



Douglas Partners

Geotechnics • Environment • Groundwater

Integrated Practical Solutions

REPORT

on

PHASE 1 CONTAMINATION ASSESSMENT WITH LIMITED INTRUSIVE SAMPLING

**MORLING COLLEGE
128 HERRING ROAD
MACQUARIE PARK**

Prepared for
LIPMAN PROPERTIES PTY LTD

Project No. 71476.01
December 2009



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EXECUTIVE SUMMARY

This report details the methodology and results of a phase 1 contamination assessment with limited intrusive sampling undertaken by Douglas Partners Pty Ltd (DP) at part of the Morling College site at 128 Herring Road, Macquarie Park. It is understood the assessment has been requested for planning and conceptual design purposes associated with a proposed staged residential development comprising five stages of multi-storey residential unit blocks. Several basement levels of car parking are proposed for each apartment building.

The objectives of the assessment were to investigate the potential for on-site soil and groundwater contamination, particularly focussing on the proposed Stage 1, and to a lesser extent the remaining stages of proposed development, provide an opinion on the suitability of the site for the proposed development, provide a preliminary *in situ* waste classification of soils / materials encountered in the bores, and provide recommendations for further assessment and/or remediation, if considered necessary.

The site comprises the whole of Lot B in DP368446 and part Lot 1 in DP876482 and occupies an area of approximately 1.7 hectares. The site is bound to the south-east by Herring Road, to the north-east by Dunmore Lang College (part of Macquarie University), to the north-west by the Cochlear Building site and a day-care centre (part of Macquarie University) and to the south-west by the remaining grounds of Morling College.

At the time of conducting the assessment, the site was being utilised by the Morling College including administration, parking, accommodation, recreation and sporting uses. The site has a general fall towards the north-west and is predominantly grass covered and landscaped apart from a small number of dwellings, administration building, a mens accommodation building, car parking and a few sheds. Filling was noted in an earth mound at the Herring Road frontage and at the rear of the site forming a level playing field. The site location and general layout is presented in Drawing 1, Appendix B.

From the site history information obtained, it is apparent that the site was previously used for agricultural purposes including poultry farming and tea tree planting. An underground storage tank (UST) was also apparently installed (but never used) in the centre of the site, underneath

one of the existing sheds (see Drawing 1). It should be noted that there was no visual evidence of the UST on the ground surface.

Soil/ filling samples were collected from twelve bores (Bores 1A to 8A, 9 to 12) spaced across the site. The sampling locations were set out non-systematically to gain broad information on sub-surface conditions across the site. Surficial topsoil and/or shallow filling were encountered generally across the site, with the exception of deeper filling in the earth mound and close to the creek at the rear of the property (i.e. filling up to 1.4 m). The topsoil and filling were found to be underlain by residual silty clay. Deeper bores drilled for geotechnical purposes identified siltstone, shale and sandstone bedrock beneath the silty clay. Some asbestos fragments were identified in the filling comprising the earth mound. Groundwater (or potentially seepage water) was measured in two bores at depths of 5 m and 7.2 m below existing grade.

A total of eighteen soil samples were sent to the primary laboratory for analysis for a combination of heavy metals, TPH, BTEX, PAH, OCP, PCB, Phenols and asbestos.

Given the proposed multi-storey residential land use, the results of soil analysis were compared to the criteria given in the NSW DEC (2006) *Contaminated Sites Guidelines for the NSW Site Auditor Scheme 2nd* edition, for residential development within minimal soil access [Column 2 HIL] and NSW EPA provisional phytotoxicity based investigation levels (PPBIL, Column 5). The NSW EPA *Contaminated Sites: Guidelines for Assessing Service Station Sites* (1994) Threshold Concentration for sensitive land uses for petroleum hydrocarbons were used for results comparison. The approach adopted by the Western Australian Health Department for asbestos in soils was used for the assessment of asbestos. The NSW DECC Waste Classification Guidelines 2008 were used in the preliminary waste classification of the soils.

The results of the soil analysis indicate that the organic and inorganic contaminant concentrations in all sampled soils were within the site assessment criteria (SAC). It is noted, however, that none of the bores were in close proximity to the UST.

The findings of this phase 1 contamination assessment indicate that the site, in general, is not likely to present a significant risk of hazard to human health or the environment and is basically environmentally suitable for the proposed staged residential development, subject to the following:

- Disposal of the soils in the earth mound at the south-eastern boundary of the site at a licensed landfill facility as Asbestos Waste. Note that further assessment of the earth mound may delineate a smaller volume of impacted soils requiring this classification and disposal;
- Further, more detailed investigations into soil contamination must be carried out in the vicinity of the UST location, as indicated on Drawing 1. The investigations should be aimed at assessing any soil contamination resulting from past leaks from the UST;
- Validation of existing building footprints upon completion of demolition and removal from the site. This will entail a visual assessment of the ground surface for evidence of asbestos-containing materials complimented with appropriate sampling and testing;
- Validation of the UST pit once the UST is located and subsequently removed and disposed off site;
- Additional *ex situ* assessment of excavated soils (particularly filling and topsoil) to confirm or otherwise the preliminary waste classifications provided in this report;
- Additional sampling and testing of soils to be retained on site, such that sample numbers comply with the NSW EPA Sampling Design Guidelines; and
- A ground water assessment, particularly given the potential presence of an UST and the depth of basement excavation proposed, which may require dewatering. The assessment should include groundwater monitoring wells positioned both hydraulically upgradient and down-gradient of the UST.

Glossary of Terms

As	arsenic
Bgl	below ground level
B(a)P	benzo(a)pyrene (a polycyclic aromatic hydrocarbon compound)
BTEX	benzene, toluene, ethyl benzene, total xylenes (monocyclic aromatic hydrocarbons)
Cd	cadmium
Cr	chromium (total)
Cr(III)	chromium with oxidation state III (stable in normal environments)
Cr(VI)	chromium with oxidation state VI (typically not stable in normal environments)
Cu	copper
C ₆ –C ₉	light hydrocarbon chain groups
C ₁₀ –C ₁₄	medium hydrocarbon chain groups
C ₁₅ –C ₂₈	heavy hydrocarbon chain groups
C ₂₉ –C ₃₆	heavy hydrocarbon chain groups
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DECCW	Department of Environment, Climate Change and Water
DIPNR	Department of Infrastructure, Planning and Natural Resources
DNR	Department of Natural Resources
DWE	Department of Water and Energy
DP	Douglas Partners Pty Ltd
EPA	Environment Protection Authority
GW	groundwater
ha	hectares
HIL	NSW EPA Contaminated Sites: <i>Guidelines for the NSW Site Auditors Scheme, 2nd Edition 2006</i> . Health-based investigation levels (Columns 1 to 4)
Hg	mercury
m	metres
mg/kg	milligrams per kilogram (or parts per million)
NATA	National Association of Testing Authorities

Ni	nickel
NSW	New South Wales
OCP	organochlorine pesticides
PAH	polycyclic aromatic hydrocarbon
Pb	lead
PCB	polychlorinated biphenyls
PID	photo ionisation detector
TPH	total petroleum hydrocarbons
VOC	Volatile Chlorinated Hydrocarbons
Zn	zinc

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PG:jlb

Project No. 71476.01

22 December 2009

REPORT ON
PHASE 1 CONTAMINATION ASSESSMENT WITH LIMITED INTRUSIVE SAMPLING
MORLING COLLEGE
128 HERRING ROAD, MACQUARIE PARK

1. INTRODUCTION

This report details the methodology and results of a Phase 1 Contamination Assessment with limited intrusive sampling undertaken by Douglas Partners Pty Ltd (DP) at Morling College (College), located at 128 Herring Road, Macquarie Park. The assessment was commissioned, in conjunction with a preliminary geotechnical investigation, by Lipman Properties Pty Ltd (Lipman). The assessment was required for planning and conceptual design purposes.

It is understood that part of the Morling College site is proposed for subdivision and staged development (five stages) into multi-storey residential apartment buildings. Stage 1 of the development is proposed for the eastern corner of the College, whilst the remaining stages will be located along the north-eastern boundary of the College, and south-west of Stage 1, as indicated on the Concept Plan (Drawing A103) in Appendix A of this report. Drawing 1 in Appendix B shows the site boundaries. It is also understood that each of the proposed multi-storey apartment buildings are likely to have up to three basement car parking levels.

The objectives of the assessment were to:

- investigate the potential for on-site soil and groundwater contamination, particularly focussing on the proposed Stage 1, and to a lesser extent the remaining stages of the proposed development which will be investigated in more detail at a later stage (note that the remainder of the College Land is not covered by this assessment);

- provide an opinion on the suitability of the site for the proposed development;
- provide a preliminary *in situ* waste classification of soils / materials encountered in the bores; and
- provide recommendations for further assessment and/or remediation, if considered necessary.

A preliminary geotechnical investigation was carried out concurrently and is reported separately under project number 71476.00.

2. SCOPE OF WORKS

In order to achieve the objectives of this assessment, the scope of works was as follows:-

- Search the current and historical titles and Deposited Plans to identify previous owners;
- Search the historical aerial photos to identify land uses and changes in the land that may indicate a potential for contamination;
- Search the Contaminated Land Register for Notices issued under the Contaminated Land Management Act (CLM Act)1997;
- Search WorkCover database records for any Dangerous Goods Licence or other approvals that may indicate contaminating activities;
- Search of the licensed Groundwater Bore database applicable to the region;
- Search City of Ryde Council for information pertaining to the site;
- Site inspection by an environmental scientist/engineer to identify site features, site activities and any areas of environmental concern;
- Obtain a limited number of samples of soil/filling from twelve (12) test bore locations, as shown on Drawing 1, Appendix B. Sampling locations were placed broadly across the site in order to assess broad sub-surface conditions. Soil samples were recovered at near surface and various intermediate depths based upon subsurface conditions and signs of contamination;

- Conduct laboratory analysis on selected soil samples at a NATA accredited analytical laboratory for a combination of the following potential contaminants:
 - Heavy Metals (As, Cd, Cr, Cu, Pb, Hg, Mn, Ni, Zn) – (17 samples);
 - Total Petroleum Hydrocarbons (TPH) – (7 samples);
 - Monocyclic Aromatic Hydrocarbons (Benzene, Toluene, Ethylbenzene and Xylene – BTEX) – (7 samples);
 - Polycyclic Aromatic Hydrocarbons (PAH) – (7 samples);
 - Organochlorine Pesticides (OCP) – (12 samples);
 - Polychlorinated Biphenyls (PCB) – (5 samples);
 - Phenols – (5 samples); and
 - Asbestos – (13 samples)
- Store remaining soil samples not analysed for a period of one month pending the need for further analysis;
- Preparation of a Phase 1 Contamination Assessment report including results of the investigation, giving an outline of any contamination issues identified at the site, and recommendations for any further investigation and/or remediation.

3. SITE IDENTIFICATION AND HISTORY

3.1 Site Identification

The site comprises the whole of Lot B in DP368446 and part Lot 1 in DP876482 and is currently owned by the Baptist Union of NSW. The existing Lot layout is presented on the cadastral plans in Appendix C.

The site has an irregular shape with a frontage to Herring Road of about 120 m and depth to the rear boundary of about 236 m. The total site area is approximately 1.7 hectares. Stage 1 of the proposed subdivision occupies around 5,000 square metres in the eastern corner of the site, whilst proposed Stages 2 to 5 occupy the remaining 1.2 hectares of the site.

The site is bound to the south-east by Herring Road, to the north-east by Dunmore Lang College (part of Macquarie University), to the north-west by the Cochlear Development (under construction) and to the south-west by the remaining grounds of Morling College.

A site plan and locality map is included as Drawing 1, Appendix B.

3.2 Site History

A site historical information review was conducted, comprising a title deeds search, a review of historical aerial photographs, Contaminated Land Register for Notices issued under the *Contaminated Land Management Act 1997*, WorkCover Dangerous Goods records and Council records (including Section 149 (2) Certificates) as well as a groundwater bore search of the Department of Water and Energy (DWE; functions now split between NSW Office of Water and Department of Environment, Climate Change and Water DECCW) database. The full site history search information referenced in the following sub-sections is presented in Appendix C.

3.2.1 Title Deeds

A historical title deeds search is used to obtain ownership or occupancy information on the property, including company names and the occupations of individuals. The title information can assist in the identification of previous land uses and can therefore assist in establishing whether there were potentially contaminating activities occurring at the site. As noted above, the site consists of two lots – Lot B Deposited Plan 368446 and Lot 1 Deposited Plan 876482. For the purpose of detailed title deeds search Lot 1 Deposited Plan 876482 was divided into two parts, marked yellow and orange on the attached cadastre (see Appendix C). The title deed search results are summarised in Tables 1 - 3. In establishing the possible use of the site, information has also been drawn from other sources such as aerial photographs.

Table 1 - Historical Title Deed Record for Lot B, Deposited Plan 368446

Date	Owner/Occupier	Possible site use
1898 - 1926	Chris Krust (<i>Butcher</i>)	Rural (paddocks)
1926 - 1934	James Hogarth (<i>Superintendent</i>)	Rural (paddocks)
1934 - 1937	Jack Eveline Sabine (<i>Poultry Farmer</i>)	Rural(poultry farming)
1937 - 1941	Cyril Gerard Gore (<i>Tea Planter</i>)	Rural(poultry farming)
1941 - 1944	Arthur Stephenson Tout (<i>Master Carrier</i>) & Joseph William Berghouse (<i>Commercial Traveller</i>)	Rural(poultry farming)
1944 - 1945	Arthur Stephenson Tout (<i>Master Carrier</i>)	Rural(poultry farming)
1945 - 1959	Laurence George Percival Russell (<i>Accountant / Company Director</i>)	Rural(poultry farming)
1959 - current	# Baptist Union of New South Wales	Educational

Current Registered Proprietor

Table 2 - Historical Title Deed Record for Lot 1, Deposited Plan 876482, part marked yellow (see Appendix C)

Date	Owner/Occupier	Possible site use
1895 - 1926	Chris Krust (<i>Butcher</i>)	Rural (paddocks)
1926 - 1934	James Hogarth (<i>Superintendent</i>)	Rural (paddocks)
1934 - 1937	Jack Eveline Sabine (<i>Poultry Farmer</i>)	Rural(poultry farming)
1937 - 1940	Cyril Gerard Gore (<i>Tea Planter</i>)	Rural(poultry farming)
1940 - 1958	Louis Leopold Nall (<i>Company Director</i>)	Rural(poultry farming)
1958 - current	# Baptist Union of New South Wales	Educational

Current Registered Proprietor

**Table 3 - Historical Title Deed Record for Lot 1, Deposited Plan 876482,
part marked orange (see Appendix C)**

Date	Owner/Occupier	Possible site use
1898 - 1926	Chris Krust (<i>Butcher</i>)	Rural (paddocks)
1926 - 1934	James Hogarth (<i>Superintendent</i>)	Rural (paddocks)
1934 - 1937	Jack Eveline Sabine (<i>Poultry Farmer</i>)	Rural(poultry farming)
1937 - 1940	Cyril Gerard Gore (<i>Tea Planter</i>)	Rural(poultry farming)
1940 - 1958	Louis Leopold Nall (<i>Company Director</i>)	Rural(poultry farming)
1958 - current	# Baptist Union of New South Wales	Educational

Current Registered Proprietor

Based on the title deeds, it appears that the site was used mainly for rural/agricultural purposes (possibly including paddocks and poultry farming from at least 1895 (the year the records start) to 1958/1959. The site was then used for educational purposes (Morling Baptist Bible College) by Baptist Union of New South Wales since 1958/1959 till present. The title deed search results for the site are included in Appendix C.

3.2.2 Aerial Photographs

Aerial photographs from 1930, 1951, 1961, 1970 and 1986 were obtained from the NSW Department of Lands Office, the 1943 image was obtained from the NSW Department of Lands website (www.lands.nsw.gov.au) and the recent image was obtained from the Google Map website (www.maps.google.com.au) on 24 November 2009. The aerial photographs are presented in Appendix C. These aerial photos were reviewed to assess the possible past uses of the site. The findings are summarised below.

1930 – The site was in an area of paddocks and open bushland vegetation. Surrounding land was made up of similar bushland vegetation, market gardens, orchards and farms.

1943 – Bushland vegetation at the north-western and central section of the site had been cleared and apparent poultry sheds built at the central section of the site. Landuse comprised poultry farming and a small amount of market gardening at the north western boundary. The surrounding area was predominantly being used for market gardens, farms and orchards.

1951 – No significant change to the landuse or the surrounding area was observed since the 1943 photograph.

1961 – No significant change to the landuse or the surrounding area was observed since the 1951 photograph.

1970 - Morling Baptist Bible College owned and operated the site, and all the poultry sheds and most of the bushland vegetation was removed. Most of the Bible College buildings had been constructed and are visible at the central section of the site. A number of buildings, associated with Macquarie University, had been constructed north-west of the site. The surrounding area east and south of the site was still predominantly being used for farms and orchards.

1986 – More buildings were present within the western section of the site. A number of buildings, part of Macquarie University, had been constructed north-east and south-west of the site. Residential buildings were visible south-east of the site.

2009 – No significant change to the site landuse was observed from the 1986 photograph. The surrounding area landuse north and south-west of the site is dominated by Macquarie University buildings. The area south-east of the site has a residential use.

3.2.3 Council Records

The subject site is located within City of Ryde Council area. The site is zoned Business Special – mixed activity.

According to the Section 149(2&5) Planning Certificate, the site has not been declared to be a “significantly contaminated site” under Part 3 of the *Contaminated Land Management Act 1997* or subject to a Site Audit Statement. The Section 149(2) Planning Certificates are included in Appendix C.

City of Ryde Council also provided information requested under the Freedom of Information Act, relating to land use, development activities, construction or related to potentially

polluting activities, such as underground storage tanks. The records are kept with DP. Pertinent aspects have been summarised below:

- Numerous letters from several parties in 1961 and 1962 relating to an application to collect effluent from the Baptist College (collectively with a few neighbours) and dispose into the municipality sewer lines. Agreement was reached with the Water Board and Council late in 1961;
- In 1962, Ryde Council approved an application from Baptist Theological College of NSW to install an underground petrol storage tank and electric pump. No plans were included showing the location of the proposed installation. Anecdotal information from the groundsman suggests that the underground tank may have been placed beneath the location of one of the storage sheds (see Drawing 1), however, it is unlikely to have ever been used (note that there are no current visual indicators marking the location of an underground tank on site).

3.2.4 WorkCover NSW Dangerous Goods Database

A search of the NSW WorkCover dangerous goods database indicated that there are four vapour (gas) tanks at the site containing liquefied petroleum gas with a maximum storage capacity of 200 kg each. The location of the tanks is shown in the WorkCover search documentation, attached in Appendix C. Two of the tanks (D1 & D2) are located within the boundaries of the future proposed works (i.e. Stages 2 to 4) and the other two tanks (D3 & D4) are located outside the boundaries of the current investigation area.

It should be noted that the WorkCover records did not list an underground fuel tank as part of the registration.

3.2.5 Regulatory Notices Search

The NSW DECCW publishes records of contaminated sites under Section 58 of the *Contaminated Land Management (CLM) Act 1997* on a public database accessed via the Internet. The Notices relate to investigation and/or remediation of contaminated site considered to pose a significant risk of harm under the definition in the CLM Act. More specifically, the Notices cover the following:

- actions taken by the EPA under Section 15, 17, 19, 231, 23, 26 or 28 of the CLM Act;
- actions taken by the EPA under Section 35 or 36 of the Environmentally Hazardous Chemicals Act 1985;
- site audit statements provided to the EPA under Section 52 of the CLM Act on sites subject to an in-force declaration or order.

A search of the public database revealed that the subject site is not listed. There are also no listed sites within close proximity to the site.

Notices issued under the CLM Act are also recorded on the Section 149 Planning Certificate(s) pertaining to the site.

The NSW DECCW also issues environmental protection licences to the owners or operators of various industrial premises under the *Protection of the Environment Operations Act 1997* (POEO Act). Licence conditions relate to pollution prevention and monitoring, and cleaner production through recycling and reuse and the implementation of best practice.

The NSW DECCW has made available a public register of licences under Section 308 of the *Protection of the Environment Operations Act 1997* (POEO Act). The register contains:

- environment protection licences
- applications for new licences and to transfer or vary existing licences
- environment protection and noise control notices
- convictions in prosecutions under the POEO Act
- the results of civil proceedings
- licence review information.
- exemptions from the provisions of the POEO Act or Regulations
- approvals granted under clause 9 of the POEO (Control of Burning) Regulation
- approvals granted under clause 7A of the POEO (Clean Air) Regulation

A search of the public register did not locate any listing for the subject site.

Although the NSW EPA is now a part of the NSW DECCW, certain statutory functions and powers continue to be exercised in the name of the EPA.

3.2.6 Groundwater Bore Search

A groundwater bore search of the DWE (water related issues now the responsibility of the NSW Office of Water) website database was conducted. Three groundwater bores in a 1 km radius were located north of the site. There was no information available for those bores on the website, which suggests that the bores were installed in the past when there was no record and they were probably used for irrigation purposes. The groundwater bore search map is attached in Appendix C.

4. GEOLOGY, HYDROGEOLOGY AND TOPOGRAPHY

The site has a general fall in elevation towards the north-west. The gradual fall is broken up by infrequent slopes and flats, particularly at the rear of the site, in the area of the existing sports field which appears to have been filled (based on the level of the playing field in relation to the adjoining creek to the north-west). Site levels range generally from about RL59m (excluding the creek) at the rear of the site, to about RL 66 m in the south-eastern section of the site.

Reference to the 1:100,000 Series Geological Sheet for Sydney indicates that the site is underlain by Triassic Age Wianamatta Group Shales comprising black to dark grey shale and laminite.

Reference to the 1:100,000 Soils Landscape Map of Sydney indicates that the site is situated within the Erosional Glenorie Landscape, which is typified by undulating to low rolling hills on Wianamatta Group Shales. Deep yellow podzolic soils are expected on lower slopes, whilst shallow to moderately deep red podzolic soils are expected on higher slopes. The soil profile can comprise localised impermeable, highly plastic soils of moderate reactivity.

The field investigations for this assessment, as well as the geotechnical investigation, encountered a generalised natural profile comprising silty clay and clay overlying siltstone, laminate and sandstone bedrock. Filling was also encountered in a number of the bores, as described in Section 10.1.

The site was not illustrated in the Department of Land & Water Acid Sulphate Soil Risk Map Series 1:25 000, Edition II. Reference to the Section 149 Certificates for the subject site indicated that the subject land does not *include or comprise acid sulphate soils under the provisions of the Local Environmental Plan applying to the land.*

Groundwater was measured in Bores 2 and 8 (drilled as part of the geotechnical investigation and located adjacent to Bores 2A and 8A) at depths of 5 m and 7.2 m bgl, a week after augering and installation of a groundwater monitoring wells. It is considered likely that the measured water comprises seepage along the soil / bedrock interface, or through rock joints, rather than a true regional groundwater. Groundwater flow direction is anticipated either to the north-west (towards Mars Creek) or to the south-east (towards Shrimptons Creek). However, based on the site and regional topography, a flow direction towards the north-west and Mars Creek is considered the more likely.

5. SITE DESCRIPTION

The subject site currently constitutes the north-eastern part of the Morling Baptist College. An inspection of the site was carried out by a Senior Associate and Environmental Engineer on 18 November 2009. Features of the site noted at that time include the following:

- The eastern corner of the site (proposed Stage 1) essentially comprised three residential dwellings (single storey brick) with associated driveways, landscaping (with significant tree stands) and lawn areas. All three residences were accessed via the main College driveway;
- The southern portion of the site was occupied by a single-storey brick building apparently used as the college chapel and administration, as well as an activity room. The building was surrounded essentially by lawn and some landscaping;
- An earth mound was located across the Herring Road frontage of the college. The mound extended into the site, but was predominantly outside the Stage 1 area (refer to Drawing 1). The mound in general was around 1 – 2 m in height and was grass covered with some protruding trees. The purpose of the mound was not known;

- The central portion of the site contained some gentle slopes and level areas (such as the bitumen access road, car parking facilities, and the mens block). The bulk of this area was grass covered, with substantial tree growth particularly along the north-eastern boundary. The structures in this area included a three-storey brick accommodation building (Mens Block), several awnings covering car parking spaces (adjacent to the bitumen access road) and several storage sheds associated with grounds maintenance;
- The north-western portion of the site comprises part of the sports field which had been levelled through filling, particularly close to the watercourse / creek which cuts through the site close to the north-western boundary. This part of the site is essentially grass covered with significant tree growth along the watercourse banks and north-eastern boundary. There was only a small amount of standing water in the watercourse at the time of the inspection;
- Filling was evident within the site at the north-western end of the playing fields, in the earth mound at the south-eastern boundary and in between the residential properties in the eastern corner of the site. The topography of the remainder of the site did not indicate a potential for significant filling, however it was noted that regrading in the past may have involved some cut and fill;
- Although a hazardous materials survey is beyond the scope of this assessment, it was noted that the presence of asbestos on the outside of the existing buildings was not obvious. Given the age of the building, however, it is possible that asbestos-containing materials had been used in the construction in the past; and
- No fragments or pieces of potential asbestos-containing materials (such as fibre-cement) were noted on the ground surface during the brief walk-over.

The locations and aerial views of the features described above may be obtained with reference to Drawing 1 (Appendix B).

A selection of site photographs is included in Appendix D.

6. POTENTIAL FOR CONTAMINATION

Based on the current and previous site uses, and DP's site observations, the potential contamination sources are summarised in the table below.

The anticipated contaminants of concern from general anthropogenic sources from past and present site activities include heavy metals, asbestos, TPH, BTEX, PAH, OCPs, PCBs and Phenols.

Table 4 – Areas of Environmental Concern (AEC's)

Potential AEC ¹	Description of Potential Contaminating Activity	Chemicals of Concern
Underground Storage Tank	<p>An approval for an underground fuel storage tank was issued by Council in 1962.</p> <p>The location of the underground tank is not documented, however, anecdotal information suggests it may be beneath an existing shed, as shown on Drawing 1.</p> <p>Given the age of the tank (if present) there is a potential for the tank to have leaked in the past, thereby potentially contaminating the soils around it.</p>	TPH, BTEX, PAH and lead
Imported Fill	The current fieldwork and site history search indicated that fill material has been placed at the rear of the site (playing field), and in the earth mound at the front of the site. The source of the fill material is unknown.	Heavy metals, TPH, BTEX, PAH, PCB, OCP, phenols and asbestos.
Previous agricultural use	The site history review indicated that the site was used in the past for agricultural activities including poultry farming and tea tree planting. Pesticides and fertilisers are likely to have been applied during this time. This form of soil contamination is typically reflected mainly in the surface horizons.	Heavy metals, OCP
Existing buildings	<p>Site history information indicates that buildings within the College started to appear in the late 1960s. It is possible that some of the existing building contain asbestos-containing materials which, if not properly managed during demolition, could contaminate the surface soils within and around the building footprints.</p> <p>It is also possible that some form of pest control (i.e. pesticide) was applied to the peripheries of the buildings in the past to control pests such as termites.</p>	Asbestos, heavy metals, OCP

AEC: Area of Environmental Concern

There may also be the possibility of other AEC on the site, which have not yet been identified due to the limited scope of the field investigations. The site history information obtained, however, does not support this occurrence as a high probability.

7. FIELD WORK AND ANALYSES

7.1 Data Quality Objectives and Project Quality Procedures

The data qualitative objectives (DQO) are qualitative and quantitative statements that specify the quality of the data required for the assessment, as stipulated in the NSW DECCW reporting guidelines. The DQO must ensure that the data obtained are sufficient to achieve the objectives of the assessment.

The DQO were developed for this current preliminary contamination assessment in accordance with the Australian Standards “*Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 1: Non-volatile and semi-volatile compounds*” (AS4482.1-2005) and “*Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 2: Volatile substances*” (AS4482.2-1999).

The seven step DQO process is as follows:

- a) State the Problem
- b) Identify the Decision
- c) Identify Inputs to the Decision
- d) Define the Boundary of the Assessment
- e) Develop a Decision Rule
- f) Specify Acceptable Limits on Decision Errors
- g) Optimise the Design for Obtaining Data.

(a) Stating the Problem

The site is proposed to be redeveloped, in stages, for residential purposes. The problems to be addressed by the Phase 1 contamination assessment are to identify issues of potential environmental concern/development constraints, or areas of elevated potential contamination risks/uncertainties; to evaluate the likely suitability of the site for the proposed redevelopment, and what steps are likely to verify its suitability, and/or to be required to render it suitable for the proposed development.

(b) Identifying the Decisions

The decisions to be made in completing the preliminary contamination assessment are as follows:

- Is there likely to be any signs of or elevated potential for soil contamination within the site?
- Does the site, or is the site likely to, present a risk of harm to human health or the environment under the existing or proposed land use?
- Is there likely to be any significant contamination issues that would pose restrictions on the proposed redevelopment?
- Is there any potential for groundwater contamination?
- Are there any off-site migration issues to be considered?
- Does the site require further investigation, remediation and/or validation to ensure suitability for the proposed redevelopment?

(c) Identify Inputs to the Decision

The inputs into the decision process are as follows:

- Historical information regarding past land uses and features;
- Site operations and observation details;
- Limited soil and groundwater sampling;
- Soil profile information obtained through the sampling phase;

- *In situ* screening results;
- Chemical test data on analysed soil and groundwater samples; and
- Assessment of test data against applicable soil and groundwater assessment criteria.

(d) Define the Boundary of the Assessment

The boundary of the assessment is the boundary of the proposed Stage 1 and subsequent stages of residential development, as shown on Drawing 1, Appendix B.

(e) Develop a Decision Rule

The information obtained through this assessment will be used to make a preliminary assessment regarding the contamination issues likely to impact on the proposed redevelopment. The decision rule in conducting this assessment is as follows:

- Sampling locations were distributed in a general systematic grid pattern with several targeted locations in suspected filled areas;
- Laboratory test results will be assessed individually, not statistically, given the limited sample numbers;
- The site assessment criteria (SAC) are developed and/or endorsed by NSW DECCW, or for analytes where there are no DECCW endorsed criteria, other relevant Australian or internationally recognised standards have been referred to as screening thresholds;
- The soil test results will provide an indication of the likely potential for contamination of the site and/or target areas on a broad scale;
- Relevant site information, observations and exceedances of the SAC will be used as a basis for the identification of target locations and/or contaminants for further investigation; and
- Further detailed investigation will be recommended, if required.

Laboratory test results will be accepted and considered useable for this assessment under the following conditions:

- All laboratories used are accredited by National Association of Testing Authorities (NATA) for the analyses undertaken;
- All practical quantitation limits (PQL) set by the laboratories fall below the assessment criteria adopted;
- The reported concentrations of analytes in the replicate sample pairs are within accepted limits; and
- The quality assurance/quality control (QA/QC) protocols and results reported by the laboratories comply with the requirements of the National Environment Protection Measure (NEPM) 1999 “*Guideline on Laboratory Analysis of Potentially Contaminated Soils*” and Australian and New Zealand Environment and Conservation Council (ANZECC)-1996 “*Guidelines for the Laboratory Analysis of Contaminated Soils*”.

(f) Specify Acceptable Limits on Decision Errors

The limits on decision errors for this assessment are as follows:

- It is accepted that only 12 sampling locations are adopted for this assessment and there are areas not sampled and may not be represented by the adopted sampling locations. The purpose of the current assessment is, therefore, to obtain a preliminary indication of the potential for contamination of the site, rather than for “site characterisation”;
- The analyte selection is based on the potential for contamination discussed in Section 6 of this report;
- The SAC adopted from the guidelines stated in Section 9 have risk probabilities already incorporated;
- The acceptable limits for replicate comparisons are outlined in Appendix F;
- The acceptance limits for laboratory QA/QC parameters are based on the laboratory reported acceptance limits and those stated in the NEPM 1999 “*Guideline on Laboratory Analysis of Potentially Contaminated Soils*” and ANZECC 1996 “*Guidelines for the Laboratory Analysis of Contaminated Soils*”.

(g) Optimise the Design for Obtaining Data

In order to collect data which are reasonably representative of the overall site conditions, sampling locations were distributed across the various topographic features of the site. It is noted, however, that the sampling numbers do not comply with the NSW EPA *Sampling Design Guidelines*. The sampling locations are presented in Drawing 1 (Appendix B). Procedures for the collection of environmental samples, as described in Section 7.4, were developed prior to undertaking the contamination assessment phase of works, which were in line with NSW DECCW guidelines and current industry practice. DP employs NATA-accredited analytical laboratories to conduct sample analysis.

7.2 Data Quality Indicators

The performance of the assessment in achieving the DQO will be assessed through the application of Data Quality Indicators (DQI), defined as follows:

- **Precision:** A quantitative measure of the variability (or reproducibility) of data;
- **Accuracy:** A quantitative measure of the closeness of reported data to the “true” value;
- **Representativeness:** The confidence (expressed qualitatively) that data are representative of each media present on the site;
- **Completeness:** A measure of the amount of useable data from a data collection activity;
- **Comparability:** The confidence (expressed qualitatively) that data can be considered equivalent for each sampling and analytical event.

An evaluation of the DQI is presented in Section 8 of this report.

7.3 Drilling Methods

A total of twelve (12) bores (BH1A to BH8A, BH9 to BH12) were augered using a bobcat-mounted drilling rig to depths ranging from 0.5 m to 2.5 m below existing ground level. It is noted that BH1A to BH8A were augered adjacent to DP Bores 1 to 8 respectively, which were drilled for geotechnical investigation purposes (refer to DP Report 71476) and taken to depths of up to 12 m. Bores 9 to 12 were augered for environmental sampling purposes only.

The bores were set out using tape measurement from existing surface features (e.g. fences and buildings), and these locations are shown in Drawing 1 of Appendix B.

7.4 Field Quality Assurance and Quality Control

The field QC procedures for sampling, as prescribed in Douglas Partners' *Field Procedures Manual* were followed during the assessment (as summarised in sections 7.7 and 7.8).

It is noted that, due to the preliminary nature of the assessment, field replicates were not recovered. Furthermore, given the absence of indicators of hydrocarbon contamination, no trip spike and trip blank samples were analysed. It is acknowledged that this approach is not in accordance with standard industry practice and guidelines and would require QA/QC practices to be incorporated into further investigations.

7.5 Laboratory QA/QC

The analytical laboratory, accredited by NATA, is required to conduct in-house QA/QC procedures. These are normally incorporated into every analytical run and include reagent blanks, spike recovery, surrogate recovery and duplicate samples. These results are included in the laboratory reports in Appendix E.

The results of the DP assessment of laboratory QA/QC are shown in Appendix F, with the full laboratory reports included in Appendix E.

7.6 Sample location and rationale

Soil/ filling samples were collected from twelve bores spaced over the 1.7 ha site. The sampling locations were set out to provide a broad, but limited, site coverage, with several bores targeting potential filled areas (specifically Bores 8A and 9 in the playing field filled area, and Bores 11 and 12 in the earth mound). Knowledge of the potential underground storage tank was obtained following completion of the fieldwork and therefore this AEC was not specifically targeted under this assessment.

The groundwater monitoring wells (converted from Bores 2 and 8) were positioned in the south-eastern and north-western portions of the site. The primary purpose of the wells was to monitor groundwater levels for potential impact on basement excavation. No groundwater samples were recovered for chemical analysis.

Soil samples were collected at broadly regular intervals based on field observations, including changes in strata and signs of contamination.

7.7 Soil Sampling Procedure

All sample locations were cleared for services and underground pipes by a services locator and review of Dial-before-you-dig (DBYD) plans.

All sampling data was recorded on DP Borehole Logs with essential information included in the chain-of-custody sheets. The general sampling procedure adopted for the collection of environmental samples is summarised below:

- collect soil samples directly from the test bore using disposable sampling equipment;

- transfer samples into laboratory-prepared glass jars, completely filled to ensure the headspace within the sample jar is minimised, and capping immediately to minimise loss of volatiles;
- label sample containers with individual and unique identification, including project number, sample location and sample depth; and
- place the glass jars, with teflon lined lid, into a cooled, insulated and sealed container for transport to the laboratory.

Envirolab Services (NATA accreditation number: 2901) was employed to conduct the primary environmental sample analysis. The laboratory is required to carry out routine in-house QC procedures.

7.8 Analytical Rationale

The analytical scheme was designed to obtain a preliminary indication of the potential presence and possible distribution of common contaminants that may be attributed to past and present activities within the site, as discussed in Section 6.

The site area is understood to be approximately 1.7 hectares. According to the NSW EPA *Sampling Design Guidelines* (1995), a minimum of 27 systematic sampling locations would be required to fully characterise the site. Given the preliminary nature of this assessment, it was considered that a reduced sampling regime comprising 12 sampling locations (approximately 40% of the sampling density) is appropriate to provide an indication of the potential for contamination within the site in general.

Some areas of possible environmental concern were noted, from the review of the previous site usage and also based on site observations, noting particularly the potential presence of an underground fuel storage tank in the north-western portion of the site, and filling in several locations within the site.

Laboratory analytical methods as stated by Envirolab, are provided in the laboratory reports Appendix E and are summarised in the QA/QC in Appendix F.

The analytical scheme adopted is presented in Table 5.

Table 5 – Analytical Scheme for soils

Sample ID (Location – Depth)	AEC	Heavy Metals	TPH/ BTEX	PAH	OCP	PCB	Phenols	Asbestos
BH1A/0-0.1	-	✓	-	-	✓	-	-	✓
BH2A/0-0.1	-	✓	-	-	✓	-	-	✓
BH3A/0-0.1	-	✓	-	-	✓	-	-	✓
BH4A/0.2-0.3	-	✓	-	-	✓	-	-	✓
BH6A/0-0.1	-	✓	-	-	✓	-	-	✓
BH7A/0.1	-	✓	-	-	✓	-	-	✓
BH8A/0.2-0.3	fill	✓	✓	✓	✓	✓	✓	✓
BH8A/0.9-1.0	Fill	✓	✓	✓	-	-	-	-
BH9/0.2-0.3	Fill	✓	✓	✓	-	-	-	-
BH9/0.9-1.0	Fill	✓	✓	✓	✓	✓	✓	✓
BH10/0.2-0.3	Fill	✓	✓	✓	✓	✓	✓	✓
BH11/0.4-0.5	Mound	✓	✓	✓	✓	✓	✓	✓
BH12/0.4-0.5	Mound	✓	✓	✓	✓	✓	✓	✓
BH12/0.7	Mound	-	-	-	-	-	-	✓
BH2A/0.6-0.7	-	✓	-	-	-	-	-	-
BH4A/0.9-1.0	-	✓	-	-	-	-	-	-
BH5A/0.2-0.3	-	✓	-	-	✓	-	-	✓
BH6A/0.2-0.3	-	✓	-	-	-	-	-	-

8. QA/QC DATA EVALUATION

The following table provides a list of the data quality indicators (refer to Section 7.1) adopted for the preliminary contamination assessment and the methods adopted in ensuring that the data quality indicators were met. Reference should be made to all previous report sections and referenced Appendices for specific details.

Table 6 - QA/QC Evaluation

DATA QUALITY INDICATOR	METHOD(S) OF ACHIEVEMENT
Data Precision and Accuracy	<p>Use of trained and qualified field staff; for sampling and investigation</p> <p>Appropriate sampling method used, minimising the opportunity for cross-contamination.</p> <p>Use of analytical laboratory (Envirolab) experienced in the analyses undertaken, with appropriate NATA accreditation.</p> <p>NATA accreditation requires use of adequately trained and experienced analytical staff.</p> <p>Appropriate and validated laboratory test methods used.</p> <p>Adequate laboratory performance based on results of the blank samples, matrix spike samples, control samples, duplicates and surrogate spike samples.</p>
Data Representativeness	<p>Sampling coverage limited, but intended to be only preliminary in nature</p> <p>Coverage of potential contaminants, based on history, site activities and site features.</p> <p>Adequate laboratory internal quality control and quality assurance methods, complying with the NEPM.</p>
Documentation Completeness	<p>Preparation of bore logs, sample location plan and chain of custody records</p> <p>Laboratory sample receipt information received confirming receipt of samples intact and appropriateness of the chain of custody</p> <p>NATA accredited laboratory results certificates provided</p>
Data Completeness	<p>Review of documented information pertaining to site history</p> <p>Analysis for potential contaminants of concern.</p>
Data Comparability	<p>Using appropriate techniques for sample recovery</p> <p>Experienced sampler used</p> <p>Using appropriate sample storage and transportation methods</p> <p>Use of NATA accredited laboratory</p> <p>Test methods consistent for each sample</p>

Based on the above, it is considered that the quality assurance and quality control data quality indicators have been generally complied with. As such, it is concluded that the laboratory test data obtained are reliable and useable for this preliminary assessment.

It is noted that, due to the preliminary nature of the assessment, field replicates were not recovered. Furthermore, given the absence of indicators of hydrocarbon contamination, no trip spike and trip blank samples were analysed. It is acknowledged that this approach

contravenes standard industry practice and guidelines, and would require rectification in further investigations.

9. SITE ASSESSMENT CRITERIA

The subject site is proposed to be developed into multi-storey residential unit blocks including basement levels. Some portions of the site will be retained for landscaping purposes. The analytical results are therefore assessed against the following:

- the health-based investigation levels (HIL) for residential development with minimal access for soils including high-rise apartments and flats (Appendix II, HIL Column 2) published in the NSW EPA *Contaminated Sites Guidelines for the NSW Site Auditor Scheme*, 2nd Edition, 2006, for all soils;
- the provisional phytotoxicity-based investigation levels (PPBIL) published in the NSW EPA *Contaminated Sites Guidelines for the NSW Site Auditor Scheme*, 2nd Edition, 2006, for soils within the upper 0.5m of the final design ground levels, where lawn or landscaping will apply;
- with respect to TPH and BTEX, threshold concentrations (in soil) for sensitive land use from NSW EPA's *Guidelines for Assessing Service Station Sites*, 1994, typically used for residential land use, as recommended in the *Guidelines for the NSW Site Auditor Scheme*, for all soils.
- There are currently no NSW DECCW produced or endorsed guidelines for the assessment of asbestos in soils. However, it is understood that the pending revision to the NEPM will be incorporating an asbestos assessment process mirroring the current approach adopted by the WA Department of Health in their publication *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (WA DoH, 2009). The guidelines suggest the following SAC for residential land use (with minimal soil access):
 - No visible asbestos pieces in the top 100 mm of the soil profile;
 - 0.001% asbestos fines (AF) or fibrous asbestos (FA) by weight;

- 0.04% asbestos cement materials (ACM) by weight.

AF and FC are defined as materials passing through a 7mm x 7mm sieve, whilst ACM are retained on the same sieve.

The SAC for asbestos outlined above will be adopted for the assessment of asbestos in the site.

The adopted SAC for the analytes to be included in the assessment are shown on Table 7.

Table 7 - Site Assessment Criteria

Contaminant	Adopted Criteria (SAC)		Source
TPH			NSW EPA Contaminated Sites <i>Guidelines for Assessing Service Station Sites</i> (1994) threshold concentrations for sensitive land use-soils. [Note that the NEPM health-based criteria must not be applied unless laboratory differentiation of aromatic and aliphatic compounds has been conducted (<i>Guidelines for the NSW Site Auditor Scheme</i> , 2 nd ed., 2006)]
C ₆ – C ₉	65 mg/kg		
C ₁₀ – C ₃₆	1000 mg/kg		
BTEX			
benzene	1 mg/kg		
toluene	1.4 mg/kg		
ethylbenzene	3.1 mg/kg		
xylene	14 mg/kg		
Metals	HIL	PPBIL	NSW EPA Contaminated Sites <i>Guidelines for the NSW Site Auditor Scheme</i> (2 nd Edition) (2006) Soil Investigation Levels for Urban Redevelopment Sites in NSW Heath-based investigation levels for residential developments with minimal soil access including high-rise apartments and flats (Appendix II, HIL Column 2 & PPBIL Column 5).
arsenic (total)	400 mg/kg	20 mg/kg	
cadmium	80 mg/kg	3 mg/kg	
chromium	480000 mg/kg	400 mg/kg	
copper	4000 mg/kg	100 mg/kg	
lead	1200 mg/kg	600 mg/kg	
mercury	60 mg/kg	1 mg/kg	
nickel	2400 mg/kg	60 mg/kg	
zinc	28000 mg/kg	200 mg/kg	
Total phenols	34000 mg/kg		
PAH			
total	80 mg/kg		
benzo(a)pyrene	4 mg/kg		
PCB	40 mg/kg		
OCP			
aldrin + dieldrin	40 mg/kg		
chlordane	200 mg/kg		
DDT (including DDD, DDE, DDT)	800 mg/kg		
Heptachlor	40 mg/kg		
Asbestos	No visible asbestos present in soil at the surface 0.001% asbestos fibres by weight 0.04% asbestos cement by weight		WA Department of Health <i>Guidelines for the Assessment, Remediation, and Management of Asbestos Contaminated Sites in Western Australia</i> , May 2009

NOTE: NSW EPA is now part of the NSW DECCW.

9.1 Waste Classification Criteria

9.1.1 Filling and Topsoil

The preliminary *in situ* waste classification for filling and topsoil materials was determined in accordance with the six step process outlined in the Department of Environment and Climate Change (DECC; now DECCW) *Waste Classification Guidelines* April 2008 (revised July 2009), as follows:

1. Is it a special waste?
2. Is it a liquid waste?
3. Is the waste “pre-classified”?
4. Does the waste have hazardous waste characteristics?
5. Chemical Assessment
6. Is the waste putrescibles?

It should be noted that it is possible that the filling and topsoil materials could be classified in the future as Excavated Natural Material (ENM) in accordance with the *Protection of the Environment Operations (Waste) Regulation 2005, General Exemption Under Part 6, Clause 51 and 51A, The Excavated Natural Material Exemption (ENM), 2008*. Under the general exemption, ENM is defined as naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that has:

- been excavated from the ground, and
- contains at least 98% (by weight) natural material, and
- does not meet the definition of Virgin Excavated Natural Material in the Act.

ENM may be applied to land as engineering fill or used in earthworks provided the contaminant concentrations in the material is within the threshold concentrations prescribed in the general exemption. For large volumes of this type of material, there is potentially a significant cost saving in not having to dispose the material at a licensed landfill.

However, the ENM guidelines require a strict sampling and testing regime that would need to be implemented to achieve such a classification. The preliminary works undertaken under this current assessment do not meet the regime required.

9.1.2 Residual Soil and Bedrock

The *Protection of the Environment Operations Act 1997*, the *Protection of the Environment Operations Amendment (Scheduled Activities and Waste) Regulation 2008*, and the *Waste Classification Guidelines* April 2008, define virgin excavated natural materials (VENM) such as clay, gravel, sand, soil and rock, as materials that:

- Are not mixed with any other waste;
- Have been excavated from areas that are not contaminated as a result of industrial, commercial, mining or agricultural activities;
- Do not contain sulphidic ores or soils;
- Consist of excavated natural materials that meet such criteria as may be approved by the EPA.

The abovementioned criteria have been adopted in determining the preliminary assignment of the VENM classification to the natural soils and bedrock to be excavated from the site as part of the proposed development.

In order to assign re-usability options to the VENM classified materials, the following publications with background concentration ranges for Australian soils have been referenced:

- NEPC (1999). *National Environmental Protection (Assessment of Site Contamination) Measure*, Schedule B(1) Guidelines on the Investigation Levels for Soil and Groundwater, Background Ranges.

With regard to the organic contaminants with no published background concentration ranges, the respective practical quantitation limits of the analytes were used as the evaluation threshold.

10. RESULTS

10.1 Field Observations - soil

Details of the sub-surface conditions encountered during the course of the investigation are included in the Bore Report Sheets (Bores 1A to 8A, and 9 to 12) in Appendix G. For reference purposes, relating to deeper soil and bedrock profiles, the Bore Report Sheets for Bores 1 to 8, drilled as part of the geotechnical investigation, are also included in Appendix G. The bore locations are shown on Drawing 1, Appendix B.

A summary of the sub-surface conditions encountered at the bore locations is as follows:

- Topsoil and surficial filling was encountered at most bore locations to depths of up to about 0.3 m below ground level (bgl). It is noted, however, that the root affected zone within the topsoil is more likely to be no greater than 0.1 m bgl;
- Filling comprising silty and sandy clay with fine to medium gravels was encountered in Bores 8A and 9 (in the playing field area) to depths of 1.4 m bgl;
- Filling comprising brown clay with fine to medium gravels was encountered in Bore 10 (between the residential dwellings in the south-eastern portion) to a depth of 0.5 m bgl;
- Filling comprising clay with fine to medium gravels was encountered in Bores 11 and 12 (earth mound in the south-eastern portion) to depths of up to 1.0 m from the top of the mound. Several asbestos fragments were noted amongst the filling (primarily at a depth of 0.7m) in Bore 12, which was terminated at 0.7 m due to refusal in the filling;
- Silty Clay / Clay was encountered beneath the topsoil and filling in all bores (except Bore 12); and
- Bedrock comprising siltstone, sandstone and limonite was encountered in Bores 1 to 8 at depths ranging from 0.5 m (Bore 3) to 4.7 m (Bore 8) bgl.

Apart from the asbestos fragments noted in the filling in Bore 12, no indicators of potential contamination were noted in any of the bores.

No groundwater or seepage water was recorded during augering of each of the bores. The use of drilling fluids in coring the bedrock (Bores 1 to 8) prevented detection of groundwater

or seepage water during the coring process. Groundwater (which may be seepage water) was measured in the wells installed in Bores 2 and 8 at depths of 5 m and 7.2 m respectively.

Table 8 below summarises the subsurface profile encountered during the environmental and geotechnical investigations. Note that reference should be made to the Geotechnical Investigation Report 71476 for detailed bore logs for Bores 1 to 8.

Table 8 – Subsurface Profile

Sampling Location	Topsoil (m)	Filling (m)	Clay/ Silty Clay (m)	Bedrock (m)	Completion Depth (m)
BH 1	0-0.1	-	0.1-1.0	1.0	12.0
BH 2	-	0-0.1	0.1-0.7	0.7	12.0
BH 3	-	0-0.1	0.1-0.5	0.5	12.0
BH 4	0-0.1	-	0.1-1.3	1.3	11.95
BH 5	0-0.1	-	0.1-1.0	1.0	12.1
BH 6	-	0-0.3	0.3-0.8	0.8	12.15
BH 7	-	-	0-2.5	2.5	12.0
BH 8	-	0-1.4	1.4-4.7	4.7	12.2
BH 1A	0-0.3	-	0.3-0.8	-	0.8
BH 2A	0-0.02	-	0.02-0.7	-	0.7
BH3 A	0-0.05	-	0.05-0.5	-	0.5
BH 4A	0-0.3	-	0.3-1.0	-	1.0
BH 5A	0-0.2	-	0.2-0.7	-	0.7
BH 6A	0-0.02	-	0.02-0.7	-	0.7
BH 7A	0-0.02*	0.02-1.0	1.0-2.4	-	2.4
BH 8A	0-0.02*	0.02-1.4	1.4-2.5	-	2.5
BH 9	0-0.02*	0.02-1.4	1.4-2.3	-	2.3
BH 10	0-0.05*	0.05-0.5	0.5-0.7	-	0.7
BH 11	0-0.05*	0.05-1.0	1.0-1.5	-	1.5
BH 12	-	0-0.7	-	-	0.7

NOTE: * constitutes topsoil / filling

10.2 Analytical Results

The analytical results for the recovered soil samples are presented on the test results certificates in Appendix E. The results are also summarised on the following Table 9, together with the SAC and waste classification criteria adopted.



Table 9 – Results of Laboratory Analysis

Sample ID	Fill/Topsoil/ Natural	Heavy Metals								PAH		TRH		Benzene	Toluene	Ethyl- Benzene	Total Xylene	Total Phenols	PCB ³	OCP ³	asbestos
		As	Cd	Cr ¹	Cu	Pb	Hg	Ni	Zn	Total PAH ₂	Benzo(a) Pyrene	C6-C9	C10-C36								
Filling / Topsoil Material																					
BH 1A/0-0.1	T	<4	<0.5	11	19	16	0.2	6	70	-	-	-	-	-	-	-	-	-	-	<0.1	ND
BH 2A/0-0.1	T	<4	<0.5	6	7	25	<0.1	3	30										<0.1	ND	
BH 3A/0-0.1	T	5	<0.5	13	17	34	<0.1	2	68										<0.1	ND	
BH 4A/0.2-0.3	T	8	<0.5	20	5	27	<0.1	2	43	-	-	-	-	-	-	-	-	-	<0.1	ND	
BH 6A/0-0.1	T	8	<0.5	23	4	32	<0.1	2	70										<0.1	ND	
BH 7A/0.1	T/F	6	<0.5	25	8	45	<0.1	3	69	-	-	-	-	-	-	-	-	-	<0.1	ND	
BH 8A/0.2-0.3	F	7	<0.5	43	16	86	0.2	6	150	6.2	0.7	<25	<250	<0.5	<0.5	<1	<3	<5	<0.1	<0.1	ND
BH 8A/0.9-1.0	F	10	<0.5	33	2	25	<0.1	2	12	<0.2	<0.05	<25	<250	<0.5	<0.5	<1	<3	-	-	-	-
BH 9/0.2-0.3	F	7	<0.5	43	4	26	<0.1	3	24	<0.2	<0.05	<25	<250	<0.5	<0.5	<1	<3	-	-	-	-
BH 9/0.9-1.0	F	12	<0.5	16	9	19	<0.1	2	14	<0.2	<0.05	<25	<250	<0.5	<0.5	<1	<3	<5	<0.1	0.4	ND
BH 10/0.2-0.3	F	7	<0.5	15	5	44	<0.1	4	15	<0.2	<0.05	<25	<250	<0.5	<0.5	<1	<3	<5	<0.1	<0.1	ND
Earth Mound Materials																					
BH 11/0.4-0.5	F	10	<0.5	18	30	14	<0.1	19	14	<0.2	<0.05	<25	<250	<0.5	<0.5	<1	<3	<5	<0.1	<0.1	ND
BH 12/0.4-0.5	F	8	<0.5	21	18	19	<0.1	13	17	<0.2	<0.05	<25	<250	<0.5	<0.5	<1	<3	<5	<0.1	<0.1	ND
BH 12/0.7	F	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	ND
Natural Soils																					
BH 2A/0.6-0.7	N	10	<0.5	39	<1	15	<0.1	1	2	-	-	-	-	-	-	-	-	-	-	-	-
BH 4A/0.9-1.0	N	8	<0.5	21	<1	27	<0.1	<1	2	-	-	-	-	-	-	-	-	-	-	-	-
BH 5A/0.2-0.3	N	5	<0.5	26	3	33	<0.1	3	30	-	-	-	-	-	-	-	-	-	-	<0.1	ND
BH 6A/0.2-0.3	N	6	<0.5	19	1	17	<0.1	1	13	-	-	-	-	-	-	-	-	-	-	-	-
Site Assessment Criteria																					
HIL ⁴		400	80	480000	4000	1200	60	2400	28000	80	4	65 ⁶	1000 ⁶	1 ⁶	1.4 ⁶	3.1 ⁶	14 ⁶	34000	40	40/200/ 800/40 ⁷	Nil ⁸
PPBIL ⁵		20	3	400	100	600	1	60	200	-	-	-	-	-	-	-	-	-	-	-	-
Waste Classification Criteria for Topsoil and Filling ⁹																					
Criteria for General Solid Waste																					
CT1		100	20	100	-	100	4	40	-	-	0.8	-	-	10	288	600	1000	288	-	-	-
Background Concentrations for Assessment of Natural Material ¹⁰																					
Published background		1-50	1	5-1000	2-100	2-200	0.03	5-500	10-300	0.95-5	-	-	-	0.05-1	0.1-1	-	-	0.03-0.5	0.02-0.1	<0.001- <0.05	-

- Notes:
- 1

All Chromium are assumed to exist in the stable Cr(III) oxidation state, as Cr(VI) will be too reactive and unstable in normal environmental conditions
- 2

Concentrations of individual compounds less than PQL have been assumed equal to PQL
- 3

Where all individual compound concentrations are less than PQL, the overall concentration is reported as "<PQL".
- 4

NSW EPA Contaminated Sites *Guidelines for the NSW Site Auditor Scheme* (2nd Edition) (2006) Soil Investigation Levels for Urban Redevelopment Sites in NSW Heath-based investigation levels for residential with minimal soil access including high-rise apartments and flats (HIL Column 2)
- 5

NSW EPA Contaminated Sites *Guidelines for the NSW Site Auditor Scheme* (2nd Edition) (2006) Soil Investigation Levels for Urban Redevelopment Sites in NSW Provisional Phytotoxicity Based Investigation Levels (PPBIL Column 5); applicable for soil in the upper 0.5m of the final profile in lawn and landscaped areas
- 6

NSW EPA Contaminated Sites *Guidelines for Assessing Service Station Sites* (1994) threshold concentrations for sensitive land use-soils
- 7

OCP thresholds given in order Aldrin+Dieldrin/Chlordane/ DDD+DDE+DDT/Heptachlor
- 8

0.04% asbestos cement / 0.001% for asbestos fibres (WA Department of Health)
- 9

NSW DECC *Waste Classification Guidelines* (Table 2) April 2008
- 10

National Environment Protection Council (NEPC) *National Environmental Protection (Assessment of Site Contamination) Measure Schedule B(1) Guidelines on the Investigation Levels for Soil and Groundwater, Background Ranges* (1999)
- Bold**

Concentration exceeds SAC
- F/T/N

Fill/Topsoil/Natural
- Not analysed / Not applicable

11. INTERPRETATION AND DISCUSSION OF LABORATORY RESULTS

11.1 Chemical Contaminants in Soil

Soil samples were assessed for a suite of potential contaminants of concern including heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn), TPH, BTEX, PAH, PCB, OCP, phenols and asbestos.

The laboratory results (Table 9) indicated that all contaminant concentrations in the soil samples analysed were within the adopted SAC, with virtually all organics concentrations also less than the laboratory practical quantitation limits.

No asbestos fibres were detected in the analysed samples (it is noted, however, that asbestos fragments were detected in Bore 12).

11.2 Preliminary Waste Classification

11.2.1 Fill and Topsoil

The preliminary waste classification of the topsoil and filling material was generally conducted in accordance with the six step process as set out in the NSW DECC *Waste Classification Guidelines*, 2008 as set out in Table 10 below.

Table 10 - Six Step Classification

Step	Comments	Rationale
1. Is it special waste?	No *	Waste not considered to have clinical, asbestos or tyre waste, apart from the earth mound which was sampled Bore 12
2. Is it liquid waste?	No	Waste composed of soil
3. Is the waste "pre-classified"?	No	Filling material does not fall into one of the pre-classified categories
4. Does the Waste have hazardous waste characteristics	No	Waste not observed to/ or considered at risk to contain explosives, gases, flammable solids, oxidising agents, organic peroxides, toxic substances or corrosive substances, substances liable to spontaneous combustion
5. Chemical Assessment	Conducted	Refer to Table 9
6. Is the Waste Putrescible?	No	All observed components of filling composed of materials pre-classified as non-putrescible (i.e. soil and gravel)

NOTE: * Asbestos is likely to be present in the filling comprising the earth mound, in which case the materials would classify as "Asbestos Waste"

Based on the site observations and analytical results, and with reference to the NSW DECC 2008 *Waste Classification Guidelines* our preliminary topsoil and fill classification is as follows:

Earth Mound materials:	Asbestos Waste
Remaining topsoil and fill materials:	General Solid Waste (non-putrescible)

The preliminary waste classification is subject to *ex situ* confirmation. It should be also noted that an alternate classification as Excavated Natural Material (ENM) is possible for the topsoil and/or filling materials not containing asbestos. Under the *Protection of the Environment Operations (Waste) Regulation 2005 – General Exemption Under Part 6, Clause 51 and 51(A)*, The excavated natural material exemption 2008, ENM is defined as naturally occurring rock and soil that has:

1. Been excavated from the ground, and
2. Contains at least 98% (by weight) natural material, and
3. Does not meet the definition of VENM in the Act.

In addition, ENM does not include material that has been processed or contain acid sulphate soils or potential acid sulphate soils. The chemical concentrations must also meet the requirements of the exemption.

In order to attain such a classification, a rigorous regime of sampling and testing, as required by the above exemption, must first be completed.

11.2.2 Residual Soil and Bedrock

The *Protection of the Environment Operations Act 1997*, the *Protection of the Environment Operations Amendment (Scheduled Activities and Waste) Regulation 2008*, and the *Waste Classification Guidelines* April 2008, define VENM such as clay, gravel, sand, soil and rock, as materials that:

- Are not mixed with any other waste
- Have been excavated from areas that are not contaminated as a result of industrial, commercial, mining or agricultural activities
- Do not contain sulphidic ores or soils
- Consist of excavated natural materials that meet such criteria as may be approved by the EPA (now DECCW)

Based on the information presented in this report, the natural soil and bedrock encountered at the bore locations are considered to be classified as VENM in accordance with the above definition, provided that the material is not cross-contaminated or mixed with other non-VENM material. The natural, *in situ* material observed is suitable for:

- Reuse on other sites subject to prior approvals or consents from the receiving site and relevant authorities, as required, or
- Disposal as VENM.

As a general rule, the receiving site or landfill facility should check to ensure that the VENM matches the description addressed in this report, and does not contain any other inclusions such as filling, building rubble or asbestos-containing material. Any material exhibiting obvious signs of contamination or odours would not be classifiable as VENM and should be stockpiled and assessed separately.

12 CONCLUSION AND RECOMMENDATIONS

This investigation was undertaken as a Phase 1 contamination assessment, with limited sampling. As such, the adopted sampling regime did not meet the sampling density recommended in the NSW EPA *Sampling Design Guidelines* for the characterisation of a site. However, the findings of this Phase 1 contamination assessment indicate that the site, in general, is not likely to be significantly contaminated (as defined by the CLM Act) and can be made environmentally suitable for the proposed staged development, subject to the following:

- Disposal of the soils in the earth mound at south-eastern boundary of the site at a licensed landfill facility as Asbestos Waste. Note that further assessment of the earth mound may delineate a smaller volume of impacted soils requiring this classification and disposal;
- Confirmation on the presence of a UST;
- Further, more detailed investigations into soil contamination must be carried out in the vicinity of the UST location, if present, as indicated on Drawing 1. The investigations should be aimed at assessing any soil contamination resulting from past leaks from the UST;
- Validation of existing building footprints upon completion of demolition and removal from the site. This will entail a visual assessment of the ground surface for evidence of asbestos-containing materials complimented with appropriate sampling and testing;
- Validation of the UST pit once the UST is removed and disposed off site;
- Additional *ex situ* assessment of excavated soils (particularly filling and topsoil) to confirm or otherwise the preliminary waste classifications provided in this report;

- Additional sampling and testing of soils to be retained on site, such that sample numbers comply with the NSW EPA Sampling Design Guidelines; and
- A ground water assessment, particularly given the possible presence of an UST and the depth of basement excavation proposed, which may require dewatering. The assessment should include groundwater monitoring wells positioned both hydraulically up-gradient and down-gradient of the UST.

Further advice is provided as follows:

- Prior to demolition, all existing buildings should be surveyed by an experienced occupational hygienist or environmental consultant to identify any hazardous materials which need to be appropriately managed during demolition works. All handling of hazardous building materials must be carried out by a contractor with the appropriate licenses; and
- The decommissioning and removal of the UST must be carried out by an appropriately qualified and licensed contractor in accordance with WorkCover guidelines.

13. LIMITATIONS OF THIS REPORT

The scope of the site assessment activities and consulting services undertaken by DP were limited to those detailed in our proposal dated 29 October 2009 and accepted by Lipman Properties Pty Ltd.

DP's assessment is necessarily based upon the result of a limited site investigation and the restricted program of surface and subsurface sampling, screening and laboratory testing which was set out in the proposal. DP cannot provide unqualified warranties nor assumes any liability for site conditions not observed, or accessible, during the time of the investigations.

Despite all reasonable care and diligence, the ground conditions encountered and concentrations of contaminants measured may not be representative of conditions between the locations sampled and investigated. In addition, site characteristics may change at any

time in response to variations in natural conditions, chemical reactions and other events, e.g. groundwater movement and or spillages of contaminating substances. These changes may occur subsequent to DP's investigations and assessment.

This report, its associated documentation and the information herein have been prepared solely for the use of Lipman Properties Pty Ltd. Any reliance assumed by third parties on this report shall be at such parties' own risk. Any ensuing liability resulting from use of the report by third parties cannot be transferred to DP.

DOUGLAS PARTNERS PTY LTD



Paul Gorman
Senior Associate

Reviewed by:



Lindsay Rockett
Senior Associate

APPENDIX A
Concept Plan (A103)



--- LOT BOUNDARY --- SITE BOUNDARY --- REQUIRED CUL-DE-SAC --- ADDITIONAL LAND AREA REQUIRED --- UNIVERSITY CREEK --- RIPARIAN ZONE SETBACK: 20M

1m 5m 10m 25m 50m

NOTES

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CLIENT

LIPMAN PROPERTIES PTY LTD
LEVEL 6, 66 BERRY STREET, NORTH SYDNEY
T 02 9955 7000 F 02 9955 3166

LIPMAN
the obvious choice
in property

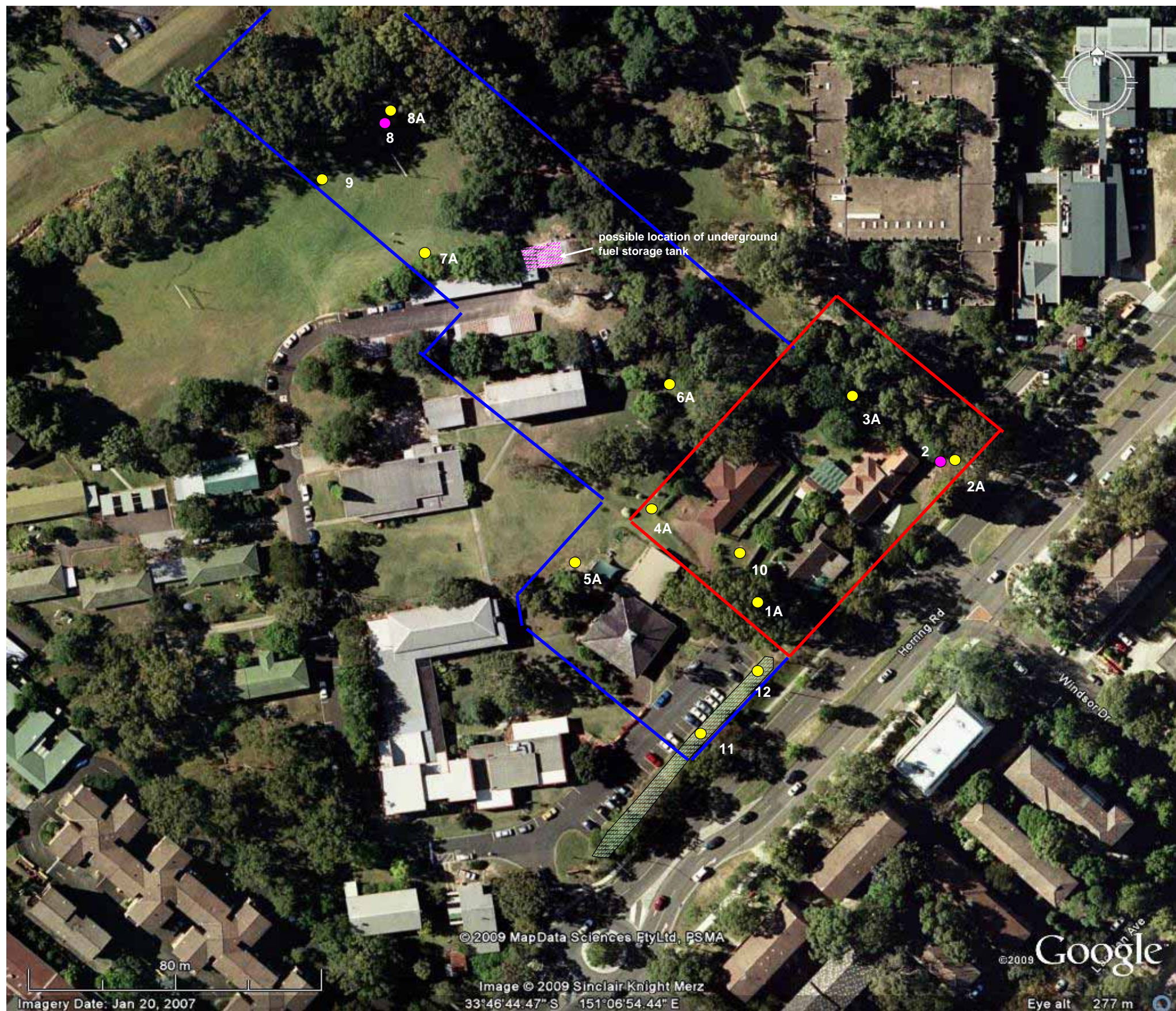
PROJECT TITLE
RESIDENTIAL DEVELOPMENT
128 HERRING ROAD, MACQUARIE PARK

DRAWING TITLE
Site Context Plan _ Future
CONCEPT PLAN

A	23/02/19	N/A	Issued for information
Rev	Date	Approved by	Revision Notes
1	23/02/19	09047	AM
FOR INFORMATION		A 103	REV A

TURNER + ASSOCIATES
L1, 410 Crown Street Surry Hills NSW 2010 Australia
t +61 2 8668 0000 f +61 2 8668 0088

APPENDIX B
Drawing 1



Locality



Legend

- Stage 1 Boundary
- Future Stages
- Bore Location
- Groundwater Monitoring Well
- Earth mound



CLIENT: Lipman Properties Pty Ltd		
DRAWN BY: PG	SCALE: NTS	OFFICE: Sydney
APPROVED BY: PG		DATE: 8 December 2009

TITLE:	Proposed Subdivision of Morling College
	120-128 Herring Road, Macquarie Park
	Bore Locations

DP Project No:	71476.01
Drawing No:	1
Revision:	0

APPENDIX C
Site History Information

ACN: 108 037 029
Ph: 02 9233 1314
Fax: 9233 2878

Service First Registration Pty Ltd

Suite 102, Level 1, 64 Castlereagh Street
Sydney 2000
PO Box 1539 Sydney 2000
DX 189 Sydney

Summary of Owners Report

Department of Lands
Sydney

Deeds Branch

Address: - Macquarie University, Macquarie Park

As regards: - Lot B D.P. 368446 & Lot 1 D.P. 876482

1} Lot B D.P. 368446

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
02.04.1898 (1898 to 1926)	Chris Krust (Butcher)	Vol 1248 Fol 153 now Vol 2304 Fol 34
29.12.1926 (1926 to 1934)	James Hogarth (Superintendent)	Vol 2304 Fol 34
24.08.1934 (1934 to 1937)	Jack Eveline Sabine Poultry Farmer)	Vol 2304 Fol 34
20.05.1937 (1937 to 1941)	Cyril Gerard Gore (Tea Planter)	Vol 2304 Fol 34
26.11.1941 (1941 to 1944)	Arthur Stephenson Tout (Master Carrier) & Joseph William Berghouse (Commercial Traveller)	Vol 2304 Fol 34 Now Vol 5298 Fol's 150 & 151
19.10.1944 (1944 to 1945)	Arthur Stephenson Tout (Master Carrier)	Vol 5298 Fol's 150 & 151 now Vol 5467 Fol 240
03.04.1945 (1945 to 1959)	Laurence George Percival Russell (Accountant, now Company Director)	Vol 5467 Fol 240 now Vol 6235 Fol 227
11.02.1959 (1959 to date)	# Baptist Union of New South Wales	Vol 6235 Fol 227 now B/368446

Denotes current registered proprietor

2} Lot 1 D.P. 876482

As regards the part highlighted yellow on D.P. 876482

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
16.12.1895 (1895 to 1926)	Chris Krust (Butcher)	Vol 1182 Fol 97
29.12.1926 (1926 to 1934)	James Hogarth (Superintendent)	Vol 1182 Fol 97
24.08.1934 (1934 to 1937)	Jack Eveline Sabine Poultry Farmer)	Vol 1182 Fol 97
20.05.1937 (1937 to 1940)	Cyril Gerard Gore (Tea Planter)	Vol 1182 Fol 97
24.05.1940 (1940 to 1958)	Louis Leopold Nall (Company Director)	Vol 1182 Fol 97 now Vol 5366 Fol 8

Email: grolly1@bigpond.net.au

Service First Registration Pty Ltd

ACN: 108 037 029

Ph: 02 9233 1314

Fax: 9233 2878

Suite 102, Level 1, 64 Castlereagh Street

Sydney 2000

PO Box 1539 Sydney 2000

DX 189 Sydney

Continued as regards the part highlighted yellow on D.P. 876482

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
20.02.1958 (1958 to date)	# Baptist Union of New South Wales	Vol 5366 Fol 8 now 1/876442

Denotes current registered proprietor

As regards the part highlighted orange on D.P. 876482

<u>Date of Acquisition and term held</u>	<u>Registered Proprietor(s) & Occupations where available</u>	<u>Reference to Title at Acquisition and sale</u>
02.04.1898 (1898 to 1926)	Chris Krust (Butcher)	Vol 1248 Fol 152
29.12.1926 (1926 to 1934)	James Hogarth (Superintendent)	Vol 1248 Fol 152
24.08.1934 (1934 to 1937)	Jack Eveline Sabine Poultry Farmer	Vol 1248 Fol 152
20.05.1937 (1937 to 1940)	Cyril Gerard Gore (Tea Planter)	Vol 1248 Fol 152
24.05.1940 (1940 to 1958)	Louis Leopold Nall (Company Director)	Vol 1248 Fol 152 now Vol 5335 Fol 70
20.02.1958 (1958 to date)	# Baptist Union of New South Wales	Vol 5335 Fol 70 now 1/876442


Denotes current registered proprietor

Yours Sincerely

Mark Groll

19 November 2009

(Ph: 0412 199 304)



Cadastral Records Enquiry Report

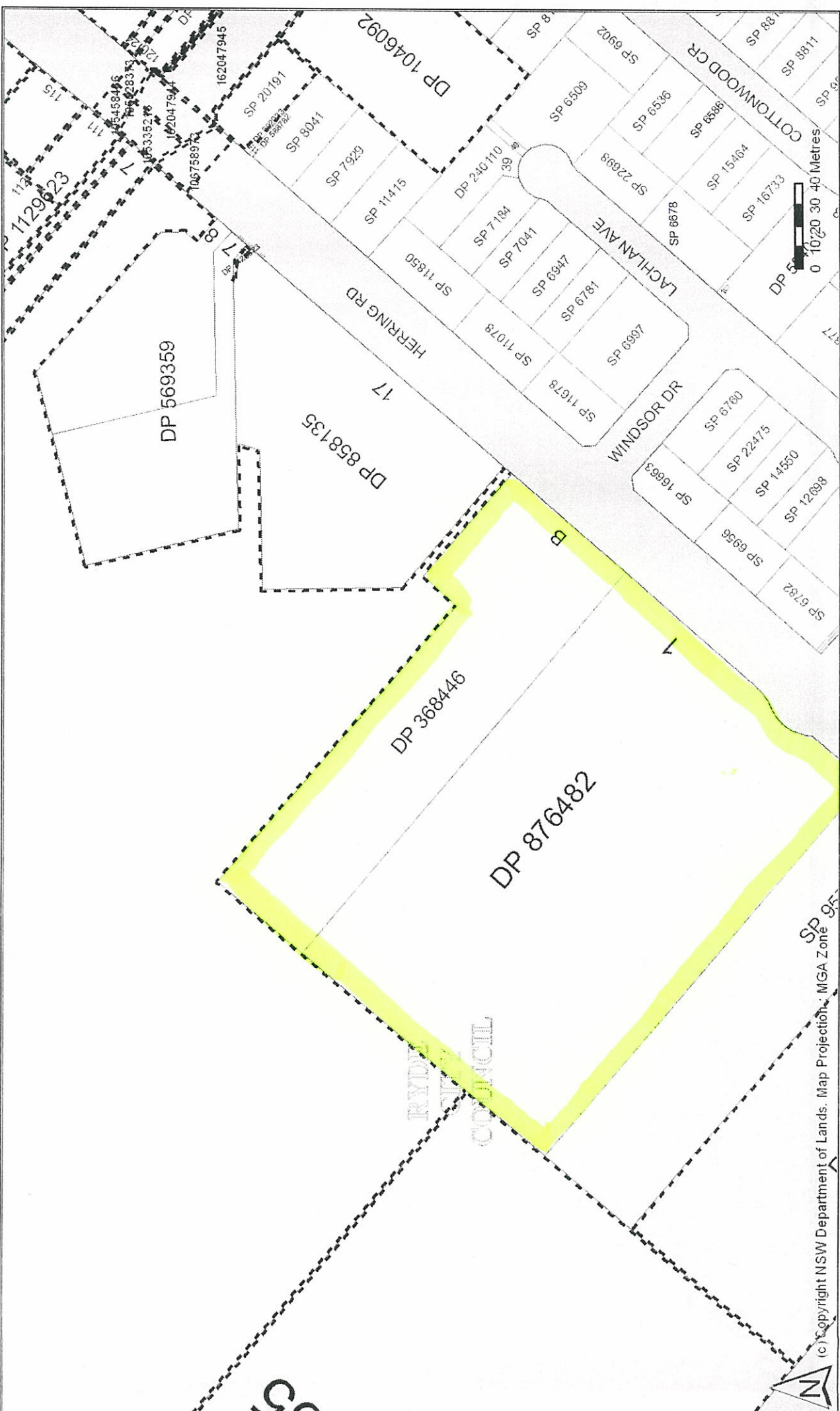
Requested Parcel : Lot B DP 368446

Identified Parcel : Lot B DP 368446

County : CUMBERLAND

Parish : HUNTERS HILL

LGA : RYDE



PLAN FORM 2

SIGNATURE AND SEALS ONLY.

THE COMMON SEAL OF THE BAPTIST UNION OF NEW SOUTH WALES was lawfully called by the authority of the Executive Committee previously given and in the presence of three members thereof. The names are set opposite herein and their signatures hereunto are appended by—

John Joseph
John Joseph

Ref: R796920 / Doc: DP 876482 P / Rev: 23-Apr-1998 / Sta: OK OK / P/L: 18-Nov-2009 14:37 / Pgs: ALL / Seq: 1 of 1

Plan Drawing only to appear in this space

<p>DP 876482</p> <p>Registered: ML 22-4-1998</p> <p>CA: N° 9291 of 19-10-1997</p> <p>Title System: TORRENS</p> <p>Purpose: SUBDIVISION</p> <p>Ref. Map: UO960-73, 74</p> <p>Last Part: DP219100, 1734, 2090</p> <p>PLAN OF SUBDIVISION OF LOTS 624 IN DP 752035 & LOT 2 IN DP 219100.</p> <p>Lengths are in metres. Reduction Ratio 1: 1000</p> <p>LGA: RYDE</p> <p>Locality: MARSFIELD</p> <p>Parish: HUNTERS HILL</p> <p>County: CUMBERLAND</p> <p>This is intended to be used in accordance with the provisions of the Survey Act 1959.</p> <p>JOHN JOSEPH, INCORPORATED</p> <p>RYDE CITY COUNCIL</p> <p>AS REGARDS THE ROAD WIDENING AS SHOWN ON THE PLAN</p> <p>Price used in preparation of subdivision: DP'S 818100, 548446, 548795, 748174, 548195 & 548195</p> <p>PANEL FOR USE ONLY for statements of intention to dedicate public roads, to create public reserves, drainage easements, etc. Restrictions on the use of land or positive covenants.</p> <p>IT IS INTENDED TO DEDICATE THE ROAD WIDENING TO ADJACENT</p> <p>DEPARTMENT ACCEPTED</p> <p>ADP ENGINE MANAGER</p>																									
<table border="1"> <thead> <tr> <th colspan="4">SUMMARY OF THE SURVEY DATA</th> </tr> <tr> <th>MARK</th> <th>EXISTING</th> <th>ADJUSTED</th> <th>2000 ACC.</th> </tr> </thead> <tbody> <tr> <td>SSM 21886</td> <td>501722-529</td> <td>1241916-105</td> <td>641 2</td> </tr> <tr> <td>SSM 21886</td> <td>501722-529</td> <td>1241916-105</td> <td>641 2</td> </tr> <tr> <td>SSM 21886</td> <td>501722-529</td> <td>1241916-105</td> <td>641 2</td> </tr> <tr> <td>SSM 21886</td> <td>501722-529</td> <td>1241916-105</td> <td>641 2</td> </tr> </tbody> </table> <p>WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION</p>		SUMMARY OF THE SURVEY DATA				MARK	EXISTING	ADJUSTED	2000 ACC.	SSM 21886	501722-529	1241916-105	641 2	SSM 21886	501722-529	1241916-105	641 2	SSM 21886	501722-529	1241916-105	641 2	SSM 21886	501722-529	1241916-105	641 2
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DP 876482



Historical Title

LEAP Searching
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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

18/11/2009 2:38PM

FOLIO: B/368446

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 6235 FOL 227

Recorded	Number	Type of Instrument	C.T. Issue
2/9/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
13/11/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
11/2/1993	I110492	DISCHARGE OF MORTGAGE	
11/2/1993	I110493	DISCHARGE OF MORTGAGE	
11/2/1993	I110494	DISCHARGE OF MORTGAGE	EDITION 1
26/8/1994	U566006	REQUEST	EDITION 2

*** END OF SEARCH ***

mg

PRINTED ON 18/11/2009



Title Search

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: B/368446

SEARCH DATE	TIME	EDITION NO	DATE
-----	----	-----	----
18/11/2009	2:41 PM	2	26/8/1994

LAND

LOT B IN DEPOSITED PLAN 368446
LOCAL GOVERNMENT AREA RYDE
PARISH OF HUNTERS HILL COUNTY OF CUMBERLAND
TITLE DIAGRAM DP368446

FIRST SCHEDULE

THE BAPTIST UNION OF NEW SOUTH WALES (T H157113)

SECOND SCHEDULE (2 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 U566006 POSITIVE COVENANT

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES
NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED
CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS
RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE
IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND
COMPRISED IN THIS FOLIO.

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

mg

PRINTED ON 18/11/2009

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. Leap Searching hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 92B(2) of the Real Property Act.

M
NEW SOUTH WALES

(For Grant and title reference
prior to first edition see
Deposited Plan.)

CERTIFICATE OF TITLE
PROPERTY ACT, 1900, as amended.



0924942

Vol. **9249** Fol. **42**



1st Edition issued 17-8-1962

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.

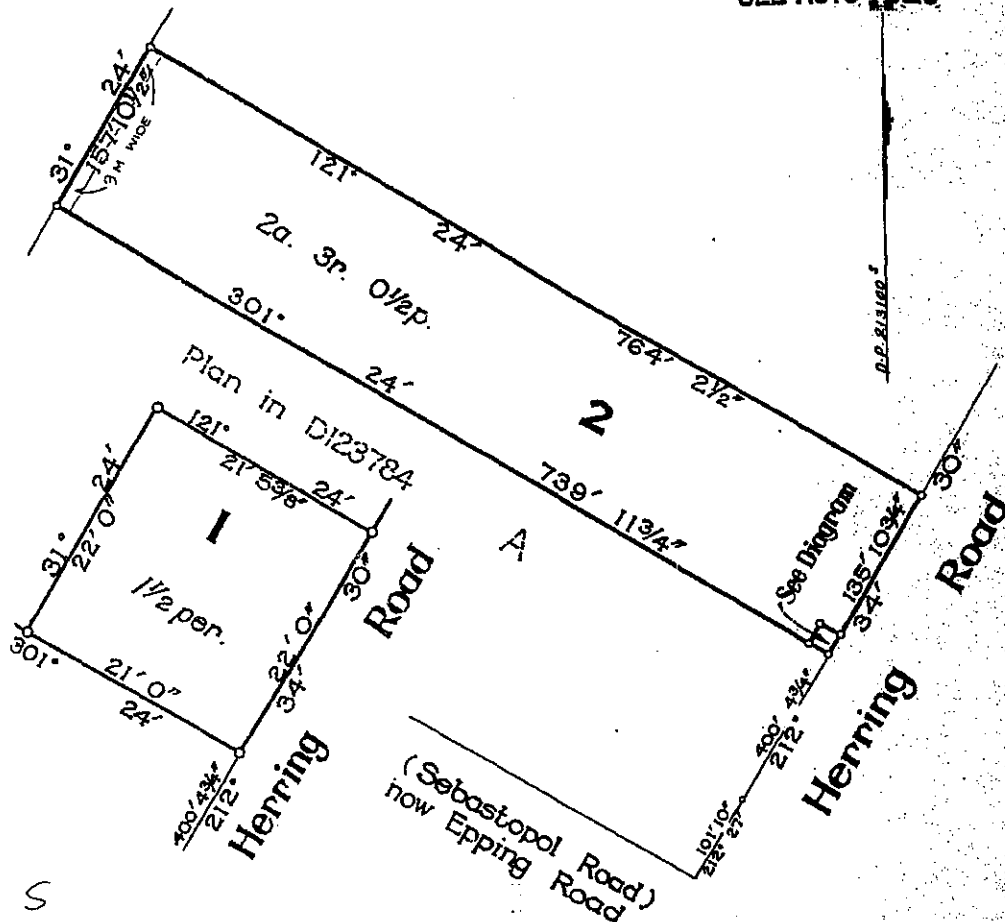
Witness

J. Brown

CANCELLED
J. Watson
Registrar-General.
SEE AUTO FOLIO



PLAN SHOWING LOCATION OF LAND



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in lot 2 in Deposited Plan 213100s at Marsfield in the Municipality of Ryde Parish of Hunters Hill and County of Cumberland.

FIRST SCHEDULE (Continued overleaf)

THE BAPTIST UNION OF NEW SOUTH WALES.

J. Watson
Registrar General

SECOND SCHEDULE (Continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.
2. ~~Mortgage No. B960679 to The Commercial Banking Company of Sydney Limited.~~ Entered 21-3-1962

J. Watson
Registrar General

Discharged see
7195300

B29
/Req: B542770
/Doc: CT 09249-042
/Pt: 18-Nov-2009

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE

REGISTERED PROPRIETOR

SEE AUTO FOLIO

PARTICULARS

33
(Page 2 of 2 pages)

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



Historical Title

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

18/11/2009 2:38PM

FOLIO: 2/213100

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9249 FOL 42

Recorded	Number	Type of Instrument	C.T. Issue
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28/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
11/2/1993	I110492	DISCHARGE OF MORTGAGE	
11/2/1993	I110493	DISCHARGE OF MORTGAGE	
11/2/1993	I110494	DISCHARGE OF MORTGAGE	EDITION 1
26/8/1994	U566006	REQUEST	EDITION 2
22/4/1998	DP876482	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS

*** END OF SEARCH ***

mg

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

18/11/2009 2:38PM

FOLIO: 624/752035

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 5366 FOL 8

Recorded	Number	Type of Instrument	C.T. Issue
19/1/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
7/7/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
15/3/1991		AMENDMENT: TITLE DIAGRAM	
11/2/1993	I110492	DISCHARGE OF MORTGAGE	
11/2/1993	I110493	DISCHARGE OF MORTGAGE	
11/2/1993	I110494	DISCHARGE OF MORTGAGE	EDITION 1
26/8/1994	U566006	REQUEST	EDITION 2
22/4/1998	DP876482	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS

*** END OF SEARCH ***

mg

PRINTED ON 18/11/2009



Historical Title

LEAP Searching
An Approved LPI NSW
Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

18/11/2009 2:38PM

FOLIO: 1/876482

First Title(s): VOL 1248 FOL 152 VOL 1182 FOL 97
Prior Title(s): 2/213100 624/752035

Recorded -----	Number -----	Type of Instrument -----	C.T. Issue -----
22/4/1998	DP876482	DEPOSITED PLAN	FOLIO CREATED EDITION 1

*** END OF SEARCH ***

mg

PRINTED ON 18/11/2009



Title Search

LEAP Searching
An Approved LPI NSW
Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 1/876482

SEARCH DATE	TIME	EDITION NO	DATE
-----	----	-----	----
18/11/2009	2:41 PM	1	22/4/1998

LAND

LOT 1 IN DEPOSITED PLAN 876482
AT MARSFIELD
LOCAL GOVERNMENT AREA RYDE
PARISH OF HUNTERS HILL COUNTY OF CUMBERLAND
TITLE DIAGRAM DP876482

FIRST SCHEDULE

THE BAPTIST UNION OF NEW SOUTH WALES

SECOND SCHEDULE (4 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 P515132 EASEMENT FOR DRAINAGE 3M WIDE AFFECTING THE PART OF
THE LAND SHOWN SO BURDENED IN THE TITLE DIAGRAM
- 3 N498846 EASEMENT FOR DRAINAGE AFFECTING THE PART OF THE LAND
SHOWN SO BURDENED IN THE TITLE DIAGRAM
- 4 U566006 POSITIVE COVENANT

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES
NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED
CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS
RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE
IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND
COMPRISED IN THIS FOLIO.

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

mg

PRINTED ON 18/11/2009

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. Leap Searching hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 92B(2) of the Real Property Act.



Photo 1: Aerial Photograph 1930

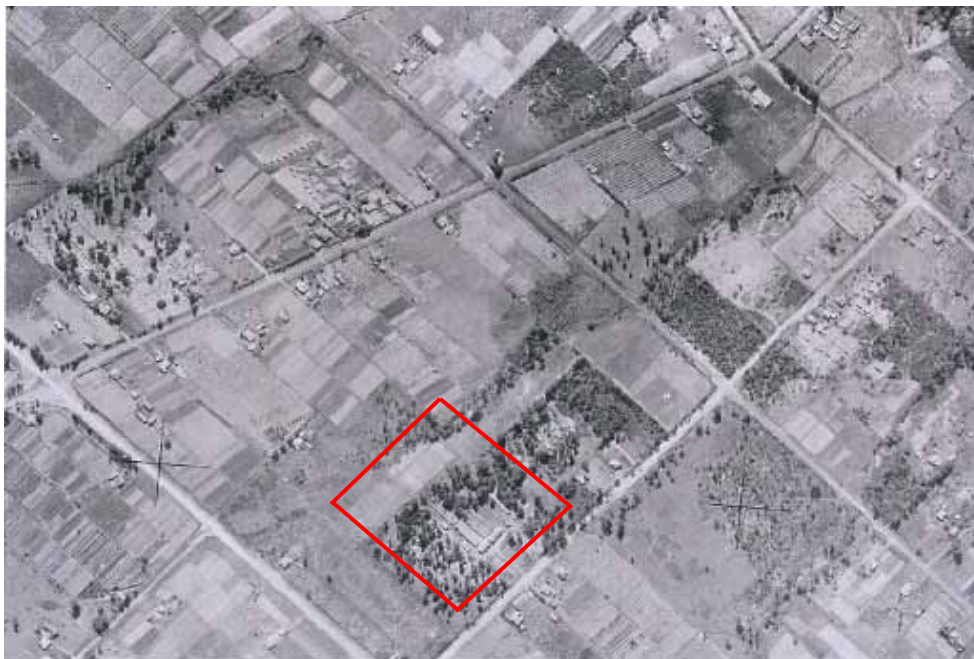


Photo 2: Aerial Photograph: 1943

Phase 1 Contamination Assessment
120-128 Herring Road,
Macquarie Park

Project
71476.01

December
2009

Plate
1



Photo 3: Aerial Photograph 1951

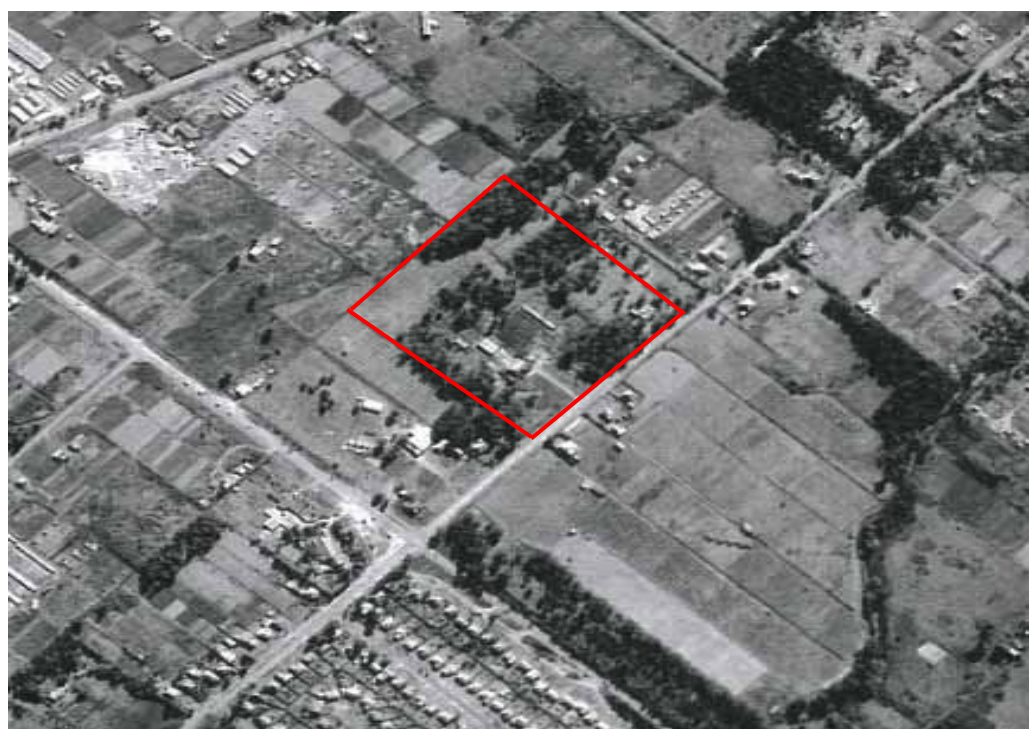


Photo 4: Aerial Photograph 1961

Phase 1 Contamination Assessment
120-128 Herring Road,
Macquarie Park

Project
71476.01

December
2009

Plate
2

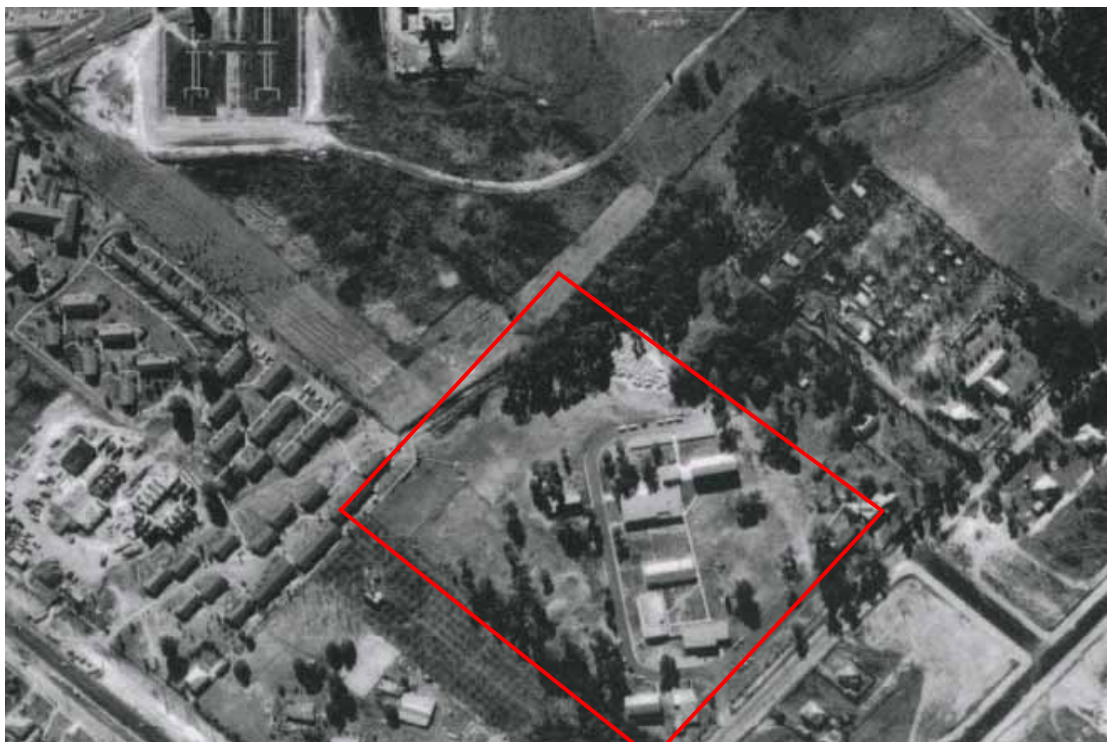


Photo 5: Aerial Photograph 1970



Photo 6: Aerial Photograph 1986

Phase 1 Contamination Assessment
 120-128 Herring Road,
 Macquarie Park

Project
 71476.01

December
 2009

Plate
 3



Photo 7: Aerial Photograph 2009

Phase 1 Contamination Assessment
120-128 Herring Road,
Macquarie Park

Project
71476.01

December
2009

Plate
4