

Trustees of the Vincentian Fathers
c/- Project Surveyors

Preliminary Site Investigation:
LOT 3 DP 707390
3-5 Vincentia Street, Marsfield, NSW



ENVIRONMENTAL



WATER



WASTEWATER



GEOTECHNICAL



CIVIL



PROJECT
MANAGEMENT



P1705856JR01V01
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1 Overview

1.1 Introduction

This report, prepared by Martens and Associates (MA), documents a preliminary site contamination investigation (PSI) completed to support a development application (DA) to the City of Ryde Council (CRC) to enable subdivision of the development at 3 – 5 Vincentia Street, Marsfield, NSW ('the site'). The subdivision aims to maintain the existing six dwellings on site with an addition of one single-dwelling lot. The site location is shown on Figure 1, Attachment A.

1.2 Objectives

Investigation objectives include:

- Identification of historic and current potentially contaminating site activities.
- Evaluation of potential areas of environmental concern (AEC) and associated contaminants of potential concern (COPC) within investigation area.
- Assess identified AECs and associated COPCs.
- Provide comment on suitability of investigation area for future development use, and where required, provide recommendations for a detailed site investigation (DSI) including possible intrusive soil investigations.

1.3 Project Scope

Scope of work included:

- Site walkover inspection by experienced environmental engineer to identify potential past uses and sources of contamination.
- Review of available City of Ryde development consents for the site.
- Review of up to seven historic aerial photographs of the site to assess past site use patterns.
- Review of other government databases relating to potentially contaminating landuses.
- Preparation of a PSI report in accordance with ASC NEPM (2013), NSW OEH (2011), NEPM and Council guidelines.

1.4 Abbreviations

ACM – Asbestos containing material
AEC – Area of environmental concern
BA – Building application
BTEX – Benzene, toluene, ethyl benzene, xylene
COPC – Contaminants of potential concern
CRC – City of Ryde Council
DA – Development application
DEC – NSW Department of Environment and Conservation
DP – Deposited Plan
DSI – Detailed site investigation
EPA – NSW Environment Protection Authority
HM – Heavy metal
LEP – Local Environmental Plan
LGA – Local government area
MA – Martens and Associates
mbgl – Metres below ground level
OCP – Organochloride pesticides
OEH – NSW Office of Environment and Heritage
OPP – Organophosphate pesticides
PACM – Potential asbestos containing material
PAH – Polycyclic aromatic hydrocarbons
PSI – Preliminary site investigation
SAC – Site acceptance criteria
TRH – Total recoverable hydrocarbons

2 Site Description

2.1 Site Location and Existing Land Use

Site information is summarised in Table 1, and site location and general surrounds shown in Figure 1, Attachment A. A site survey is provided in Figure 2, Attachment A.

Table 1: Site background information.

Site address	3 – 5 Vincentia Street, Marsfield, NSW
Lot/DP	Lot 3 DP 707390
Investigation area ¹	3,946 m ²
Local Government Area (LGA)	City of Ryde Council (CRC)
Current land use	SP2 – Place of Public Worship
Proposed land use	R2 – Low Density Residential
Site description	<p>The site consists of 6 dwellings currently used to provide parishioner accommodation.</p> <p>There is a small shed used for storage, a double open garage and five large trees located on the eastern portion of the lot.</p> <p>A large tree is located between existing dwellings in the middle of the lot.</p>
Surrounding land uses	The site is bordered by Minimbah Care Facility to the east, low density residential development to the south and the Southern Cross Care development to the north.
Topography¹	Site slopes are low to medium (<15%) with a high point of 91.32 mAHD in the south western corner of the lot and a low point of 80.54 mAHD in the south eastern corner of the lot.
Expected geology	<p>The Sydney 1:100,000 Geological Sheet 9130 (NSW Dept. of Mineral Resources, 1983) identifies the site as Ashfield Shale from the Wianamatta Group, consisting of black to dark-grey shale and laminate.</p> <p>The NSW Environment and Heritage eSPADE website identifies the site as having soils of Hawkesbury Sandstone, which is a medium to coarse-grained quartz sandstone with minor shale and laminite lenses.</p>
Environmental Receptors	The site drains generally via pit, pipe and overland flow into street drainage along Vincentia Street or to the vacant lot east of the site.
Sensitive receptors	<p>Future site occupants and visitors.</p> <p>Site workers during future construction works.</p> <p>Surrounding residential/commercial site occupants and workers.</p>

Notes

¹ Sourced from planning proposal (Siteplus, 2016)

2.2 Hydrogeology

Review of NSW Department of Primary Industries - Water's database indicated four groundwater bores (with limited information) located within 500 m of the site (Table 2). Groundwater bore locations are shown in Figure 3, Attachment A.

Table 2: Available hydrogeological information.

Groundwater Bore Identification	Direction and Distance	Depth To Groundwater (mBGL)	Intended Use	Water Bearing Zone Substrate
GW108110	North west (230 m)	7.3	Monitoring Bore	ND ¹
GW112641	North East (475 m)	ND ¹	Monitoring Bore	ND ¹
GW112640	North East (510 m)	ND ¹	Monitoring Bore	ND ¹
GW112642	North East (475 m)	ND ¹	Monitoring Bore	ND ¹

Notes

¹ ND – No data available

From review of the information in Table 2, groundwater wells in the vicinity are used for monitoring and the only groundwater depth available is for bore GW108110 and is recorded at 7.3 mBGL. Groundwater levels are likely to be indicative of the site, however further investigation would be required to characterise site hydrogeology.

3 Site Background Assessment

3.1 Historical Site Records Review

Development application and building plan records kept by CRC were reviewed (Table 3). The records indicate that various development applications for residential site infrastructure including dwellings, a double garage and one application for land subdivision were approved between 1998 and 2000 for the site.

Table 3: Site history information.

Lot ID	Year	Approval No.	Description
Lot 3 DP 707390	1998	LDA1998/0158	Villa Homes
	1999	BA1999/0030	Villa Homes
	1999	LDA1999/1434	Outbuilding – Double Garage
	1999	PCA1999/1434	Outbuilding – Double Garage
	2000	LDA2000/0157	Land Subdivision – One lot into Two Lots.

3.2 NSW EPA Records

The site is not listed in OEH records under the Contaminated Land Management Act (1997) and the Environmentally Hazardous Chemicals Act (1985).

One record for sites within Marsfield was identified on the list of NSW contaminated sites notified to the EPA (Table 4).

Table 4: Available EPA contaminated lands record information.

Suburb	Address	Site Name	Activity that Caused Contamination	Distance from Site (meters)
Marsfield	189 Epping Road	Coles Express Marsfield	Service Station	740

Due to distance from the site, it is unlikely that the above sites would have caused near surface site soil contamination.

3.3 Historical Aerial Photograph Review

Historical aerial photographs taken of the site during 1943, 1956, 1965, 1982, 1994, 2007, and 2017 were reviewed to investigate historic site land uses (Table 5). Copies of aerial photographs are provided in Attachment C. The lot had its first two residential dwellings constructed in 1982, with the remaining four constructed in 1999, prior to this the site was free of dwellings.

Table 5: Historic aerial photograph observations 1943 – 2017.

Year	3-5 Vincentia Street	Surrounding Land Use
1943 ¹	No residential dwellings on the lot. Current lot predominately a sporting field with vegetation along the western boundary.	Rural development with market gardens and orchards surrounding the site. Bushland to the east of the site and remaining sporting field to the north. Vincentia Street is yet to be constructed.
1956	Little to no change from previous.	Little change from previous with the exception of market gardens and orchards to the south and vegetation to the east cleared for market garden use. Second shed located adjacent to southern boundary in the sites east.
1965	Little to no change from previous.	Orchards on the site immediately to the south and sheds to the north east and south east removed. Otherwise, little to no change from previous.
1982	Earthworks for adjacent road is being constructed on the site boundary, otherwise little to no change from previous.	Sporting field sub divided into lots to allow construction of Vincentia Street and existing lot boundaries. Land to the south, south east and west of the site has been cleared to allow for construction of residential development. Dunbar Park to the east of the site has been constructed.

Year	3-5 Vincentia Street	Surrounding Land Use
1994	Two of the current residential dwellings and a double garage have been constructed in the middle of the site.	Vincentia Street has been constructed otherwise little to no change from previous.
2007 (Google Maps)	All current residential dwellings have been constructed.	Southern Cross Care and Minimbah Care have been constructed to the north and east of the site respectively.
2017 (Nearmap)	Area cleared to the east of existing carport, used as a temporary carpark.	Little to no change from previous.

Notes

¹ Image of poor quality.

3.4 Walkover Site Inspection

Site walkover observations undertaken on 10 March, 2017 by an experienced MA environmental engineer are summarised below.

- o All 6 residential dwellings on the site all in good condition.
- o Corrugated metal shed with concrete floor near south eastern boundary. Shed used for storage of tools, gardening equipment, and general rubbish.
- o Open double garage at north eastern corner of lot.
- o One large tree is located in the middle of the lot and five large trees located at the eastern portion of the lot.

4 Potential for Contamination

4.1 Areas of Environmental Concern/Contaminants of Potential Concern

Our assessment of site AECs and COPCs (Table 6) for the investigation area is made on the basis of available site history, aerial photograph interpretation and site walkovers. A map showing locations of identified AECs within the investigation area is provided in Attachment B.

Table 6: Areas of environmental concern and contaminants of potential concern.

AEC ¹	Potential for Contamination	COPC	Contamination Likelihood
AEC 1 – Dwellings	Pesticides and heavy metals may have been used underneath dwellings for pest control. Dwelling construction may include ACM, lead based paints and/or galvanised metals.	HM, OCP/OPP and asbestos.	Low
AEC 2 – Shed and Carport/Carpark	Shed may have stored fuel, oils, asbestos sheeting, pesticides and/or been treated with heavy metals and pesticides (pest control). Shed construction may have included ACM, lead based paints and/or galvanised metals and contamination may still be present in site soils.	HM, TRH, BTEX, PAH, OCP/OPP and asbestos.	Low

Notes

¹ Locations identified on AEC map in Attachment B.

4.2 Sensitive Receptors and Exposure Pathways

Table 7 provides a summary of identified sensitive receptors and potential exposure pathways connecting receptors to identified AECs and COPCs outlined in Table 6.

Table 7: Summary of receptors and potential pathways.

Receptor	Pathway
<u>Human Receptors:</u>	
o Future site workers and visitors.	o Dermal contact.
o Site workers during future construction works.	o Oral ingestion of potentially contaminated soil.
o Surrounding commercial site workers.	
<u>Environmental Receptors</u>	
o Council's pit and pipe stormwater system.	o Migration of contaminated runoff.
o Existing site flora and fauna.	o Direct contact with site flora and fauna.

5 Conclusions and Recommendations

5.1 Conclusions

Results of the site history review indicate that the site has been used for residential purposes since approximately 1982. Development consents for residential site infrastructure included dwellings, an open double garage and a subdivision between 1998 and 2000. The following potential contamination sources are noted:

- o Past dwelling construction and maintenance have the potential to have introduced contaminants in the form of asbestos (as a construction material), pesticides (pest control) and heavy metals (paints, pest control).
- o Shed and the carpark/carport may have stored fuel, oils, asbestos sheeting, pesticides and/or been treated with heavy metals and pesticides (pest control). Shed construction may have included ACM and/or lead based paints, and contamination may still be present in site soils.

Overall, the investigation area is considered to have a low risk of contamination and poses a low potential risk of harm to human health and environment under proposed development conditions. However, assessment of the identified AEC should be undertaken prior to any future residential infrastructure development.

5.2 Recommendations

Assessment of identified AECs and COPCs as noted in this PSI should be undertaken prior to any future development or subdivision. Site is unlikely to be heavily contaminated, therefore assessment of identified AECs and COPCs may be completed prior to dwelling construction and after subdivision.

If preliminary screening identifies soil contaminants then further testing may be required following demolition of the shed. Already developed areas of the site would only require soil testing if the buildings are to be demolished which we understand is not required as part of the subdivision application.

The DSI plan is to be developed in accordance with NSW EPA (1995) *Sampling Design Guidelines* and a risk based assessment. Assessment shall address each of the identified AEC and associated COPCs identified in Table 7. Results of the site testing shall be assessed against site acceptance criteria (SAC) developed with reference to ASC NEPM (1999, amended 2013).

Any spoil generated by excavation would require site classification in accordance with NSW EPA (2014) Waste Classification guidelines prior to offsite disposal.

6 Limitations Statement

The preliminary site investigation was undertaken in line with current industry standards.

It is important, however, to note that no land contamination study can be considered to be a complete and exhaustive characterisation of a site nor can it be guaranteed that any assessment shall identify and characterise all areas of potential contamination or all past potentially contaminating land-uses. This is particularly the case on sites where full access is not possible due to the presence of structures (dwellings and sheds), a long history of residential land use, and where additional assessment and validation work is identified as being required. Therefore, this report should not be read as a guarantee that no contamination shall be found on the site. Should material be exposed in future which appears to be contaminated or inconsistent with natural site soils, additional testing may be required to determine the implications for the site.

Martens & Associates Pty Ltd has undertaken this assessment for the purposes of the current development proposal. No reliance on this report should be made for any other investigation or proposal. Martens & Associates accepts no responsibility, and provides no guarantee regarding the characteristics of areas of the site not specifically studied in this investigation.

- ASC NEPM (1999, amended 2013) *National Environmental Protection Measure, (site contamination measure)*.
- City of Ryde Council – DA/BA/CC records (2017).
- Google Earth Maps (2007).
- Nearmap – Aerial photographs (2017).
- NSW DEC (2006) *2nd Ed. Contaminated Sites: Guidelines for the NSW Site Auditor Scheme*.
- NSW Department of Environment & Heritage (eSPADE, NSW soil and land information). <http://www.environment.nsw.gov.au>
- NSW Department of Mineral Resources, (1983) *Sydney 1:100,000 Geological Sheet 9130*
- NSW DPI Office of Water, groundwater database, accessed March 27, 2017. <http://allwaterdata.water.nsw.gov.au/water.stm>
- NSW EPA (1995) *Sampling Design Guidelines*.
- NSW Land and Property Information (LPI) – Aerial photographs (1956, 1965, 1982, 1994).
- NSW OEH (2011) *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites, 2nd Edition*.
- NSW SIX – Spatial Information Exchange – Land & Property Information Aerial photograph (1943, 2017).
<https://six.nsw.gov.au/wps/portal/>
- SEPP 55 *Remediation of Land*.

8 Attachment A – Figures



Martens & Associates Pty Ltd ABN 85 070 240 890		Environment Water Wastewater Geotechnical Civil Management	
Drawn:	DOS	Site Location 3 – 5 Vincentia Street, Marsfield, NSW Source: Nearmap, 2017 (top) and NSW SIX Maps (bottom)	Drawing No:
Approved:	GT		Figure 1
Date:	27.3.17		
Scale:	Not to Scale		Job No: P1705856

All Groundwater Map

All data times are Eastern Standard Time

Map Info

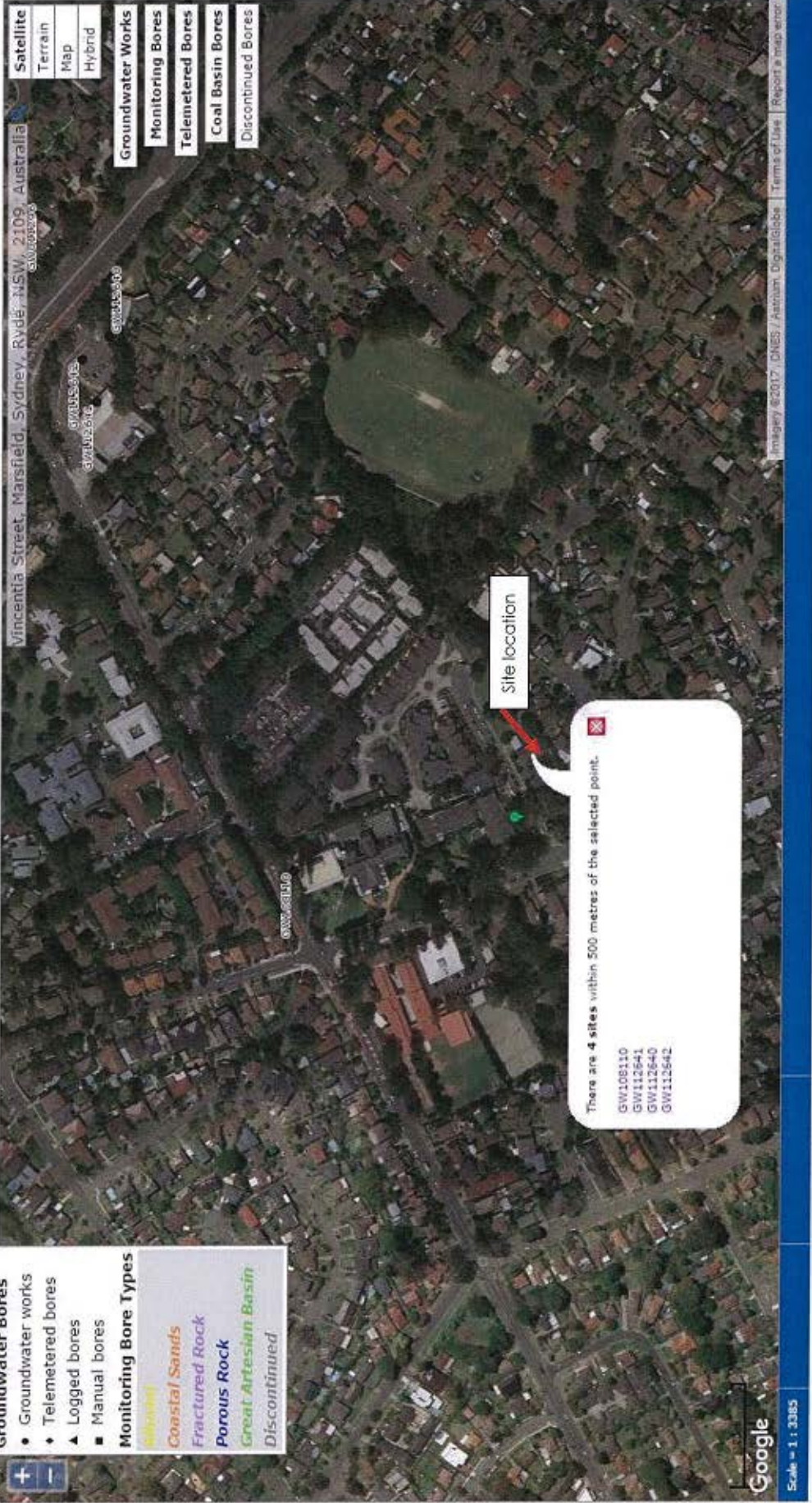
current: c:\data\GWD100110

Groundwater Bores

- Groundwater works
- Telemetered bores
- Logged bores
- Manual bores

Monitoring Bore Types

- Coastal Sands
- Fractured Rock
- Porous Rock
- Great Artesian Basin
- Discontinued



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Drawn: DOS

Approved: GT

Date: 27.3.16

Scale: Not to Scale

Environment | Water | Wastewater | Geotechnical | Civil | Management

Groundwater Bores near Site
3 - 5 Vincenia Street, Marsfield, NSW
Source: NSW DPI Groundwater Database, 2017

Drawing No:

Figure 3

Job No: P1705856