



# **Douglas Partners**

*Geotechnics | Environment | Groundwater*

Report on  
Land Capability Assessment

Site 1 - Lake Munmorah Rezoning  
Lake Munmorah and Crangan Bay

Prepared for  
Darkinjung Local Aboriginal Land Council

Project 83115.01  
November 2017

**Integrated Practical Solutions**





# Douglas Partners

Geotechnics | Environment | Groundwater

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Reviewer		1 November 2017



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## Report on Land Capability Assessment

### Site 1 - Lake Munmorah Rezoning

### Lake Munmorah and Crangan Bay

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#### 1. Introduction

This report presents the results of a land capability assessment undertaken for Site 1 – Lake Munmorah Rezoning at Lake Munmorah and Crangan Bay. The investigation was commissioned in an email received from Chris Smith from ADW Johnson on behalf of Darkinjung Local Aboriginal Land Council (DLALC) dated 19 October 2017, and was undertaken in accordance with Douglas Partners' (DP) proposal CCT170104 dated 10 October 2017 and in consultation with ADW Johnson Pty Ltd.

It is understood that the development of the site will include rezoning of the land, leading to a number of possible landuses. The objective of this land capability assessment was to provide preliminary information on the following issues:

- Agricultural potential / suitability;
- Mining / mine subsidence;
- Groundwater data;
- Areas of soft / unsuitable ground;
- Slope and drainage;
- Areas of potential flooding;
- Soil erodibility / dispersion;
- Soil permeability;
- Salinity potential; and
- Provide recommendations for further intrusive investigation / ground truthing.

This assessment comprised a desktop review of available data, including a previous report prepared for the site by DP. It should be noted that some of the information presented in this report is taken from the previous report by prepared by DP for the site (Section 3).

The details of the desktop review are presented in this report, together with comments and recommendations on the issues listed above.

No intrusive investigation was undertaken for this report.

## 2. Site Information

### 2.1 Site Identification

A summary of the site identification details are presented in Table 1, and the location of the site is shown in Figures 1 and 2 (below) and Drawing 1, Appendix A.

**Table 1: Site Identification Details**

Identification	Description
<b>Registered Owner</b>	Darkinjung Local Aboriginal Land Council
<b>Street Address</b>	405 – 415 Pacific Highway, Lake Munmorah; 425 Pacific Highway, Crangan Bay; and 2 Kanangra Drive, Crangan Bay.
<b>Lot Numbers</b>	Lot 642 in Deposited Plan 1027231; Lot 100 in Deposited Plan 10444282; and Lot 644 in Deposited Plan 1027231.
<b>Site Area</b>	Approximately 164 hectares (approximately 58 hectares proposed for re-zoning)
<b>Current Site Zoning</b>	E2 Environmental Conservation and E3 Environmental Management
<b>Parish</b>	Wyong, County of Northumberland
<b>Local Government Area</b>	Central Coast Council (CCC)
<b>Current Land use</b>	Vacant bushland.

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 Lake Munmorah (image sourced from SIX Maps)**

Figure 2, is an aerial view of the local area and shows the site in relation to the Pacific Highway.



Figure 2: Location of the site (image sourced from nearmap.com, dated 23 February 2016)

## 2.2 Site Description

At the time of the previous investigation, described in Section 3, the majority of the site comprised dense bushland and had a grass surface cover. No structures were evident at the site, although the site was bisected in a north-south direction by Chain Valley Bay Road. Other site features are discussed in Section 3.

## 3. Previous Report

DP prepared a report for the site entitled *Report on Preliminary Site Investigation, Site 1 – Lake Munmorah Rezoning, Lake Munmorah and Crangan Bay*, prepared for DLALC (DP Project No. 83115.00) dated September 2017.

The objective of the preliminary site investigation (PSI) was to provide an initial assessment of the site's contamination status to support a rezoning application. The future development was understood to comprise a low density residential land use.

The PSI comprised a review of desktop information, site walkover by a Senior Environmental Scientist and a Senior Geotechnical Engineer, development of a preliminary conceptual site model (CSM) and comments on slope stability.

The site walkover completed as part of the PSI noted the following:

- With the exception of minor tracks in the southern and central portions, the remainder of the site comprised thick natural vegetation which limited access to other areas. The walkover was limited to accessible areas along the existing tracks;
- A number of fragments of asbestos-containing material (ACM) were observed. The approximate locations of these and other areas where ACM fragments were observed are shown on Drawing 1, Appendix A;
- Small quantities of rubbish, derelict car bodies and suspected fly-tipped materials comprising demolition debris (bricks, concrete, potential asbestos-containing materials (PACM) and metal scraps) were observed in southern and central portions of the site. Whilst the fly-tipped materials were observed to predominantly be present in areas generally bordering the site boundaries or adjacent to tracks bisecting the site, given the access restrictions associated with dense vegetation, the potential for such materials to be present in other areas of the site cannot be completely ruled out. The approximate locations of the identified fly-tipped materials are shown on Drawing 1, Appendix A;
- Small stockpiles ranging between approximately 5 m<sup>3</sup> and 10m<sup>3</sup> of suspected imported fill were observed in the south-eastern section of Lot 642 and the western portion of Lot 100. The approximate locations of these stockpiles and other areas where fill stockpiles were observed are shown on Drawing 1, Appendix A.

Surface slopes across most of the site were generally less than about 3°, although locally steeper areas (slopes up to about 5°) over a distance of about 100 m were observed in the northern portions of the site. These areas are outside of the development areas shown in the indicative subdivision layout for the site. Soils exposed along the network of tracks within the site comprised predominately residual sandy clay / clayey sand. Pockets of weathered sandstone were also exposed in elevated parts of the site where the tracks had been worn to depths of about 0.5 m below the surrounding ground.

The PSI report concluded:

*...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; including fly-tipped materials and imported filling materials.*

*Overall, Site 1 would generally be considered compatible (from a site contamination perspective) with the proposed residential land uses, subject to removal of all existing fly-tipped material (including ACM) and the results of further intrusive contamination investigations to obtain quantitative data on the contamination status of the site. In this regard, prior to commencement of intrusive investigations, it would be prudent to also undertake a detailed site walkover in conjunction with vegetation clearing activities with a view to verifying the presence/absence of additional fly-tipped materials and/or areas of concern in parts of the site that were previously inaccessible. Subsequent to removal of all fly-*

*tipped materials, the intrusive investigations could initially be limited to the assessment of soils on a broad grid, combined with additional targeted sampling in the areas of environmental concern.*

*These investigations should include an assessment of site soils for chemical and physical characteristics to confirm the perceived low to moderate risk of contamination. The investigations should also target the areas where ACM and/or PACM have been observed on the ground surface to evaluate the vertical and lateral extent of ACM contamination (if any) at the site. Should the results of the intrusive investigations identify the need for remediation, then an adequate remediation and validation programme will need to be implemented to render Site1 suitable for the proposed residential development.*

*Depending on the final design plans, preliminary investigations for acid sulfate soils should also target the areas where deep excavations are proposed (if in areas of alluvial soils), with a view to confirming the presence/absence of acid sulfate soils. Such assessment should be carried out in accordance with the ASSMAC Guidelines.*

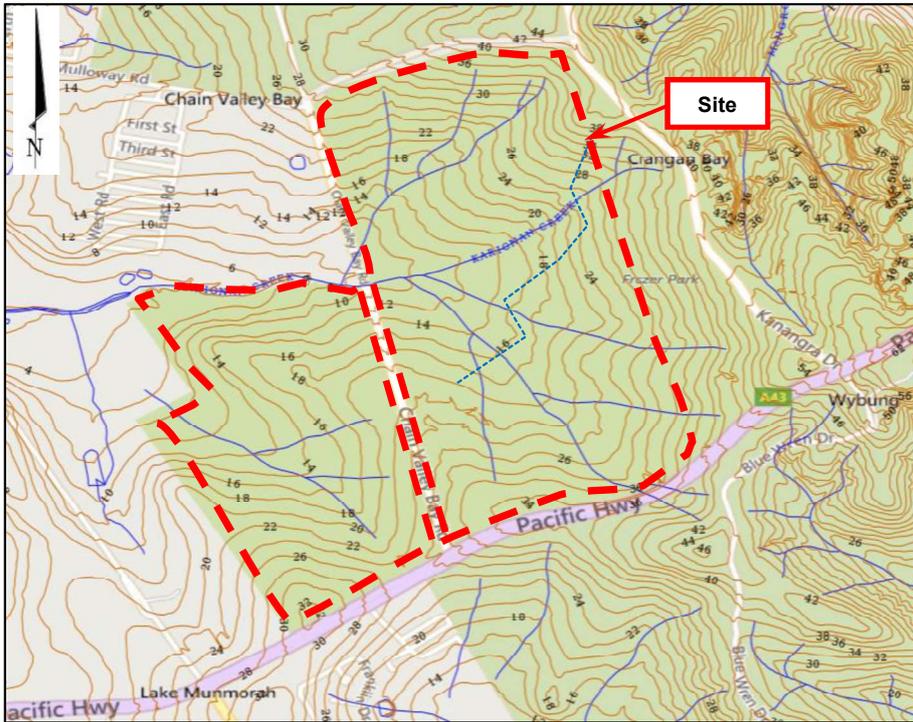
*Furthermore, it is considered that the portions of the sites that are currently proposed to be developed for residential allotments and roads do not pose any significant risk with regard to landslide or slope instability. Construction of the development will still need to adopt suitable excavation support measures and safe batter slopes, and these would be determined at a later stage...*

#### **4. Topography**

Review of the local topographic mapping and site observations indicated that surface levels at the site generally slope toward Karignan Creek. Surface levels at Lot 642 fall from approximately RL 32 m in the southern section to RL 10 m along the northern boundary of the lot i.e., where Karignan Creek meets Chain Valley Bay Road. With regard to Lot 100 and Lot 644, Karignan Creek flows through the centre of the lot, and has minor tributaries extending towards the north and south. As a result, surface levels at Lot 100 and Lot 644 range from approximately RL 34 m at the southern and northern boundaries of the lot to RL 12 m in the central western portion of the lot, i.e. where Karignan Creek meets Chain Valley Bay Road (refer to Figure 3).

Surface water would flow into Karignan Creek and its tributaries and some would be expected to infiltrate the soils at the site.

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)

## 5. Adjacent Site Uses

Surrounding land uses include the following:

- North – Bushland and residential properties;
- East – Bushland;
- South – Pacific Highway and beyond this, residential properties and bushland; and
- West – Schools including St Brendan’s Catholic Primary School, Lake Munmorah Public School, Lake Munmorah High School, and St Brigid’s Catholic College and a church.

## 6. Regional Geology and Soil Landscape

### 6.1 Geological Setting

Reference to the Gosford-Lake Macquarie 1:100,000 Geology Sheet Provisional 2012 indicates that Site 1 is underlain by Munmorah Conglomerate (identified as ‘Rnm’ in Figure 4), which typically comprises conglomerate, pebbly sandstone, siltstone and claystone. This is overlain in the areas close to Karignan Creek by Quaternary Alluvium (identified as ‘Qa’ in Figure 4) which typically comprises a mix of gravel, sand, silt and clay.

## 6.2 Soil Landscape

Reference to Gosford-Lake Macquarie 1:100,000 Soil Landscapes Sheet indicates that the majority of the site is underlain by Doyalson Erosional soil landscape (identified as 'aw' in Figure 5). Additionally, areas in close proximity to the Karignan Creek are mapped as Wyong Alluvial (identified as 'wy' in Figure 5) and Tacoma Swamp (identified as 'ts' in Figure 5) soil landscapes. Additionally, in the southern section, there is a small area mapped as disturbed terrain (identified as 'xx' in Figure 5) and this is associated with a network of tracks and mounds used by dirt bike and off-road enthusiasts.



**Figure 4: Site Geology Mapping** (image sourced from Microsoft Virtual Earth with Gosford-Lake Macquarie 1:100,000 Geology Sheet Provisional 2012 overlay)



### 6.2.2 Wyong Alluvial

- Identified as 'wy' in Figure 5;
- Landscape – broad poorly drained floodplains and alluvial flats, slope gradients <3%, local relief <10 m, meander scolls, oxbows and swamps are common;
- Extensively cleared open forest;
- Current land use includes mostly cattle and horse grazing on improved pastures, rural subdivisions, hobby farms, industrial and urban areas;
- Limitations –
  - Flooding;
  - Mine subsidence district;
  - Seasonal waterlogging;
  - High foundation hazard;
  - Localised permanent waterlogging;
  - Localised stream bank erosion;
  - Localised acid sulfate potential;
  - Strongly acid, poorly drained;
  - Impermeable soils of low fertility; and
  - Saline subsoils.

Overall, mapping indicates high to severe limitations for urban development due to the flooding hazard, generally low limitations for cultivation and generally low to moderate limitations for grazing for the Wyong Alluvial soils landscape.

### 6.2.3 Tacoma Swamp

- Identified as 'ts' in Figure 5;
- Landscape – swampy floodplains and closed depressions, slope gradients <3%, local relief <5m;
- Uncleared swampland;
- Mine subsidence district;
- Current land use is mostly uncleared swampland, some areas have been filed or partially drained;
- Limitations –
  - Flooding;
  - Strongly saline;
  - Permanent waterlogging;
  - Potential acid sulfate soil;
  - Foundation hazard;
  - Organic soil; and
  - Very low fertility.

Overall, mapping indicates severe limitations for urban development, cultivation and grazing for the Tacoma Swamp soils landscape.

#### 6.2.4 Disturbed terrain

- Identified as 'xx' in Figure 5;
- Landscape – level plain to hummocky terrain, extensively disturbed by human activity including complete disturbance, removal or burial of soil, local relief and slopes are highly variable;
- Original vegetation completely cleared, replaced with turf or grassland;
- Mine subsidence district;
- Current land use includes all land uses which have extensively disturbed the soil and landscape over large areas, predominantly quarries, gravel pits and sandmining. Other current uses include rubbish tips, power stations, sewerage schemes and various landfill areas;
- Limitations are highly variable depending on the site but may include –
  - Mass movement hazard;
  - Steep slopes;
  - Foundation hazard;
  - Unconsolidated areas;
  - Impermeable soils;
  - Poor drainage;
  - Erosion hazard; and
  - Very low fertility and toxic materials.

Overall, mapping indicates that due to variability, geotechnical engineering advice should be sought prior to urban development within area mapped as disturbed terrain. Given the disturbance, there are obviously high to severe limitations for cultivation and grazing.

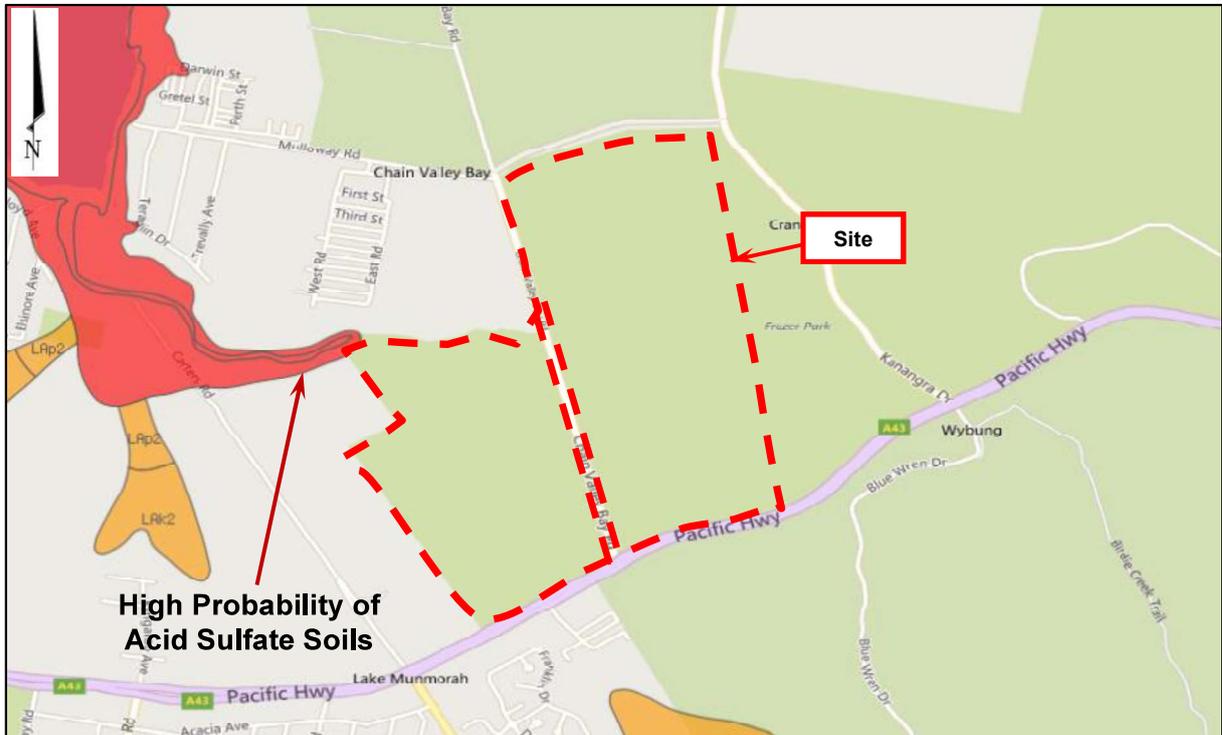
## 7. Acid Sulfate Soils

The local acid sulfate risk mapping indicates that the north-western boundary of the site adjoins an area mapped as having a high risk of acid sulfate soils within 1 m of the ground surface. The remainder of the site is located within an area mapped as having no known occurrence of acid sulfate soils. Figure 6 is a street map of the local area and shows the site in relation to areas mapped as having a probability of acid sulfate soils.

It is noted that the mapping generally only provides an indication of the presence/absence of acid sulfate soils. In this regard, during the site walkover, waterlogged areas were present in the central portions of Lot 100 and the northern portion of Lot 642 which are associated with Karignan Creek. These correspond with the areas mapped as Quaternary Alluvium 'Qa' in Figure 4, which also match the areas mapped as Wyong Alluvial 'wy' and Tacoma Swamp 'ts' in Figure 5.

Development within Site 1 is proposed in areas that are mapped as being underlain by the Munmorah Conglomerate formation ('Rnm' in Figure 4) and do not encroach into the areas mapped as Quaternary Alluvium ('Qa'). For the current indicative subdivision layout, acid sulfate soils are, therefore, not considered to be an issue. If the areas of proposed development were to change such that work is expected to encroach into the lower-lying areas associated with the watercourses, then further review and assessment for the presence of acid sulfate soils would be required.

This conclusion is supported by observations made during the site walkover where residual soils were exposed along tracks within the current proposed development areas.



**Figure 6: Site Acid Sulfate Soil Risk Mapping** (image sourced from Microsoft Virtual Earth with Acid Sulfate Risk Mapping Sheet overlay)

## 8. Groundwater

Given the topography and geology, and noting the presence of Karignan Creek within the site, it is considered likely that a permanent groundwater table is present at relatively shallow depths (i.e. less than 4 m to 6 m depth) in the central portions of Site 1. It should be noted that groundwater levels are transient and can be affected by factors such as soil permeability and recent weather conditions.

Figure 7 is a street map of the local area and shows the site in relation to the local registered groundwater bores.



**Figure 8: 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 Industries Water] indicated that there are 11 registered groundwater bores within a 2.5 km distance of the site. The information available from the reports suggests that the closest bore (GW200836) was installed for monitoring purposes to a depth of 210 m, and the available information for this bore suggests that sandstone bedrock was encountered at a depth of 5 m.

Given the site topography in relation to the locations of the bores and the presence of intermittent watercourses within the site, it is considered unlikely that any potential groundwater contamination from the site, if present, would impact any registered groundwater bores.

## **9. Comments**

### **9.1 Agricultural potential / suitability**

The soil landscape mapping indicates that the majority of the site would be suitable for grazing but not suitable for cultivation. This is largely due to the majority of the site having low fertility soils. Current land uses for the soil landscapes mapped within the site area include grazing and 'hobby farming'.

### **9.2 Mining / mine subsidence**

The whole site lies within the proclaimed Swansea North Entrance Mine Subsidence District. Development on the site will be subject to the approval of Subsidence Advisory NSW (formerly the NSW Mine Subsidence Board).

### **9.3 Groundwater**

Given the topography and geology and the presence of Karignan Creek within the site, it is considered that a permanent shallow groundwater table (less than about 6 m depth) could be present. A shallower perched groundwater level could be present in the alluvium associated with the creek system. No groundwater data was available for the site; however, limited data was available for the area to the north-east. Groundwater levels were not available for the bores located north-east of the site.

### **9.4 Areas of soft / unsuitable ground and Potential Flooding**

Based on the mapping, areas of soft or unsuitable ground would be located within the areas mapped as Tacoma Swamp which are likely to experience flooding and permanent waterlogging. In addition, part of the site mapped as Wyong Alluvial and Doyalson Erosional are also likely to experience localised flooding and seasonal waterlogging.

### **9.5 Slope and drainage**

The mapped and observed (Section 3) slopes across the site range from between <3% and <10%. The majority of the site is also considered to comprise poorly drained floodplains, with the exception of disturbed terrain areas.

### **9.6 Soil erodibility / dispersion**

The majority of the site (areas mapped as Doyalson erosional and disturbed terrain) is considered to have a high erosion and dispersion potential.

## 9.7 Soil permeability

Based on the mapping, the majority of the site is considered to comprise impermeable soils. These impermeable soils are consistent with areas of flooding and localised and seasonal waterlogging.

## 9.8 Salinity potential

Mapping indicates that there may be minor areas of the site with saline subsoils. These areas coincide with the area in the vicinity of Karignan Creek.

## 10. Recommendations for further intrusive investigation

Overall, it is considered that the site is generally compatible with the proposed rezoning for residential subdivision, subject to further remedial works / investigation being completed as follows:

- Removal of all existing fly-tipped material;
- Further targeted intrusive investigations to obtain quantitative data on the contamination status of the site;
- Possible preliminary investigation for acid sulfate soils if excavations are proposed in areas of alluvial soils; and
- Detailed geotechnical assessment once layout of roads, services and lots are finalised.

## 11. Limitations

Douglas Partners (DP) has prepared this report for this project at Site 1 – Lake Munmorah Rezoning in accordance with DP's proposal CCT170104 dated 10 October 2017 and acceptance received from Chris Smith from ADW Johnson on behalf of Darkinjung Local Aboriginal Land Council (DLALC) dated 19 October 2017. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Darkinjung Local Aboriginal Land Council and ADW Johnson 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.

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 the Comments section of 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 components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

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**Douglas Partners Pty Ltd**

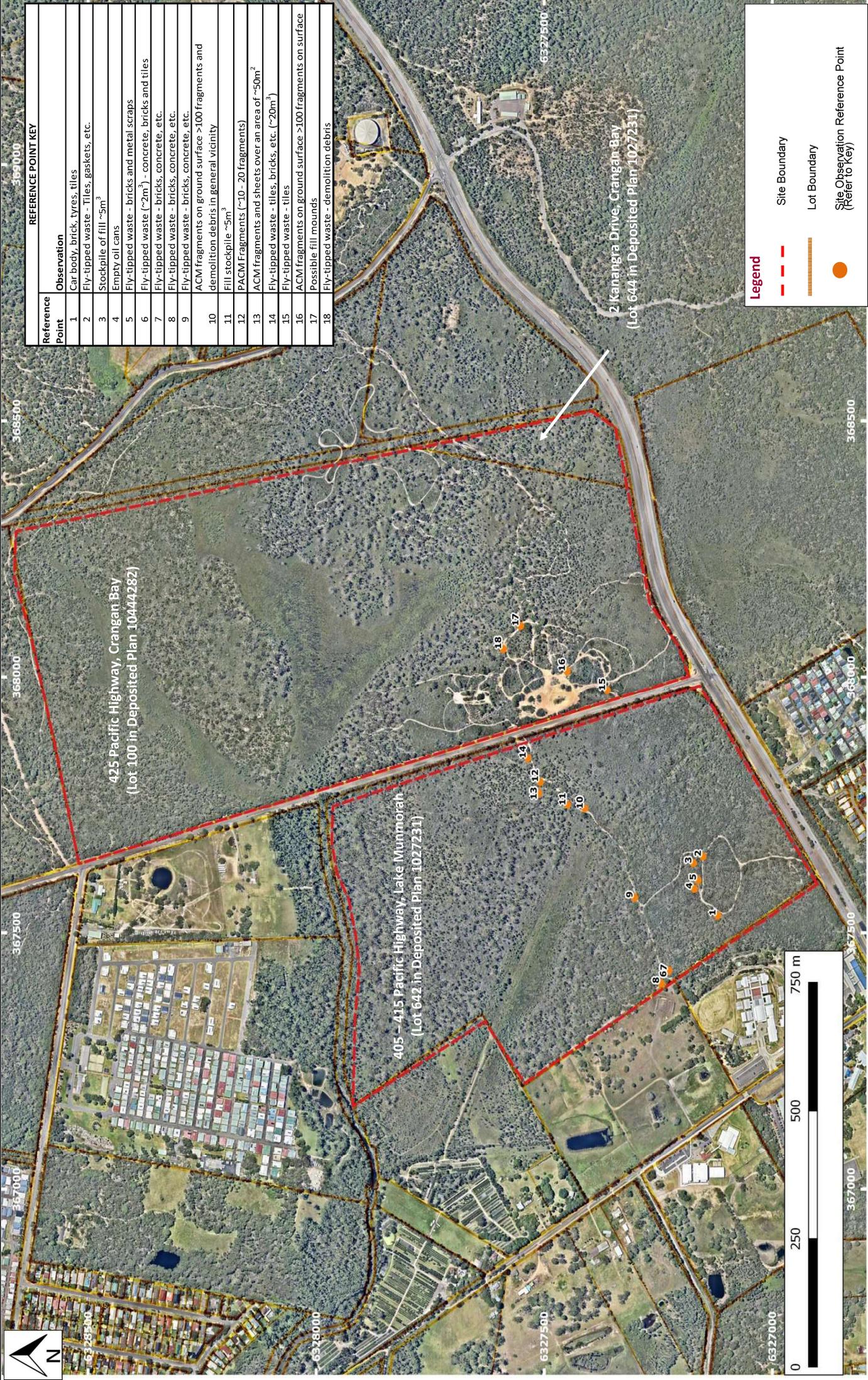
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## Appendix A

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Drawing 1

Proposed Subdivision Layout



REFERENCE POINT KEY	
Reference Point	Observation
1	Car body, brick, tyres, tiles
2	Fly-tipped waste - Tiles, gaskets, etc.
3	Stockpile of fill ~5m <sup>3</sup>
4	Empty oil cans
5	Fly-tipped waste - bricks and metal scraps
6	Fly-tipped waste (~2m <sup>2</sup> ) - concrete, bricks and tiles
7	Fly-tipped waste - bricks, concrete, etc.
8	Fly-tipped waste - bricks, concrete, etc.
9	Fly-tipped waste - bricks, concrete, etc.
10	ACM fragments on ground surface >100 fragments and demolition debris in general vicinity
11	Fill stockpile ~5m <sup>3</sup>
12	PACM fragments (~10 - 20 fragments)
13	ACM fragments and sheets over an area of ~50m <sup>2</sup>
14	Fly-tipped waste - tiles, bricks, etc. (~20m <sup>3</sup> )
15	Fly-tipped waste - tiles
16	ACM fragments on ground surface >100 fragments on surface
17	Possible fill mounds
18	Fly-tipped waste - demolition debris

Legend	
	Site Boundary
	Lot Boundary
	Site Observation Reference Point (Refer to Key)

 <b>Douglas Partners</b> Geotechnics   Environment   Groundwater		CLIENT: Darlington Local Aboriginal Land Council OFFICE: Central Coast SCALE: As shown	
Base Image Source: Nearmap		DATE: 13.03.2017	
<b>Site Plan and Features</b>		DRAWN BY: NSA	
<b>Preliminary Site Investigation for Contamination</b>		PROJECT: 83115.00	
<b>405 - 415 Pacific Highway, Lake Munmorah, 425 Pacific Highway, Crangan Bay and 2 Kanatigra Drive, Crangan Bay</b>		DRAWING No: 1	
		REVISION: 0	



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## **Appendix B**

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Notes About This Report

# About this Report

# Douglas Partners



## 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

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

## 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.