M. 61	Intersn.
'f'	11° 12' 20"	176"
'g'	348° 30'	176"



SCHEDULE OF SHORT BOUNDARIES

No	BEARING	DIST
①	326° 12' 20"	15·69⅛"
②	296° 12' 20"	"
③	86° 12' 20"	"
④	56° 12' 20"	"
⑤	26° 12' 20"	"
⑥	352° 26' 00"	12·10½"
⑦	314° 53' 10"	"
⑧	272° 20' 20"	"

SCHEDULE OF CURVED BOUNDARIES

No	CHORD	ARC	RAD
⑨	80° 28' 30" 20·73⅛"	20·77¾"	310·0"
⑩	87° 56' 50" 60·39⅝"	60·72½"	"
⑪	87° 21' 30" 41·77⅛"	41·79½"	"
⑫	89° 53' 10" 98·11½"	98·84"	250·0"

EASEMENT FOR DRAINAGE 6FT. WIDE.

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 6 in Deposited Plan 236405 at Moorebank in the City of Liverpool, Parish of Holsworthy, and County of Cumberland being part of Portion 31 granted to Thomas Moore on 26-11-1818.

~~WOOD GREEN ESTATES PTY. LIMITED.~~

FIRST SCHEDULE (Continued overleaf)

SECOND SCHEDULE (Continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. ~~Mortgage No. L20574 to Bank of New South Wales. Entered 18-6-1968. Discharged~~ L163535
3. Easement for drainage affecting the part of the land above described 6ft. wide shown in the plan hereon created by the registration of Deposited Plan 236405 See L82511.

Registrar General.

Vol. 10837 Fol 155

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General
~~Roddins Pty. Limited~~ Edward James Childs J Moorebank Bank Officer and Carole ~~Ann~~ Childs his wife as Joint Tenants	Transfer	L276329	12-12-1968	20-12-1968.	
	Transfer	L734680	30-1-1970	17-2-1970	

CANCELLED

SEE AUTO FOLIO

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION		
~~Caveat~~	~~L276329~~	~~12-12-1968~~		~~20-12-1968~~		Withdrawn	L276328	
~~Mortgage~~	L276334	6-12-1968	~~to C C Widross + Co. (Aust.) Pty. Limited~~	20-12-1968.		~~Discharged~~	L734679	
~~Mortgage~~	~~M313553~~	~~30-1-1970~~	~~to Bank of New South Wales~~	~~EX 6-1971~~		Discharged	N676322	
~~Mortgage~~	~~N676323~~	~~8-1-1974~~	~~to Custom Credit Corporation Limited~~	~~31-1-1974~~		Discharged	R907405	
~~Mortgage~~	~~P414601~~	~~------~~	~~to Custom Credit Corporation Limited~~	~~19-9-1975~~		Discharged	R907406	
~~Mortgage~~	~~R907407~~	~~------~~	~~to N.S.W. Permanent Building Society Limited~~	~~9-7-1980~~		Discharged	W81013	
W81014 Mortgage to Barclays Australia (Finance) Limited. Registered 20-12-1985.								

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

Form: 97-01T
Licence: MID/0734/97

TRANSFER

New South Wales
Real Property Act 1900

5582436H

Office of State Revenue use only

OFFICE OF STATE REVENUE (N.S.W. TREASURY)
CLIENT No 3323749 STAMP No. 292
STAMP DUTY 32.00 SIGNATURE
TRANSACTION No. 1 DATE 13-1-99
ASSESSMENT DETAILS:

(A) **LAND TRANSFERRED**

If appropriate, specify the share or part transferred.

FOLIO IDENTIFIER 110/235787

(B) **LODGED BY**

LTO Box	Name, Address or DX and Telephone
23L	CSB Reference (15 character max): 2114780O4

(C) **TRANSFEROR** HALA NAGHI

(D) acknowledges receipt of the consideration of $205,000.00 and as regards the land specified above transfers to the transferee an estate in fee simple.

(E) Encumbrances (if applicable): 1. 2. 3.

(F) **TRANSFEREE**

(G)

T **TS** (s713 LGA) **TW** (Sheriff)	**ROBERT PETER ZOGHBI and MARY ZOGHBI** **TENANCY:** Joint Tenants

(H) We certify this dealing correct for the purposes of the Real Property Act 1900. **DATE** 3.2.98

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

R Bannan
Signature of Witness

ROSE KANAAN
Name of Witness (BLOCK LETTERS)

5/36 Rossmore Ave, punchbowl
Address of Witness

SOLICITOR

Signature of Transferor

Signature of STEPHEN RITCHIE
Solicitor for the Transferee

Checked by (LTO use)

97-01T

TRANSFER

Real Property Act, 1900

0
244727 J

Office of State Revenue use only

$2.00 030595 602B 04 20095448?/03

(A) **LAND TRANSFERRED**

Show no more than 20 References to Title.
If appropriate, specify the share transferred.

FOLIO IDENTIFIER 6/236405

(B) **LODGED BY**

L.T.O. Box	Name, Address or DX and Telephone
568 Q	T J JOHNSON & CO 1/47 MEMORIAL AVENUE, LIVERPOOL NSW 2170 REFERENCE (max. 15 characters):

(C) **TRANSFEROR** EDWARD JAMES CHILDS AND CAROLE ANN CHILDS

(D) acknowledges receipt of the consideration of $170,000.00

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 TS (s713 LGA) TW (Sheriff)	YANA SEGRAN NAIR, SAMSON CEDRIC NAIR AND MAIMUM NISHA of 4 Wiruna Crescent, Narwee

(G) **TENANCY:** JOINT

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. **DATED** 28/4/95

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

Signature of Witness

DAI MASTERS
Name of Witness (BLOCK LETTERS)

161 GEORGE ST LIVERPOOL
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's solicitor

T J JOHNSON

CHECKED BY (office use only)

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

[redacted]

TRANSFER

Real Property Act, 1900

U 414800 F

Office of State Revenue use only

(A) **LAND TRANSFERRED**

Show no more than 20 References to Title.
If appropriate, specify the share transferred.

FOLIO IDENTIFIER 110/235787

(B) **LODGED BY**

L.T.O. Box	Name, Address or DX and Telephone
	GALLUZZO GOLOTTA ANDRIANO
	REFERENCE (max. 15 characters) 10330

(C) **TRANSFEROR** CHERYL LYNETTE BEST & JANET LORRAINE DAVY

(D) acknowledges receipt of the consideration of $172,500.00

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

WILLEM STERRENBERG & ANN DOROTHY STERRENBERG

(G) **TENANCY:** JOINT TENANTS

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. **DATED** 21.6.94

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

J Twomey
Signature of Witness

DAVID TWOMEY
Name of Witness (BLOCK LETTERS)

173-175 Bigg St, Liverpool.
Address of Witness

Cheryl Best Janet Davy
Signature of Transferor

Signed in my presence by the Transferee who is personally known to

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

Solicitor for G.M.V. Galluzzo
Signature of Transferee

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

CHECKED BY (office use only)

Plan Form 3—**TO BE USED WHERE IT IS INTENDED TO DEDICATE PUBLIC ROADS OR PUBLIC RESERVES OR CREATE DRAINAGE RESERVES, EASEMENTS, OR RESTRICTIONS AS TO USER.**

DP235787 (E)

OFFICE USE ONLY

Registered: 19·2·1968

C.A. 1967/80 of 20/12/1967

Title System: Torrens

Purpose: Subdivision

Ref. Map: DP2411

Last Plan DP235784 *

PLAN OF
SUBDIVISION OF PART
LOT 136 D.P. 235784

Scale: 80 feet to an inch

~~Map / Shire~~
City: LIVERPOOL
Locality: MOOREBANK
Parish: HOLSWORTHY
County: CUMBERLAND

I, Harold Keith Wright
of 2 Leeder Avenue Penshurst
a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan
is accurate and has been made *~~(1) by me (2)~~ under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and was completed on † 3·11·1967
Signature H K Wright
Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth: "A"-"B"

Statements of intention to dedicate public roads or public reserves or create drainage reserves, easements, or restrictions as to user.
(Signatures and Seals to appear in panel provided.)

It is intended to dedicate Harvey Avenue, Lucas Avenue & Astor Street as Public Roads.

*Pursuant to Sec. 88B of the Conveyancing Act 1919-1964 it is intended to create:-
1. Easements for Drainage 6' wide
2. Restriction as to user. M.K.W. 2.2.68
* Instrument filed as K953996

SCHEDULE OF SHORT BOUNDARIES

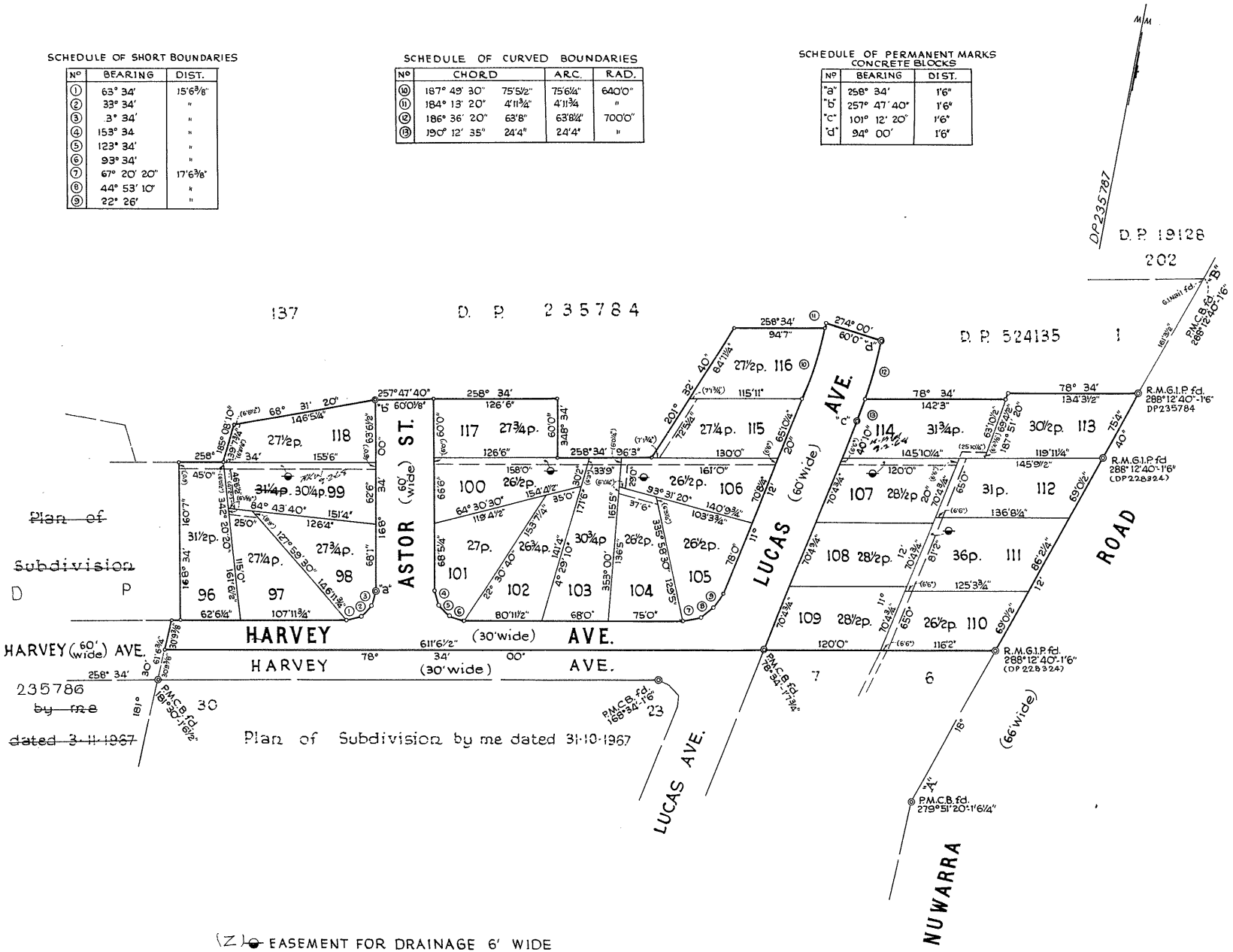
No	BEARING	DIST.
①	63° 34'	15'6 3/8"
②	33° 34'	"
③	3° 34'	"
④	153° 34	"
⑤	123° 34'	"
⑥	93° 34'	"
⑦	67° 20' 20"	17'6 3/8"
⑧	44° 53' 10"	"
⑨	22° 26'	"

SCHEDULE OF CURVED BOUNDARIES

No	CHORD		ARC.	RAD.
⑩	187° 49' 30"	75'5½"	75'6¼"	640'0"
⑪	184° 13' 20"	4'11¾"	4'11¾"	"
⑫	186° 36' 20"	63'8"	63'8¼"	700'0"
⑬	190° 12' 35"	24'4"	24'4"	"

SCHEDULE OF PERMANENT MARKS CONCRETE BLOCKS

No	BEARING	DIST.
"a"	258° 34'	1'6"
"b"	257° 47' 40"	1'6"
"c"	101° 12' 20"	1'6"
"d"	94° 00'	1'6"



~~Plan of Subdivision D P 235786 by me dated 3-11-1967~~

M.P.D.

WARNING. Plan Drawing only to appear in this space.

SURVEYOR'S REFERENCE: 1595/7/2

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION.

† Strike out either (1) or (2). Insert date of survey.

SCHEDULE OF SHORT BOUNDARIES

No	BEARING	DIST.
①	63° 34′	15′6⅜″
②	33° 34′	"
③	3° 34′	"
④	153° 34	"
⑤	123° 34′	"
⑥	93° 34′	"
⑦	67° 20′ 20″	17′6⅜″
⑧	44° 53′ 10″	"
⑨	22° 26′	"

SCHEDULE OF CURVED BOUNDARIES

No	CHORD		ARC.	RAD.
⑩	187° 49′ 30″	75′5½″	75′6¼″	640′0″
⑪	184° 13′ 20″	4′11¾″	4′11¾	"
⑫	186° 36′ 20″	63′8″	63′8¼″	700′0″
⑬	190° 12′ 35″	24′4″	24′4″	"

SCHEDULE OF PERMANENT MARKS CONCRETE BLOCKS

No	BEARING	DIST.
"a"	258° 34′	1′6″
"b"	257° 47′ 40″	1′6″
"c"	101° 12′ 20″	1′6″
"d"	94° 00′	1′6″

DP 235787 (E)

DP 235787

D. P. 19128

202

137

D. P. 235784

D. P. 524135 1

WARNING. Plan Drawing only to appear in this space.

Req:R950091 /Doc:DP 0235787 P /Rev:08-Oct-2002 /Sts:SC.OK /Pgs:ALL /Prt:30-Jun-2017 16:49 /Seq:2 of 3
Ref:als /Src:T

Plan of Subdivision D P 235786 by me dated 3-11-1967

Plan of Subdivision by me dated 31-10-1967

ASTOR (60′ wide) ST.

LUCAS (60′ wide) AVE.

HARVEY (60′ wide) AVE.

HARVEY (30′ wide) AVE.

LUCAS AVE.

NUWARRA ROAD (66′ wide)

96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118

R.M.G.I.P. fd. 288°12′40″-1′6″ DP235784

R.M.G.I.P fd 288°12′40″-1′6″ (DP228324)

R.M.G.I.P. fd. 288°12′40″-1′6″ (DP228324)

P.M.C.B. fd. 288°12′40″-1′6″

P.M.C.B. fd. 279°51′20″-1′6¼″

P.M.C.B. fd. 181°30′-1′6½″

P.M.C.B. fd. 169°34′-1′6″

P.M.C.B. fd. 78°34′-1′7¾″

(Z) EASEMENT FOR DRAINAGE 6′ WIDE

DP235787

OFFICE USE ONLY.

Registered: 3RE 19·3·1968

C.A. 1967/80 of 20/12/1967

Title System: Torrens

Purpose: Subdivision

Ref. Map: DP2411

Last Plan DP235784 *

PLAN OF

SUBDIVISION OF PART LOT 136 D.P. 235784

Scale: 80 feet to an inch

Mmg. / ~~Shire~~

City: LIVERPOOL

Locality: MOOREBANK

Parish: HOLSWORTHY

County: CUMBERLAND

I, Harold Keith Wright

of 2 Leeder Avenue Penshurst

a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan

*is accurate and has been made *~~(1) by me (2)~~ under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and was completed on †* 5.11.1967

Signature H K Wright

Surveyor registered under Surveyors Act, 1929, as amended. Datum Line of Asimuth. "A"-"B"

**Strike out either (1) or (2). †Insert date of survey.*

Statements of intention to dedicate public roads or public reserves or create drainage reserves, easements, or restrictions as to user.

(Signatures and Seals to appear in panel provided.)

It is intended to dedicate Harvey Avenue, Lucas Avenue & Astor Street as Public Roads.

*Pursuant to Sec. 88B of the Conveyancing Act 1919-1964 It is intended to create:-

1. Easements for Drainage 6' wide
2. Restriction as to user. N.S.W. 4336

* Instrument filed as K953996

SURVEYOR'S REFERENCE: 1595/7/2

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION.

SIGNATURES AND SEALS ONLY.

The Common Seal of the Council of the City of Liverpool was hereunto affixed on the 20th day of December 1967 pursuant to a resolution of Council passed on the 19th day of December, 1967.

MAYOR TOWN CLERK

P6875

THE COMMON SEAL OF HARVEY & LUCAS PTY LIMITED WAS HEREUNTO AFFIXED BY ORDER OF THE BOARD OF DIRECTORS IN THE PRESENCE OF:

SECRETARY.

JOHN FITZROY HARVEY
A JUSTICE OF THE PEACE

JOHN FITZROY HARVEY
BY HIS ATTORNEY

ALBERT MAX LUCAS
BY HIS ATTORNEY

THE COMMON SEAL OF TIMBERCREST PTY LIMITED WAS HEREUNTO AFFIXED BY ORDER OF THE BOARD OF DIRECTORS IN THE PRESENCE OF:

SECRETARY.

Council Clerk's Certificate.

I hereby certify that—

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

**(b) the requirements of section 348 of the †Metropolitan Water, Sewerage, and Drainage Act, 1924, as amended, †Hunter District Water, Sewerage, and Drainage Act, 1938, as amended,*

have been complied with by the applicant in relation to the proposed

Subdivision *(insert "new road" or "subdivision") set out herein.*

Subdivision No. 1967/80

Date 20th December, 1967

(Signature) Council Clerk.

**This part of certificate to be deleted where the application is only for the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water Sewerage and Drainage Board, and the Hunter District Water Board.*

†Delete if inapplicable.

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 235787

FEET	INCHES	METRES
-	9	0.229
1	6	0.457
1	6 1/4	0.464
1	6 1/2	0.470
1	7 3/4	0.502
4	11 3/4	1.518
6	-	1.829
6	0 1/4	1.835
6	0 1/2	1.842
6	1 1/4	1.861
6	3	1.905
6	3 1/8	1.908
6	4 3/8	1.940
6	6	1.981
6	9 1/4	2.064
7	1 3/4	2.178
8	5 1/4	2.572
15	6 3/8	4.734
16	1 5/8	4.918
17	6 3/8	5.344
24	4	7.417
25	-	7.620
25	10 1/4	7.880
29	-	8.839
30	-	9.144
30	2	9.195
30	9 3/8	9.382
33	9	10.287
35	-	10.668
37	6	11.430
39	7 3/4	12.084
40	10	12.446
41	2	12.548
45	-	13.716
46	6 1/2	14.186
51	4	15.646
60	-	18.288
60	0 1/8	18.291
61	6 3/4	18.764
62	6	19.050
62	6 1/4	19.056
63	6 1/2	19.368
63	8	19.406
63	8 1/4	19.412
63	10 1/2	19.469
65	-	19.812
65	10 1/4	20.072
66	-	20.117
66	6	20.269
68	-	20.726
68	1	20.752
68	5 1/4	20.860
69	0 1/2	21.044
69	4 1/2	21.146
70	4 3/4	21.457
70	8 1/4	21.546
72	5 1/4	22.079
75	-	22.860
75	4	22.962
75	5 1/2	23.000
75	6 1/4	23.019
78	-	23.774
80	11 1/2	24.676
81	2	24.740
84	11 1/4	25.889
86	2 1/4	26.270
94	7	28.829
96	3	29.337
103	3 3/4	31.490
107	11 3/4	32.912
115	-	35.052
115	11	35.331
116	2	35.408
119	4 1/2	36.386
119	11 1/4	36.557
120	-	36.576
125	3 3/4	38.195

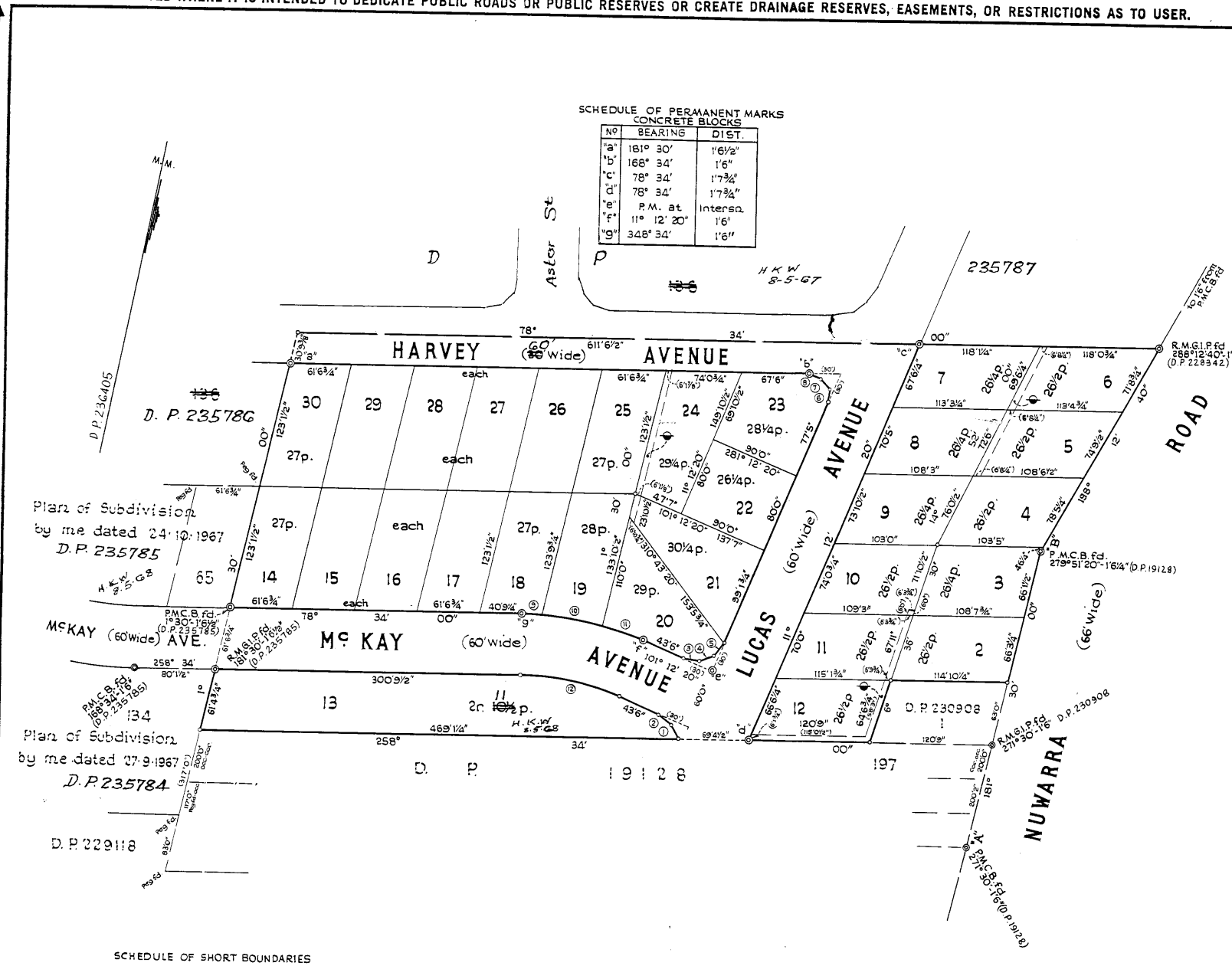
CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 235787 CONTINUED

FEET	INCHES	METRES
126	4	38.506
126	6	38.557
129	5	39.446
130	-	39.624
134	3 1/2	40.932
136	5	41.580
136	8 1/4	41.662
140	9 3/4	42.920
142	3	43.358
145	9 1/2	44.437
145	10 1/4	44.456
146	5 1/4	44.634
146	11 3/4	44.799
151	4	46.126
153	7 1/4	46.819
154	4 1/2	47.054
155	6	47.396
158	-	48.158
160	7	48.946
161	-	49.073
161	3 1/2	49.162
161	6 1/2	49.238
165	5	50.419
171	6	52.273
450	-	137.160
611	6 1/2	186.398
640	-	195.072
700	-	213.360
770	4 3/4	234.817
1115	11	340.131

AC	RD	P	SQ M
-	-	7 1/4	183.4
-	-	26 1/2	670.3
-	-	26 3/4	676.6
-	-	27	682.9
-	-	27 1/4	689.2
-	-	27 1/2	695.6
-	-	27 3/4	701.9
-	-	28 1/2	720.8
-	-	30 1/4	765.1
-	-	30 1/2	771.4
-	-	30 3/4	777.8
-	-	31	784.1
-	-	31 1/2	796.7
-	-	31 3/4	803
-	-	36	910.5

Plan Form 3—**TO BE USED WHERE IT IS INTENDED TO DEDICATE PUBLIC ROADS OR PUBLIC RESERVES OR CREATE DRAINAGE RESERVES, EASEMENTS, OR RESTRICTIONS AS TO USER.**



SCHEDULE OF SHORT BOUNDARIES

No	BEARING	DIST.
①	326° 12' 20"	15'6⅜"
②	296° 12' 20"	"
③	86° 12' 20"	"
④	56° 12' 20"	"
⑤	26° 12' 20"	"
⑥	352° 26' 00"	12'10½"
⑦	314° 53' 10"	"
⑧	277° 20' 20"	"

SCHEDULE OF CURVED BOUNDARIES

No	CHORD		ARC.	RAD.
⑨	80° 28' 30"	20'7¾"	20'7¾"	310'0"
⑩	87° 56' 50"	60'1⅜"	60'2½"	"
⑪	97° 21' 30"	41'7¼"	41'7½"	"
⑫	89° 53' 10"	98'1½"	98'9¼"	250'0"

(Z) EASEMENT FOR DRAINAGE 6FT. WIDE.

D.P.236405 (E)

Registered: 19·6·1968

C.A. 1968/114 of 19-3-1968

Title System: Torrens

Purpose: Subdivision

Ref. Map: D.P. 2411

Last Plan D.P.230908 (D.P.19128)

PLAN OF

SUBDIVISION OF LOT 2 IN D.P. 230908

Scale: 80 feet to an inch

~~Mun.~~/Shire

City: LIVERPOOL

Locality: MOOREBANK

Parish: HOLSWORTHY

County: CUMBERLAND

I, Harold Keith Wright

of 2 Leeder Ave, Penshurst,

a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan

is accurate and has been made ~~(1) by me (2)~~ under my immediate supervision in accordance with the Survey Practice Regulations, 1933, and was completed on †* 31·10·1967

Signature H K Wright

Surveyor registered under Surveyors Act, 1929, as amended. Datum Line of Azimuth. "A" – "B"

Statements of intention to dedicate public roads or public reserves or create drainage reserves, easements, or restrictions as to user.

(Signatures and Seals to appear in panel provided.)

It is intended to dedicate Lucas, Harvey & McKay Avenues as Public Roads.

X It is intended to create Pursuant to Sec. 88B of the Conveyancing Act. 1919-1964.
1. Easements for Drainage 6ft. wide
2. Restriction as to user

X Instrument filed as L 82511 .

Strike out either (1) or (2). † Insert date of survey.

OFFICE USE ONLY.

WARNING. Plan Drawing only to appear in this space.

WARNING. Plan Drawing only to appear in this space.

SURVEYOR'S REFERENCE: 2424/2

D.P.236405 (E)

Registered: 19.6.1968

C.A. 1968/14 of 19-3-1968

Title System: Torrens

Purpose: Subdivision

Ref. Map: D.P.2411

Last Plan D.P.230908 (D.P.19128)

PLAN OF

SUBDIVISION OF LOT 2 IN D.P. 230908

Scale: 80 feet to an inch

Mun./Shire

City: LIVERPOOL

Locality: MOOREBANK

Parish: HOLSWORTHY

County: CUMBERLAND

I, Harold Keith Wright

of 2 Leeder Ave, Penshurst.

a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan

*is accurate and has been made *((1) by me (2) under my immediate supervision in accordance with the Survey Practice Regulation, 1933, and was completed on †* 31.10.1967

Signature H K Wright

Surveyor registered under Surveyors Act, 1929, as amended. Datum Line of Azimuth. "A" - "B"

Statements of intention to dedicate public roads or public reserves or create drainage reserves, easements, or restrictions as to user.

(Signatures and Seals to appear in panel provided.)

It is intended to dedicate Lucas, Harvey & McKay Avenues as Public Roads.

X It is intended to create Pursuant to Sec. 88B of the Conveyancing Act. 1919-1964.
1. Easements for Drainage 6ft. wide
2. Restriction as to user

X Instrument filed as L 82511

SURVEYOR'S REFERENCE: 2424/2

OFFICE USE ONLY.

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION.

**Strike out either (1) or (2). †Insert date of survey.*

SIGNATURES AND SEALS ONLY.

Secretary

D. Pashley
L. Pashley

As Mortgagee under Mortgage No. I20574 Bank of New South Wales hereby consents to the within Plan of Subdivision. Dated at Sydney this 21st day of March 19 68.
Signed for and on behalf of BANK OF NEW SOUTH WALES by KENNETH STUART CRICH who is personally known to me.

Manager.

Assistant Secretary.

W Stewart

Council Clerk's Certificate.

I hereby certify that—

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

**(b) the requirements of section 348 of the †Metropolitan Water, Sewerage, and Drainage Act, 1924, as amended, †Hunter District Water, Sewerage, and Drainage Act, 1938, as amended,*

have been complied with by the applicant in relation to the proposed Subdivision *(insert "new road" or "subdivision") set out herein.*

Subdivision No. 1968/14

Date 19th March 1968.

(Signature) Council Clerk.

**This part of certificate to be deleted where the application is only for the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water Sewerage and Drainage Board, and the Hunter District Water Board.*

†Delete if inapplicable.

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 236405

FEET	INCHES	METRES
-	5	0.127
-	7 3/4	0.197
1	6	0.457
1	6 1/4	0.464
1	6 1/2	0.470
1	7 1/2	0.495
1	7 3/4	0.502
1	10 1/2	0.572
4	6 1/4	1.378
6	-	1.829
6	0 1/8	1.832
6	1 1/8	1.857
6	1 3/4	1.873
6	1 7/8	1.876
6	3 3/4	1.924
6	8 1/4	2.038
6	9	2.057
6	10 3/4	2.102
8	1 1/2	2.477
8	5 1/4	2.572
8	8 1/4	2.648
9	3	2.819
9	4 1/2	2.858
10	-	3.048
12	10 1/2	3.924
15	6 1/8	4.728
15	6 3/8	4.734
20	7 3/4	6.293
23	10 1/2	7.277
30	-	9.144
30	2 1/2	9.208
30	6 1/4	9.303
30	9 3/8	9.382
40	9 1/4	12.427
41	7 1/4	12.681
41	7 1/2	12.687
43	6	13.259
47	7	14.503
58	3	17.755
60	-	18.288
60	1 3/8	18.323
60	1 5/8	18.329
60	2 1/2	18.352
61	4 3/4	18.713
61	6 3/4	18.764
63	-	19.202
64	6 3/4	19.679
66	-	20.117
66	1 1/2	20.155
66	3 1/4	20.199
66	6 1/4	20.276
67	6	20.574
67	6 1/4	20.580
67	11	20.701
69	4 1/2	21.146
69	6 1/4	21.190
69	10 1/2	21.298
70	-	21.336
70	5	21.463
71	8 3/4	21.863
71	10 1/2	21.908
72	6	22.098
73	6	22.403
73	10 1/2	22.517
74	0 3/4	22.574
74	9 1/2	22.797
76	0 1/2	23.178
77	5	23.597
78	5 1/4	23.908
80	-	24.384
80	1 1/2	24.422
83	-	25.298
90	-	27.432
98	1 1/2	29.909
98	9 1/4	30.105
99	1 3/4	30.220
103	-	31.394

CONVERSION TABLE ADDED IN REGISTRAR GENERAL'S DEPARTMENT

DP 236405 CONTINUED

FEET	INCHES	METRES
103	5	31.521
108	3	32.995
108	6 1/2	33.084
108	7 3/4	33.115
109	3	33.299
110	-	33.528
113	3 1/4	34.525
113	4 3/4	34.563
114	10 1/4	35.008
115	0 1/2	35.065
115	1 3/4	35.096
118	0 3/4	35.985
118	1 1/4	35.998
120	9	36.805
123	1 1/2	37.529
123	9 3/4	37.738
133	10 1/2	40.805
137	7	41.935
149	10 1/2	45.682
153	5 3/4	46.780
200	-	60.960
200	2	61.011
250	-	76.200
300	9 1/8	91.672
300	9 1/2	91.681
310	-	94.488
317	-	96.622
403	5	122.961
469	1 1/4	142.983
469	4 3/4	143.072
611	6 1/2	186.398
772	6	235.458

AC	RD	P	SQ M
-	-	26 1/4	663.9
-	-	26 1/2	670.3
-	-	27	682.9
-	-	28	708.2
-	-	28 1/4	714.5
-	-	29	733.5
-	-	29 1/4	739.8
-	-	30 1/4	765.1
-	2	11	2302

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

30/6/2017 4:51PM

FOLIO: 5/236405

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 10837 FOL 154

Recorded	Number	Type of Instrument	C.T. Issue
5/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
14/3/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
25/3/1988	X445209	DISCHARGE OF MORTGAGE	EDITION 1
11/5/1992	E446011	MORTGAGE	EDITION 2
30/3/1994		AMENDMENT: LOCAL GOVT AREA	
15/8/2000	7023536	DISCHARGE OF MORTGAGE	
15/8/2000	7023537	MORTGAGE	EDITION 3
13/9/2007	AD410775	DISCHARGE OF MORTGAGE	EDITION 4
11/8/2016	AK673585	CAVEAT	

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

30/6/2017 4:53PM

FOLIO: 6/236405

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 10837 FOL 155

Recorded	Number	Type of Instrument	C.T. Issue
5/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
14/3/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
14/6/1989	Y416513	DISCHARGE OF MORTGAGE	
14/6/1989	Y416514	MORTGAGE	EDITION 1
30/3/1994		AMENDMENT: LOCAL GOVT AREA	
19/5/1995	O244726	DISCHARGE OF MORTGAGE	
19/5/1995	O244727	TRANSFER	
19/5/1995	O244728	MORTGAGE	EDITION 2
16/9/1999	6203235	DEPARTMENTAL DEALING	
12/4/2006	AC239505	DISCHARGE OF MORTGAGE	
12/4/2006	AC239506	TRANSFER	
12/4/2006	AC239507	MORTGAGE	EDITION 3
11/8/2016	AK673586	CAVEAT	

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
30/6/2017 4:49PM

FOLIO: 110/235787

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 10746 FOL 140

Recorded	Number	Type of Instrument	C.T. Issue
5/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
17/3/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
30/3/1994		AMENDMENT: LOCAL GOVT AREA	
6/7/1994	U414799	DISCHARGE OF MORTGAGE	
6/7/1994	U414800	TRANSFER	
6/7/1994	U414801	MORTGAGE	EDITION 1
19/9/1995	O545242	DISCHARGE OF MORTGAGE	
19/9/1995	O545243	TRANSFER	
19/9/1995	O545244	MORTGAGE	EDITION 2
21/10/1997	3512573	DISCHARGE OF MORTGAGE	
21/10/1997	3512574	MORTGAGE	EDITION 3
9/2/1999	5582435	DISCHARGE OF MORTGAGE	
9/2/1999	5582436	TRANSFER	
9/2/1999	5582437	MORTGAGE	EDITION 4
2/4/2002	8473122	DISCHARGE OF MORTGAGE	
2/4/2002	8473123	TRANSFER	
2/4/2002	8473124	MORTGAGE	EDITION 5
20/6/2011	AG309720	DISCHARGE OF MORTGAGE	EDITION 6
11/7/2012	AH104506	MORTGAGE	EDITION 7
11/8/2016	AK673587	CAVEAT	

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 5/236405

SEARCH DATE	TIME	EDITION NO	DATE
30/6/2017	4:44 PM	4	13/9/2007

LAND

LOT 5 IN DEPOSITED PLAN 236405
AT MOOREBANK
LOCAL GOVERNMENT AREA LIVERPOOL
PARISH OF HOLSWORTHY COUNTY OF CUMBERLAND
TITLE DIAGRAM DP236405

FIRST SCHEDULE

DIONISSIOS CHRONOPOULOS
SOPHIA CHRONOPOULOS
AS JOINT TENANTS (T V296597)

SECOND SCHEDULE (3 NOTIFICATIONS)

---

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 DP236405 EASEMENT FOR DRAINAGE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
* 3 AK673585 CAVEAT BY 87 TO 91 NUWARRA ROAD PTY LTD

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 6/236405

SEARCH DATE	TIME	EDITION NO	DATE
30/6/2017	4:46 PM	3	12/4/2006

LAND

LOT 6 IN DEPOSITED PLAN 236405
AT MOOREBANK
LOCAL GOVERNMENT AREA LIVERPOOL
PARISH OF HOLSWORTHY COUNTY OF CUMBERLAND
TITLE DIAGRAM DP236405

FIRST SCHEDULE

FAIZAL FREDRIC NAIR
VIKASHNI NAND
AS JOINT TENANTS (T AC239506)

SECOND SCHEDULE (4 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 DP236405 EASEMENT FOR DRAINAGE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
3 AC239507 MORTGAGE TO PERMANENT CUSTODIANS LIMITED
* 4 AK673586 CAVEAT BY 87 TO 91 NUWARRA ROAD PTY LTD

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 110/235787

SEARCH DATE	TIME	EDITION NO	DATE
30/6/2017	4:43 PM	7	11/7/2012

LAND

LOT 110 IN DEPOSITED PLAN 235787
AT MOOREBANK
LOCAL GOVERNMENT AREA LIVERPOOL
PARISH OF HOLSWORTHY COUNTY OF CUMBERLAND
TITLE DIAGRAM DP235787

FIRST SCHEDULE

JOSE TEDDY SUGPATAN
TERESITA SUGPATAN
AS JOINT TENANTS (T 8473123)

SECOND SCHEDULE (4 NOTIFICATIONS)

---

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 DP235787 EASEMENT FOR DRAINAGE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
3 AH104506 MORTGAGE TO WESTPAC BANKING CORPORATION
* 4 AK673587 CAVEAT BY 87 TO 91 NUWARRA ROAD PTY LTD

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

APPENDIX D

Data Quality Objectives

INTRODUCTION

The Data Quality Objectives (DQOs) process was used to define the type, quantity and quality of the data needed to support decisions relating to the environmental condition of a site (reference 1). The process consists of seven steps, with the output from each step influencing the choices that will be made later in the process.

According to USEPA (reference 2), DQOs are qualitative and quantitative statements, derived from the first six steps of the process, that:

- ◊ Clarify the study objective;
- ◊ Define the most appropriate type of data to collect;
- ◊ Determine the most appropriate conditions from which to collect the data; and
- ◊ Specify tolerable limits on decision errors which will be used as the basis for establishing the quantity and quality of data needed to support the decision.

The DQOs are then used to develop a scientific and resource-effective data collection design.

STEP 1 - STATE THE PROBLEM

The problem is the potential for the site to be impacted by contamination caused by past activities undertaken on or adjacent to the site, at levels in excess of those permissible for the proposed land-use and which could impact upon anticipated receiving environments.

The Stage 1 PSI information obtained and reviewed by GEE supports the conclusion that the site may be contaminated, in particular the fill layer and to a lesser extent the upper portion of the natural soil. There is also potential for ACM to be present at the surface of the site and within the fill materials. Groundwater is unlikely to be contaminated and therefore is not included as part of this assessment. However, if the fill and soils are deemed to be contaminated then groundwater assessment will be warranted.

STEP 2 - IDENTIFY THE DECISION STATEMENT

The following decision were required to be made:

- ◊ Does the concentrations of CoPC in the fill materials and upper portion of the natural soil exceed acceptable levels for the proposed land-use?
- ◊ Are there any aesthetic issues relating to the fill and natural soils at the site?

STEP 3 - IDENTIFY INPUTS TO THE DECISION

The following information inputs are required to resolve the decision statement:

- ◊ Collection of environmental soil samples using appropriate methods,
- ◊ Analysis of selected samples for the contaminants of concern,
- ◊ Comparison of the results with relevant Site Assessment Criteria (SAC) as defined in the main body of the report, and
- ◊ Accurate measurements of sample locations to allow for accurate mapping and contouring of contamination (if identified).

STEP 4 - DEFINE THE BOUNDARIES OF THE STUDY

The site covers a combined area of approximately 2,010m^2 and is legally referred to as Lot 110 in Deposited Plan (DP) 235787 and Lots 5 and 6 in DP 236405.

The lateral extent of the study is the boundaries of the site (as depicted on **Figure 2**). The vertical extent of the study is approximately 3.0m below ground surface (bgs), 0.5m into natural soils, or drilling / excavation method refusal.

STEP 5 - DEVELOP A DECISION RULE

The purpose of this step is to define the parameter of interest, specify the action level, and integrate previous DQO outputs into a single "if…then…" statement that describes a logical basis for choosing among alternative actions.

The parameters of interest (or contaminants of concern) are a broad group of common contaminant compounds known to occur within the Sydney area.

The action level or Site Assessment Criteria (SAC) will be used to decide if the parameter represents an unacceptable risk for the proposed land-use and/or the receiving environment. If the measured concentration of a parameter or compound exceeds the action levels (SAC) in soils, then this is deemed to present an unacceptable risk if the site is developed for commercial/residential land-use or to environmental receptors.

If the concentrations of a parameter or compound, whichever is representative for of the site, are above the nominated action levels, then further sampling may be proposed to determine the extent of contamination.

STEP 6 - SPECIFY ACCEPTABLE LIMITS ON DECISION ERRORS

There are two types of errors:

1) Deciding that the site is acceptable for residential land-use and that there is a low risk to receiving environments when it actually is not. The consequence of this error may be unacceptable health risk for current and future users of the sites.

2) Deciding that the site is unacceptable for the proposed land-use and that there is a risk to receiving environments when it is acceptable. The consequence of this error is that the client will pay for further investigation / remediation that are not necessary.

The more severe consequences are with decision error (1) since the risk of jeopardising human health outweighs the consequences of paying more for remediation. It will not be possible to conduct statistical hypothesis tests as the proposed sampling programme consists of the collection of one round of samples only.

STEP 7 - OPTIMISING THE DESIGN FOR OBTAINING DATA

The purpose of this step is to identify a resource-effective data collection design for generating data that are expected to satisfy the DQOs.

The resource effective data collection design that is expected to satisfy the DQOs is described in detail in Section 7 of the report. To ensure the design satisfies the DQOs a comprehensive Quality Assurance and Quality Control Plan will be implemented.

References

1. NSW DEC (2006) *Contaminated Sites: Guidelines for NSW Site Auditor Scheme, 2nd Edition.*
2. USEPA, 2000: *Guidance for Data Quality Objectives Process*. EPA QA/G-4.

APPENDIX E

Borehole Logs

Borehole Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361

Hole ID. **BH1**
Hole Depth: **1.20 m**
Sheet: **1 of 1**

Project Name: **Environmental Site Assessment** Project Number: **E17013MOR**
Location / Site: **87-91 Nuwarra Road, Moorebank NSW** Client: **St George Community Housing**

Drilling Company: **Geo Environmental Engineering** Date Started: **21/06/2017** Ground Level: ----------
Drill Method: **Hand Auger** Date Completed: **21/06/2017** Easting: ----------
Equipment: **Manual** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests: ID No.	Samples / Tests: DCP blows/100mm	Observations / Comments
							Surface: grass				5 10 15	
Hand Auger					SM	Fill	**FILL**- Silty Sand, dark grey, fine to coarse grained, trace fine gravels, roots.	loose	moist	AC210617-21 0.1-0.2m		
					GM	Natural	**Silty Gravelly SAND**- grey-brown, low plasticity, fine to coarse grained, fine to medium gravels, charcoal.	loose to medium dense	moist	AC210617-22 0.2-0.3m		
		1.0			CH		**Silty CLAY**- orange-brown / red-brown, medium plasticity.	stiff	moist	AC210617-23 0.5-0.6m BH1 / 0.6-0.7m		
							becoming light grey mottled orange, with some sand from 1.0m.			BH1 / 1.1-1.2m		
		2.0					**Practical refusal at 1.20m** Hand auger refusal on weathered siltstone bedrock					borehole was dry upon completion DCP refusal at 1.34m (bouncing)

Moisture	
D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

Logged By: **Andy Chiem** Date: **21/06/2017** Checked By: **Stephen McCormack** Date: **30/06/2017**

GEE DAVIES BH LOG E17013MOR.GPJ GEE.GDT 4/7/17 12:59:53 PM

Borehole Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361

Hole ID. **BH2**
Hole Depth: **1.25 m**
Sheet: **1 of 1**

Project Name: **Environmental Site Assessment** Project Number: **E17013MOR**
Location / Site: **87-91 Nuwarra Road, Moorebank NSW** Client: **St George Community Housing**

Drilling Company: **Geo Environmental Engineering** Date Started: **21/06/2017** Ground Level: ----------
Drill Method: **Hand Auger** Date Completed: **21/06/2017** Easting: ----------
Equipment: **Manual** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Samples / Tests DCP blows/100mm	Observations / Comments
							Surface: grass				5 10 15	
Hand Auger					SM	Fill	**FILL**- Silty Sand, dark grey, fine to coarse grained, trace fine to coarse gravels, tile, brick.	loose	moist	AC210617-24 0.1-0.2m		
										AC210617-25 0.4-0.5m		
					CH	Natural	**Silty CLAY**- brown, medium plasticity. becoming orange from 0.8m.	firm	moist	AC210617-26 BH2 / 0.6-0.7m		
		1.0						stiff				
							Practical refusal at 1.25m Hand auger refusal on weathered siltstone bedrock					borehole was dry upon completion DCP refusal at 1.35m (bouncing)
		2.0										

Moisture	
D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

Logged By: **Andy Chiem** Date: **21/06/2017** Checked By: **Stephen McCormack** Date: **30/06/2017**

GEE DAVIES BH LOG E17013MOR.GPJ GEE.GDT 4/7/17 12:59:54 PM

Test Pit Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361

Hole ID. **TP1**
Hole Depth: **1.00 m**
Sheet: **1 of 1**

Project Name: **Environmental Site Assessment** Project Number: **E17013MOR**
Location / Site: **87-91 Nuwarra Road, Moorebank NSW** Client: **St George Community Housing**

Drilling Company: **AB-11 Group** Date Started: **21/06/2017** Ground Level: ----------
Drill Method: **Excavation** Date Completed: **21/06/2017** Easting: ----------
Equipment: **2T Mini-excavator** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
							Surface: grass				
Excavation					GC	Fill	**FILL**- Silty Clay With Gravel, dark grey / brown, low to medium plasticity, fine to medium gravels.	stiff	moist	AC210617-01 / TP1 0.1-0.2m	Sample AC210617-TP1 (0.0 - 0.3m) sieved from bucket weighing 7.2kg
					CH	Natural	**Silty CLAY**- orange-brown / light grey, medium plasticity. becoming orange / red-brown from 0.8m.	stiff	moist	AC210617-02 0.4-0.5m AC210617-03 0.9-1.0m	
		1.0					**Hole Terminated at 1.00m** Target depth reached				testpit was dry upon completion
		2.0									

Moisture	
D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

Logged By: **Andy Chiem** Date: **21/06/2017** Checked By: **Stephen McCormack** Date: **30/06/2017**

GEE DAVIES BH LOG E17013MOR.GPJ GEE.GDT 4/7/17 12:59:55 PM

Test Pit Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361

Hole ID. **TP2**
Hole Depth: **1.10 m**
Sheet: **1 of 1**

Project Name: **Environmental Site Assessment** Project Number: **E17013MOR**
Location / Site: **87-91 Nuwarra Road, Moorebank NSW** Client: **St George Community Housing**

Drilling Company: **AB-11 Group** Date Started: **21/06/2017** Ground Level: ----------
Drill Method: **Excavation** Date Completed: **21/06/2017** Easting: ----------
Equipment: **2T Mini-excavator** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests: ID No.	Samples / Tests: DCP blows/100mm (5 10 15)	Observations / Comments
							Surface: grass					
Excavation					SM	Fill	**FILL**- Silty Sand, dark grey, fine to coarse grained, clay inclusions, brick, sandstone fragments.	loose to medium dense	moist	AC210617-04 / 05 / TP2 0.1-0.2m		Sample AC210617-TP2 (0.0 - 0.3m) sieved from bucket weighing 9.4kg
					CH	Natural	**Silty CLAY**- orange-brown, medium plasticity.	firm to stiff	moist	AC210617-06 0.3-0.4m TP2 / 0.4-0.5m		
		1.0					becoming light grey mottled orange from 0.9m.			AC210617-07 0.9-1.0m TP2 / 1.0-1.1m		
							Practical refusal at 1.10m Excavator bucket scraping on weathered siltstone bedrock					minor seepage at base of pit upon completion DCP refusal at 1.26m (bouncing)
		2.0										

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

Logged By: **Andy Chiem** Date: **21/06/2017** Checked By: **Stephen McCormack** Date: **30/06/2017**

GEE DAVIES BH LOG E17013MOR.GPJ GEE.GDT 4/7/17 12:59:56 PM

Test Pit Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361

Hole ID. **TP3**
Hole Depth: **1.25 m**
Sheet: **1 of 1**

Project Name: **Environmental Site Assessment** Project Number: **E17013MOR**
Location / Site: **87-91 Nuwarra Road, Moorebank NSW** Client: **St George Community Housing**

Drilling Company: **AB-11 Group** Date Started: **21/06/2017** Ground Level: ----------
Drill Method: **Excavation** Date Completed: **21/06/2017** Easting: ----------
Equipment: **2T Mini-excavator** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
							Surface: grass				
Excavation					SM	Fill	**FILL**- Silty Sand, dark brown / orange, fine to coarse grained, clay pipes.	loose	moist	AC210617-08 / TP3 0.1-0.2m	Sample AC210617-TP3 (0.0 - 0.3m) sieved from bucket weighing 15.6kg
		1.0			CH	Natural	**Silty CLAY**- orange-brown / red-brown, medium plasticity. becoming light grey mottled orange, with sand from 1.1m.	stiff	moist	AC210617-09 0.5-0.6m TP3 / 0.8-0.9m AC210617-10 0.9-1.0m	
		2.0					**Practical refusal at 1.25m** Excavator bucket scraping on weathered sandstone bedrock				test pit was dry upon completion

GEE DAVIES BH LOG E17013MOR.GPJ GEE.GDT 4/7/17 12:59:57 PM

Moisture	
D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

Logged By: **Andy Chiem** Date: **21/06/2017** Checked By: **Stephen McCormack** Date: **30/06/2017**

Test Pit Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361

Hole ID. **TP4**
Hole Depth: **0.90 m**
Sheet: **1 of 1**

Project Name: **Environmental Site Assessment** Project Number: **E17013MOR**
Location / Site: **87-91 Nuwarra Road, Moorebank NSW** Client: **St George Community Housing**

Drilling Company: **AB-11 Group** Date Started: **21/06/2017** Ground Level: ----------
Drill Method: **Excavation** Date Completed: **21/06/2017** Easting: ----------
Equipment: **2T Mini-excavator** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
							Surface: grass				
Excavation	0.6m perched 21/06/2017				GM	Fill	**FILL**- Silty Gravelly Sand, dark grey, fine to coarse grained, fibro.	loose	very moist	AC210617-11 / TP4 0.1-0.2m	Sample AC210617-TP4 (0.0 - 0.3m) sieved from bucket weighing 14.9kg. One fragment of fibro encountered in fill (AC210617-100)
							clay pipes from 0.4m.				pit of broken clay pipes
											seepage occurring from 0.6m, likely perched water
					CH	Natural	**Silty CLAY**- orange-brown / red-brown, medium plasticity.	stiff	wet	AC210617-12 0.7-0.8m	
		1.0					**Hole Terminated at 0.90m** Target depth reached				
		2.0									

Moisture	
D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

Logged By: **Andy Chiem** Date: **21/06/2017** Checked By: **Stephen McCormack** Date: **30/06/2017**

GEE DAVIES BH LOG E17013MOR.GPJ GEE.GDT 4/7/17 12:59:58 PM

Test Pit Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361

Hole ID. **TP5**
Hole Depth: **1.20 m**
Sheet: **1 of 1**

Project Name: **Environmental Site Assessment** Project Number: **E17013MOR**
Location / Site: **87-91 Nuwarra Road, Moorebank NSW** Client: **St George Community Housing**

Drilling Company: **AB-11 Group** Date Started: **21/06/2017** Ground Level: ----------
Drill Method: **Excavation** Date Completed: **21/06/2017** Easting: ----------
Equipment: **2T Mini-excavator** Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests ID No.	Observations / Comments
							Surface: grass				
Excavation					GC	Fill	**FILL**- Gravelly Clayey Sand, dark brown, fine to coarse grained, fine to coarse gravels.	loose	moist	AC210617-13 / TP5 0.1-0.2m	Sample AC210617-TP5 (0.0 - 0.3m) sieved from bucket weighing 14.8kg
					GC	Fill	**FILL**- Gravelly Clay, grey / brown, medium to high plasticty, fine to medium gravel, sheet metal.	stiff	moist	AC210617-14 0.4-0.5m	
		1.0								AC210617-15 0.9-1.0m	
					CH	Natural	**Silty CLAY**- light grey mottled red-brown, medium to high plasticty.	stiff	moist	AC210617-16 1.1-1.2m	
		2.0					**Hole Terminated at 1.20m** Target depth reached				test pit dry upon completion

Moisture	
D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

Logged By: **Andy Chiem** Date: **21/06/2017** Checked By: **Stephen McCormack** Date: **30/06/2017**

GEE DAVIES BH LOG E17013MOR.GPJ GEE.GDT 4/7/17 12:59:59 PM

Test Pit Log Report

Geo Environmental Engineering Pty Ltd
82 Bridge Street
Lane Cove NSW 2066
T 02 9420 3361

Hole ID. **TP6**
Hole Depth: **1.00 m**
Sheet: **1 of 1**

Project Name: **Environmental Site Assessment**
Project Number: **E17013MOR**
Location / Site: **87-91 Nuwarra Road, Moorebank NSW**
Client: **St George Community Housing**

Drilling Company: **AB-11 Group**
Date Started: **21/06/2017**
Ground Level: ----------
Drill Method: **Excavation**
Date Completed: **21/06/2017**
Easting: ----------
Equipment: **2T Mini-excavator**
Northing: ----------

Method	Water Level	Depth (m)	RL (m)	Graphic Log	USCS Symbol	Material Type	Material Description	Consistency / Density	Moisture	Samples / Tests: ID No.	Samples / Tests: DCP blows/100mm	Observations / Comments
							Surface: grass				5 10 15	
Excavation					GM	Fill	**FILL**- Silty Gravelly Sand, dark grey, fine to coarse grained, fine to coarse gravels, clay inclusions.	loose	moist	AC210617-17 / 18 / TP6 0.1-0.2m		Sample AC210617-TP6 (0.0 - 0.3m) sieved from bucket weighing 17.4kg
					CH	Natural	**Silty CLAY**- red-brown / orange-brown, medium plasticity.	firm	moist	AC210617-19 0.3-0.4m		
							becoming red-brown / light grey from 0.6m.			TP6 / 0.5-0.6m		
		1.0								AC210617-20 0.9-1.0m		
							Practical refusal at 1.00m Excavator bucket scraping on weathered siltstone bedrock					test pit dry on completion DCP refusal at 1.1m (bouncing)
		2.0										

Moisture

D	Dry
Dp	Damp
SM	Slightly Moist
M	Moist
VM	Very Moist
W	Wet
Sd	Saturated

Additional Comments

Logged By: **Andy Chiem** Date: **21/06/2017**
Checked By: **Stephen McCormack** Date: **30/06/2017**

GEE DAVIES BH LOG E17013MOR.GPJ GEE.GDT 4/7/17 1:00:00 PM

Geo Environmental Engineering
82 Bridge Street
Lane Cove NSW 2066
E info@geoenvironmental.com.au

Log Report Legend

MATERIAL SYMBOL


FILL


CONCRETE


ASPHALT


TOPSOIL


ORGANICS


ESTUARINE MUD


CLAY


SAND


SILT


GRAVEL


Sandy CLAY


Clayey SAND


Clayey SILT


Clayey GRAVEL


Silty CLAY


Silty SAND


Sandy SILT


Sandy GRAVEL


Gravelly CLAY


Gravelly SAND


Gravelly SILT


Silty GRAVEL


CLAY & SAND


SAND & CLAY


SILT & CLAY


GRAVEL & CLAY


CLAY & SILT


SAND & SILT


SILT & SAND


GRAVEL & SAND


CLAY & GRAVEL


SAND & GRAVEL


SILT & GRAVEL


GRAVEL & SILT


Sandy Silty CLAY


Clayey Silty SAND


Sandy Clayey SILT


Sandy Clayey GRAVEL


Silty Sandy CLAY


Silty Clayey SAND


Clayey Sandy SILT


Clayey Sandy GRAVEL


Sandy Gravelly CLAY


Clayey Gravelly SAND


Sandy Gravelly SILT


Silty Clayey GRAVEL


Silty Gravelly CLAY


Silty Gravelly SAND


Clayey Gravelly SILT


Clayey Silty GRAVEL


Gravelly Silty CLAY


Gravelly Silty SAND


Gravelly Clayey SILT


Sandy Silty GRAVEL


Gravelly Sandy CLAY


Gravelly Clayey SAND


Gravelly Sandy SILT


Silty Sandy GRAVEL


SANDSTONE


SHALE


GRANITE


BASALT


SHALE / SANDSTONE


PORCELLANITE


GNEISS


SHALE / CLAYSTONE


MUDSTONE


CLAYSTONE


MUDSTONE / CLAYSTONE


SHALE / SILTSTONE


IRONSTONE

WATER LEVELS


Encountered Water

Standing Water

ABBREVIATIONS

PT	Pushtube
SFA	Solid Flight Auger
PWS	Percussion Window Sampler
HA	Hand Auger
HFA	Hollow Flight Auger

WELL GRAPHICS


Cuttings


Bentonite


Screen


Gravel Pack


Grout


Cave-in

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APPENDIX F

Quality Assurance Assessment Report

F1. INTRODUCTION

A detailed Quality Assurance (QA) assessment, including the analysis of Quality Control (QC) samples, was carried out by GEE to determine the reliability of field procedures and analytical results.

F2. QUALITY ASSURANCE

Quality Assurance (QA) involves all of the actions, procedures, checks and decisions undertaken to ensure the representativeness and integrity of samples and accuracy and reliability of analysis results (reference 1).

In accordance with AS4482.1 (reference 2) and AS5667.1 (reference 3), a series of QA procedures were integrated within the sampling and analysis plan and included:

- ◊ The collection of Quality Control (QC) samples.
- ◊ The use of standardised field sampling forms developed by GEE.
- ◊ Documentation of calibration and use of field instruments.

To ensure QA in the field, samples were collected by experienced and trained personnel using appropriate methods detailed herein, including appropriate sample handling, containment and transport, and calibrated equipment. Additionally QC samples were collected and analysed as discussed in Section F3.

To ensure QA in the laboratory, GEE used laboratories that are NATA accredited for the analytical tests carried out, therefore it is reasonable for GEE to rely on the laboratories to be proficient in all tests conducted. This encompasses all actions, procedures, checks and decisions undertaken, to ensure the accuracy and reliability of the analysis results. As part of the laboratory QA, QC samples were analysed with each batch of samples as part of this investigation as required by NATA. A discussion of the laboratory QC samples analysed as part of this investigation is provided in Section F3.3.2.

F3. QUALITY CONTROL

QC involves those parts of QA which serve to monitor and measure the effectiveness of QA procedures. QC samples assess sample integrity, accuracy and precision and can be separated into field and laboratory QC.

F3.1 DEFINITIONS

Table F1 provides a description and objective of each of the field and laboratory QC samples used during this investigation.

Table F1: QC Sample Types, Descriptions and Recommended Frequency of Analysis

Type	Description	Purpose	Recommended Frequency
	FIELD QC SAMPLES		
Blind Replicate	A sample collected at the same time and from the same sampling point as the corresponding primary sample[1], and analysed at the same laboratory. Blind replicates are collected, preserved, stored, transported and analysed in the same manner as the primary sample, with the laboratory having no knowledge of the source of the replicate sample. The assessment of blind replicates samples is undertaken by calculating the Relative Percent Difference (RPD) which is defined as: $RPD\ (\%) = 100 \times \frac{\text{Result No. 1} - \text{Result No. 2}}{\text{Mean Result}}$	Used to evaluate total sampling and analysis precision and, in the case of soil samples, sample variability.	In accordance with AS4482.1 (reference 2) and NEPM (reference 4) it is recommended that 1 blind replicate sample is collected for every 20 primary samples.
Trip Blank	Trip blanks are laboratory supplied test samples of analyte-free media (either washed sand or de-ionised water) which remain in the sample storage eskies during sampling activities and returned to the laboratory unopened. For soil sampling programmes, the trip blank consists of acid-washed quartz sand that has been heated to 400ºC. For water sampling programs trip blanks comprise pre-washed glass vials containing distilled or de-ionised water with appropriate preservatives. The USEPA has shown that cross-contamination only occurs with volatile organics (reference 5), therefore, trip blanks are only analysed for volatile organics.	Used to measure cross-contamination during sampling, transport, sample preparation and analysis.	Industry standard is 1 trip blank per batch of primary samples.
Trip Spike	Trip spikes, like trip blanks, are supplied by the primary laboratory using analyte-free media (either washed sand or de-ionised water) and remain in the sample storage eskies during sampling activities and returned to the laboratory unopened. The sample media, however, is spiked with BTEX. For water sampling programmes the BTEX concentration is known and standardised by each laboratory, while for soil sampling programmes the exact spike concentration is not known, rather two identical jars of sand are spiked the same concentration with one sample becoming the trip-spike and the other becoming a control sample, which remains in a refrigerator at the laboratory. The trip spike is analysed after returning from the field and the % recovery of the known spike (for water sampling programs), or of the control sample (for soil sampling programs), is calculated.	Used to monitor VOC losses during transit.	Industry standard is 1 trip spike per batch of primary samples where volatile concentrations are being measured.

[1] Primary samples are the original representative samples of soil or groundwater collected for analysis to determine aspects of their chemical composition. Primary samples are the original sample taken from a particular location and other samples from the same location are duplicates, replicates or splits.

Table F1 Continued

Type	Description	Purpose	Recommended Frequency
	LABORATORY QC SAMPLES		
Laboratory Duplicate	Laboratory duplicates are field samples which are prepared and analysed in the same manner twice. The assessment of laboratory duplicates is undertaken by calculating the (RPD) which is defined as: $\text{RPD (\%)} = 100 \times \frac{\text{Result No. 1 – Result No. 2}}{\text{Mean Result}}$	Determines analytical precision for a sample batch	NATA specifies 1 per 10 samples for trace element and inorganic analysis
Laboratory Control Sample (LCS)	Laboratory Control Samples (LCS) are analyte-free matrices (de-ionised water or clean sand) spiked with a known concentration of target analytes and carried through the entire preparation and analysis. Assessment of LCS is undertaken by calculating the percent recovery (%R) of the spike which is defined as: $\text{Percent Recovery (\%R)} = 100 \times \frac{\text{Spikes Sample Result (SSR) – Sample Result (SR)}}{\text{Concentration of Spike Added (SA)}}$	Determines analytical accuracy and precision for a batch of samples	NATA specifies 1 per batch of up to 20 samples
Surrogates	Surrogates are organic compounds added to field samples and laboratory QC samples prior to preparation. They are similar in chemical behaviour to the target analytes and are not expected to be present in samples (reference 6). They form part of the laboratory QC for organic analyses, and are used to indicate the presence of sample specific interferences. The surrogate is added at the extraction stage then analysed with the batch of samples. Like LCSs, surrogates are assessed by calculating the percent recovery (%R), although the definition is slightly different as shown below: $\text{Percent Recovery (\%R)} = 100 \times \frac{\text{Spiked Sample Result (SSR)}}{\text{Concentration of Spike Added (SA)}}$	Used to demonstrate that the surrogate does not interfere with the target analytes, therefore determines analytical accuracy for each sample	Added to every blank, field and laboratory QC sample
Matrix Spikes	Field samples spiked with a known concentration of a target analytes and carried through the entire preparation and analysis. Matrix spike samples are assessed by calculating the percent recovery (%R) of the spike which is defined as: $\text{Percent Recovery (\%R)} = 100 \times \frac{\text{Spikes Sample Result (SSR) – Sample Result (SR)}}{\text{Concentration of Spike Added (SA)}}$	Determine the effects of matrix interferences on analytical accuracy of a sample.	Performed at least 1 per batch of up to 20 samples.
Method Blank	Method blanks are an analyte-free matrices (reagent water or clean sand) that is carried through the entire preparation and analysis.	Establishes that laboratory contamination does not cause false positives.	Prepared with every batch of up to 20 samples for all organic and inorganic analyses.

F3.2 CRITERIA / ACCEPTABLE RANGE

The QC Acceptance Criteria adopted for this investigation is provided in Table F2 and is in general accordance with the Table 4 of AS4482.1 (reference 2) and NEPM (reference 4).

Table F2: QC Sample Acceptance Criteria

QC Sample	Criteria / Acceptable Range
FIELD QC SAMPLES	
Blind Replicate	RPD < 50 % When average concentration is > 10 x LOR/PQL[2] RPD < 75 % When average concentration is 5 to 10 x LOR/PQL RPD < 100 % When average concentration is< 5 x LOR/PQL
Trip Blank	Analytical Result < LOR/PQL
Trip Spike	± 30%
LABORATORY QC SAMPLES	
Laboratory Duplicates	RPD < 30 % When average concentration is > 10 x LOR/PQL RPD < 50 % When average concentration is 4 to 10 x LOR/PQL RPD < 100 % When average concentration is< 4 x LOR/PQL
Laboratory Control Samples	%R of 70 – 130% (General analytes) %R of 50 – 130% (Phenols) %R of 60 – 130% (OCP/OPPs) %R of 62 – 130% (Chromium)
Surrogates	%R of 70 – 130% (General analytes) %R of 50 – 130% (Phenols) %R of 60 – 130% (OCP/OPPs)
Matrix Spikes	%R of 70 – 130% (General analytes) %R of 50 – 130% (Phenols) %R of 60 – 130% (OCP/OPPs) %R of 62 – 130% (Chromium)
Method Blanks	Analytical Results < LOR/PQL

If data do not meet the QC Acceptance Criteria then a judgement is made as to whether the exceedance is critical in relation to the suitability of the data set. Otherwise the following steps will be taken:

- ◊ Request that the laboratory re-check or even re-analyse the sample.
- ◊ Inspect the sample for anomalies which may be causing the failure.
- ◊ If necessary, undertake additional sampling and analyses.

[2] Both the LOR and PQL are interchangeable terms used by laboratories and is defined as the lowest concentration that can be reliably achieved within specific limits of precision and accuracy during routine laboratory operating conditions (reference 6).

F3.3 RESULTS

F3.3.1 Field QC Samples

Field QC samples collected and analysed as part of this investigation comprised:

- ◊ Two blind replicates (AC210617-05 & AC210617-18)
- ◊ One trip blank (labelled 'trip blank')
- ◊ One trip spike (labelled 'trip spike')

Tabulated results are presented at the conclusion of this Appendix. Table F3 provides a summary of the frequency of QC samples and lists results which do not meet the criteria established in Table F2.

Table F3: QC Sample Acceptance Criteria - Soil

Type	Frequency Conducted	Results Not Meeting the Criteria
Blind Replicates	Metals - 2 per 18 primary samples (11.1%)	--
	PAH/TRH/BTEX - 1 per 12 primary samples (8.3%)	--
	OCP/PCB - 1 per 5 primary samples (20.0%)	
Trip Blank	1 per sample batch	--
Trip Spike	1 per sample batch	--

The quality control results all conformed to the sample acceptance criteria.

F3.3.2 Laboratory QC

Laboratory QC results are provided in the laboratory reports while a summary of the results which exceeded the acceptance criteria is provided in Table F4.

Table F4: QC Sample Acceptance Criteria

Type	Results Exceeding Criteria
Laboratory Duplicates	--
Laboratory Control Samples	--
Surrogates	--
Matrix Spikes	--
Method Blanks	--

The laboratory RPD acceptance criteria were considered acceptable.

F4. DATA QUALITY ASSESSMENT

In accordance with reference 7, Data Quality Indicators (DQIs), specifically, precision, accuracy, representativeness, completeness and comparability, were used to assess the reliability of field procedures and analytical results.

F4.1 PRECISION

This is the measure of the variability (or reproducibility) of the data. In the field precision is achieved by using standard operating procedures which were adopted by GEE during this investigation. For laboratory analysis precision is assessed using blind replicates and trip spikes. The measured RPDs for the blind replicate samples and split samples were considered acceptable as were the analytical results for the trip spike.

F4.2 ACCURACY

Accuracy is a measure of the closeness of a measurement to the true parameter value. In the field, accuracy is achieved by using standard operating procedures which were adopted by GEE. For laboratory analysis, accuracy is assessed using trip blanks, rinsate blanks, method blanks, matrix spikes, surrogates and laboratory control samples. Considering that these QC samples were of an acceptable standard, GEE considers the laboratory data set to be accurate.

F4.3 REPRESENTATIVENESS

This is the confidence (expressed qualitatively) that the data are representative of each media present on the site. This is achieved in the field and laboratory by using an adequate number of sampling points to characterise the site and ensuring that the samples collected were representative of the media from which they were collected. Additionally, samples should be analysed within necessary holding times depending on the analyte.

Environmental soil samples were collected from each borehole in general accordance with techniques described in Australian Standards AS4482.1 (reference 2), AS4482.2 (reference 8) and NEPM (reference 1), to maintain the representativeness and integrity of the samples. The number of sampling points exceeded the minimum required sampling density as defined by NSW EPA (reference 9), however, were considered sufficient for the purpose of this investigation.

Finally all samples were analysed within holding times.

F4.4 COMPLETENESS

This is a measure of whether all the data necessary to meet the project objectives, were collected. In the field and laboratory, this is achieved by sampling all critical locations and depths using acceptable methods and ensuring samples are analysed for appropriate chemicals.

GEE selected a sufficient number of sample points for the purpose of the investigation as defined by the NSW EPA (reference 9). Additionally, samples were analysed for chemicals of concern based on appropriate field screening measures and logging of unusual aesthetics which may indicate contamination. Combined with the fact that standard operating procedures were adopted by GEE, the investigation is assessed as being complete.

F4.5 COMPARABILITY

This is a measure of confidence that data may be considered to be equivalent for each sampling and analysis event. Soil samples were collected by experienced GEE personnel using standard operating procedures and analysed in accordance with NATA accredited laboratory methods. The comparability of the data should be consistent as sampling protocols were employed throughout the duration of the fieldwork and analysis was undertaken by NATA registered laboratories using accredited analytical methods.

F5. CONCLUSION

A review of the DQIs indicates that the field procedures and analytical results adopted for this investigation are able to be relied upon for making conclusions and recommendations regarding the contamination status of the site.

References

1. *NEPC, 1999: National Environment Protection Council (1999). National Environment Protection (Assessment of Site Contamination) Measure. Schedule B(2) Data Collection, Sample Design and Reporting.*

2. *Australian Standard AS4482.1 – 2005: Guide to the sampling and investigation of potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds.*

3. *Australian / New Zealand Standard AS/NZS5667.1 – 1998: Water Quality – Sampling. Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples*

4. *NEPC, 1999: National Environment Protection Council (1999). National Environment Protection (Assessment of Site Contamination) Measure. Schedule B(3) Guideline of Laboratory Analysis of Potentially contaminated Soils.*

5. *Keith, 1991: Environmental sampling and Analysis, A practical guide. Lewis Publishers.*

6. *Popek (2003). Sampling and Analysis of Environmental Chemical Pollutants. Academic Press.*

7. *NSW DEC (2006) Contaminated Sites: Guidelines for NSW Site Auditor Scheme, 2nd Edition.*

8. *Australian Standard AS4482.2 – 1999: Guide to the sampling and investigation of potentially contaminated soil Part 2: Volatile substances.*

9. *NSW EPA, 1995: Environment Protection Authority NSW, 1995: Contaminated Sites: Sampling Design Guidelines, EPA NSW.*

SOIL - Blind Replicate Results

Sample Date		21-06-17	21-06-17	RPD	21-06-17	21-06-17	RPD
Sample Identification		**AC210617-04**	**AC210617-05**		**AC210617-17**	**AC210617-18**	
Analyte	Units						
Total Metals							
Arsenic	mg/kg	10	6	50%	16	19	17%
Cadmium	mg/kg	<0.4	<0.4	--	0.5	0.6	18%
Chromium	mg/kg	18	14	25%	54	51	6%
Copper	mg/kg	23	25	8%	33	43	26%
Lead	mg/kg	43	47	9%	40	51	24%
Mercury	mg/kg	<0.1	<0.1	--	<0.1	<0.1	--
Nickel	mg/kg	5	4	22%	18	11	48%
Zinc	mg/kg	53	64	19%	90	93	3%
Polycyclic Aromatic Hydrocarbons							
Naphthalene	mg/kg	<0.1	<0.1	--	--	--	--
Acenaphthylene	mg/kg	<0.1	<0.1	--	--	--	--
Acenaphthene	mg/kg	<0.1	<0.1	--	--	--	--
Fluorene	mg/kg	<0.1	<0.1	--	--	--	--
Phenanthrene	mg/kg	<0.1	<0.1	--	--	--	--
Anthracene	mg/kg	<0.1	<0.1	--	--	--	--
Fluoranthene	mg/kg	<0.1	<0.1	--	--	--	--
Pyrene	mg/kg	<0.1	<0.1	--	--	--	--
Benz(a)anthracene	mg/kg	<0.1	<0.1	--	--	--	--
Chrysene	mg/kg	<0.1	<0.1	--	--	--	--
Benzo(b&k)fluoranthene	mg/kg	<0.2	<0.2	--	--	--	--
Benzo(a)pyrene	mg/kg	<0.1	<0.1	--	--	--	--
Indeno(1.2.3.cd)pyrene	mg/kg	<0.1	<0.1	--	--	--	--
Dibenz(a.h)anthracene	mg/kg	<0.1	<0.1	--	--	--	--
Benzo(g.h.i)perylene	mg/kg	<0.1	<0.1	--	--	--	--
TOTAL PAHs	mg/kg	NIL(+)VE	NIL(+)VE	--	--	--	--
BTEX							
Benzene	mg/kg	<0.2	<0.2	--	--	--	--
Toluene	mg/kg	<0.5	<0.5	--	--	--	--
Ethylbenzene	mg/kg	<1	<1	--	--	--	--
meta- & para-Xylene	mg/kg	<2	<2	--	--	--	--
ortho-Xylene	mg/kg	<1	<1	--	--	--	--
Total Petroleum Hydrocarbons							
F1 (C6-C10)	mg/kg	<25	<25	--	--	--	--
F2 (>C10-C16)	mg/kg	<50	<50	--	--	--	--
F3 (>C16-C34)	mg/kg	<100	<100	--	--	--	--
F4 (>C34-C40)	mg/kg	<100	<100	--	--	--	--

Values in Bold Indicate: RPD > 50 % When average concentration is > 10 x LOR
RPD > 75 % When average concentration is 5 to 10 x LOR
RPD > 100 % When average concentration is< 5 x LOR

SOIL - Trip Blank Results

Laboratory:		Envirolab
Laboratory Report Number:		169824
Sample ID		**Trip Blank**
Analyte	Units	
BTEX		
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
meta- & para-Xylene	mg/kg	<2
ortho-Xylene	mg/kg	<1
Total Petroleum Hydrocarbons		
C6 - C9 Fraction	mg/kg	<25
C10 - C14 Fraction	mg/kg	--
C15 - C28 Fraction	mg/kg	--
C29 - C36 Fraction	mg/kg	--

Notes:

--- Not Analysed

SOIL - Trip Spike Results

Laboratory:		Envirolab
Laboratory Report Number:		169824
Sample ID		**Trip Spike**
Analyte	Units	
BTEX		
Benzene	mg/kg	101%
Toluene	mg/kg	100%
Ethylbenzene	mg/kg	99%
meta- & para-Xylene	mg/kg	99%
ortho-Xylene	mg/kg	98%

Notes:

--- Not Analysed

SOIL - Blind Replicate Results

Sample Date		04-10-17	04-10-17	RPD
Sample Identification		**AC041017-02**	**AC041017-03**	
Analyte	Units			
Total Metals				
Arsenic	mg/kg	5	5	0%
Cadmium	mg/kg	<0.4	<0.4	--
Chromium	mg/kg	11	14	24%
Copper	mg/kg	81	68	17%
Lead	mg/kg	110	48	**78%**
Mercury	mg/kg	0	<0.1	--
Nickel	mg/kg	280	310	10%
Zinc	mg/kg	210	150	33%
Polycyclic Aromatic Hydrocarbons				
Naphthalene	mg/kg	<0.1	<0.1	--
Acenaphthylene	mg/kg	<0.1	<0.1	--
Acenaphthene	mg/kg	<0.1	<0.1	--
Fluorene	mg/kg	<0.1	<0.1	--
Phenanthrene	mg/kg	<0.1	<0.1	--
Anthracene	mg/kg	<0.1	<0.1	--
Fluoranthene	mg/kg	0.1	0.2	67%
Pyrene	mg/kg	0.1	0.2	67%
Benz(a)anthracene	mg/kg	<0.1	<0.1	--
Chrysene	mg/kg	<0.1	0.1	--
Benzo(b&k)fluoranthene	mg/kg	<0.2	0.2	--
Benzo(a)pyrene	mg/kg	<0.1	<0.1	--
Indeno(1.2.3.cd)pyrene	mg/kg	<0.1	<0.1	--
Dibenz(a.h)anthracene	mg/kg	<0.1	<0.1	--
Benzo(g.h.i)perylene	mg/kg	<0.1	0.1	--
TOTAL PAHs	mg/kg	0.4	1.1	**93%**
BTEX				
Benzene	mg/kg	<0.2	<0.2	--
Toluene	mg/kg	<0.5	<0.5	--
Ethylbenzene	mg/kg	<1	<1	--
meta- & para-Xylene	mg/kg	<2	<2	--
ortho-Xylene	mg/kg	<1	<1	--
Total Petroleum Hydrocarbons				
F1 (C6-C10)	mg/kg	<25	<25	--
F2 (>C10-C16)	mg/kg	<50	<50	--
F3 (>C16-C34)	mg/kg	<100	<100	--
F4 (>C34-C40)	mg/kg	<100	<100	--

Values in Bold Indicate: RPD > 50 % When average concentration is > 10 x LOR
RPD > 75 % When average concentration is 5 to 10 x LOR
RPD > 100 % When average concentration is< 5 x LOR

SOIL - Trip Blank Results

Laboratory:		Envirolab
Laboratory Report Number:		177110
Sample ID		**Trip Blank**
Analyte	Units	
BTEX		
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
meta- & para-Xylene	mg/kg	<2
ortho-Xylene	mg/kg	<1
Total Petroleum Hydrocarbons		
C6 - C9 Fraction	mg/kg	<25
C10 - C14 Fraction	mg/kg	--
C15 - C28 Fraction	mg/kg	--
C29 - C36 Fraction	mg/kg	--

Notes:

--- Not Analysed

SOIL - Trip Spike Results

Laboratory:		Envirolab
Laboratory Report Number:		177110
Sample ID		**Trip Spike**
Analyte	Units	
BTEX		
Benzene	mg/kg	86%
Toluene	mg/kg	76%
Ethylbenzene	mg/kg	72%
meta- & para-Xylene	mg/kg	70%
ortho-Xylene	mg/kg	69%

Notes:

--- Not Analysed

APPENDIX G

Laboratory Reports and Certificates

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Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 169824

Client:

Geo-Environmental Engineering
82 Bridge St
Lane Cove
NSW 2066

Attention: Steve McCormack

Sample log in details:

Your Reference:	**E17013MOR**
No. of samples:	41 Soils, 1 Material
Date samples received / completed instructions received	22/06/2017 / 22/06/2017

This report supersedes previous report R00. Addition for weight of asbestos material as per client request.

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details:

Date results requested by: / Issue Date:	29/06/17 / 30/06/17
Date of Preliminary Report:	Not Issued

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Accredited for compliance with ISO/IEC 17025 - Testing **Tests not covered by NATA are denoted with *.**

Results Approved By:

David Springer
General Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	169824-1	169824-2	169824-4	169824-5	169824-8
Your Reference	---------- -	AC210617-01	AC210617-02	AC210617-04	AC210617-05	AC210617-08
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
TRHC6 - C9	mg/kg	<25	<25	<25	<25	<25
TRHC6 - C10	mg/kg	<25	<25	<25	<25	<25
vTPHC6 - C10 less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	80	78	75	79	84

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	169824-11	169824-12	169824-13	169824-14	169824-17
Your Reference	---------- -	AC210617-11	AC210617-12	AC210617-13	AC210617-14	AC210617-17
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
TRHC6 - C9	mg/kg	<25	<25	<25	<25	<25
TRHC6 - C10	mg/kg	<25	<25	<25	<25	<25
vTPHC6 - C10 less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	80	80	83	83	80

vTRH(C6-C10)/BTEXN in Soil						
Our Reference:	UNITS	169824-21	169824-24	169824-26	169824-40	169824-41
Your Reference	---------- -	AC210617-21	AC210617-24	AC210617-26	Trip Blank	Trip Spike
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
TRHC$_6$ - C$_9$	mg/kg	<25	<25	<25	<25	[NA]
TRHC$_6$ - C$_{10}$	mg/kg	<25	<25	<25	<25	[NA]
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25	<25	<25	<25	[NA]
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	101%
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	100%
Ethylbenzene	mg/kg	<1	<1	<1	<1	99%
m+p-xylene	mg/kg	<2	<2	<2	<2	99%
o-Xylene	mg/kg	<1	<1	<1	<1	98%
Total +ve Xylenes	mg/kg	<1	<1	<1	<1	[NA]
naphthalene	mg/kg	<1	<1	<1	<1	[NA]
Surrogate aaa-Trifluorotoluene	%	74	85	75	87	100

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	169824-1	169824-2	169824-4	169824-5	169824-8
Your Reference	---------- -	AC210617-01	AC210617-02	AC210617-04	AC210617-05	AC210617-08
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	83	83	86	83	82

svTRH (C10-C40) in Soil						
Our Reference:	UNITS	169824-11	169824-12	169824-13	169824-14	169824-17
Your Reference	---------- -	AC210617-11	AC210617-12	AC210617-13	AC210617-14	AC210617-17
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100	<100	110
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100	<100	110
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	110
Surrogate o-Terphenyl	%	85	88	82	84	83

svTRH (C10-C40) in Soil				
Our Reference:	UNITS	169824-21	169824-24	169824-26
Your Reference	----------	AC210617-21	AC210617-24	AC210617-26
Depth	---------- -	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil
Date extracted	-	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	26/06/2017	26/06/2017	26/06/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	<50	<50	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100	<100	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100	<100	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50	<50	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100	<100	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50
Surrogate o-Terphenyl	%	86	81	86

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- - ---------- - -	169824-1 AC210617-01 - 21/06/2017 Soil	169824-2 AC210617-02 - 21/06/2017 Soil	169824-4 AC210617-04 - 21/06/2017 Soil	169824-5 AC210617-05 - 21/06/2017 Soil	169824-8 AC210617-08 - 21/06/2017 Soil
Date extracted	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Surrogate p-Terphenyl-d14	%	127	88	85	97	90

PAHs in Soil Our Reference: Your Reference Depth Date Sampled Type of sample	UNITS ---------- - ---------- -	169824-11 AC210617-11 - 21/06/2017 Soil	169824-12 AC210617-12 - 21/06/2017 Soil	169824-13 AC210617-13 - 21/06/2017 Soil	169824-14 AC210617-14 - 21/06/2017 Soil	169824-17 AC210617-17 - 21/06/2017 Soil
Date extracted	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.4	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	0.4	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	0.5	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.3	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	<0.05	<0.05	2.6	<0.05	<0.05
Surrogate p-Terphenyl-d14	%	91	91	81	87	88

PAHs in Soil Our Reference: Your Reference	UNITS ---------- -	169824-21 AC210617-21	169824-24 AC210617-24	169824-26 AC210617-26
Depth	----------	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil
Date extracted	-	26/06/2017	26/06/2017	28/06/2017
Date analysed	-	27/06/2017	27/06/2017	29/06/2017
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.07	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	0.07	<0.05	<0.05
Surrogate p-Terphenyl-d14	%	86	85	98

Organochlorine Pesticides in soil						
Our Reference:	UNITS	169824-1	169824-4	169824-11	169824-14	169824-24
Your Reference	---------- -	AC210617-01	AC210617-04	AC210617-11	AC210617-14	AC210617-24
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	90	85	86	87	85

PCBs in Soil						
Our Reference:	UNITS	169824-1	169824-4	169824-11	169824-14	169824-24
Your Reference	----------	AC210617-01	AC210617-04	AC210617-11	AC210617-14	AC210617-24
	-					
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	90	85	86	87	85

Acid Extractable metals in soil						
Our Reference:	UNITS	169824-1	169824-2	169824-4	169824-5	169824-6
Your Reference	---------- -	AC210617-01	AC210617-02	AC210617-04	AC210617-05	AC210617-06
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Arsenic	mg/kg	8	6	10	6	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	20	24	18	14	23
Copper	mg/kg	12	13	23	25	10
Lead	mg/kg	40	11	43	47	11
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	3	2	5	4	2
Zinc	mg/kg	34	5	53	64	6

Acid Extractable metals in soil						
Our Reference:	UNITS	169824-8	169824-9	169824-11	169824-12	169824-13
Your Reference	---------- -	AC210617-08	AC210617-09	AC210617-11	AC210617-12	AC210617-13
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Arsenic	mg/kg	<4	7	5	6	12
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	9	20	13	23	20
Copper	mg/kg	7	8	18	13	38
Lead	mg/kg	14	12	71	14	48
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	4	1	6	1	9
Zinc	mg/kg	32	14	51	6	65

Acid Extractable metals in soil						
Our Reference:	UNITS	169824-14	169824-16	169824-17	169824-18	169824-19
Your Reference	---------- -	AC210617-14	AC210617-16	AC210617-17	AC210617-18	AC210617-19
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Arsenic	mg/kg	11	<4	16	19	9
Cadmium	mg/kg	<0.4	<0.4	0.5	0.6	<0.4
Chromium	mg/kg	21	5	54	51	25
Copper	mg/kg	8	6	33	43	12
Lead	mg/kg	22	6	40	51	11
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	<1	18	11	2
Zinc	mg/kg	12	3	90	93	7

Acid Extractable metals in soil						
Our Reference:	UNITS	169824-21	169824-22	169824-23	169824-24	169824-26
Your Reference	---------- -	AC210617-21	AC210617-22	AC210617-23	AC210617-24	AC210617-26
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Arsenic	mg/kg	5	10	9	<4	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	14	18	29	8	21
Copper	mg/kg	20	3	8	18	8
Lead	mg/kg	43	13	13	18	8
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	2	2	2	1
Zinc	mg/kg	69	4	5	19	3

Moisture						
Our Reference:	UNITS	169824-1	169824-2	169824-4	169824-5	169824-6
Your Reference	---------- -	AC210617-01	AC210617-02	AC210617-04	AC210617-05	AC210617-06
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/06/2017	23/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	26/06/2017	26/06/2017	27/06/2017	27/06/2017	27/06/2017
Moisture	%	21	26	20	22	28

Moisture						
Our Reference:	UNITS	169824-8	169824-9	169824-11	169824-12	169824-13
Your Reference	---------- -	AC210617-08	AC210617-09	AC210617-11	AC210617-12	AC210617-13
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
Moisture	%	16	24	15	29	16

Moisture						
Our Reference:	UNITS	169824-14	169824-16	169824-17	169824-18	169824-19
Your Reference	---------- -	AC210617-14	AC210617-16	AC210617-17	AC210617-18	AC210617-19
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
Moisture	%	17	18	17	17	23

Moisture						
Our Reference:	UNITS	169824-21	169824-22	169824-23	169824-24	169824-26
Your Reference	---------- -	AC210617-21	AC210617-22	AC210617-23	AC210617-24	AC210617-26
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	26/06/2017	26/06/2017	26/06/2017	26/06/2017	26/06/2017
Date analysed	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
Moisture	%	21	11	29	15	24

CEC Our Reference: Your Reference	UNITS ----------	169824-1 AC210617-01	169824-2 AC210617-02	169824-4 AC210617-04	169824-6 AC210617-06	169824-8 AC210617-08
Depth	- ----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/06/2017	28/06/2017	28/06/2017	28/06/2017	28/06/2017
Date analysed	-	28/06/2017	28/06/2017	28/06/2017	28/06/2017	28/06/2017
Exchangeable Ca	meq/100g	3.8	5.3	10	6.1	2.2
Exchangeable K	meq/100g	0.2	0.2	0.1	0.1	0.2
Exchangeable Mg	meq/100g	2.7	6.9	1.6	5.1	0.47
Exchangeable Na	meq/100g	0.10	0.32	<0.1	0.31	<0.1
Cation Exchange Capacity	meq/100g	6.9	13	12	12	2.9

CEC Our Reference: Your Reference	UNITS ----------	169824-9 AC210617-09	169824-11 AC210617-11	169824-12 AC210617-12	169824-13 AC210617-13	169824-14 AC210617-14
Depth	- ----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/06/2017	28/06/2017	28/06/2017	28/06/2017	28/06/2017
Date analysed	-	28/06/2017	28/06/2017	28/06/2017	28/06/2017	28/06/2017
Exchangeable Ca	meq/100g	7.1	20	5.2	10	5.3
Exchangeable K	meq/100g	0.2	0.5	0.2	0.3	<0.1
Exchangeable Mg	meq/100g	4.2	0.68	3.7	0.92	2.0
Exchangeable Na	meq/100g	0.35	<0.1	0.27	<0.1	0.15
Cation Exchange Capacity	meq/100g	12	22	9.3	12	7.5

CEC Our Reference: Your Reference	UNITS ----------	169824-16 AC210617-16	169824-17 AC210617-17	169824-19 AC210617-19	169824-21 AC210617-21	169824-22 AC210617-22
Depth	- ----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	28/06/2017	28/06/2017	28/06/2017	28/06/2017	28/06/2017
Date analysed	-	28/06/2017	28/06/2017	28/06/2017	28/06/2017	28/06/2017
Exchangeable Ca	meq/100g	1.9	11	2.6	7.4	2.6
Exchangeable K	meq/100g	0.2	0.2	0.2	0.2	<0.1
Exchangeable Mg	meq/100g	6.0	1.9	7.2	2.5	1.2
Exchangeable Na	meq/100g	0.80	<0.1	0.63	0.11	0.10
Cation Exchange Capacity	meq/100g	8.9	14	11	10	4.0

CEC Our Reference: Your Reference	UNITS ----------	169824-23 AC210617-23	169824-24 AC210617-24	169824-26 AC210617-26
Depth	- ----------	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil
Date prepared	-	28/06/2017	28/06/2017	28/06/2017
Date analysed	-	28/06/2017	28/06/2017	28/06/2017
Exchangeable Ca	meq/100g	3.5	3.6	11
Exchangeable K	meq/100g	0.2	0.3	<0.1
Exchangeable Mg	meq/100g	8.8	1.1	4.0
Exchangeable Na	meq/100g	0.62	<0.1	0.46
Cation Exchange Capacity	meq/100g	13	5.0	15

Misc Inorg - Soil						
Our Reference:	UNITS	169824-1	169824-2	169824-4	169824-6	169824-8
Your Reference	---------- -	AC210617-01	AC210617-02	AC210617-04	AC210617-06	AC210617-08
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
Date analysed	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
pH 1:5 soil:water	pH Units	5.8	5.3	6.6	5.5	5.7

Misc Inorg - Soil						
Our Reference:	UNITS	169824-9	169824-11	169824-12	169824-13	169824-14
Your Reference	---------- -	AC210617-09	AC210617-11	AC210617-12	AC210617-13	AC210617-14
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
Date analysed	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
pH 1:5 soil:water	pH Units	5.1	8.3	5.2	7.7	7.5

Misc Inorg - Soil						
Our Reference:	UNITS	169824-16	169824-17	169824-19	169824-21	169824-22
Your Reference	---------- -	AC210617-16	AC210617-17	AC210617-19	AC210617-21	AC210617-22
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
Date analysed	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
pH 1:5 soil:water	pH Units	5.2	7.0	5.2	6.5	6.3

Misc Inorg - Soil						
Our Reference:	UNITS	169824-23	169824-24	169824-26	169824-33	169824-34
Your Reference	---------- -	AC210617-23	AC210617-24	AC210617-26	TP2	TP2
Depth	----------	-	-	-	0.4-0.5	1.0-1.1
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
Date analysed	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017	27/06/2017
pH 1:5 soil:water	pH Units	5.8	5.8	7.0	6.2	5.3
Chloride, Cl 1:5 soil:water	mg/kg	[NA]	[NA]	[NA]	<10	24
Sulphate, SO4 1:5 soil:water	mg/kg	[NA]	[NA]	[NA]	<10	86
Resistivity in soil*	ohm m	[NA]	[NA]	[NA]	360	120

Misc Inorg - Soil					
Our Reference:	UNITS	169824-35	169824-36	169824-37	169824-38
Your Reference	---------- -	TP3	TP6	BH1	BH2
Depth	----------	0.8-0.9	0.5-0.6	0.6-0.7	0.6-0.7
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017
Date analysed	-	27/06/2017	27/06/2017	27/06/2017	27/06/2017
pH 1:5 soil:water	pH Units	5.2	5.2	5.5	5.5
Chloride, Cl 1:5 soil:water	mg/kg	<10	20	<10	<10
Sulphate, SO4 1:5 soil:water	mg/kg	92	130	65	85
Resistivity in soil*	ohm m	170	110	200	160

Asbestos ID - soils NEPM - ASB-001						
Our Reference:	UNITS	169824-27	169824-28	169824-29	169824-30	169824-31
Your Reference	---------- -	AC210617-TP1	AC210617-TP2	AC210617-TP3	AC210617-TP4	AC210617-TP5
Depth	----------	-	-	-	-	-
Date Sampled		21/06/2017	21/06/2017	21/06/2017	21/06/2017	21/06/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	29/06/2017	29/06/2017	29/06/2017	29/06/2017	29/06/2017
Sample mass tested	g	659.66	749.89	844.31	741.6	766.33
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	–	–	–	–	–
FA and AF Estimation*	g	–	–	–	–	–
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*[#2]	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001		
Our Reference:	UNITS	169824-32
Your Reference	---------- -	AC210617-TP6
Depth	----------	-
Date Sampled		21/06/2017
Type of sample		Soil
Date analysed	-	29/06/2017
Sample mass tested	g	839.59
Sample Description	-	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibre detected
Trace Analysis	-	No asbestos detected
Total Asbestos[#1]	g/kg	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected
ACM >7mm Estimation*	g	–
FA and AF Estimation*	g	–
ACM >7mm Estimation*	%(w/w)	<0.01
FA and AF Estimation*[#2]	%(w/w)	<0.001

Asbestos ID - materials		
Our Reference:	UNITS	169824-39
Your Reference	----------	AC210617-100
	-	
Depth	----------	-
Date Sampled		21/06/2017
Type of sample		Material
Date analysed	-	27/06/2017
Mass / Dimension of Sample	-	80x65x5mm (31.54g)
Sample Description	-	Grey compressed fibre cement material
Asbestos ID in materials	-	Chrysotile asbestos detected Amosite asbestos detected Crocidolite asbestos detected

Method ID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'TEQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'TEQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'TEQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Metals-020	Determination of various metals by ICP-AES.

Method ID	Methodology Summary
Metals-021	Determination of Mercury by Cold Vapour AAS.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Alternatively determined by colourimetry/turbidity using Discrete Analyer.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25oC in accordance with APHA 22nd ED 2510 and Rayment & Lyons. Resistivity is calculated from Conductivity.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. **NOTE** #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) **NOTE** #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			26/06/2017	169824-1	26/06/2017 || 26/06/2017	LCS-7	26/06/2017
Date analysed	-			26/06/2017	169824-1	26/06/2017 || 26/06/2017	LCS-7	26/06/2017
TRH C_6 - C_9	mg/kg	25	Org-016	<25	169824-1	<25 || <25	LCS-7	87%
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	169824-1	<25 || <25	LCS-7	87%
Benzene	mg/kg	0.2	Org-016	<0.2	169824-1	<0.2 || <0.2	LCS-7	94%
Toluene	mg/kg	0.5	Org-016	<0.5	169824-1	<0.5 || <0.5	LCS-7	91%
Ethylbenzene	mg/kg	1	Org-016	<1	169824-1	<1 || <1	LCS-7	82%
m+p-xylene	mg/kg	2	Org-016	<2	169824-1	<2 || <2	LCS-7	83%
o-Xylene	mg/kg	1	Org-016	<1	169824-1	<1 || <1	LCS-7	80%
naphthalene	mg/kg	1	Org-014	<1	169824-1	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	88	169824-1	80 || 78 || RPD: 3	LCS-7	82%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			26/06/2017	169824-1	26/06/2017 || 26/06/2017	LCS-7	26/06/2017
Date analysed	-			26/06/2017	169824-1	26/06/2017 || 26/06/2017	LCS-7	26/06/2017
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	169824-1	<50 || <50	LCS-7	113%
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	169824-1	<100 || <100	LCS-7	108%
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	169824-1	<100 || <100	LCS-7	91%
TRH >C_{10}-C_{16}	mg/kg	50	Org-003	<50	169824-1	<50 || <50	LCS-7	113%
TRH >C_{16}-C_{34}	mg/kg	100	Org-003	<100	169824-1	<100 || <100	LCS-7	108%
TRH >C_{34}-C_{40}	mg/kg	100	Org-003	<100	169824-1	<100 || <100	LCS-7	91%
Surrogate o-Terphenyl	%		Org-003	88	169824-1	83 || 84 || RPD: 1	LCS-7	86%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			28/06/2017	169824-1	26/06/2017 || 26/06/2017	LCS-7	26/06/2017
Date analysed	-			29/06/2017	169824-1	27/06/2017 || 27/06/2017	LCS-7	27/06/2017
Naphthalene	mg/kg	0.1	Org-012	<0.1	169824-1	<0.1 || <0.1	LCS-7	98%
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012	<0.1	169824-1	<0.1 || <0.1	LCS-7	92%
Phenanthrene	mg/kg	0.1	Org-012	<0.1	169824-1	<0.1 || <0.1	LCS-7	95%
Anthracene	mg/kg	0.1	Org-012	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	169824-1	<0.1 || <0.1	LCS-7	95%
Pyrene	mg/kg	0.1	Org-012	<0.1	169824-1	<0.1 || <0.1	LCS-7	94%
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012	<0.1	169824-1	<0.1 || <0.1	LCS-7	108%
Benzo(b,j+k) fluoranthene	mg/kg	0.2	Org-012	<0.2	169824-1	<0.2 || <0.2	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	169824-1	<0.05 || <0.05	LCS-7	86%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	105	169824-1	127 || 91 || RPD: 33	LCS-7	111%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			26/06/2017	169824-1	26/06/2017 || 26/06/2017	LCS-7	26/06/2017
Date analysed	-			26/06/2017	169824-1	26/06/2017 || 26/06/2017	LCS-7	26/06/2017
HCB	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	LCS-7	80%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	LCS-7	96%
Heptachlor	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	LCS-7	100%
delta-BHC	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	LCS-7	92%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	LCS-7	95%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	LCS-7	97%
Dieldrin	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	LCS-7	104%
Endrin	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	LCS-7	96%
pp-DDD	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	LCS-7	104%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	LCS-7	89%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	93	169824-1	90 || 91 || RPD: 1	LCS-7	107%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			26/06/2017	169824-1	26/06/2017 || 26/06/2017	LCS-7	26/06/2017
Date analysed	-			26/06/2017	169824-1	26/06/2017 || 26/06/2017	LCS-7	26/06/2017
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	169824-1	<0.1 || <0.1	LCS-7	106%
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	169824-1	<0.1 || <0.1	[NR]	[NR]
Surrogate TCLMX	%		Org-006	93	169824-1	90 || 91 || RPD: 1	LCS-7	85%

QUALITY CONTROL Acid Extractable metals in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			23/06/2017	169824-1	26/06/2017 || 26/06/2017	LCS-7	23/06/2017
Date analysed	-			26/06/2017	169824-1	26/06/2017 || 26/06/2017	LCS-7	26/06/2017
Arsenic	mg/kg	4	Metals-020	<4	169824-1	8 || 9 || RPD: 12	LCS-7	103%
Cadmium	mg/kg	0.4	Metals-020	<0.4	169824-1	<0.4 || <0.4	LCS-7	96%
Chromium	mg/kg	1	Metals-020	<1	169824-1	20 || 19 || RPD: 5	LCS-7	102%
Copper	mg/kg	1	Metals-020	<1	169824-1	12 || 12 || RPD: 0	LCS-7	104%
Lead	mg/kg	1	Metals-020	<1	169824-1	40 || 36 || RPD: 11	LCS-7	96%
Mercury	mg/kg	0.1	Metals-021	<0.1	169824-1	<0.1 || <0.1	LCS-7	98%
Nickel	mg/kg	1	Metals-020	<1	169824-1	3 || 3 || RPD: 0	LCS-7	97%
Zinc	mg/kg	1	Metals-020	<1	169824-1	34 || 31 || RPD: 9	LCS-7	98%

QUALITY CONTROL CEC	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD
Date prepared	-			28/06/2017	169824-1	28/06/2017 || 28/06/2017
Date analysed	-			28/06/2017	169824-1	28/06/2017 || 28/06/2017
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	169824-1	3.8 || 4.0 || RPD: 5
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	169824-1	0.2 || 0.2 || RPD: 0
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	169824-1	2.7 || 2.9 || RPD: 7
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	169824-1	0.10 || 0.10 || RPD: 0

QUALITY CONTROL Misc Inorg - Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base ll Duplicate ll %RPD	Spike Sm#	Spike % Recovery
Date prepared	-			27/06/2017	169824-1	27/06/2017 || 27/06/2017	LCS-7	27/06/2017
Date analysed	-			27/06/2017	169824-1	27/06/2017 || 27/06/2017	LCS-7	27/06/2017
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	169824-1	5.8 || 5.8 || RPD: 0	LCS-7	102%
Chloride, Cl 1:5 soil:water	mg/kg	10	Inorg-081	<10	[NT]	[NT]	LCS-7	84%
Sulphate, SO4 1:5 soil:water	mg/kg	10	Inorg-081	<10	[NT]	[NT]	LCS-7	92%
Resistivity in soil*	ohm m	1	Inorg-002	<1.0	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	169824-17	26/06/2017 || 26/06/2017	169824-4	26/06/2017
Date analysed	-	169824-17	26/06/2017 || 26/06/2017	169824-4	26/06/2017
TRHC$_{6}$ - C$_{9}$	mg/kg	169824-17	<25 || <25	169824-4	77%
TRHC$_{6}$ - C$_{10}$	mg/kg	169824-17	<25 || <25	169824-4	77%
Benzene	mg/kg	169824-17	<0.2 || <0.2	169824-4	83%
Toluene	mg/kg	169824-17	<0.5 || <0.5	169824-4	84%
Ethylbenzene	mg/kg	169824-17	<1 || <1	169824-4	73%
m+p-xylene	mg/kg	169824-17	<2 || <2	169824-4	72%
o-Xylene	mg/kg	169824-17	<1 || <1	169824-4	70%
naphthalene	mg/kg	169824-17	<1 || <1	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%	169824-17	80 || 93 || RPD: 15	169824-4	77%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	169824-17	26/06/2017 || 26/06/2017	169824-4	26/06/2017
Date analysed	-	169824-17	26/06/2017 || 26/06/2017	169824-4	26/06/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	169824-17	<50 || <50	169824-4	106%
TRHC$_{15}$ - C$_{28}$	mg/kg	169824-17	<100 || <100	169824-4	105%
TRHC$_{29}$ - C$_{36}$	mg/kg	169824-17	110 || 180 || RPD: 48	169824-4	74%
TRH>C$_{10}$-C$_{16}$	mg/kg	169824-17	<50 || <50	169824-4	106%
TRH>C$_{16}$-C$_{34}$	mg/kg	169824-17	<100 || <100	169824-4	105%
TRH>C$_{34}$-C$_{40}$	mg/kg	169824-17	110 || 190 || RPD: 53	169824-4	74%
Surrogate o-Terphenyl	%	169824-17	83 || 83 || RPD: 0	169824-4	86%

QUALITY CONTROL PAHs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	169824-17	26/06/2017 || 26/06/2017	169824-4	26/06/2017
Date analysed	-	169824-17	27/06/2017 || 27/06/2017	169824-4	27/06/2017
Naphthalene	mg/kg	169824-17	<0.1 || <0.1	169824-4	98%
Acenaphthylene	mg/kg	169824-17	<0.1 || <0.1	[NR]	[NR]
Acenaphthene	mg/kg	169824-17	<0.1 || <0.1	[NR]	[NR]
Fluorene	mg/kg	169824-17	<0.1 || <0.1	169824-4	91%
Phenanthrene	mg/kg	169824-17	<0.1 || <0.1	169824-4	91%
Anthracene	mg/kg	169824-17	<0.1 || <0.1	[NR]	[NR]
Fluoranthene	mg/kg	169824-17	<0.1 || <0.1	169824-4	92%
Pyrene	mg/kg	169824-17	<0.1 || <0.1	169824-4	97%
Benzo(a)anthracene	mg/kg	169824-17	<0.1 || <0.1	[NR]	[NR]
Chrysene	mg/kg	169824-17	<0.1 || <0.1	169824-4	109%
Benzo(b,j+k)fluoranthene	mg/kg	169824-17	<0.2 || <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	169824-17	<0.05 || <0.05	169824-4	93%
Indeno(1,2,3-c,d)pyrene	mg/kg	169824-17	<0.1 || <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	169824-17	<0.1 || <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	169824-17	<0.1 || <0.1	[NR]	[NR]
Surrogate p-Terphenyl-d14	%	169824-17	88 || 84 || RPD: 5	169824-4	111%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	169824-4	26/06/2017
Date analysed	-	[NT]	[NT]	169824-4	26/06/2017
HCB	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	[NT]	[NT]	169824-4	81%
gamma-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	[NT]	[NT]	169824-4	96%
Heptachlor	mg/kg	[NT]	[NT]	169824-4	100%
delta-BHC	mg/kg	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	[NT]	[NT]	169824-4	93%
Heptachlor Epoxide	mg/kg	[NT]	[NT]	169824-4	95%
gamma-Chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	[NT]	[NT]	169824-4	98%
Dieldrin	mg/kg	[NT]	[NT]	169824-4	104%
Endrin	mg/kg	[NT]	[NT]	169824-4	97%
pp-DDD	mg/kg	[NT]	[NT]	169824-4	104%
Endosulfan II	mg/kg	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	[NT]	[NT]	169824-4	92%

QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Methoxychlor	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%	[NT]	[NT]	169824-4	105%
QUALITY CONTROL PCBs in Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date extracted	-	[NT]	[NT]	169824-4	26/06/2017
Date analysed	-	[NT]	[NT]	169824-4	26/06/2017
Aroclor 1016	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1221	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1232	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1242	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1248	mg/kg	[NT]	[NT]	[NR]	[NR]
Aroclor 1254	mg/kg	[NT]	[NT]	169824-4	112%
Aroclor 1260	mg/kg	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%	[NT]	[NT]	169824-4	85%
QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	169824-17	26/06/2017 || 26/06/2017	169824-4	26/06/2017
Date analysed	-	169824-17	26/06/2017 || 26/06/2017	169824-4	26/06/2017
Arsenic	mg/kg	169824-17	16 || 14 || RPD: 13	169824-4	86%
Cadmium	mg/kg	169824-17	0.5 || 0.6 || RPD: 18	169824-4	92%
Chromium	mg/kg	169824-17	54 || 56 || RPD: 4	169824-4	88%
Copper	mg/kg	169824-17	33 || 33 || RPD: 0	169824-4	102%
Lead	mg/kg	169824-17	40 || 43 || RPD: 7	169824-4	98%
Mercury	mg/kg	169824-17	<0.1 || <0.1	169824-4	94%
Nickel	mg/kg	169824-17	18 || 25 || RPD: 33	169824-4	92%
Zinc	mg/kg	169824-17	90 || 88 || RPD: 2	169824-4	104%
QUALITY CONTROL CEC	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	169824-16	28/06/2017 || 28/06/2017	LCS-1	28/06/2017
Date analysed	-	169824-16	28/06/2017 || 28/06/2017	LCS-1	28/06/2017
Exchangeable Ca	meq/100 g	169824-16	1.9 || 1.8 || RPD: 5	LCS-1	100%
Exchangeable K	meq/100 g	169824-16	0.2 || 0.2 || RPD: 0	LCS-1	111%
Exchangeable Mg	meq/100 g	169824-16	6.0 || 5.9 || RPD: 2	LCS-1	100%
Exchangeable Na	meq/100 g	169824-16	0.80 || 0.77 || RPD: 4	LCS-1	105%

QUALITY CONTROL Misc Inorg - Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	169824-16	27/06/2017 || 27/06/2017	LCS-1	27/06/2017
Date analysed	-	169824-16	27/06/2017 || 27/06/2017	LCS-1	27/06/2017
pH 1:5 soil:water	pH Units	169824-16	5.2 || 5.1 || RPD: 2	LCS-1	102%
Chloride, Cl 1:5 soil:water	mg/kg	[NT]	[NT]	[NR]	[NR]
Sulphate, SO4 1:5 soil:water	mg/kg	[NT]	[NT]	[NR]	[NR]
Resistivity in soil*	ohm m	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL Misc Inorg - Soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD	Spike Sm#	Spike % Recovery
Date prepared	-	169824-35	27/06/2017 || 27/06/2017	169824-34	27/06/2017
Date analysed	-	169824-35	27/06/2017 || 27/06/2017	169824-34	27/06/2017
pH 1:5 soil:water	pH Units	169824-35	5.2 || 5.2 || RPD: 0	[NR]	[NR]
Chloride, Cl 1:5 soil:water	mg/kg	169824-35	<10 || <10	169824-34	70%
Sulphate, SO4 1:5 soil:water	mg/kg	169824-35	92 || 90 || RPD: 2	169824-34	110%
Resistivity in soil*	ohm m	169824-35	170 || 160 || RPD: 6	[NR]	[NR]

QUALITY CONTROL Acid Extractable metals in soil	UNITS	Dup. Sm#	Duplicate Base + Duplicate + %RPD
Date prepared	-	169824-11	26/06/2017 || 26/06/2017
Date analysed	-	169824-11	26/06/2017 || 26/06/2017
Arsenic	mg/kg	169824-11	5 || 4 || RPD: 22
Cadmium	mg/kg	169824-11	<0.4 || <0.4
Chromium	mg/kg	169824-11	13 || 14 || RPD: 7
Copper	mg/kg	169824-11	18 || 17 || RPD: 6
Lead	mg/kg	169824-11	71 || 57 || RPD: 22
Mercury	mg/kg	169824-11	<0.1 || <0.1
Nickel	mg/kg	169824-11	6 || 6 || RPD: 0
Zinc	mg/kg	169824-11	51 || 50 || RPD: 2

Report Comments:

Asbestos-ID in soil: NEPM
This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013.
This is reported outside our scope of NATA accreditation.

Asbestos ID was analysed by Approved Identifier:	Lulu Scott, Paul Ching
Asbestos ID was authorised by Approved Signatory:	Paul Ching

INS: Insufficient sample for this test	PQL: Practical Quantitation Limit	NT: Not tested
NR: Test not required	RPD: Relative Percent Difference	NA: Test not required
<: Less than	>: Greater than	LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.

Duplicate: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.

LCS (Laboratory Control Sample) : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.
Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.
Spikes for Physical and Aggregate Tests are not applicable.
For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable.
Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Geo-Environmental Engineering Pty Ltd
Project Mgr:	S. McCormack
Sampler:	A. Chiem
Address:	82 Bridge Street Lane Cove NSW 2066
Email:	stephen@geoenvironmental.com.au andy@geoenvironmental.com.au
Phone:	0431 480 980

Client Project Name and Number:	E17013MOR
PO No.:	
Envirolab Services Quote No. :	
Date results required:	
Or choose: standard / 1 day / 2 day / 3 day	5 days

Note: Inform lab in advance if urgent turnaround is required - surcharge applies

Envirolab Services
12 Ashley St, Chatswood, NSW, 2067

Phone: 02 9910 6200
Fax: 02 9910 6201
E-mail: ahie@envirolabservices.com.au

Contact: Aileen Hie

Sample information				Tests Required														Comments
Envirolab Sample ID	Client Sample ID	Date sampled	Type of sample	Combination 3	Combination 3a	Combination 4	Combination 7	Combination 7a	Combination 5	Combination 5a	Metals (Std8)	Asbestos NEPM	EC	resistivity calc / pH / sulfate / Chloride	BTEX / Volatile TRH	BTEX	CEC/pH	TRH/BTEX	Provide as much information about the sample as you can
1	AC210617-01	21/06/2017	soil jar						1								1		
2	AC210617-02	21/06/2017	soil jar	1													1		
3	AC210617-03	21/06/2017	soil jar																
4	AC210617-04	21/06/2017	soil jar						1								1		
5	AC210617-05	21/06/2017	soil jar	1															
6	AC210617-06	21/06/2017	soil jar								1						1		
7	AC210617-07	21/06/2017	soil jar																
8	AC210617-08	21/06/2017	soil jar	1													1		
9	AC210617-09	21/06/2017	soil jar								1						1		
10	AC210617-10	21/06/2017	soil jar																
11	AC210617-11	21/06/2017	soil jar						1								1		
12	AC210617-12	21/06/2017	soil jar	1													1		
13	AC210617-13	21/06/2017	soil jar	1													1		

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 169824
Date Received: 22/6/2017
Time Received: 15:00
Received by: PR
Temp: Cool/Ambient
Cooling: Ice/Icepack 4.5
Security: Intact/Broken/None

Relinquished by (company):	Geo-Environmental Engineering	**Received by (company):**	ELS
Print Name:	A. Chiem	**Print Name:**	PRay
Date & Time:	22-Jun-17	**Date & Time:**	22/6/2017
Signature:		**Signature:**	PR

Samples Received: 1
Temperature Recieved at: (if applicable)
Transported by: Hand delivered / courier

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Geo-Environmental Engineering Pty Ltd
Project Mgr:	S. McCormack
Sampler:	A. Chiem
Address:	82 Bridge Street Lane Cove NSW 2066
Email:	stephen@geoenvironmental.com.au
Phone:	0431 480 980

Client Project Name and Number:	E17013MOR
PO No.:	
Envirolab Services Quote No. :	
Date results required:	
Or choose: standard / 1 day / 2 day / 3 day	5 days
Note: Inform lab in advance if urgent turnaround is required - surcharge applies	

Envirolab Services
12 Ashley St, Chatswood, NSW, 2067

Phone: 02 9910 6200
Fax: 02 9910 6201
E-mail: ahie@envirolabservices.com.au

Contact: Aileen Hie

Sample information				Tests Required															Comments
Envirolab Sample ID 169824	Client Sample ID	Date sampled	Type of sample	Combination 3	Combination 3a	Combination 4	Combination 7	Combination 7a	Combination 5	Combination 5a	Metals (Std8)	Asbestos NEPM	EC	resistivity calc / pH / sulfate / Chloride	BTEX / Volatile TRH	BTEX	CEC/pH	TRH/BTEX	Provide as much information about the sample as you can
14	AC210617-14	21/06/2017	soil jar						1								1		
15	AC210617-15	21/06/2017	soil jar																
16	AC210617-16	21/06/2017	soil jar								1						1		
17	AC210617-17	21/06/2017	soil jar	1													1		
18	AC210617-18	21/06/2017	soil jar								1								
19	AC210617-19	21/06/2017	soil jar								1						1		
20	AC210617-20	21/06/2017	soil jar																
21	AC210617-21	21/06/2017	soil jar	1													1		
22	AC210617-22	21/06/2017	soil jar								1						1		
23	AC210617-23	21/06/2017	soil jar								1						1		
24	AC210617-24	21/06/2017	soil jar						1								1		
25	AC210617-25	21/06/2017	soil jar																
26	AC210617-26	21/06/2017	soil jar	1													1		

Relinquished by (company):	Geo-Environmental Engineering
Print Name:	A. Chiem
Date & Time:	22-Jun-17
Signature:	

Received by (company):	EJ
Print Name:	PRay
Date & Time:	22/6/2017
Signature:	

Temperature Recieved at: (if applicable)
Transported by: Hand delivered / courier

CHAIN OF CUSTODY - Client

ENVIROLAB SERVICES

Client:	Geo-Environmental Engineering Pty Ltd	**Client Project Name and Number:** E17013MOR	**Envirolab Services** 12 Ashley St, Chatswood, NSW, 2067
Project Mgr:	S. McCormack	**PO No.:**	Phone: 02 9910 6200
Sampler:	A. Chiem	**Envirolab Services Quote No. :**	Fax: 02 9910 6201
Address:	82 Bridge Street Lane Cove NSW 2066	**Date results required:** **Or choose: standard / 1 day / 2 day / 3 day** 5 days *Note: Inform lab in advance if urgent turnaround is required - surcharge applies*	E-mail: ahie@envirolabservices.com.au Contact: Aileen Hie
Email:	stephen@geoenvironmental.com.au		
Phone:	0431 480 980		

Sample information				Tests Required													Comments
Envirolab Sample ID 169824	Client Sample ID	Date sampled	Type of sample	Combination 3	Combination 3a	Combination 4	Combination 7	Combination 7a	Combination 5	Combination 5a	Metals (Std8)	Asbestos NEPM	EC	resistivity calc / pH / sulfate / Chloride	BTEX / Volatile TRH	BTEX	CEC/pH	Asbestos	Provide as much information about the sample as you can
27	AC210617-TP1	21/06/2017	soil bag									1							7.2kg
28	AC210617-TP2	21/06/2017	soil bag									1							9.4kg
29	AC210617-TP3	21/06/2017	soil bag									1							15.6kg
30	AC210617-TP4	21/06/2017	soil bag									1							14.9kg
31	AC210617-TP5	21/06/2017	soil bag									1							14.8kg
32	AC210617-TP6	21/06/2017	soil bag									1							17.4kg
33	TP2 / 0.4 - 0.5	21/06/2017	soil bag											1					
34	TP2 / 1.0 - 1.1	21/06/2017	soil bag											1					
35	TP3 / 0.8 - 0.9	21/06/2017	soil bag											1					
36	TP6 / 0.5 - 0.6	21/06/2017	soil bag											1					
37	BH1 / 0.6 - 0.7	21/06/2017	soil bag											1					
38	BH2 / 0.6 - 0.7	21/06/2017	soil bag											1					
39	AC210617-100	21/06/2017	bag															1	fibro fragment
40	Trip Blank	21/06/2017	--												1				
41	Trip Spike	21/06/2017	--													1			

Relinquished by (company):	Geo-Environmental Engineering	**Received by (company):** PRay.	**Samples Received: Cool or Ambient (circle one)**
Print Name:	A. Chiem	**Print Name:** AJ	**Temperature Recieved at:** (if applicable)
Date & Time:	22-Jun-17	**Date & Time:** 22/6/2017	**Transported by: Hand delivered / courier**
Signature:		**Signature:**	**Page No: 3 of 3**

extra 42 BH1/1.1-1.2