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22 February 2016

General Manager
Wyong Shire Council
P O Box 20
Wyong,
NSW 2259

ATTENTION: JONATHAN LUKE – STRATEGIC LAND USE PLANNER

Dear Sir,

PLANNING PROPOSAL RZ/2/2016, No 165 (LOT 2 DP 1154872) LOUISIANA ROAD WADALBA. – Owner / Threshold Developments Pty Ltd. Our ref: ccl-wscThreshold14

Reference is made to the above PP and the previously submitted documentation. One outstanding issue was the Preliminary Site Investigation for Contamination, which was underway at the time of lodgement of the application in mid January 2016. Optima is now pleased to provide a copy of the completed report of that investigation which was undertaken by Douglas Partners.

As you will note the investigation found that there was a low to medium potential for contamination given past activities and the existing site conditions. The report concludes that the site would generally be considered compatible with the proposed residential use, subject to further intrusive contamination investigations to asses the sites contamination status. This next phase of investigation would be appropriately undertaken as part of the development application process and would include an assessment of the site soils for chemicals and physical characteristics to assess the perceived low to medium risk of contamination.

In the interim our clients are taking action to remove all fly tipped waste material from the site, identified as part of the Preliminary Assessment.

Please do not hesitate to contact our office to discuss any particular aspect that may require further explanation.

Yours faithfully
OPTIMA DEVELOPMENTS PTY LTD

Chris Oliver
Director / Principal Consultant
MPIA CPP 7762

c.c Threshold Developments Pty Ltd

Douglas Partners
Geotechnics / Environment / Groundwater

Integrated Practical Solutions

Report on
Preliminary Site Investigation for Contamination

Proposed Rezoning
165 Louisiana Road, Wadalba

Prepared for
Threshold Developments Pty Ltd

Project 82936.00
February 2016

Douglas Partners
Geotechnics / Environment / Groundwater

Document History

Document details

Project No.	82936.00	Document No.	R.001.Rev0
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Revision 0	Brent Kerry	Tim Wright	16 February 2016

Distribution of copies

Status	Electronic	Paper	Issued to
Revision 0	1		Chris Oliver (Optima Developments P/L)

The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

	Signature	Date
Author	B Kerry	19/2/16
Reviewer	TEMCWright for Tim Wright	19/2/16

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Executive Summary

This report presents the results of a preliminary site investigation for contamination (PSI) undertaken at 165 Louisiana Road, Wadalba (the site). The investigation was commissioned by Ian Everitt of Threshold Developments Pty Ltd, on 4 January 2016 and was undertaken in accordance with Douglas Partners' proposal WYG150349 dated 4 June 2015.

The objective of the study was to provide an initial assessment of the site's contamination status to support an application to rezone the site by Threshold Developments Pty Ltd. For the purposes of this investigation, it is understood that future development is likely to include residential uses (i.e. residential subdivision).

This PSI report presents the results of a site history review and a walkover of the site. No intrusive investigation or testing was undertaken for this PSI.

Based on the findings of the desktop review and site walkover, DP considers that there is a low to medium potential for contamination given the past site activities and the existing site conditions. Some potential contamination sources were identified (refer Table 2 – Section 6); including placement of filling, fly-tipping (illegal dumping), demolition of past structures and application of chemicals associated the with suspected former poultry use.

The site would generally be considered compatible (from a site contamination perspective) with the proposed residential land uses, subject to the results of further intrusive contamination investigations to assess the site's contamination status. These investigations could initially be limited to assessment of soils on a broad grid, combined with additional targeted sampling in areas of environmental concern (i.e. areas of filling/disturbance/former sheds). These investigations should include an assessment of site soils for chemical and physical characteristics to assess the perceived low to medium risk of contamination.

Prior to completion of the further intrusive contamination investigations it is recommended that a licensed contractor is engaged to remove all fly-tipped waste materials and suspected ACM fragments observed at the ground surface (refer to Drawing 1, Appendix A).

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Report on Preliminary Site Investigation for Contamination
Proposed Rezoning
165 Louisiana Road, Wadalba

1. Introduction

This report presents the results of a preliminary site investigation for contamination (PSI) undertaken at 165 Louisiana Road, Wadalba (the site). The investigation was commissioned by Ian Everitt of Threshold Developments Pty Ltd, on 4 January 2016 and was undertaken in accordance with Douglas Partners' proposal WYG150349 dated 4 June 2015.

The objective of the study was to provide an initial assessment of the site's contamination status to support an application to rezone the site by Threshold Developments Pty Ltd. For the purposes of this investigation, it is understood that future development is likely to include residential uses (i.e. residential subdivision).

This PSI report presents the results of a site history review and a walkover of the site. No intrusive investigation or testing was undertaken for this PSI. The PSI was undertaken with respect to the staged investigation approach outlined in *State Environmental Planning Policy No. 55 – Remediation of Land* (SEPP 55 – Ref 1) and the National Environment Protection Council (NEPC) *National Environment Protection (Assessment of Site Contamination) Measure 1999* (amended 2013) (NEPC, 2013 – Ref 2).

1.1 Objectives

The objectives of the PSI were to:

- Identify potential sources of contamination and determine potential contaminants of concern;
- Identify areas of potential contamination;
- Identify potential human and ecological receptors;
- Identify potentially affected media (soil, sediment, groundwater, surface water, indoor and ambient air);
- Provide a preliminary assessment of the site's contamination status and likely compatibility with a residential use; and
- Assess the need for further investigation and/or site remediation.

1.2 Site Identification

The site is identified as Lot 51 Deposited Plan 1195704 and has a street address of 165 Louisiana Road, Wadalba, NSW. The site is located within the parish of Munmorah, County of Northumberland and in the Wyong Shire Council (WSC) local government area.

The site is currently zoned RU6 Transition and E2 Environmental Conservation under Wyong Local Environmental Plan 2013. The site has an irregular shape and comprises an area of approximately 2.715 hectares.

Figure 1, is a plan of the local area and shows the site in relation to various local features.

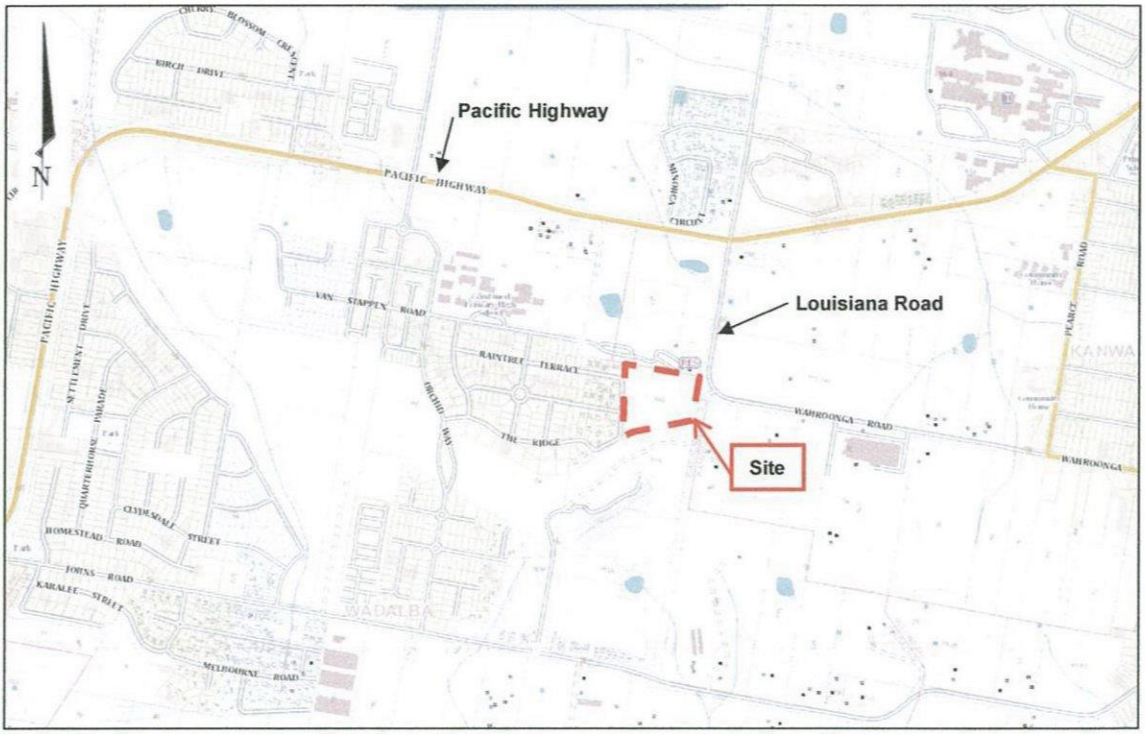


Figure 1: Location of the site within Wadalba
(image sourced from SIX Maps)

Figure 2, is an aerial view of the local area and shows the site in relation to the nearest cross street.

Figure 2: Location of the site (image sourced from nearmap.com, dated 3 March 2015)

At the time of the PSI, the site appeared to generally comprise partially cleared bushland, with several small clearings and access trails traversing the site. No structures were observed at the site, however, two small dams were located adjacent to the southern boundary of the site. Other site features are discussed in Section 5.

Drawing 1, which is included in Appendix A, shows the existing layout of the site.

2. Scope of Work

The scope of PSI work completed comprised:

- Collation and interpretation of readily available site data from the following sources:
  - Published public data, including topographical, geological and hydrogeological maps;
  - A search of the Registered Groundwater Bore database of the NSW Department of Primary Industries, Office of Water;
  - NSW EPA Contaminated Land and Protection of Environment Operations databases;
  - WSC Property Enquiry Information; and
  - Historical aerial photographs; and
  - Other historical information available for the site.
- Site walkover to provide a visual assessment of potential contamination sources;
- Development of a preliminary conceptual site model (CSM); and

- Preparation of this report outlining the works undertaken and the findings of the PSI.

3. Physical Setting

3.1 Topography

Review of the local topographic mapping and site observations indicated that site is sloping down to the north, east and west. Surface levels within the site range between approximately RL 26 m in the north west and 44 m AHD in the south. A shallow gully (dry at the time of the walkover) borders the western site boundary which feeds an intermittent tributary mapped approximately 200 m to the north which appears to discharge to the north then west towards Porters Creek and then Wyong River, located approximately 5 km to the south-east.

Surface water would generally be expected to infiltrate at the site, however, runoff from the site is generally expected to migrate to the north, possibly entering the stormwater drainage system associated with the sporting complex located to the north. The final discharge point would most likely be Porters Creek and Wyong River.

Figure 3 is a plan of the local area and shows the site in relation to surface elevation contours and local watercourses.

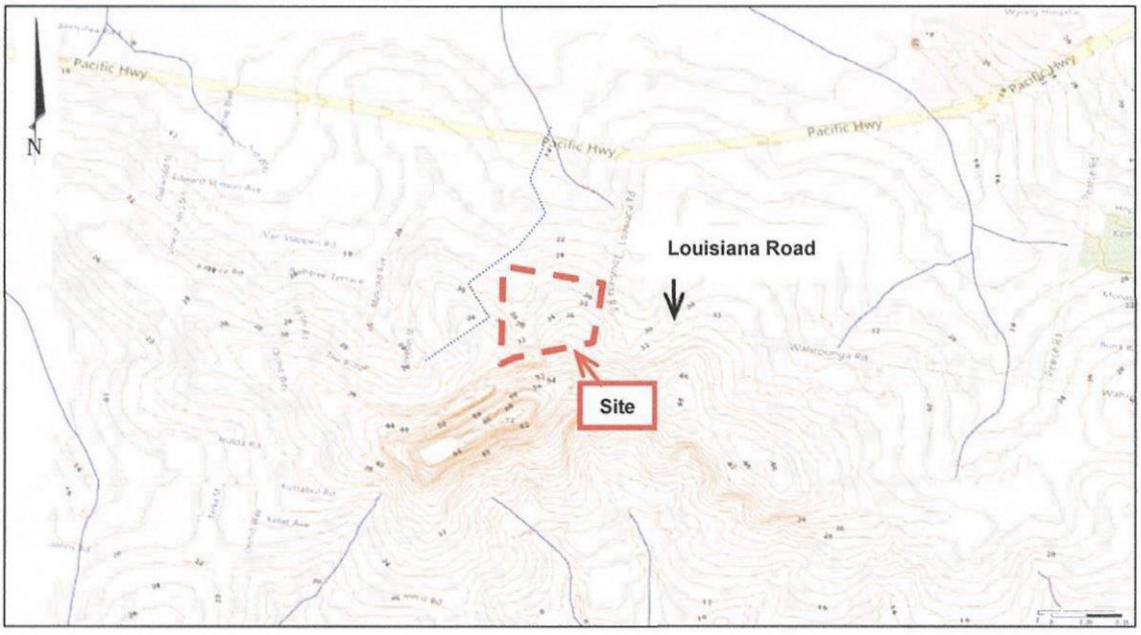


Figure 3: Site Topography
(image sourced from Microsoft Virtual Earth with 2 m elevation contour overlay)

3.2 Adjacent Site Uses

Surrounding land uses include the following:

- North (down slope) – Wadalba Rural Fire Service facilities and Mascord Park (sporting facilities);
- East (across and down slope) – Possibly an unformed road (fire trail) and residential subdivision (under construction);
- South (up slope) – Bushland possibly including remnant portions of the original property that the current site has historically been subdivided from. Water infrastructure (i.e. large tanks, etc) and telecommunication towers on the ridge located to the south of the site; and
- West (down slope) – Residential properties.

The potential for contamination from existing off-site land uses or activities to have impacted the site is considered to be relatively low.

A walkover of the adjacent sites was not undertaken as part of this PSI.

3.3 Regional Geology and Soil Landscape

Reference to the local geological mapping indicates that the site is located within an area mapped as being underlain by Patonga Claystone (identified as Rnp in Figure 4). Patonga Claystone typically comprises red-brown and grey-green claystone and siltstone or fine lithic sandstone. Patonga Claystone typically weathers to form silty and sandy clay soils.

Reference to the local soil landscape mapping indicates that the site is underlain by Woodburys Bridge residual soil landscape (identified as Wo in Figure 5). The mapping indicates that site soils would generally comprise red podzolic soils underlain by Patonga Claystone bedrock.

Local knowledge and the site walkover indicate that subsurface conditions would be consistent with the local geological and soil landscape mapping.

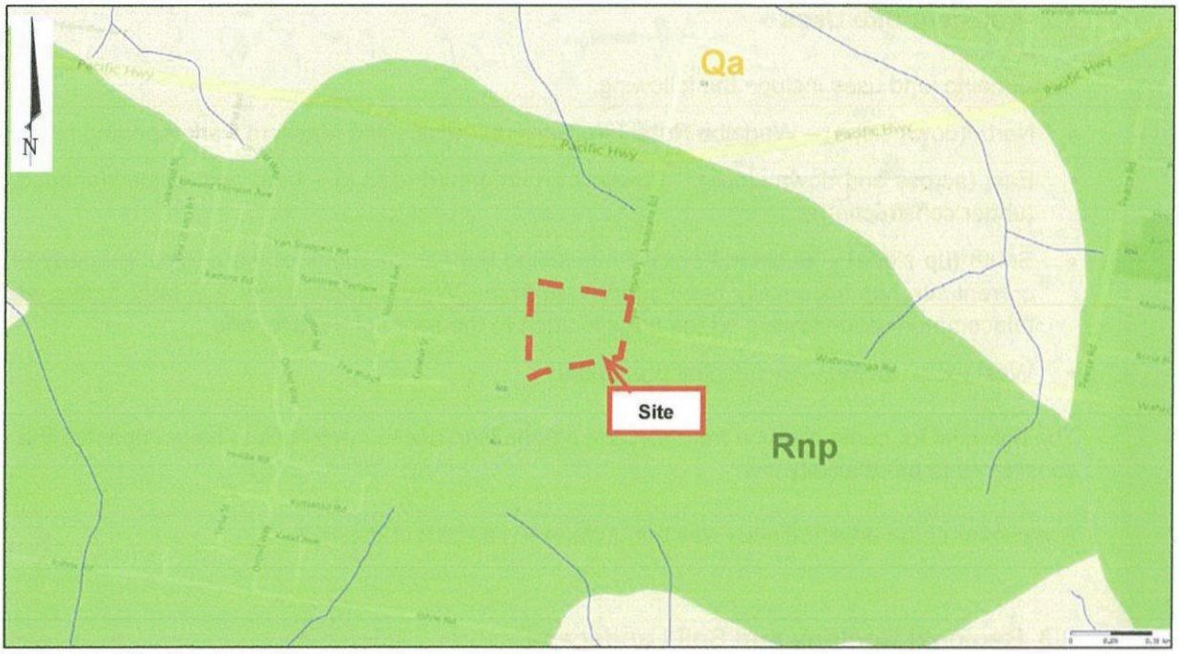


Figure 4: Site Geology Mapping
(image sourced from Microsoft Virtual Earth with Sydney Region 1:100,000 Geology overlay)

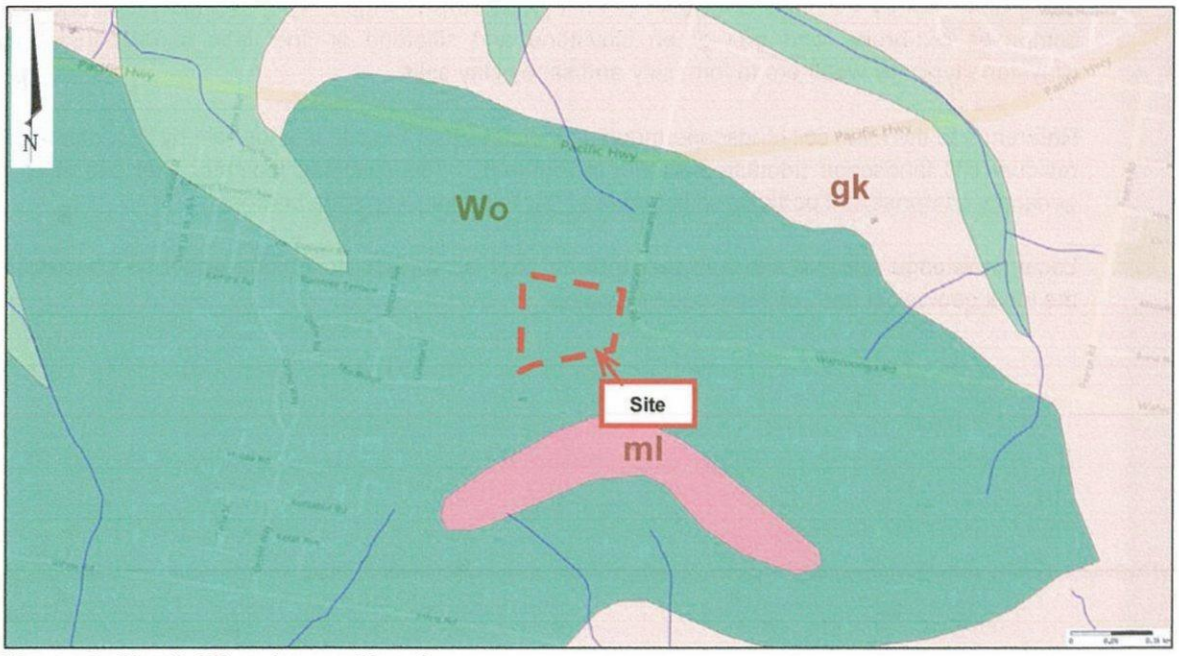


Figure 5: Site Soil Landscape Mapping
(image sourced from Microsoft Virtual Earth with Gosford-Lake Macquarie 1:100,000 Soil Landscapes Sheet overlay)

3.4 Acid Sulfate Soils

The local acid sulfate risk mapping indicates that the site is located in an area mapped as having no known occurrence of acid sulfate soils. The mapping is consistent with the mapped subsurface conditions and site elevation indicating that assessment for acid sulfate soil is not warranted.

3.5 Groundwater

Given the site's topography and geology, it is considered likely that a permanent groundwater table is present at relatively shallow depth (i.e. less than 4 m depth). It should be noted that groundwater levels are potentially transient and can be affected by factors such as soil permeability and recent weather conditions.

Figure 6 is a street map of the local area and shows the site in relation to the local registered groundwater bores.

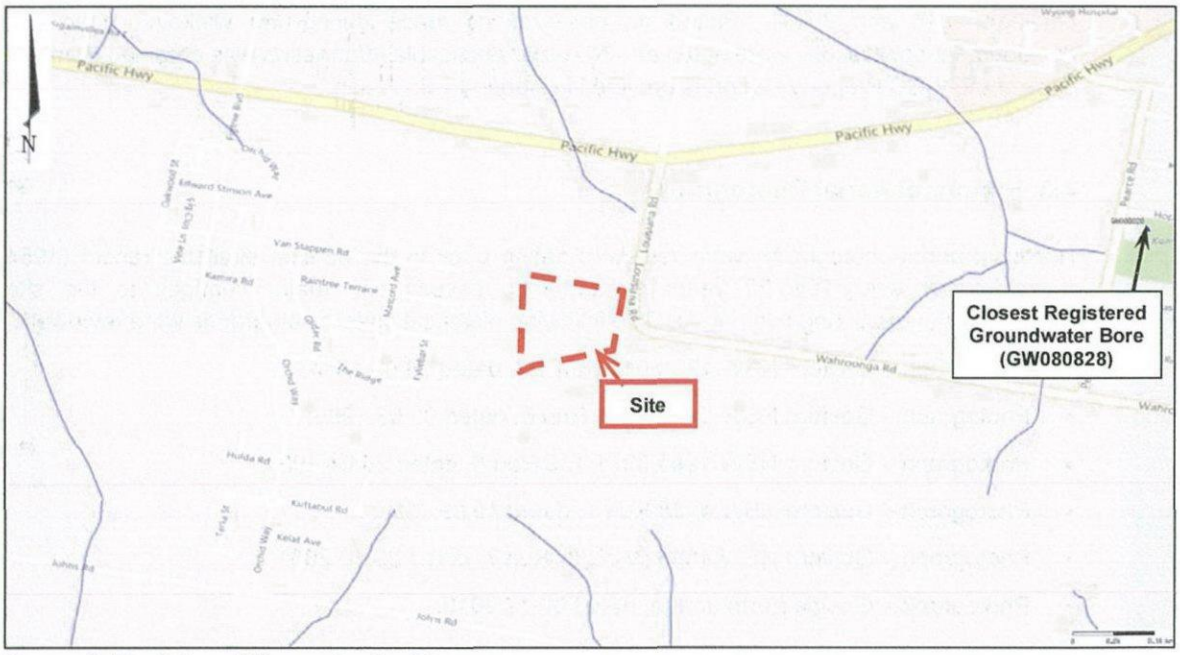


Figure 6: Registered Groundwater Bores
(image sourced from Microsoft Virtual Earth with NSW Office of Water Registered Groundwater Bore location overlay)

A search for registered groundwater bores in the Department of Natural Resources groundwater bore database [Note: this function has been taken up by NSW Department of Primary Industries Office of Water] indicated that there are no registered groundwater bores within a 1 km radius of the site. The information available from the reports suggests that the closest bore was installed as a test bore at Kanwal Oval. No well construction details were provided. A copy of the search results is provided in Appendix B. Given the site topography and proximity of intermittent watercourses to the north, it is considered unlikely that any potential groundwater contamination from the site would impact the any registered groundwater bores.

4. Site History

4.1 Regulatory Notices Search

The NSW EPA Register of Contaminated Land was searched for any Regulatory Notices that may be current on the site issued under the *Contaminated Land Management (CLM) Act* 1997 and Section 308 of the *Protection of the Environment Operations (POEO) Act* 1997. The information obtained at the time of preparing this report indicated that no current or previous Licences, Notices or Orders were applicable for the site.

4.2 Council Enquiry Information

An enquiry was made through Wyong Shire Council's (WSC) web site and the general enquiry phone number. The enquiry identified that an application for subdivision (27 lots) was approved in 2007 (i.e. subdivision to the west of the current site). Other applications for the site pertain to dwellings, vegetation management, wastewater treatment systems and a boundary adjustment submitted between 2010 and 2013. Based on observations made during the walkover none of these development applications were acted on. No other applicable information was obtained from WSC. A copy of the WSC Property Report is provided in Appendix B.

4.3 Historical Aerial Photographs

Historical aerial photographs were reviewed dating back to the earliest available record (1954) and approximately every 10 to 20 years thereafter to assess any major changes to the site and surrounding areas during this period. The following historical aerial photographs were reviewed:

- Photograph – Gosford NSW 128-5013 Run 1G, dated 18.03.1954;
- Photograph – Gosford NSW 1439-5117 Run 6, dated 08.03.1966;
- Photograph – Gosford NSW 1984 3371-139 Run 8, dated 26.04.1984;
- Photograph – Gosford NSW 4238 Run 7, dated 15.09.1994;
- Photograph – Gosford NSW 4586 (M2288) Run 7, dated 29.10.2001;
- Photograph – Google Earth Image, dated 02.12.2010.

Extracts of the 1954, 1966, 1984 and 1994 historical aerial photographs are included as Drawing 2 in Appendix B. Table 1 summarises the observations made during the aerial photograph review.

Table 1: Aerial Photograph Review

Year	Site	Surrounding Land Use
1954	The site appears to be generally vegetated with a mix of trees and grass, with several cleared areas and the presence of rectangular shaped buildings suggesting existing development at the site. Unsealed tracks also appear to traverse the site.	Areas to the north appear to have a semi-rural use with sheds and cultivated paddocks visible (possible orchards or market gardens). Other surrounding areas appear less developed typically vegetated with bushland with some paddocks for probable grazing uses.
1966	The site appears to be in a similar condition to the 1954 photograph. The photograph quality is poor; however, it is likely several buildings/sheds are present at the site.	This photograph is of poor quality which limits the comments that can be made. Surrounding areas appear to be in-part developed for primarily semi-rural uses. No specific rural uses can however be identified.
1984	The site appears to be somewhat revegetated with bushland. At least one (possibly up to three) building/shed is visible at the site.	No significant changes were observed.
1994	All buildings at the site appear to have been removed with some vegetation regrowth visible. A single cleared (bare) area is visible and corresponds with the location of a former shed. Remaining portions of the site appear to be vegetated with bushland.	Surrounding areas appear to have semi-rural residential uses with significant areas having a bushland vegetation cover. No intensive agricultural uses were identified on adjacent properties.
2001	Bushland appears to cover the site except for the cleared (bare) area previously identified.	A general increase in development in surrounding areas, however, no significant changes were observed on adjacent properties.
2010	No significant changes were observed.	No significant changes were observed.

4.4 Other Historical Information

The client, as part of the initial information package, supplied a historical survey plan of the site and surrounding areas. No date was visible on the plan, however, it identified the presence of six sheds or shelters within the site boundary and suggests past use of the site for poultry farming (similar to other rural properties in the local area). The survey plan also identifies the presence of two small ponds (observed during the walkover) adjacent to the southern site boundary.

A copy of the survey plan is included in Appendix B.

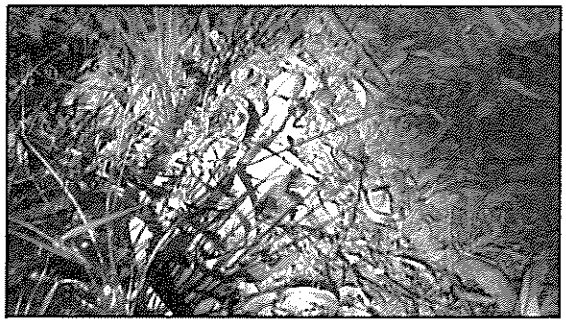
5. Site Walkover / Observations

A site walkover was undertaken on 20 January 2016 by a Senior Environmental Engineer (Mr Brent Kerry). The site features observed during the walkover are summarised below. The general site topography was consistent with that described in Section 3.1.

The site layout appears to have remained unchanged from the March 2015 aerial photograph (refer to Drawing 1, Appendix A). The site is currently occupied by the following features:


Figures 7 and 8 – Photograph from access trail that traverses the site from Louisiana Road (generally surfaced with a recycled building material aggregate). The cleared area observed in the 2001 and 2010 aerial photographs appeared to have been covered with an organic leaf mulch mix. A single fragment of a suspected asbestos-containing material (ACM) was observed at the ground surface of the access track (Figure 8). The location of the suspected ACM fragment is identified on Drawing 1, Appendix B.


Figures 9 and 10 – Photograph of the general site conditions (scattered trees with grass/shrub surface cover). The long grass and absence of distinctive site features prevented the detailed inspection of the former shed/building footprints. Fly-tipping was observed in several isolated areas throughout the site. A variety of fly-tipped materials were identified (plastic, metal timber, concrete, asphalt, and some domestic waste).

Figures 11 and 12 – Photographs of an area where a surface cover of filling was observed. Several fragments of suspected ACM were observed at the surface of the filling (refer to Figure 12). The location of the suspected ACM fragments is identified on Drawing 1, Appendix B.

6. Preliminary Conceptual Site Model

A conceptual site model (CSM) is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM provides the framework for identifying how the site became contaminated and how potential receptors may be exposed to contamination either in the present or in the future i.e. it enables an assessment of the potential source – pathway – receptor linkages (complete pathways).

6.1 Potential Contamination Sources and Contaminants of Concern

Table 2 summarises the potential sources of contamination and associated contaminants of concern that have been identified at the site.

Table 2: Potential Contamination Sources and Contaminants of Concern

Potential Contamination Source/Activity	Description of Potential Contaminating Activity	Primary Potential Contaminants of Concern
Importation and/or placement of contaminated filling	Importation of substantial filling is unlikely likely based on site history and observations. However, some filling and illegal dumping was observed at the site.	Various - Common contaminants associated with filling are metals (As, Cd, Cr, Cu, Pb, Hg, Ni and Zn), TRH, BTEX, PAH, PCB, OCP and asbestos
Former sheds	Site history review identified presence of sheds (probable poultry use). These sheds may have been treated for pests or contained hazardous building materials which *could have contaminated the soil during their usage or* demolition.	Metals (As, Cd, Cr, Cu, Pb, Hg, Ni and Zn), OCP and asbestos

Notes:
As = arsenic, Cd = cadmium, Cr = chromium, Cu = copper, Pb = lead, Hg = mercury, Ni = nickel and Zn = zinc
TRH = total recoverable hydrocarbons, BTEX = benzene, toluene, ethylbenzene and xylene, PAH = polycyclic aromatic hydrocarbons, PCB = polychlorinated biphenyls, OCP = organochlorine pesticides

For the purpose of developing a conceptual site model, the potential sources (S) of contamination are summarised as:

- S1 - Contaminated filling (imported filling, fly-tipping and contamination from demolition of previous buildings); and
- S2 - Application/spills (chemicals possibly used at the site).

6.2 Potential Receptors of Concern

The potential receptors of potential contamination sourced from the site are considered to be:

- R1 - Site users (future residential users);
- R2 - Adjacent site users (residential);
- R3 - Construction and maintenance workers;
- R4 - Surface water (nearby intermittent watercourse);
- R5 - Terrestrial ecology; and
- R6 - Property (future).

Groundwater is not considered a potential receptor of concern given the potential contamination sources and site conditions identified. This should be reassessed based on the results of future investigations recommended at the site.

6.3 Potential Contamination Migration Pathways

The pathways by which the potential sources of contamination could reach potential receptors are described below:

- P1 - Ingestion and dermal contact;
- P2 - Inhalation of dust and / or vapours;
- P3 - Surface run off; and
- P4 - Direct contact with terrestrial ecology / property.

6.4 Conceptual Site Model

A 'source–pathway–receptor' approach has been used to assess the potential risks of harm being caused to human, water or environmental receptors from contamination sources on or in the vicinity of the site, via exposure pathways. The possible pathways between the above sources (S1 and S2) and receptors (R1 to R6) are provided in Table 3 below.

Table 3: Conceptual Site Model

Potential Source	Pathway	Receptor
S1 - Contaminated filling. (Metals, TRH, BTEX, PAH, PCB, OCP and asbestos)	P1 – Ingestion and dermal contact	R1 – Site users R3 –Construction & maintenance workers.
	P2 – Inhalation of dust and / or vapours	R1 – Site users R2 – Adjacent site users R3 – Construction & maintenance workers.
S2 - Application/spills. (Metals, OCP)	P3 – Surface run off	R4 –Surface water.
	P4 – Direct contact with terrestrial ecology / property	R5 – Terrestrial ecology R6 – Property

7. Conclusions and Recommendations

Based on the findings of the desktop review and site walkover, DP considers that there is a low to medium potential for contamination given the past site activities and the existing site conditions. Some potential contamination sources were identified (refer Table 2 – Section 6); including placement of filling, fly-tipping (illegal dumping), demolition of past structures and application of chemicals associated the with suspected former poultry use.

The site would generally be considered compatible (from a site contamination perspective) with the proposed residential land uses, subject to the results of further intrusive contamination investigations to assess the site's contamination status. These investigations could initially be limited to assessment of soils on a broad grid, combined with additional targeted sampling in areas of environmental concern (i.e. areas of filling/disturbance/former sheds). These investigations should include an assessment of site soils for chemical and physical characteristics to assess the perceived low to medium risk of contamination.

Prior to completion of the further intrusive contamination investigations it is recommended that a licensed contractor is engaged to remove all fly-tipped waste materials and suspected ACM fragments observed at the ground surface (refer to Drawing 1, Appendix A).

8. References

1. Department of Urban Affairs and Planning, Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land, 1998.

2. National Environment Protection Council (NEPC), National Environment Protection (Assessment *of Site Contamination) Measure 1999* (amended 2013), 2013.

9. Limitations

Douglas Partners (DP) has prepared this report for this project at 165 Louisiana Road, Wadalba in accordance with DP's proposal WYG150161, dated 4 June 2015 and acceptance received from Ian Everitt of Threshold Developments P/L dated 4 January 2016. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of the Threshold Development P/L for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

DP's contamination assessment is necessarily based on the result of a desktop site historical search and site inspection only and did not include surface or subsurface sample screening and/or chemical testing. DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site.

It is noted that this assessment does not constitute a hazardous material building assessment. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report. This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the environmental components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Suspected asbestos has been detected by observation on the surface of the site. Building demolition materials, such as concrete were also located in other areas of the site and these are considered as indicative of the possible presence of hazardous building materials (HBM), including asbestos. It is therefore considered possible that HBM, including asbestos, may be present in unobserved parts of the site, and hence no warranty can be given that asbestos is not present.

Douglas Partners Pty Ltd

Appendix A

About This Report
Drawings 1 and 2

About this Report

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

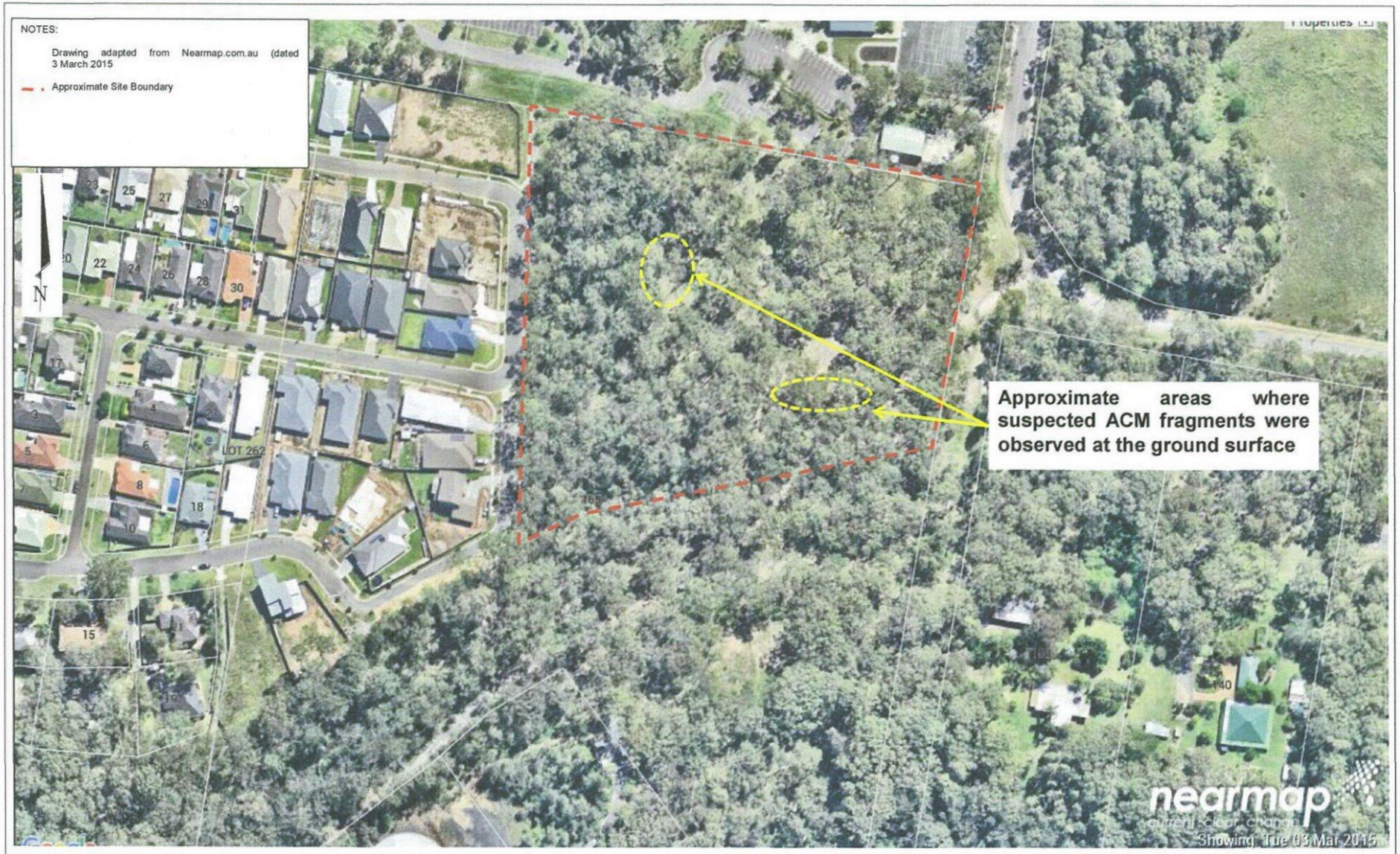
In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

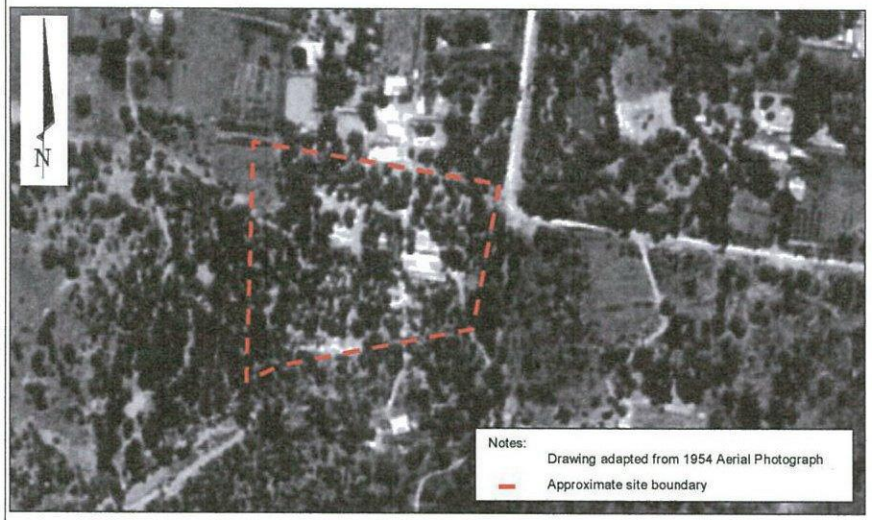
Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

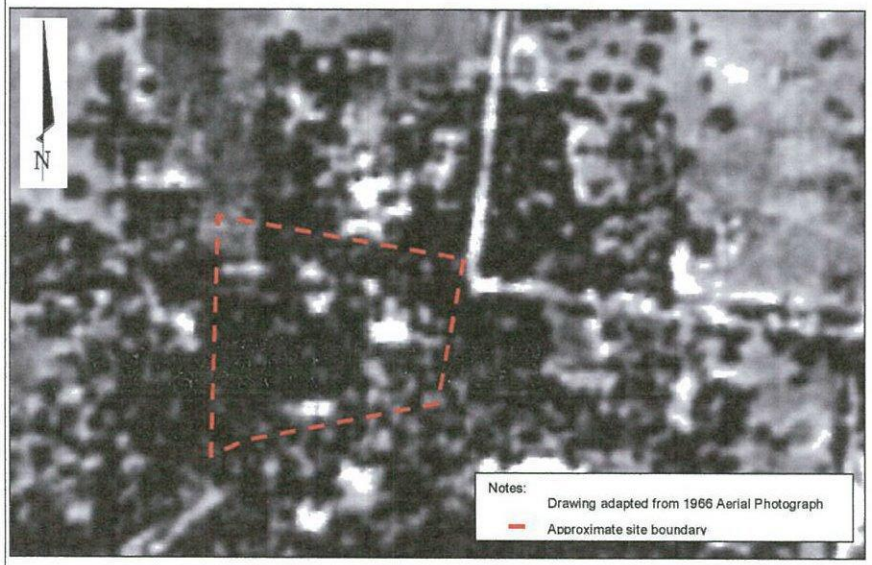
Site Inspection

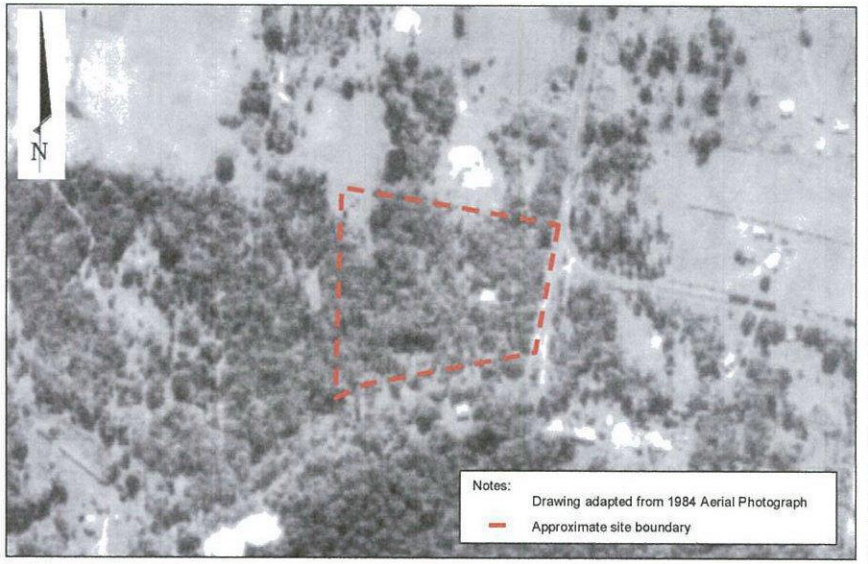
The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.

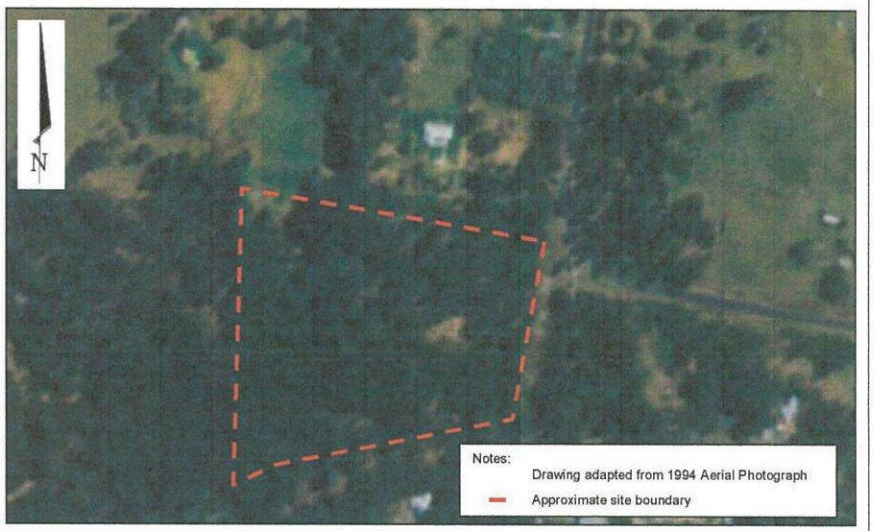


Douglas Partners Geotechnics / Environment / Groundwater	CLIENT:	Threshold Developments P/L	TITLE:	**Existing Site Layout** **Preliminary Site Investigation for Contamination** **165 Louisiana Road, Wadalba**	PROJECT No: 82936.00
	OFFICE: Central Coast	DRAWN BY: BJK			DRAWING No: 1
	SCALE: NTS	DATE: Feb 2016			REVISION: A









Douglas Partners
Geotechnics | Environment | Groundwater

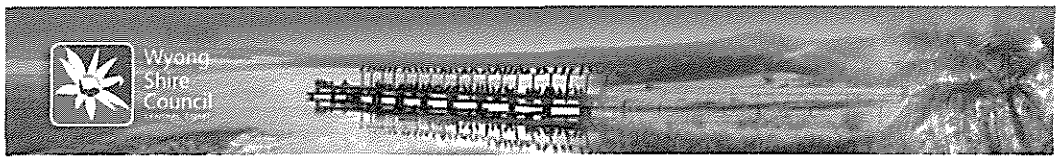
CLIENT:	Threshold Developments P/L		
OFFICE:	Central Coast	DRAWN BY:	BJK
SCALE:	NTS	DATE:	Feb 2016

TITLE: **Historical Aerial Photographs**
Preliminary Site Investigation for Contamination
165 Louisiana Road, Wadalba

PROJECT No:	82936.00
DRAWING No:	2
REVISION:	A

Appendix B

Background Information



Property Details

Important Information:

Applications listed on this page are only from a lodgement date of 01/01/2007 onwards.

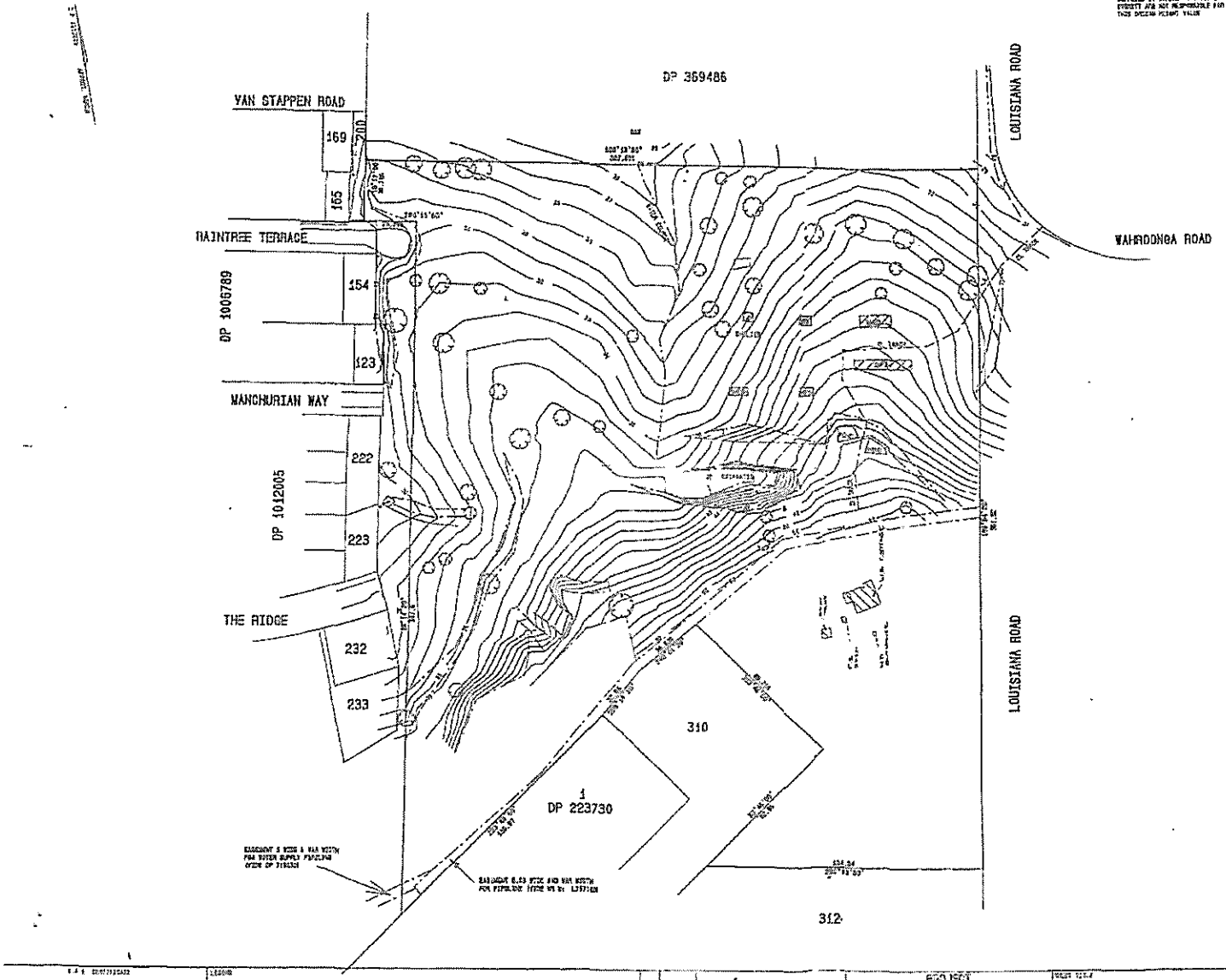
The information listed on this page is supplied by Council for general information purposes only and does not reflect all records and information available for the identified parcel of land. No reliance should be placed on the information on this page to determine the planning or other legislative controls affecting the identified parcel of land. Applications may be made in accordance with the *Government Information (Public Access) Act 2009* to inspect information held by Council in relation to the identified parcel of land. Applications may also be made for planning certificates under sec. 149 of the *Environmental Planning and Assessment Act 1979*. Additionally, the parcel conditions listed are not a complete list of conditions imposed on the identified parcel of land. For example, site compatibility, flooding and coastal hazards are not listed on this page. Also, a reference to a chapter of Council's Development Control Plan (DCP), does not mean that other chapters of the DCP are not relevant. Please refer to Council's full Terms and Conditions applicable to the use of this service.

165 Louisiana Road WADALBA NSW 2259

⊟	**Details**	Property Number: 383197 Lot/DP: Ward: A Riding
⊟	**Warning**	No Land Parcels attached to this property.
⊟	**Applications**	DA - 1040 / 2013 - Dwelling DA - 107 / 2012 - Dwelling DA - 738 / 2010 - Vegetation management works & fencing LA - 240 / 2013 - Aerated Wastewater Treatment System (AWTS) Sub-surface .... LA - 34 / 2012 - Aerated Wastewater Treatment System (AWTS) Sub-surface .... SC - 49 / 2013 - Boundary adjustment
⊟	**Conditions**	**Parcel Conditions** Cannot connect to the database
⊟	**Services**	There are no services for this property.

close all | open all

Wyong Shire Council



PROJECT
FINDESHOLD DEVELOPMENTS

PLAN SHOWING CONTOURS AND DETAIL

EVERITT & EVERITT PTY. LIMITED
REGISTERED SURVEYORS

NSW OFFICE OF WATER
Work Summary

GW080828

Licence :20BL169372

Licence Status Active

Authorised Purpose(s): TEST BORE

Intended Purpose(s): TEST BORE

Work Type :Bore
Work Status :(Unknown)
Construct. Method :(Unknown)
Owner Type :Local Govt

Commenced Date :
Completion Date :25-Aug-2004

Final Depth :
Drilled Depth :

Contractor Name :
Driller :
Assistant Driller's Name :

Property : - KANWAL OVAL
GWMA : -
GW Zone : -

Standing Water Level :
Salinity :
Yield :

Site Details

Site Chosen By	County	Parish	Portion/Lot DP
	Form A :NORTHUMBERLAND	MUNMORAH	LT78 DP31859
	Licensed :NORTHUMBERLAND	MUNMORAH	78 31859

Region :20 - HUNTER
River Basin :211 - MACQUARIE - TUGGERAH LAKES
Area / District :

CMA Map :9131-2N WYONG
Grid Zone :56/1
Scale :1:25,000

Elevation : 0.00
Elevation Source :(Unknown)

Northing :6318247
Easting :358688

Latitude (S) :33° 15' 56"
Longitude (E) :151° 28' 58"

GS Map :
MGA Zone :56

Coordinate Source :Map Interpretation

Construction

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;PL-Placement of Gravel Pack;PC-Pressure Cemented;S-Sump;CE-Centralisers

H	P	Component Type	From (m)	To (m)	OD (mm)	ID (mm)	Interval	Details

(No Construction Details Found)

Water Bearing Zones

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

(No Water Bearing Zone Details Found)

Drillers Log

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

Remarks

Form A Remarks:
Location map received
No Form a received Reviewed data - nothing to update.

*** End of GW080828 ***