ENVIRONMENTAL INVESTIGATION SERVICES

REPORT

TO

MIDSON GROUP PTY LTD

ON

STAGE 1 PRELIMINARY CONTAMINATION ASSESSMENT

FOR

PROPOSED RESIDENTIAL AGED CARE FACILITY DEVELOPMENT

AT

238 MONA VALE ROAD, ST. IVES

FEBRUARY 2013 **REF: E26305Krpt**

AS/NZS ISO 9001 Certified
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1 INTRODUCTION

Midson Group Pty Ltd ('the client') commissioned Environmental Investigation Services (EIS), a division of Jeffery & Katauskas Pty Ltd (J&K), to undertake a Stage 1 preliminary Environmental Site Assessment (ESA) and a contamination assessment for the proposed residential aged care facility development at 238 Mona Vale Road, St Ives, NSW 2075 ('the site').

The site is identified as Lot 1, 2 and 3 in DP1091770 and Lot 1 in DP238521. At the time of this investigation was occupied by a disused garden centre and a residential dwelling.

The site location is shown on Figure 1 and the ESA was confined to the site boundaries as shown on Figure 2.

The assessment was undertaken generally in accordance with an EIS proposal (Ref: EP6682KG) of 10 October 2012 and written acceptance from Midson Group Pty Ltd of 1 February 2013.

This report has been prepared to support the lodgement of a development application to Ku-Ring-Gai Council for the proposed development.

1.1 Proposed Development Details

The proposed development includes the construction of a residential aged care facility.

1.2 Objectives

The objectives of the ESA are to:

- Assess the potential for soil and groundwater contamination at the site;
- Identify the areas of environmental concern;
- Establish whether an intrusive (Stage 2) investigation is required; and
- Prepare a report presenting the results of the ESA.

1.3 Scope of Work

The scope of work undertaken for the ESA included:

- A site history assessment to identify historical land uses that may have resulted in site contamination;
- A walkover site inspection to identify potential contamination sources;
- Preparation of a Conceptual Site Model (CSM) identifying the Potential Contaminants of Concern (PCC) and potential sensitive receptors; and
- Preparation of a report presenting the results of the ESA.

The ESA was generally undertaken with reference to the regulations/guidelines outlined in the table below. Individual guidelines applicable to the assessment are also referenced within the text of the report (where required).

Table 1-1: Guidelines

Guidelines/Regulations/Documents
Contaminated Land Management Amendment Act (2008[1])
State Environmental Planning Policy No.55 – Remediation of Land (1998[2])
NSW EPA Guidelines for Consultants Reporting on Contaminated Sites (1997[3])
Guidelines for the NSW Site Auditor Scheme, 2nd Edition (2006[4])
National Environmental Protection (Assessment of Site Contamination) Measure (1999[5])

[1] *Contaminated Land Management Amendment Act,* NSW Government Legislation, 2008 (CLM Amendment Act 2008)

[2] *State Environmental Planning Policy No. 55 – Remediation of Land,* NSW Government, 1998 (SEPP55)

[3] *Guidelines for Consultants Reporting on Contaminated Sites,* NSW EPA, 1997 (Reporting Guidelines 1997)

[4] *Guidelines for the NSW Site Auditor Scheme, 2nd ed.,* NSW DEC, 2006 (Site Auditor Guidelines 2006)

[5] *National Environmental Protection (Assessment of Site Contamination) Measure,* National Environment Protection Council (NEPC), 1999 (NEPM 1999)

2 DATA QUALITY OBJECTIVES

2.1 DQOs for the Assessment

The DQO process includes a clear statement of the objectives of the study and a methodology for collecting enough data of sufficient quality to support the decisions of the study. The DQOs provide a systematic approach for undertaking the assessment and outlines criteria against which data can be assessed.

A methodology for establishing the DQOs is presented in the US EPA document *Data Quality Objectives Process for Hazardous Waste Site Investigations* (2000[6]). This methodology has been adopted by the NEPC in NEPM 1999, AS4482.1-2005[7] and the Site Auditor Guidelines 2006. The main steps involved in preparing the DQOs include:

1. State the problem;
2. Identify the decision;
3. Identify inputs into the decision;
4. Study boundaries;
5. Develop a decision rule;
6. Specify limits on decision errors; and
7. Optimise the design for obtaining data.

The first six steps provide qualitative and quantitative statements which are used in the final step to develop a data collection plan. Not all seven steps of the DQO process are applicable to Stage 1 'desktop' ESAs. However, this process should be reviewed and adapted for any subsequent investigation stages where intrusive works are undertaken. Suitable Data Quality Indicators (DQIs) would also be prepared for intrusive investigations where soil and groundwater analytical data is obtained.

2.1.1 State the Problem

Historical land uses may have resulted in soil and groundwater contamination at the site that may pose a risk to human health and the environment. A Stage 1 ESA is required to identify and assess these risks, and to establish whether an intrusive (Stage 2) investigation is required.

2.1.2 Identify the Decision

The assessment aims to address the following decisions:

- Does the site history indicate previous land use(s) that may have resulted in contamination;

[6] *Data Quality Objectives Process for Hazardous Waste Site Investigations,* US EPA, *2000* (US EPA 2000)
[7] *Guide to the Investigation and Sampling of sites with Potentially Contaminated Soil,* Standards Australia, 2005 (AS 2005)

- Does the site inspection indicate the presence of potential on-site and/or nearby off-site contamination sources;
- What are the PCC for soil and groundwater, based on the historical information and site walkover;
- Are there any potential receptors that may be impacted by the PCC;
- Are there potential human-health and/or environmental risks associated with the PCC under the existing or proposed land uses;
- Is an intrusive investigation required to assess the actual site contamination conditions.

2.1.3 Inputs into the Decision

The following inputs will be used to address the decisions:

Table 2-1: Inputs into the Decision

Inputs	Details
Site Inspection & Physical Setting	Undertake a site inspection to identify potential on and off-site contamination sources. Assess the physical setting including a review of regional geology, topography, acid sulfate soil (ASS) potential and hydrogeology.
Site History Assessment	Review of site history information and other information as outlined in **Section 4**.
Conceptual Site Model	Prepare a CSM identifying the PCC and potential human and environmental receptors.

The information obtained from the above inputs is considered sufficient to assess the potential for site contamination and to address the decisions outlined above (see **Section 2.1.2**).

2.1.4 Study Boundary

The assessment will be confined to the site boundaries as shown in Figure 2.

2.1.5 Develop a Decision Rule

The presence of potential contamination sources at the site will result in a recommendation for intrusive works. The nature and extent of the investigation required will be dependent on the CSM/PCC, the areas of environmental concern and the nature of the proposed land use.

2.1.6 Specify Limits on Decision Errors

Decision errors are false positive (i.e. stating the site is free of contamination when it is not) or false negative (i.e. stating that the site is contaminated when it is not). The more significant is the false positive, which may result in potential risks to human health and the environment. To account for this, the ESA has assumed that potential contamination sources are present at the site unless demonstrated otherwise.

2.1.7 Optimise the Design for Obtaining Data

The overall data set will be optimised by reviewing the data as the project proceeds.

3 SITE INFORMATION AND PHYSICAL SETTING

3.1 Site Identification

Table 3-1: Site Identification Information

Site Owner:	Dasmin Pty Ltd
Site Address:	238 Mona Vale Road, St Ives, NSW 2075
Lot & Deposited Plan:	Lot 1, 2 and 3 in DP1091770 and Lot 1 in DP238521
Current Land Use:	Commercial
Proposed Land Use:	Commercial
Local Government Authority:	Ku-Ring-Gai Council
Current Zoning:	R3 Medium Density Residential (LEP 2012)
Site Area:	5,612m^2
RL (AHD) (approx.):	155m
Geographical Location (MGA) (approx.):	N: 6221320 E: 1443520
Site Location Plan:	Figure 1
Site Layout Plan:	Figure 2

3.2 Site Location and Setting

The site is located within the metropolitan area of Sydney approximately 17km from the CBD. The surrounding areas are predominantly residential area, with the exception of commercial properties located to the south-east of the site. The site is triangular shaped and extends from Killeaton Street to the north, Link Road to the south-west and Mona Vale Road to the south-east boundary.

3.3 Topography

The regional topography is characterised by slightly undulating hill slopes of approximately 3°- 8°. The site is located within a low depression with topography falling towards the site centre at approximately 2°-3°. The site topography had been altered to accommodate the existing development and included several terraced areas retained by brick/concrete walls (less than 1m high). The lowest area of the site appeared to be the central section, with the lowest point located in the central north section adjacent to Killeaton Street. The layout of the site stormwater system suggests that water was directed to the lowest point of the site.

3.4 Site Inspection

A walkover inspection of the site and immediate surrounds was undertaken on 5 February 2013. The inspection was limited to accessible areas of the site and included an internal inspection of the majority of the buildings.

At the time of the inspection, the site was occupied by a disused garden centre which generally consisted of gravel yards, a hardstand asphaltic concrete car park and concrete paved footpaths. A concrete slab was located in the north-west section of the site. The majority of the site was generally open apart from a network of shade providing structures located along the south, west and south-east sections of the site. Various trees and shrubs were present in flowerbeds throughout the site.

A wooden building with a colourbond awning was located in the north-east corner of the site. An unmarked and partially exposed water pipe was observed in this area and was presumed to be associated with the former nursery's watering system. A single storey timber and fibro building was located adjacent to the entrance off Killeaton Street. This building appeared to have been used as a former nursery with a network of awnings attached to the rear. A tin roof shed (possibly used for storage) with an exposed earth floor was situated next to the concrete slab at the north-west section of the site. The earth floor inside the shed appeared to be stained. A disused single-storey, brick and fibro residential building with a tiled roof was located along the south-east boundary. A toilet block and storage shed were semi-detached to the south side of the residential building.

The surrounding land use consisted of low to high density residential developments to the north and south west of the site. The area to the south east of the site comprised of commercial properties including a childcare centre and church.

3.4.1 Underground Services

The 'Dial Before You Dig' (DBYD) plans were reviewed for the ESA. A brief summary of relevant information is present below:

Table 3-2: Summary of Services

Service	Location	Contaminant Migratory Pathway
Telecom	The plans indicate that electrical cables are located on the opposite side of Mona Vale Rd and flanking the Mona Vale Rd site boundary.	The potential for the migration of volatile mobile contaminants along the length of the telecom cable trench is considered to be high.
Electrical	The plans indicate that electrical cables are located on the opposite side of Mona Vale Rd.	These services are not considered to be a potential migratory pathway.
RTA electrical	The plans indicate that electrical cables are located outside of the site boundary adjacent to the Mona Vale Rd and Link Rd intersection.	These services are not considered to be a potential migratory pathway.
Stormwater	Within site boundary	The stormwater generally extends from the corner of Link Rd and Mona Vale

Service	Location	Contaminant Migratory Pathway
		Rd, northward towards Killeaton St. The potential for the migration of volatile mobile contaminants along the stormwater easement is considered to be high.

3.5 Regional Geology

The regional geological map of Sydney (1983[8]) indicates the site to be underlain by Ashfield Shale of the Wianamatta Group, which typically consists of black to dark grey shale and laminite.

3.6 Acid Sulfate Soil (ASS) Risk Map

The risk maps prepared by the Department of Land and Soil Conservation indicate areas of high risk, low risk and no known occurrence of ASS. The ASS risk map for the Sydney area (1997[9]) indicates that the site is located within an area of no known occurrence of acid sulphate soil.

3.7 Hydrogeology

A search of the groundwater bore summary records available on the NSW Office of Water[10] website was undertaken for the ESA. The search was limited to registered bores located within approximately 1km from the site. A copy of the records and a plan showing the approximate location of the bores is attached in Appendix A. A brief summary of relevant information pertaining to the ESA is present below:

Table 3-3: Summary of Groundwater Bores

Reference	Distance from site (m) (approx.)	Direction & Gradient from site	Final Depth (m)	Standing Water Level (SWL) (m)	Registered Purpose	Potential Receptor
GW028301	440m	North east & across catchment boundary	68m	Not available	Domestic	No
GW103897	860m	South west & across catchment	3.50m	Not available	Monitoring	No

[8] *1:100,000 Geological Map of Sydney (Series 9130)* Department of Mineral Resources (1983)

[9] *1:25,000 Acid Sulfate Soil Risk Map (Series 9130N3, Ed 2),* Department of Land and Soil Conservation (1997)

[10] http://www.waterinfo.nsw.gov.au/gw/, visited on 11/02/13

Reference	Distance from site (m) (approx.)	Direction & Gradient from site	Final Depth (m)	Standing Water Level (SWL) (m)	Registered Purpose	Potential Receptor
		boundary				
GW022928	780m	South west & across catchment boundary	50m	Not available	Irrigation	No
GW032711	510m	West & up gradient	42m	Not available	Irrigation	No

Ku-Ring-Gai Creek is located 650m down gradient from the site. No groundwater bores were located between the site and the Ku-Ring-Gai Creek.

The stratigraphy of the site is expected to consist of residual clayey soils overlying relatively shallow bedrock. Based on these conditions and the results of the groundwater bore search, groundwater is not considered to be a significant resource for abstraction purposes in the immediate vicinity of the site. A perched aquifer located in the shallow subsurface is not considered to be a resource due to high salinity, poor water quality and low yield.

4 SITE HISTORY ASSESSMENT

4.1 Aerial Photographs

Historical aerial photographs of the site and immediate surrounds were reviewed for the site history assessment. The majority of the photographs were obtained from the NSW Department of Lands. A summary of the relevant information is presented in the following table:

Table 4-1: Summary of Historical Aerial Photos

Year	Details
1930	The quality of the 1930 aerial photograph is quite poor, however the wesr section of the site appeared to be used as an orchard. Bushland occupied the central area and a small building structure at the east corner. The site appeared to be bounded by the existing Killeaton Street to the north and Mona Vale Road to the south east. The immediate surroundings generally appeared to be used for agricultural purposes with low density buildings. Native bushland appeared to occupy the area to the south of the existing Mona Vale Road.
1943[11]	The site appeared to have changed significantly. A large commercial warehouse of unknown use occupied the north-west section of the site. Several small structures occupied the north-east section while the remainder of the site appeared to be occupied by flowerbeds and trees. The surrounding land use appeared similar to 1930 with a general increase in building density. Buildings were a mix residential and commercial (associated with farming).
1951	The site and immediate surroundings appeared generally similar the 1943 aerial photograph except with the addition of another building at the central area of the site.
1961	The site generally appeared similar to the 1951 aerial photograph. Surrounding land use had significantly changed compared to the 1951 aerial photograph with residential developments widespread.
1970	The site appeared to be generally similar to the 1961 aerial photograph. The immediate surroundings had been significantly altered with the development of the existing Link Road which flanked the south-west site boundary and, what appeared to be, a residential development beyond. The areas to the north, west

[11] https://six.maps.nsw.gov.au/wps/portal/SIXViewer, visited on 11/02/12

Year	Details
	and south of the site were generally occupied by low density residential developments.
1978	The majority of the site appeared to be occupied by buildings. The immediate surrounds appeared to be similar to that of the 1970 aerial photograph however an increase in commercial land use was apparent.
1986	The site and immediate surroundings appeared to be generally similar to the 1978 aerial photograph.
1994	The site and immediate surroundings appeared to be generally similar to that of the previous 1986 photograph.
2002	The site and immediate surroundings appeared similar to that of the 1994 aerial photograph.
2011[12]	The site appeared to have undergone significant alteration, with the removal of the majority of the buildings on site. The site layout appeared similar to that observed at the time of the site inspection.

4.2 Land Title Search

A limited search of the land title records (Lot 1 and Lot 2 in DP109770) was undertaken for the site history assessment. The record search was performed by Advance Legal Searchers. Copies of the title records are presented in Appendix A. A summary of the relevant information is presented in the following table:

Table 4-2: Summary of Relevant Land Title Information

Date	Proprietor
1960 – 2005	Camellia Grove Nursery Pty Limited
1946 – 1960	James Ronald Fisher, nurseryman
1927 – 1940	Arthur Macquarie Weymark, fruit merchant
1909 – 1927	Ester Jane Russell, wife of orchardist
1872 – 1909	Thomas Connelley, farmer

[12] Google EarthPro visited on 12/2/13

The title records have indicated agricultural land use that may have resulted in site contamination.

4.3 Council Records

4.3.1 Development Applications (DA), Building Approvals (BA)

A review of Council DA, BA and property files is currently underway and the results will be forwarded when received.

4.3.2 Section 149 Planning Certificate

The s149 (2 and 5) planning certificates were reviewed for the site history assessment. Copies of the certificates are attached in Appendix A. The Council review of records related to previous land use did not suggest any potential cause of contamination of this property. However the Council states that agriculture and horticulture were widespread land uses in areas of Ku-Ring-Gai Council prior to urban development. Therefore the Council suggests further investigations are required if contamination of the site is a concern.

4.4 WorkCover Records

WorkCover records were reviewed for the site history assessment. Copies of the records are attached in Appendix A. The records did not indicate the existence of any licences, including underground storage tanks (USTs), at the site.

4.5 NSW EPA Records

The NSW EPA records available online were reviewed for the site history assessment. Copies of the records are attached in Appendix A. A summary of the relevant information is provided in the following table:

Table 4-3: Summary of NSW EPA Online Records

Source	Details
CLM Act 1997[13]	No notices for the site under Section 58 of the Act.
NSW EPA List of Contaminated Sites[14]	The site is not listed in the NSW EPA register.
POEO Register[15]	No notices for the site in the POEO register.

[13] http://www.environment.nsw.gov.au/prclmapp/searchregister.aspx, visited on 12/2/13
[14] http://www.environment.nsw.gov.au/clm/publiclist.htm, visited on 12/2/13
[15] http://www.environment.nsw.gov.au/prpoeoapp/, visited on 12/2/13

4.6 Integrity of Site History Information

The site history information has generally been obtained from government organisations including: NSW Land Titles Office, Department of Lands, NSW WorkCover records and NSW EPA records. The veracity of the information from these sources is considered to be high, however, given the age of the development, the gap of up to 13 years between aerial photographs and the lack of information available on activities prior to 1900's, a certain degree of information loss can be expected.

Non verifiable anecdotal information has not been reported. Therefore, there is considered to be a high level of integrity associated with information reviewed for the assessment.

We note that a review of the council records including DA, BA and property files have not been included. This information will be issued as an addendum when received.

4.7 Summary of Site History

The site history assessment has indicated the following:

Table 4-4: Site History Summary

Source	Summary
Aerial Photos	The records indicate the previous land use of the site included a farm, fruit merchant, orchid and nursery. Buildings also appear to have been removed from the site. These activities suggest the site may have been exposed to chemicals involved in intensive agriculture. The removal of buildings from the site may also have contributed to contamination.
Land Title Records	The records indicate agricultural land use that may have resulted in site contamination.
WorkCover Records	The records did not indicate the existence of any licences, including underground storage tanks (USTs), at the site.
NSW EPA Records	There are no EPA notices for the site. The site is not listed on the CLM register.

5 CONCEPTUAL SITE MODEL (CSM)

5.1 Contamination Sources and Potential Contaminants of Concern (PCC)

The potential contamination sources and PCC identified at the site are outlined in the following table:

Table 5-1: PCC

Source	Site Feature / Land Use	PCC
Fill material	**On-site**: If fill material has been previously imported onto the site there is a possibility this could contain elevated concentrations of contaminants. The nature and type of contaminants present may vary considerably depending on the source of the fill soils. Some contaminants have the potential to impact the groundwater by leaching. **Off-site**: Mobile contaminants have the potential to migrate through soil via migration pathways such as service trenches. The groundwater in the vicinity of the site may also be impacted by contaminants encountered in the fill material in the adjacent areas.	Soil: HM, TPH, BTEX, PAHs, OCPs, OPPs, PCBs and asbestos Groundwater: HM, TPH, BTEX, PAHs.
Historical site activities and chemical storage	**On-site**: The activities associated with farming and the production of fruit and plants for commercial proposes involve the use of chemicals such as pesticides, herbicides and fertilisers. It is also probable that these chemicals were stored on site. Therefore it is possible the use of these chemicals may have resulted in contamination.	HM, OCPs, OPPs & Herbicides
Demolition of buildings	**On-site**: The historical aerial photographs indicated that a number of buildings have been demolished at the site. Potential asbestos containing materials may have been present within the buildings.	Asbestos

Note:
HM – Heavy metals including arsenic, cadmium, chromium, copper, lead, mercury, nickel & zinc
TPH – Total petroleum hydrocarbons including light, mid and heavy fractions
BTEX – Monocyclic aromatic hydrocarbons
VOCs - Volatile organic compounds (includes a more extensive list of volatile compounds and BTEX)
PAHs - Polycyclic aromatic hydrocarbons
OCPs - Organochlorine pesticides
OPPs - Organophosphorus pesticides
PCBs - Polychlorinated Biphenyls

As the potential contamination sources identified at this site are surface based, groundwater contamination is likely to be associated with the storage and use of

chemicals associated with intensive farming such as pesticides, herbicides and fertilisers.

5.2 Contamination Fate and Transport

The fate and transport of the PCC identified above is outlined in the following table:

Table 5-2: Fate and Transport of PCC

PCC	Fate and Transport
Non-volatile contaminants including metals, heavy fraction PAHs, OCPs, OPPs, PCBs and asbestos	With the exception of asbestos, non-volatile contaminants are predominantly confined to the soil and groundwater medium. The mobility of these contaminants varies depending on: the nature and type of contaminant present; soil type/porosity; surface water infiltration; groundwater levels; and the rate of groundwater movement. Non-volatile contaminants associated with ash and slag waste (such as heavy fraction PAHs and some heavy metals) are bound within a relatively insoluble matrix. Slag and ash is usually formed as a by-product of combustion at high temperatures which 'locks in' the contaminants within the matrix. A number of studies have found that soils effectively filter out asbestos fibres and retain them near the surface. The studies concluded that there is no significant migration of asbestos fibres, either through soil or groundwater. The transport of airborne asbestos is associated with disturbance of the material.
Volatile contaminants including TPH, VOCs/BTEX and light fraction PAHs	Volatile contaminants are usually more mobile when compared to the non-volatile compounds. The potential for migration of volatile contaminants such as light fraction PAHs, TPHs and BTEX/VOCs is relatively high in sandy soil with a high water table. Surface water infiltration can also accelerate the migration potential of these contaminants. Volatile contaminants break down rapidly as a result of microbial activity and availability of nutrients including nitrogen, oxygen etc. The mobile contaminants would be expected to move down to the rock surface or groundwater table and migrate down gradient from the source. The mobility would depend on a range of factors including: soil type/porosity; confining layers within the aquifer; and solubility in groundwater.

5.3 Potential Receptors and Exposure Pathways

The potential receptors and exposure pathways identified for the PCC at the site are presented in the following table:

Table 5-3: Potential Receptors and Exposure Pathways

Receptors	Exposure Pathway
On-site human receptors include: - Site occupants; - Site visitors; - Contractors and workers; and - Future site occupants.	- Exposure by direct dermal contact, ingestion and inhalation - Inhalation of airborne asbestos fibres mobilised during demolition of the existing pavements and/or excavation activities associated with the proposed development works - Migration and consumption of contaminated groundwater
On-site Environmental receptors include: - Soil and groundwater.	- Uptake of heavy metals within the root zone of plants - Migration of soluble contaminants via surface water flows - Migration of contaminated groundwater
Off-site human receptors include: - Off-site occupants; - Off-site visitors; and - Contractors and workers in the adjoining area.	- Exposure by direct dermal contact, ingestion and inhalation (i.e. dust and fugitive emissions from volatile contaminants, primarily during the proposed demolition/construction activities) - Inhalation of airborne asbestos fibres mobilised during demolition of the existing pavements and/or excavation activities associated with the proposed development works - Migration of contaminated groundwater, including extraction and use of groundwater down-gradient from the site
Off-site environmental receptors include: - The manmade dam located approximately Kuring-gai Creek approx. 650m to the north of the site.	- Migration of contaminated groundwater, including extraction and use of groundwater down-gradient from the site - Migration of contaminants via surface water flows

6 DISCUSSION

6.1 Potential for Site Contamination

Based on the results of the assessment, EIS are of the opinion that the potential for soil and groundwater contamination at the site is low to moderate. A Hazardous Building Material Survey of the existing structures is also recommended for the site.

This based on the following:

- The historical assessment indicated that the site was previously used for agricultural and horticultural activities which may have included the use of pesticides, herbicides and fertilizers;
- Several buildings/sheds (possibly containing asbestos building materials) were previously demolished at the site;

6.2 Recommendations

A Stage 2 environmental site investigation should be undertaken to assess the soil and groundwater contamination conditions at the site. The investigation should be designed to meet the sampling density detailed in the *NSW EPA Contaminated Sites Sampling Design Guidelines* (1995[16]) and should include the installation of a minimum of three groundwater monitoring wells.

[16] *Contaminated Sites Sampling Design Guidelines,* NSW EPA, 1995 (EPA Sampling Design Guidelines 1995)

7 CONCLUSION

Based on the scope of work undertaken for the Stage 1 preliminary ESA, EIS consider that the site can be made suitable for the proposed development, provided that a Stage 2 Environmental Site Assessment is completed (including soil and groundwater sampling) and a Hazardous Building Material Survey is undertaken prior to demolition of the buildings.

The objectives (detailed in **Section 1.2**) and DQOs (detailed in Section 2) are considered to have been met for this ESA.

7.1 Regulatory Requirement

The regulatory requirements applicable for the site are outlined in the following table:

Table 7-1: Regulatory Requirement

Guideline	Applicability
Duty to Report Contamination 2008[17]	The requirement to report to the NSW EPA under Section 60 and Duty to Report Contamination 2008 guidelines (under the CLM Amendment Act 2008) should be assessed following the intrusive investigation.
POEO Act 1997	Section 143 of the POEO Act 1997 states that if waste is transported to a place that cannot lawfully be used as a waste facility for that waste, then the transporter and owner of the waste are each guilty of an offence. The transporter and owner of the waste have a duty to ensure that the waste is disposed of in an appropriate manner.
Work Health and Safety Code of Practice 2011[18]	Sites contaminated with asbestos become a 'workplace' when work is carried out there and require a register and asbestos management plan.

[17] *Guidelines on the Duty to Report Contamination*, NSW Government Legislation, 2008 (Duty to Report Contamination 2008)

[18] Code of Practice – How to Manage and Control Asbestos in the Workplace, WHS Regulation 2011

8 LIMITATIONS

The conclusions developed in this report are based on site conditions which existed at the time of the assessment and the scope of work outlined in the report. They are based on visual observations of the site and immediate surrounds, together with the interpretation of available historical information and documents reviewed as described in this report.

The assessment and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined previously in this report.

Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work.

EIS adopts no responsibility whatsoever for any problems such as USTs, buried items or contaminated material that may be encountered at the site. Development activities at the site should be planned on this basis, and any unexpected problems that may be encountered should be immediately inspected by experienced environmental personnel. This should ensure that such problems are dealt with in an appropriate manner, with minimal disruption to the project timetable and budget.

Where information has been provided by third parties, EIS has not undertaken any verification process, except where specifically stated in the report.

EIS has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report.

EIS accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site.

EIS have not and will not make any determination regarding finances associated with the site.

Changes in the proposed or current site use may result in remediation or further investigation being required at the site.

During construction at the site, soil, fill and any unsuspected materials that are encountered should be monitored by qualified environmental and geotechnical engineers to confirm assumptions made on the basis of the limited assessment data, and possible changes in site level and other conditions since the investigation. Soil materials considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa.

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LIST OF IN-TEXT TABLES:

IMPORTANT INFORMATION ABOUT THIS REPORT

These notes have been prepared by EIS to assist with the assessment and interpretation of this report.

The Report is Based on a Unique Set of Project Specific Factors:
This report has been prepared in response to specific project requirements as stated in the EIS proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- the proposed land use is altered;
- the defined subject site is increased or sub-divided;
- the proposed development details including size, configuration, location, orientation of the structures are modified;
- the proposed development levels are altered, eg addition of basement levels; or
- ownership of the site changes.

EIS/J&K will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the assessment. If the subject site is sold, ownership of the assessment report should be transferred by EIS to the new site owners who will be informed of the conditions and limitations under which the assessment was undertaken. No person should apply an assessment for any purpose other than that originally intended without first conferring with the consultant.

Changes in Subsurface Conditions
Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (eg. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an assessment report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

This Report is Based on Professional Interpretations of Factual Data
Site assessments identify conditions applicable at the time of the assessment. Data obtained from the site inspection, available site history information and published regional information is interpreted (by geologists, engineers or environmental scientists) and opinions are drawn about the overall nature and extent of contamination, the likely impact on the proposed development and appropriate investigation/remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

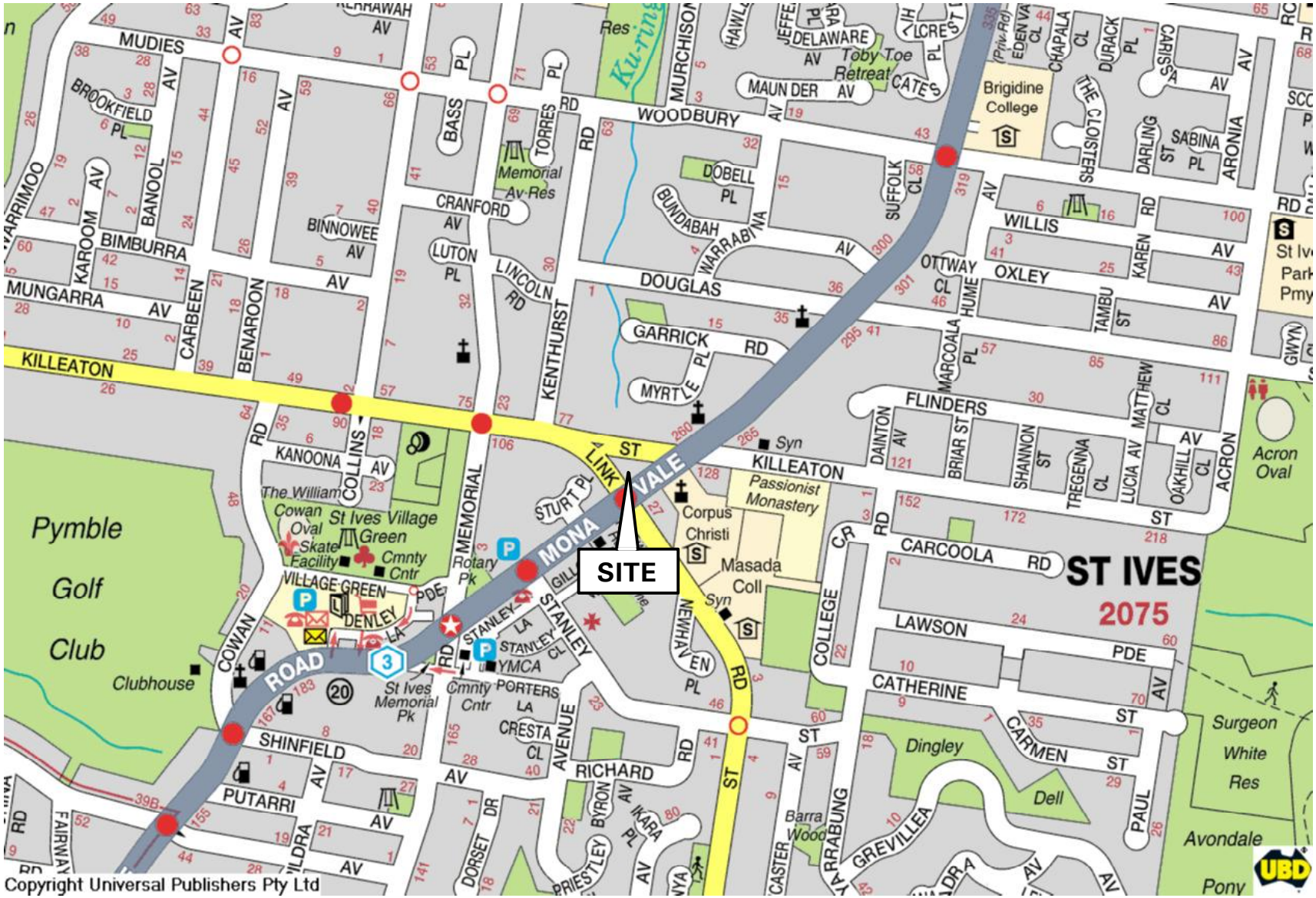
Assessment Limitations
Although information provided by a site assessment can reduce exposure to the risk of the presence of contamination, no environmental site assessment can eliminate the risk. Even a rigorous professional assessment may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which

showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

Misinterpretation of Site Assessments by Design Professionals
Costly problems can occur when other design professionals develop plans based on misinterpretation of an assessment report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

Read Responsibility Clauses Closely
Because an environmental site assessment is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site assessment, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.

REPORT FIGURES

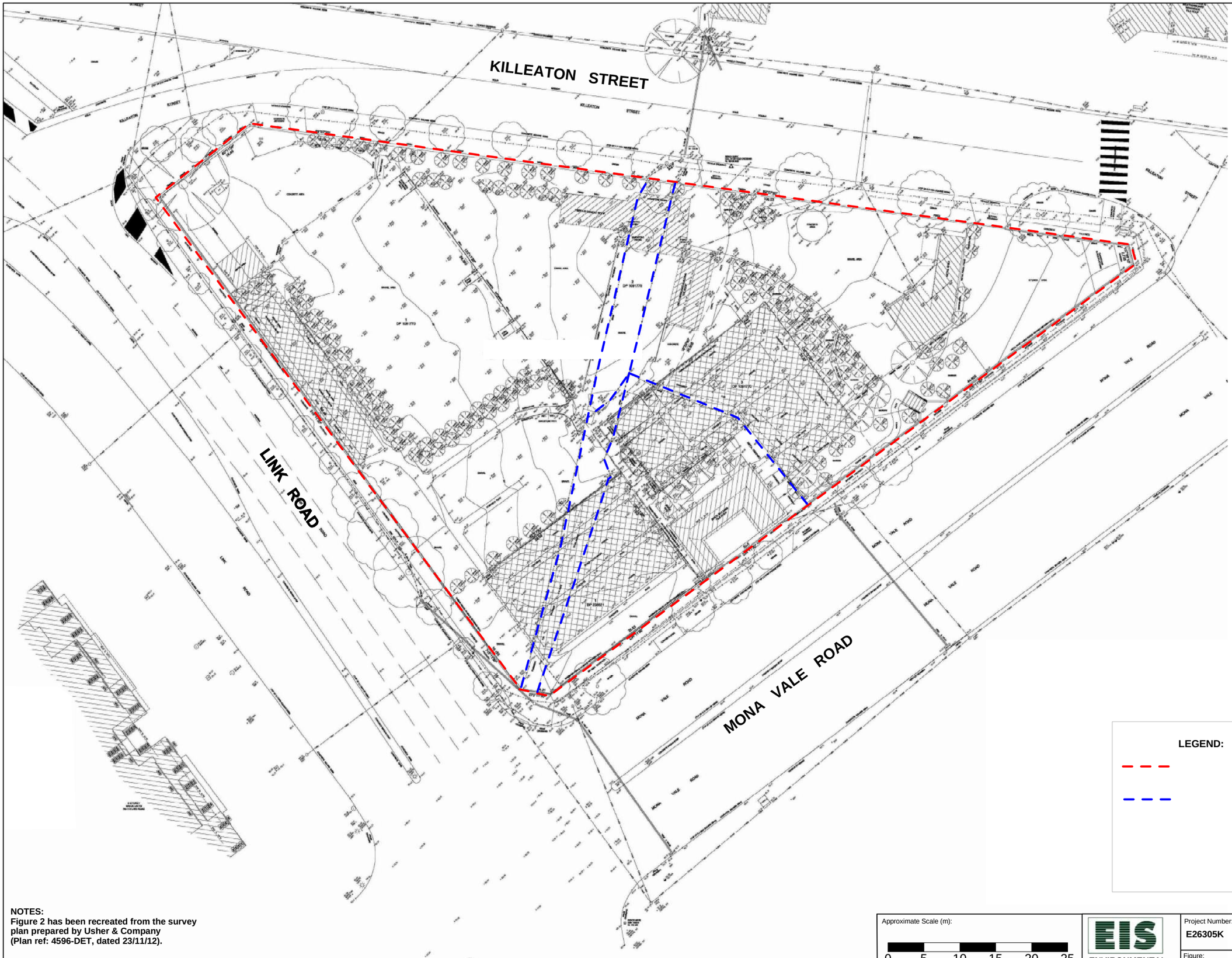


NOTES:
Figure 1 has been recreated from UBD on disc (version 5.0). Figure is not to scale.

UBD Map ref: 155 B11

Reference should be made to the report text for a full understanding of this plan.

ENVIRONMENTAL INVESTIGATION SERVICES	Project Number: **E26305K**	Title: **SITE LOCATION PLAN**
	Figure: **1**	Address: **238 MONA VALE ROAD ST IVES NSW 2075**



LEGEND:

- Approximate site boundary
- Stormwater

NOTES:
Figure 2 has been recreated from the survey plan prepared by Usher & Company (Plan ref: 4596-DET, dated 23/11/12).

Reference should be made to the report text for a full understanding of this plan.

Approximate Scale (m): 0 5 10 15 20 25

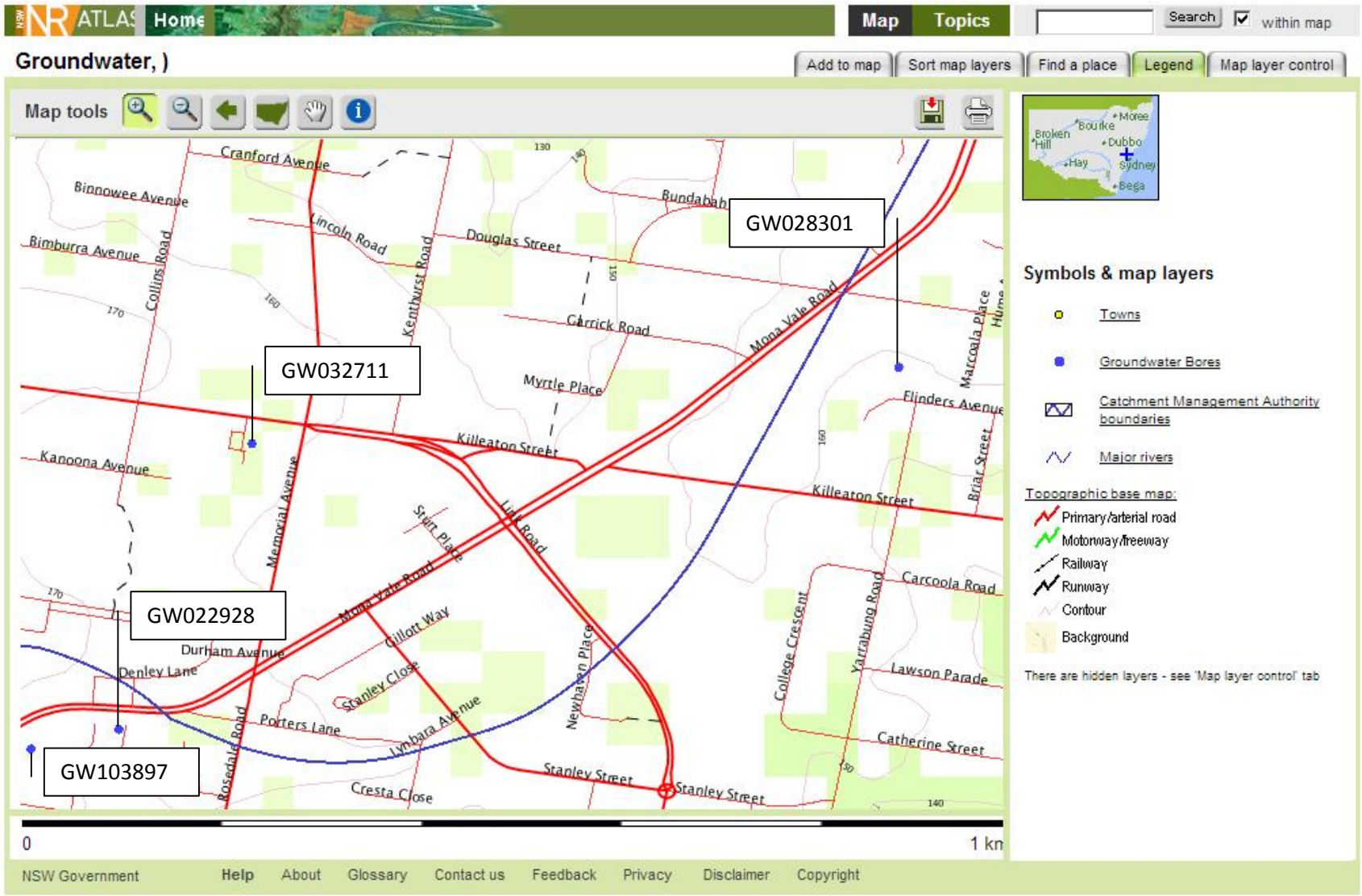
ENVIRONMENTAL INVESTIGATION SERVICES

Project Number:	Title:
E26305K	**SITE LAYOUT PLAN**
Figure: **2**	Address: **238 MONA VALE ROAD ST IVES NSW 2075**

APPENDIX A1

Site History Assessment Documents – Groundwater Bore Records

St Ives - Groundwater Bore Records



Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Monday, February 11, 2013

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW028301

Works Details (top)

GROUNDWATER NUMBER	GW028301
LIC-NUM	10WA108119
AUTHORISED-PURPOSES	DOMESTIC
INTENDED-PURPOSES	GENERAL USE
WORK-TYPE	Bore open thru rock
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Cable Tool
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	1966-03-01
FINAL-DEPTH (metres)	68.50
DRILLED-DEPTH (metres)	68.60
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	603 - SYDNEY BASIN
GW-ZONE	-
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	212 - HAWKESBURY RIVER
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	(Unknown)
NORTHING	6266760.00
EASTING	330481.00
LATITUDE	33 43' 32"

LONGITUDE	151 10' 13"
GS-MAP	0055A3
AMG-ZONE	56
COORD-SOURCE	GD.,PR. MAP
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	GORDON
PORTION-LOT-DP	89

Licensed (top)

COUNTY	CUMBERLAND
PARISH	GORDON
PORTION-LOT-DP	BLJ

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1	1	Casing	(Unknown)	-0.30	20.60	152			Suspended in Clamps

Water Bearing Zones (top)

FROM-DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK-CAT-DESC	S-W-L	D-D-L	YIELD	TEST-HOLE-DEPTH (metres)	DURATION	SALINITY
51.50	54.20	2.70	(Unknown)			0.38			invalid code

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	0.91	0.91	Clay		
0.91	6.70	5.79	Clay Light Brown Yellow		
6.70	8.83	2.13	Shale Grey		
6.70	8.83	2.13	Clay Seams		
8.83	18.28	9.45	Shale Dark Brown Sticky		
18.28	25.90	7.62	Sandstone Medium		

25.90	31.39	5.49	Sandstone Grey
25.90	31.39	5.49	Shale Bands
31.39	32.91	1.52	Shale Grey
32.91	38.10	5.19	Sandstone Cream Traces
32.91	38.10	5.19	Shale
38.10	39.62	1.52	Sandstone Cream Soft
39.62	44.19	4.57	Sandstone Hard
44.19	50.29	6.10	Sandstone Grey
50.29	50.90	0.61	Sandstone Soft
50.90	51.81	0.91	Sandstone Grey Shale Water Supply
51.81	68.58	16.77	Sandstone Grey Water Supply

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Monday, February 11, 2013

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW032711

Works Details (top)

GROUNDWATER NUMBER	GW032711
LIC-NUM	10BL019887
AUTHORISED-PURPOSES	IRRIGATION
INTENDED-PURPOSES	IRRIGATION
WORK-TYPE	(Unknown)
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	(Unknown)
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	1966-01-01
FINAL-DEPTH (metres)	42.60
DRILLED-DEPTH (metres)	42.70
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	603 - SYDNEY BASIN
GW-ZONE	-
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	212 - HAWKESBURY RIVER
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	(Unknown)
NORTHING	6266621.00
EASTING	329608.00
LATITUDE	33 43' 36"

LONGITUDE	151 9' 39"
GS-MAP	0055A3
AMG-ZONE	56
COORD-SOURCE	GD.,PR. MAP
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	GORDON
PORTION-LOT-DP	3 219148

Licensed (top)

COUNTY	CUMBERLAND
PARISH	GORDON
PORTION-LOT-DP	N/A

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1	1	Casing	Drilled	0.00	0.00	152			(Unknown)

Water Bearing Zones (top)

no details

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	42.67	42.67	Clay Nominal		
0.00	42.67	42.67	Sandstone Nominal		
0.00	42.67	42.67	Shale Nominal		

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Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Monday, February 11, 2013

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW022928

Works Details (top)

GROUNDWATER NUMBER	GW022928
LIC-NUM	10BL016460
AUTHORISED-PURPOSES	IRRIGATION
INTENDED-PURPOSES	GENERAL USE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	Cable Tool
OWNER-TYPE	Private
COMMENCE-DATE	
COMPLETION-DATE	1958-03-01
FINAL-DEPTH (metres)	50.20
DRILLED-DEPTH (metres)	50.30
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	N/A
GWMA	603 - SYDNEY BASIN
GW-ZONE	-
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	213 - SYDNEY COAST - GEORGES RIVER
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	(Unknown)
NORTHING	6266156.00
EASTING	329436.00
LATITUDE	33 43' 51"

LONGITUDE	151 9' 32"
GS-MAP	0055A3
AMG-ZONE	56
COORD-SOURCE	GD.,PR. MAP
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	GORDON
PORTION-LOT-DP	99999

Licensed (top)

COUNTY	CUMBERLAND
PARISH	GORDON
PORTION-LOT-DP	N/A

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1	1	Casing	Steel	-0.10	5.90	203			(Unknown)

Water Bearing Zones (top)

FROM-DEPTH (metres)	TO-DEPTH (metres)	THICKNESS (metres)	ROCK-CAT-DESC	S-W-L	D-D-L	YIELD	TEST-HOLE-DEPTH (metres)	DURATION	SALINITY
18.20	18.20	0.00	(Unknown)	3.60		0.25			Good

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	3.04	3.04	Loam		
3.04	6.09	3.05	Clay White Red		
6.09	9.14	3.05	Clay White Shaley		
9.14	12.19	3.05	Clay White Red		
12.19	18.28	6.09	Shale Grey Water Supply		
18.28	24.38	6.10	Sandstone Shaley Water Supply		
24.38	27.43	3.05	Shale Grey		
27.43	39.62	12.19	Sandstone Cream Water Supply		

27.43	39.62	12.19	Shale Grey
39.62	48.76	9.14	Shale Grey Water Supply
48.76	50.29	1.53	Sandstone White

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Groundwater Works Summary

For information on the meaning of fields please see Glossary
Document Generated on Monday, February 11, 2013

Print Report

Works Details Site Details Form A Licensed Construction Water Bearing Zones Drillers Log

Work Requested -- GW103897

Works Details (top)

GROUNDWATER NUMBER	GW103897
LIC-NUM	10BL159957
AUTHORISED-PURPOSES	MONITORING BORE
INTENDED-PURPOSES	MONITORING BORE
WORK-TYPE	Bore
WORK-STATUS	(Unknown)
CONSTRUCTION-METHOD	
OWNER-TYPE	
COMMENCE-DATE	
COMPLETION-DATE	2000-10-09
FINAL-DEPTH (metres)	3.50
DRILLED-DEPTH (metres)	3.50
CONTRACTOR-NAME	
DRILLER-NAME	
PROPERTY	SHELL ST IVES SELF SERVE SITE
GWMA	-
GW-ZONE	-
STANDING-WATER-LEVEL	
SALINITY	
YIELD	

Site Details (top)

REGION	10 - SYDNEY SOUTH COAST
RIVER-BASIN	
AREA-DISTRICT	
CMA-MAP	
GRID-ZONE	
SCALE	
ELEVATION	
ELEVATION-SOURCE	
NORTHING	6266122.00
EASTING	329317.00
LATITUDE	33 43' 52"

LONGITUDE	151 9' 28"
GS-MAP	
AMG-ZONE	56
COORD-SOURCE	
REMARK	

Form-A (top)

COUNTY	CUMBERLAND
PARISH	GORDON
PORTION-LOT-DP	3//12504

Licensed (top)

COUNTY	CUMBERLAND
PARISH	GORDON
PORTION-LOT-DP	3 12504

Construction (top)

Negative depths indicate Above Ground Level;H-Hole;P-Pipe;OD-Outside Diameter;
ID-Inside Diameter;C-Cemented;SL-Slot Length;A-Aperture;GS-Grain Size;Q-Quantity

HOLE-NO	PIPE-NO	COMPONENT-CODE	COMPONENT-TYPE	DEPTH-FROM (metres)	DEPTH-TO (metres)	OD (mm)	ID (mm)	INTERVAL	DETAIL
1		Hole	Hole	0.00	3.50				Auger
1	1	Casing	PVC Class 18	0.00	0.00	50			

Water Bearing Zones (top)

no details

Drillers Log (top)

FROM	TO	THICKNESS	DESC	GEO-MATERIAL	COMMENT
0.00	1.50	1.50	FILL,TOPSOIL,DARK BROWN,SILTY SAND		
1.50	3.50	2.00	CLAY,GREY WITH WEATHERED ROCK		

Warning To Clients: This raw data has been supplied to the Department of Infrastructure, Planning and Natural Resources (DIPNR) by drillers, licensees and other sources. The DIPNR does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

APPENDIX A2

Site History Assessment Documents – Historical Land Title Records

ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)
ABN 82 147 943 842

P.O. Box 149
Yagoona NSW 2199

Telephone: +612 9754 1590
Mobile: 0412 169 809
Facsimile: +612 8076 3026
Email: alsearch@optusnet.com.au

4th February, 2013

ENVIRONMENTAL INVESTIGATION SERVICES
PO BOX 976,
NORTH RYDE BC NSW 1670

Attention: Cameron Hollands

RE: **238 Mona Vale Road, St Ives**
Job No. E26305K

Note 1: **Lot 1 DP 1091770** **(page 1)**
Note 2: **Lot 2 DP 1091770** **(page 4)**

Note 1

Current Search

Folio Identifier 1/1091770 (title attached)
DP 1091770 (plan attached)
Dated 1st February, 2013
Registered Proprietor:
DASMIN PTY LIMITED

Title Tree

Lot 1 DP 1091770 – Auto Consol 11416-121

Folio Identifier 1/1091770 (Auto Consol 11416-121)

Certificate of Title Volume 11416 Folio 121

Certificate of Title Volume 11156 Folio 49

Certificate of Title Volume 8021 Folio 182

Certificate of Title Volume 6937 Folio 222

Certificate of Title Volume 6130 Folio 228

Certificate of Title Volume 5174 Folio 244

Certificate of Title Volume 4757 Folio 247

Certificate of Title Volume 137 Folio 135

*****

Summary of proprietor(s)
Lot 1 DP 1091770 (Auto Consol 11416-121)

Year	Proprietor
	(Lot 1 DP 1091770 - Auto Consol 11416-121)
2005 – todate	Dasmin Pty Limited
	(Part of Lot A DP 366620 and other lands – Area 1 Acre 1 Rood 19 ¾ Perches – CTVol 11416 Fol 121)
1970 – 2005	Camellia Grove Nursery Pty Limited
	(Lot A DP 366620 and other lands – Area 1 Acre 0 Roods 33 ½ Perches – CTVol 11156 Fol 49)
1969 – 1970	Camellia Grove Nursery Pty Limited
	(Lot A DP 366620 and other lands – Area 1 Acre 1 Rood 18 ¾ Perches – CTVol 8021 Fol 182)
1960 – 1969	Camellia Grove Nursery Pty Limited
	(Lot A DP 366620 and other lands – Area 1 Acre 1 Rood 18 ¾ Perches – CTVol 6937 Fol 222)
1960 – 1960	Camellia Grove Nursery Pty Limited
1955 – 1960	James Ronald Fisher, nurseryman
	(Lot A DP 366620 – Area 2 Roods 26 ½ Perches – CTVol 6130 Fol 228)
1954 – 1955	James Ronald Fisher, nurseryman
1950 – 1954	James Ronald Fisher, nurseryman Ronald Llewellyn Fisher, nurseryman
	(Lot 12 DP 17413 – Area 3 Roods 33 ¼ Perches – CTVol 5174 Fol 244)
1946 – 1950	James Ronald Fisher, nurseryman Ronald Llewellyn Fisher, nurseryman
1944 – 1946	Ronald Llewellyn Fisher, retired Eben Gowrie Waterhouse
1944 – 1944	Eben Gowrie Waterhouse, university professor
1940 – 1944	Janet Frew Waterhouse, wife of university professor
	(Lot 12 DP 17413 and other lands – Area 12 Acres 1 Rood 13 Perches – CTVol 4757 Fol 247)
1940 – 1940	Janet Frew Waterhouse, wife of university professor
1936 – 1940	Arthur Macquarie Weymark, fruit merchant
	(That piece or parcel of land, part of 80 acres originally granted to George Thomas Bean 1841, Parish of Gordon – Area 17 Acres 2 Roods 22 Perches – CTVol 137 Fol 135)
1927 – 1936	Arthur Macquarie Weymark, fruit merchant
1909 – 1927	Ester Jane Russell, wife of orchardist
1872 – 1909	Thomas Connelley, farmer

*****

Note 2

Current Search

Folio Identifier 2/1091770 (title attached)
DP 1091770 (plan attached)
Dated 1st February, 2013
Registered Proprietor:
DASMIN PTY LIMITED

Title Tree

Lot 2 DP 1091770 – Auto Consol 11416-121

Folio Identifier 2/1091770 (Auto Consol 11416-121)

Certificate of Title Volume 11416 Folio 121

Certificate of Title Volume 11156 Folio 49

Certificate of Title Volume 8021 Folio 182

Certificate of Title Volume 6937 Folio 222

Certificate of Title Volume 5112 Folio 67

Certificate of Title Volume 5106 Folio 145

Certificate of Title Volume 4757 Folio 247

Certificate of Title Volume 137 Folio 135

*****

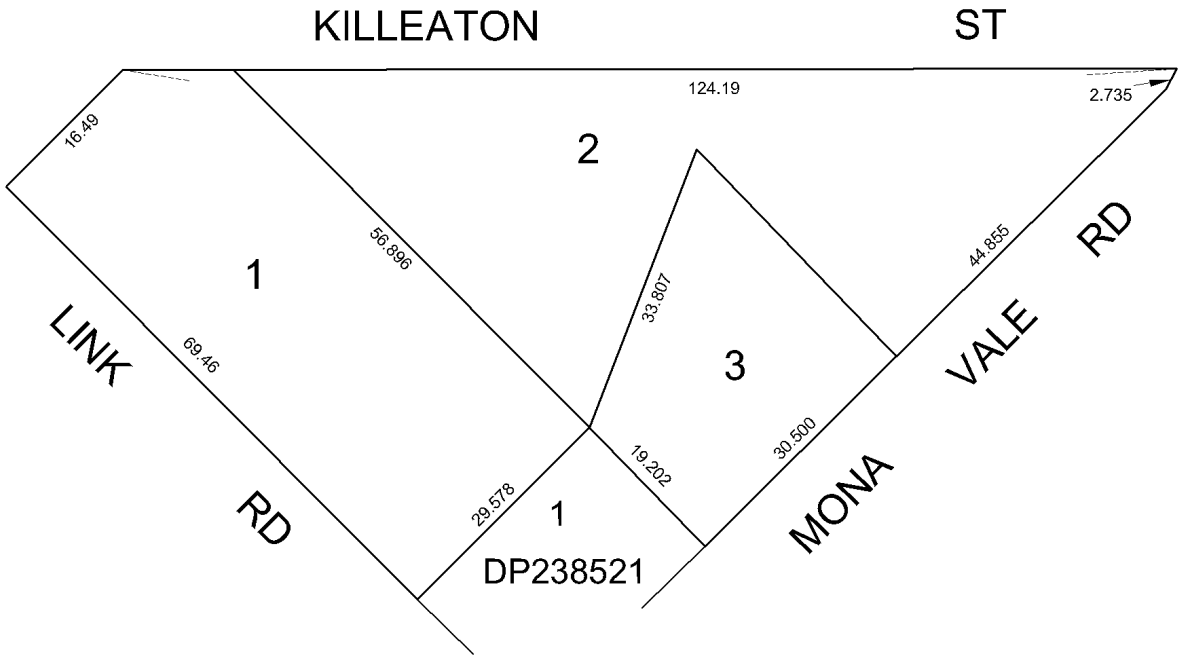
Summary of proprietor(s)
Lot 2 DP 1091770 (Auto Consol 11416-121)

Year	Proprietor
	(Lot 2 DP 1091770 - Auto Consol 11416-121)
2005 – todate	Dasmin Pty Limited
	(Lot A DP 341616 and other lands – Area 1 Acre 1 Rood 19 ¾ Perches – CTVol 11416 Fol 121)
1970 – 2005	Camellia Grove Nursery Pty Limited
	(Lot A DP 341616 and other lands – Area 1 Acre 0 Roods 33 ½ Perches – CTVol 11156 Fol 49)
1969 – 1970	Camellia Grove Nursery Pty Limited
	(Lot A DP 341616 and other lands – Area 1 Acre 1 Rood 18 ¾ Perches – CTVol 8021 Fol 182)
1960 – 1969	Camellia Grove Nursery Pty Limited
	(Lot A DP 341616 and other lands – Area 1 Acre 1 Rood 18 ¾ Perches – CTVol 6937 Fol 222)
1960 – 1960	Camellia Grove Nursery Pty Limited
1955 – 1960	James Ronald Fisher, nurseryman
	(Lot A DP 341616 – Area 2 Roods 32 ¼ Perches – CTVol 5112 Fol 67)
1954 – 1955	James Ronald Fisher, nurseryman
1946 – 1954	James Ronald Fisher, nurseryman Ronald Llewellyn Fisher, nurseryman
1944 – 1946	Ronald Llewellyn Fisher, nurseryman Eben Gowrie Waterhouse
1944 – 1944	Eben Gowrie Waterhouse, university professor
1940 – 1944	Janet Frew Waterhouse, wife of university professor
	(Lot 13 DP 17413 and other lands – Area 3 Roods 38 ½ Perches – CTVol 5106 Fol 145)
1939 – 1940	Janet Frew Waterhouse, wife of university professor
1939 – 1939	Elizabeth Evelyn May Clough, wife of retired motor car hire proprietor
	(Lot 13 DP 17413 and other lands – Area 12 Acres 1 Rood 13 Perches – CTVol 4757 Fol 247)
1939 – 1939	Elizabeth Evelyn May Clough, wife of retired motor car hire proprietor
1936 – 1939	Arthur Macquarie Weymark, fruit merchant
	(That piece or parcel of land, part of 80 acres originally granted to George Thomas Bean 1841, Parish of Gordon – Area 17 Acres 2 Roods 22 Perches – CTVol 137 Fol 135)
1927 – 1936	Arthur Macquarie Weymark, fruit merchant
1909 – 1927	Ester Jane Russell, wife of orchardist
1872 – 1909	Thomas Connelley, farmer

*****

e-departmental

Full dimensions and/or area(s) are not available for all lots. Any division of the lands herein may necessitate the lodgement of a plan of survey.



TOTAL AREA: 4995 m²

DP 1091770

Registered : 06.12.2005

Title System : TORRENS

Purpose : DEPARTMENTAL

Ref. Map : KU-RING-GAI SH 37

Last Plan : DP366620, DP341616

PLAN OF LOT A IN DP366620 AND PART OF LOTS A AND B IN DP341616 COMPRISED IN VOL.11416 FOL.121

Lengths are in metres. Reduction Ratio - NTS
LPI Ref. : TCB55

Sheet 1 of 1 sheets

L.G.A. : KU-RING-GAI

LOCALITY : ST IVES

PARISH : GORDON

COUNTY : CUMBERLAND

LOT	PRIOR IDENTITY
1	PART LOT A IN DP366620
2	PART LOT A IN DP341616
3	PART LOT B IN DP341616

THIS PLAN HAS BEEN PREPARED TO PROVIDE AN UNIQUE IDENTITY FOR THE LAND IN THE CERTIFICATE OF TITLE REFERRED TO ABOVE.

IT IS NOT A CURRENT PLAN IN THE TERMS OF 7A OF THE CONVEYANCING ACT, 1919.

Req:R088823 /Doc:DP 1091770 P /Rev:08-Dec-2005 /Sts:SC.OK /Prt:01-Feb-2013 18:30 /Pgs:ALL /Seq:1 of 1
Ref:ALS /Src:T

APPENDIX A3

Site History Assessment Documents – Section 149 Certificates

12 FEB 2013

PLANNING CERTIFICATE

UNDER SECTION 149 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

818 Pacific Highway, Gordon NSW 2072
Locked Bag 1056, Pymble NSW 2073
T 02 9424 0000 F 02 9424 0001
DX 8703 Gordon TTY 02 9424 0875
E kmc@kmc.nsw.gov.au
W www.kmc.nsw.gov.au
ABN 86 408 856 411

Ku·ring·gai Council

PROPERTY DETAILS

Address: 238-240 Mona Vale Road ST IVES NSW 2075

Lot Description: Lot 1 DP 238521, Lot 1 DP 1091770, Lot 2 DP 1091770, Lot 3 DP 1091770

CERTIFICATE DETAILS

Certificate No: PC0382/13 **Certificate Date:** 8/02/2013

Certificate Type: Section 149(2) & (5)

Receipt No: 358023

APPLICANT'S DETAILS

REF: E26305K

Mr C Hollands
115 Wicks Road
MACQUARIE PARK NSW 2113

BACKGROUND INFORMATION

This certificate provides information on how a property (such as land, a house, a commercial building, etc.) may be used and the limits on its development. The certificate contains information Council is aware of through its records and environmental plans with data supplied by the State Government. The details contained in this certificate are limited to that required by Section 149 of the Environmental Planning and Assessment Act.

1. WHICH ENVIRONMENTAL PLAN RESTRICTS THE USE OF THIS PROPERTY?

(Including planning proposals and draft local environmental plans exhibited prior to 1 July 2009 pursuant to section 66(1) b of the E. P. & A. Act).

Ku-ring-gai Local Environmental Plan (Local Centres) 2012 as published on the NSW Legislation Website on 25 January 2012.

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2. WHAT IS THE ZONING OF THIS PROPERTY and the relevant environmental plan?

(Zoning is a way of classifying land and limits the range of uses or activities that may be permitted on that land or property).

R3 Medium Density Residential

under the provisions of the Ku-ring-gai Local Environmental Plan (Local Centres) 2012 as published on the NSW Legislation Website on 25 January 2012.

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3. WHAT DOES NOT REQUIRE DEVELOPMENT CONSENT under the above environmental plan(s)?

Home occupations.

Note: Please refer to the provisions for Exempt and Complying Development as described in Part 3 of Ku-ring-gai Local Environmental Plan (Local Centres) 2012.

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4. WHAT DOES REQUIRE DEVELOPMENT CONSENT under the above environmental plan(s)?

Attached dwellings; Bed and breakfast accommodation; Boarding houses; Building identification signs; Business identification signs; Child care centres; Community facilities; Dwelling houses; Environmental protection works; Exhibition homes; Flood mitigation works; Group homes; Home-based child care; Home businesses; Home industries; Hostels; Multi dwelling housing; Neighbourhood shops; Places of public worship; Recreation areas; Respite day care centres; Roads; Seniors housing; Shop top housing

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5. WHAT IS PROHIBITED by the above environmental plan(s)?

Any development not specified in item 3 or 4

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6. DO THE DIMENSIONS OF THE LAND PERMIT THE ERECTION OF A DWELLING HOUSE ON THIS PROPERTY?

There are no provisions in Ku-ring-gai Local Environmental Plan (Local Centres) 2012 that regulate minimum dimension sizes for the erection of a dwelling house on this property.

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7. WHAT OTHER PLANNING INSTRUMENTS AFFECT THIS PROPERTY?

(State and deemed state environmental plans are prepared by the State Government and cover issues as varied as rivers, residential development, employment, etc. If you have any further enquiries please contact the Department of Planning, Tel: 02 9228 6333 or email information@planning.nsw.gov.au..

Draft State Environmental Planning Policy (Competition)

State Environmental Planning Policy No.6 - Number of storeys in a building.
State Environmental Planning Policy No.19 - Bushland in Urban Areas.
State Environmental Planning Policy No.21 - Caravan Parks
State Environmental Planning Policy No.32 - Urban Consolidation (Redevelopment of Urban Land).
State Environmental Planning Policy No.33 - Hazardous & Offensive Development.
State Environmental Planning Policy No.44 - Koala Habitat Protection.
State Environmental Planning Policy No.55 - Remediation of Land.
State Environmental Planning Policy No.62 - Sustainable Aquaculture.
State Environmental Planning Policy No.64 - Advertising and Signage.
State Environmental Planning Policy No.65 - Design Quality of Residential Flat Development.
State Environmental Planning Policy No.70 - Affordable Housing(Revised Schemes).
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004.
State Environmental Planning Policy (Major Development) 2005.
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.
State Environmental Planning Policy (Temporary Structures) 2007.
State Environmental Planning Policy (Infrastructure) 2007.
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
State Environmental Planning Policy (Affordable Rental Housing) 2009.

Sydney Regional Environmental Plan No.20 - Hawkesbury Nepean River.
State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004.

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8. WHICH DEVELOPMENT CONTROL PLANS APPLY TO THE PROPERTY?

(A development control plan adds further detail to local environmental plans and may address issues such as building height, car parking etc. Copies of the Plans are available from Council).

There are no Development Control Plans applying to this land.

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9. WHICH DEVELOPMENT CONTRIBUTION PLANS APPLY IF THIS PROPERTY IS DEVELOPED?

(A Development Contribution Plan – commonly known as a Section 94 Plan outlines the financial costs Council charges if a property is developed and Council believes the development will require additional services or facilities such as parks, roads etc. Copies of the Plans are available from Council).

Ku-ring-gai Contributions Plan 2010.

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10. IS THE PROPERTY IDENTIFIED AS A HERITAGE ITEM by Council or State Government? (and if so, what is the status, e.g. local environmental plan, Heritage Act etc.)

No.

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11. IS THE PROPERTY IN A CONSERVATION AREA?

No.

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12. DOES THE PROPERTY INCLUDE OR COMPRISE CRITICAL HABITAT?

No.

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13. IS THE PROPERTY AFFECTED BY A ROAD WIDENING OR ROAD REALIGNMENT under the Roads Act, any environmental planning instrument or any Council resolution?

No.

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14. IS THE PROPERTY RESERVED FOR ACQUISITION BY A PUBLIC AUTHORITY UNDER ANY ENVIRONMENTAL PLAN OR PROPOSED ENVIRONMENTAL PLAN?

No.

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15. IS THE PROPERTY PART OF ANY APPLICATION DECLARED TO BE "STATE SIGNIFICANT DEVELOPMENT"?

(Development is judged to be "State significant" if the Minister for Planning declares it to be so based on substantial cost of development, significant numbers of employees or other criteria. If you have any further enquiries please contact the Department of Planning, Tel: 02 9228 6333 or email information@planning.nsw.gov.au..

No.

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16. IS THE PROPERTY AFFECTED BY SECTION 38 OR 39 OF THE COASTAL PROTECTION ACT?

No.

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17. IS THE PROPERTY WITHIN A "PROCLAIMED MINE SUBSIDENCE DISTRICT"?

No.

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18. IS THE PROPERTY AFFECTED BY ONE OF THE MATTERS PRESCRIBED BY SECTION 59(2) OF THE CONTAMINATED LAND MANAGEMENT ACT 1997?

No.

SPECIAL NOTE: If you have any concerns about land contamination beyond the information described in this certificate, you should contact the NSW Office of Environment & Heritage. Tel:131 555 or email info@environment.nsw.gov.au.

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19. IS THE PROPERTY BUSH FIRE PRONE LAND?

No.

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20. IS THE PROPERTY, LAND TO WHICH A PROPERTY VEGETATION PLAN UNDER THE *NATIVE VEGETATION ACT 2003* APPLIES?

No.

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21. IS THE PROPERTY, LAND SUBJECT TO AN ORDER UNDER THE *TREE (DISPUTES BETWEEN NEIGHBOURS) ACT 2006*?

The land is not known to be subject to such order.

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22. IS THE PROPERTY SUBJECT TO DIRECTIONS UNDER PART 3A MAJOR INFRASTRUCTURE AND OTHER PROJECTS of the Environmental Planning & Assessment Act 1979 No.203?

No.

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23. IS THE PROPERTY SUBJECT TO A CURRENT SITE COMPATIBILITY CERTIFICATE AND CONDITIONS FOR SENIORS HOUSING under the provisions of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004?

No.

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24. IS THE PROPERTY SUBJECT TO A VALID SITE COMPATIBILITY CERTIFICATE FOR INFRASTRUCTURE issued under clause 19 of State Environmental Planning Policy (Infrastructure) 2007?

No.

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25. IS THE PROPERTY SUBJECT TO A VALID SITE COMPATIBILITY CERTIFICATE AND CONDITIONS FOR AFFORDABLE RENTAL HOUSING issued under clause 37 of State Environmental Planning Policy (Affordable Rental Housing) 2009?

No.

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26. IS THE PROPERTY SUBJECT TO AN EXEMPTION UNDER SECTION 23 OR AUTHORISATION UNDER SECTION 24 OF THE NATIONAL BUILDING AND JOBS PLAN (*STATE INFRASTRUCTURE DELIVERY) ACT 2009*?

No.

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27. IS THE PROPERTY, LAND THAT IS BIODIVERSITY CERTIFIED LAND WITHIN THE MEANING OF PART 7AA OF THE THREATENED SPECIES CONSERVATION ACT 1995?

No.

Special Note: For further information about the Biodiversity Certified Land contact the NSW Office of Environment & Heritage. Tel:131 555 or email info@environment.nsw.gov.au.

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28. IS THE PROPERTY, LAND TO WHICH A BIOBANKING AGREEMENT UNDER PART 7A OF THE THREATENED SPECIES CONSERVATION ACT 1995 RELATES?

No.

Special Note: For further information about the Biobanking agreement contact the Biobanking Team at NSW Office of Environment & Heritage. Tel:131 555 or email biobanking@environment.nsw.gov.au.

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29. IS THE PROPERTY, LAND ON WHICH COMPLYING DEVELOPMENT MAY BE CARRIED OUT UNDER EACH OF THE CODES FOR COMPLYING DEVELOPMENT IN *STATE ENVIRONMENTAL PLANNING POLICY (EXEMPT AND COMPLYING DEVELOPMENT CODES) 2008* AND, IF COMPLYING DEVELOPMENT MAY NOT BE CARRIED OUT ON THAT LAND BECAUSE OF ONE OR MORE OF THE REQUIREMENTS UNDER CLAUSES 1.17A(c) AND (d) AND 1.19 OF THAT POLICY, WHY IT MAY NOT BE CARRIED OUT ON THAT LAND?

General Housing Code

Complying development under the General Housing Code **may** be carried out on the land.

Housing Alterations Code

Complying development under the Housing Internal Alteration Code **may** be carried out on the land.

General Development Code

Complying development under the General Development Code **may** be carried out on the land.

General Commercial and Industrial Code

Complying development under the General Commercial and Industrial Code **may** be carried out on the land.

Subdivision Code

Complying development under the Subdivision Code **may** be carried out on the land.

Demolition Code

Complying development under the Demolition Code **may** be carried out on the land.

SPECIAL NOTE: The above question relates to whether or not the land falls within an exclusion area under Clauses 1.17A(c) and (d) and 1.19 of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. It is your responsibility to ensure that you comply with any other general requirements of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. Failure to comply with these provisions may mean that a Complying Development Certificate issued under the provisions of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 is invalid.

30. DO ANY ADOPTED COUNCIL POLICIES OR RESOLUTIONS OR ANY POLICIES ADOPTED BY A PUBLIC AUTHORITY REQUIRED TO BE REFERRED TO IN A PLANNING CERTIFICATE RESTRICT THE DEVELOPMENT OF THE PROPERTY DUE TO THE LIKELIHOOD OF LANDSLIP, BUSHFIRES, TIDAL INUNDATION, SUBSIDENCE, CONTAMINATION, ACID SULPHATE SOILS OR ANY OTHER RISK (OTHER THAN FLOODING)?

Note: A review of Council's readily available records has been conducted to identify previous land uses that may have caused land contamination. This review did not reveal any reason for contamination of this property. However, prior to urban settlement, sizeable areas of Ku-ring-gai were covered by agricultural and horticultural activities. These uses are listed in the Managing Land Contamination Planning Guidelines as activities that may cause contamination. If you are concerned about possible contamination of the site you should make your own investigations regarding the condition of this property.

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31. DO ANY ADOPTED COUNCIL POLICIES OR RESOLUTIONS OR ANY POLICIES ADOPTED BY A PUBLIC AUTHORITY REQUIRED TO BE REFERRED TO IN A PLANNING CERTIFICATE EFFECT THE DEVELOPMENT OF THE PROPERTY DUE TO FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION?

No.

The following additional information is issued under Section 149(5).

32. IS LAND SLIP OR SUBSIDENCE LIKELY TO RESTRICT DEVELOPMENT OF THE LAND?

No.

SPECIAL NOTE: Some lots in the Ku-ring-gai Local Government area contain filling and/or road batters which may be subject to settlement and require special consideration in the design of foundations.

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33. IS FLOODING LIKELY TO RESTRICT DEVELOPMENT OF THE LAND?

Some properties in the Ku-ring-gai Local Government area contain or adjoin natural drainage paths, pipelines, watercourses and depressions. During major rainfall or blockage of the drainage system surface water may affect the site or restrict future development.

SPECIAL NOTE: The Department of Infrastructure, Planning & Natural Resources and the Department of Commerce have not indicated any private property which may be affected by flooding of major rivers or creeks in the Ku-ring-gai Local Government area.

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34. OTHER INFORMATION RELATING TO DEVELOPMENT OF THE SITE.

This land may contain threatened species, populations and ecological communities listed under the Threatened Species Conservation Act 1995 (NSW) and or the Environment Protection Biodiversity Conservation Act 1999 (Commonwealth). For more information contact the Department of Environment, Climate Change and Water, Tel: 99955000.

This land may contain one or more of the following endangered or critically endangered ecological communities as described in the final determination of the scientific committee to list the ecological communities under Part 3 of Schedule 1 or Part 2 of Schedule 1A of the Threatened Species Conservation Act 1995 (NSW) :

Blue Gum High Forest,
Duffys Forest Ecological Community in the Sydney Basin Bioregion,
Sydney Turpentine Ironbark Forest
Coastal Upland Swamp

For more information contact NSW Department of Environment & Heritage. Tel:131 555 or email info@environment.nsw.gov.au

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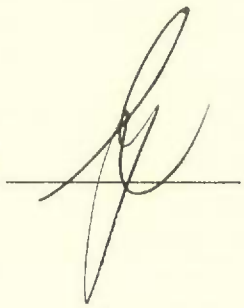
35. DO YOU NEED TO REFER TO ANY OTHER DOCUMENTS?

Yes. The Environmental Planning and Assessment Act 1997 commenced operation on 1 July 1998. As a consequence of this Act the information contained in this certificate needs to be read in conjunction with the provisions of the Environmental Planning and Assessment (Amendment) Regulation 1998, Environmental Planning and Assessment (Further Amendment) Regulation 1998 and Environmental Planning and Assessment (Savings and Transitional) Regulation 1998. Your solicitor will have a copy of this legislation or it may be obtained from the Government Information Office.

John McKee
General Manager,
Per



APPENDIX A4

Site History Assessment Documents – WorkCover Records

WorkCover
NEW SOUTH WALES

11 FEB 2013

Our Ref: D13/017853
Your Ref: Katie McGrath

8 February 2013

Attention: Katie McGrath
Environmental Investigation Services
PO BOX 976
North Ryde BC NSW 1670

Dear Ms McGrath,

RE SITE: 238 Mona Vale Rd St Ives NSW

I refer to your site search request received by WorkCover NSW on 6 February 2013 requesting information on licences to keep dangerous goods for the above site.

A search of the Stored Chemical Information Database (SCID) and the microfiche records held by WorkCover NSW has not located any records pertaining to the above mentioned premises.

If you have any further queries please contact the Dangerous Goods Licensing Team on (02) 4321 5500.

Yours Sincerely

Brent Jones
Senior Licensing Officer
Dangerous Goods Team

APPENDIX B

Abbreviations

ABBREVIATIONS

AGST	Above Ground Storage Tank
AHD	Australian Height Datum
ALTPQL	All Less than PQL
ANZECC	Australian and New Zealand Environment Conservation Council
ASS	Acid Sulfate Soil
BA/DA	Building Approval and Development Application
B(a)P	Benzo(a)pyrene
BGL	Below Ground Level
BH	Borehole
BOM	Bureau of Meteorology
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
COC	Chain of Custody documentation
CLM	Contaminated Land Management
CMP	Construction Management Plan
CSM	Conceptual Site Model
CT	Contamination Threshold
DBYD	Dial Before You Dig
DEC	Department of Environment and Conservation (now part of OEH)
DECC	Department of Environment and Climate Change (now part of OEH)
DECCW	Department of Environment, Climate Change and Water (now part of OEH)
DWE	NSW Department of Water and Energy
DO	Dissolved Oxygen
DP	Deposited Plan
DQIs	Data Quality Indicators
DQOs	Data Quality Objective
EC	Electrical Conductivity
Eh	Redox Potential
EILs	Ecological Investigation Levels
ENM	Excavated Natural Material
EMP	Environmental Management Plan
ESA	Environmental Site Assessment
FR	Field Rinsate
GAI	General Approvals of Immobilisation
GILs	Groundwater Investigation Levels
GPS	Global Positioning System
Hazmat	Hazardous Materials Assessment
HILs	Health Based Investigation Level
HM	Heavy Metals
HMTVs	Hardness Modified Trigger Values
LNAPLs	Light Non-Aqueous Phase Liquids
NATA	National Association of Testing Authorities
NDLR	Not Detected at Limit of Reporting
NEPC	National Environmental Protection Council
NEPM	National Environmental Protection Measure
NHMRC	National Health and Medical Research Council
NSW EPA	Environmental Protection Authority of NSW
MGA	Map Grid of Australia
OCPs	Organochlorine Pesticides
OEH	NSW Office of Environment and Heritage
OPPs	Organophosphate Pesticides
PAH	Polycyclic Aromatic Hydrocarbons
PASS	Potential ASS
PCC	Potential Contaminants of Concern
PCBs	Polychlorinated Biphenyls

ABBREVIATIONS

PID	Photo-ionisation Detector
POEO	Protection of Environmental Operations
PPIL	Provisional Phyto-toxicity Investigation Levels
PQL	Practical Quantitation Limit
RAP	Remediation Action Plan
RL	Reduced Level
QA/QC	Quality Assurance and Quality Control
RPD	Relative Percentage Difference
SAC	Site Assessment Criteria
SAQP	Sampling, Analysis and Quality Plan
SAS	Site Audit Statement
SCC	Specific Contamination Concentration
SD	Standard Deviation
SEPP	State Environmental Planning Policy
sPOCAS	suspension Peroxide Oxidation Combined Acidity and Sulfate
SPT	Standard Penetration Test
SVOCs	Semi-Volatile Organic Compounds
SWL	Standing Water Level
TB	Trip Blank
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TP	Test Pit
TPH	Total Petroleum Hydrocarbons
TRH	Total Recoverable Hydrocarbons
TS	Trip Spike
USEPA	United States Environmental Protection Agency
UCL	Upper Confidence Limit
UPSS	Underground Petroleum Storage Systems
UST	Underground Storage Tank
VENM	Virgin Excavated Natural Material
VOCs	Volatile Organic Compounds
WC	Waste Classification
WHS	Workplace, Health and Safety