Douglas Partners
Geotechnics / Environment / Groundwater

Douglas Partners Pty Ltd
ABN 75 053 980 117
www.douglaspartners.com.au
Unit 2, 73 Sheppard Street
Hume ACT 2620
PO Box 1487
Fyshwick ACT 2609
Phone (02) 6260 2788

Goulburn Mulwaree Council
184-194 Bourke Street
Goulburn NSW 2580

Attention: Andrew Cartwright

Email: Andrew.Cartwright@goulburn.nsw.gov.au

Project 94319.02
1 October 2020
R.001.Rev0
PJS

Additional Excavated Natural Material Assessment
Proposed Site Development
20-24 Lockyer Street, (Lot 2, DP1238241), Goulburn

1. Introduction

This letter report presents the results of further environmental tested conducted by Douglas Partners Pty Ltd (DP) following segregation undertaken on a stockpile generated from works associated with the Tait Crescent extension, located at 12 Tait Crescent, Goulburn. The works were commissioned in an email dated 4 March 2020 by James Phan of Goulburn Mulwaree Council (Council).

DP have previously undertaken an excavated natural material assessment for two stockpiles located at 12 Tait Crescent (property address now known as 20-24 Lockyer Street). The assessment was detailed in '*Report on Excavated Natural Material Assessment, Tait Crescent Extension, 12 Tait Crescent, Goulburn, NSW*' (report reference 94319.01.R.001.Rev0, dated 26 November 2019).

The assessment was undertaken in order to investigate whether the stockpiled material met the definition of Excavated Natural Material (ENM) as defined in '*The Excavated Natural Material Order 2014*' (the ENM Order), a resource recovery order made under Part 9, Claus 93 of the '*Protection of the Environmental Operations (Waste) Regulation 2014*'.

The two stockpiles assessed (Stockpiles SP1 and SP2) were generated during the extension of Tait Crescent (now known as Lockyer Street). Council proposed to reuse the material as engineered fill on the site and it is understood the material will be used to in-fill on-site dams. The results of the assessment indicated that the material in the stockpiles generally met the requirements of the definition of ENM, With the exception of a small area of Stockpile SP2, in the vicinity of test pit SP2-4 where the presence of foreign materials exceeded the maximum allowable concentration detailed in Table 4 of the ENM Order. It was recommended that this material was excavated and disposed off-site. It was considered that once the material in the vicinity of test pit SP2-4 was removed, the stockpile would meet the requirements of the ENM Order.

The objectives of the works was to oversee the removal of the unsuitable material located in Stockpile SP2.

This report must be read in conjunction with the notes entitled *'About This Report'* in Appendix A and other explanatory notes, and the report should be kept in its entirety without separation of individual pages or sections. This report only applies to the material contained within the subject stockpile.

2. Scope of Works

The scope of works for the ENM Assessment is summarised below:

- Review of previous environmental works undertaken at the site;
- Direct and oversee excavation of the unsuitable material;
- Collection of soil samples to validate that unsuitable material had been removed;
- Laboratory analysis of soil samples at a NATA accredited laboratory for foreign material listed in Table 4 of the ENM Order; and
- Provision of this report which outlines the works undertaken and assesses the results of validation samples for the classification of the stockpiled material as ENM.

3. Site Identification and Description

3.1 Site Identification

The site identification information is summarised in Table 1.

Table 1: Site Identification Details

Item		Details
Site Address		20-24 Lockyer Street, Goulburn
Current land use		Agricultural
Block and Section Number (see Drawing 1, Appendix B)		Lot 2, DP1238214
State Plan Zoning		IN1: General Industrial RU2: Rural Landscape
Council		Goulburn Mulwaree Council
Approximate Site Area		13 ha
Proposed future land-use		Unspecified commercial/industrial and large lot residential use.
Surrounding Land Use	**North:**	Industrial
	South:	Hume Highway and undeveloped open land beyond
	East:	Undeveloped open land with industrial/commercial properties beyond.

Item		Details
	West:	Undeveloped open land with light industrial/commercial properties beyond.

3.2 Site Layout and Description

The site comprises an irregular area of approximately 13 ha. The newly constructed Lockyer Street splits the site into two parcels of land in the north-western part of the site. The parcels of land are of unequal size, with the smaller parcel present to the north of Lockyer Street and the larger parcel to the south-east of Lockyer Street.

A storage shed is located along the south-western boundary of the site. The land to the east of the storage shed is undeveloped with several dams across the drainage line present within the site. Three large stockpiles are located within the northern and central portions of the site and one smaller stockpile is located in the north-west corner of the site. Two of these stockpiles (Stockpiles SP1 and SP2) were the subject of the ENM assessment (DP 2019) from which the recommendation of segregating unsuitable material from Stockpile SP2 was made.

Access to the site is via Lockyer Street. The highest elevation point is approximately 691 m Australian Height Datum (AHD) within the western area and the lowest elevation point is approximately 654 m AHD the south-east corner of the site. The maximum north-south dimensions and east-west dimensions are approximately 325 m and 470 m, respectively.

3.3 Stockpile Description

Stockpile SP2 is the subject of this assessment. The stockpile is located in the central portion of the site, to the east of a series of dams.

The stockpile is large and graded so that there are no steep sides. The stockpile is irregularly shaped with maximum dimensions of 120 m long and 60 m wide and a maximum height of approximately 1.5 m. Towards the south of the stockpile, the height is approximately 1.5 m. The area where unsuitable material was identified was in the vicinity of test pit SP2-4, located in the south-western part of the stockpile.

The site location, stockpile location and site layout are presented in Drawing 1, Appendix B.

4. Field Work Methodology

A suitably qualified environmental consultant mobilised to site on 18 March 2020 to direct and observe the segregation and removal of unsuitable material from the stockpile. Council provided a tracked excavator and operator to remove the unsuitable material.

Test pit SP2-4 was located using GPS coordinates obtained during the ENM assessment (DP, 2019). Starting at the location of test pit SP2-4, material was excavated the full depth of the stockpile, a minimum distance of 2 metres in all directions. Excavated material was loaded directly into a waiting truck for disposal at a licensed waste disposal facility.

During excavation, the DP consultant observed the faces of the resulting excavation for the presence of foreign materials. Where foreign material was observed within the excavation faces, the excavator operator was directed to extend the excavation to remove the material.

The extent of the resulting excavation was approximately 3 m long and 2 m wide with a depth of approximately 1.5 m below the surface of the stockpile. The extent of the excavation is presented on Drawing 2, Appendix B.

4.1 Sample Collection and Handling

Sampling was undertaken directly from the exposed surface of excavations. Sampling data was recorded to comply with routine Chain of Custody requirements.

Samples to validate the removal of localised foreign material impacted areas comprised the following:

- Collection of an approximately 6 kg bulk sample for laboratory analysis for foreign material;
- If the visual assessment indicated that foreign material was not present, the stockpiled material was considered to meet the requirements of ENM; and
- If the visual assessment indicated that foreign material would likely exceed the assessment criteria, then further excavation was required.

The general sampling, handling, transport and tracking procedures comprised:

- The use of stainless steel sampling equipment;
- Washing of all non-disposable sampling equipment, such as hand tools, in a 3% solution of phosphate-free detergent (Decon 90), then rinsing with 'clean' water prior to each sample being collected; transfer of the sample plastic bags, with each plastic bag individually sealed to eliminate cross contamination during transportation to the laboratory;
- Labelling of the sample containers with individual and unique identification including project and sample number; and
- Use of Chain of Custody documentation to enable cross-checking of sample tracking and custody at any point in the transfer of samples from the field to hand-over to the laboratory.

Douglas Partners Laboratory in Wollongong (a NATA accredited laboratory) was commissioned to conduct the sample analysis.

Laboratory analytical methods are as stated in the laboratory certificates of analysis presented in Appendix C.

5. Assessment Criteria

The ENM Order provides a definition of excavated natural material as *naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that has:*

a) Been excavated from the ground, and

b) Contains at least 98% (by weight) natural material, and

c) Does not meet the definition of Virgin Excavated Natural Material in the Act.

Excavated natural material does not include material located in a hotspot; that has been processed; or that contains asbestos, Acid Sulfate Soils (ASS), Potential Acid Sulfate soils (PASS) or sulfidic ores.

The ENM Order also states that the *generator must not supply excavated natural material waste to any person if, in relation to any of the chemical and other attributes of the excavated natural material:*

- *The chemical concentration or other attribute of any sample collected and tested as part of the characterisation of the excavated natural material exceeds the absolute maximum concentration or other value listed in Column 3 of Table 4; and*
- *The average concentration or other value of that attribute from the characterisation of the excavated natural material (based on the arithmetic mean) exceeds the maximum average concentration or other value listed in Column 2 of Table 4; and*
- *The absolute maximum concentration or other value of that attribute in any excavated natural material supplied under this order must not exceed the absolute maximum concentration or other value listed in Column 3 of Table 4.*

Given that the only attribute that did not meet the values presented in Table 4 of the ENM Order in the previous assessment was foreign materials (rubber, plastic, bitumen, paper, cloth, paint and wood, Row 18 of Table 4), for the purpose of this assessment, the only the values of Row 18 have been applied as assessment criteria, to validate the removal of unsuitable material.

6. Field Work Observations

Excavation of the unsuitable material in the vicinity of test pit SP2-4 was undertaken on 18 March 2020. During the excavation, a suitably qualified environmental scientist from DP was on site to visually assess the excavated material.

Under the monitoring and reporting of DP, the unsuitable material was removed to the extent required. The resulting excavation was approximately 3 m long, 2 m wide and 1.5 m deep.

Observations made during the excavation indicated that little to no foreign material was observed in the sides and base of the resulting excavation.

Site Photographs taken during the excavation are presented in Appendix D, and the extent of the excavation is presented in Drawing 2, Appendix B.

7. Laboratory Results

The results of the laboratory analysis undertaken on the soil samples are presented in the laboratory certificate of analysis, Appendix C. The results of the validation samples indicated that the foreign material (comprising rubber, plastic, bitumen , paper, cloth, paint and wood) were below the absolute maximum concentration specified in Row 18 of Table 4 of the ENM Order (2014).

8. Conclusions

DP considers that following the removal of unsuitable material in the vicinity of test pit SP2-4, the remaining material comprising stockpile SP2 would meet the requirements of Excavated Natural Material' with reference to NSW EPA Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – The Excavated Natural Material Order 2014, November 2014. The soils could be considered for re-use on-site or on another site in accordance with the requirements of the ENM exemption. It is noted that ENM materials can only be applied to land as engineered fill or used in earthworks.

It is noted that the conditions set out in the relevant Resource Recovery Exemption are designed to minimise the risk of potential harm to human health or the environment, however, they do not guarantee that human health or the environment will not be harmed. The suitability of the exempted material should be confirmed with respect to the particular use proposed (i.e. areas fit for purpose), as stated in the relevant exemptions. The geotechnical properties of the materials should also be considered for the intended purpose.

During excavation and reuse of the material, it is recommended that appropriate inspections are conducted and if any materials are encountered that are different to the materials sampled and tested or exhibit signs of contamination (e.g. anthropogenic inclusions, staining or odours), these should be appropriately segregated for further assessment. The handling, transport and disposal / re-use of the materials should be conducted in accordance with regulatory and statutory requirements.

9. References

Douglas Partners Pty Ltd (2019) '*Report on Preliminary Site Investigation for Contamination, Proposed Commercial/Industrial and Residential Development, 12 Tait Crescent, Goulburn*', Reference 94319.00.R.001.Rev0, dated 24October 2019

Goulburn Mulwaree Council (2009), *Local Environment Plan*

NSW EPA, "Waste Classification Guidelines – Part 1: Classifying Waste, November 2014".

NSW EPA, "Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 – The Excavated Natural Material Order 2014", November 2014.

10. Limitations

Douglas Partners (DP) has prepared this report for this project at 20-24 Lockyer Street, Goulburn following instruction received from James Phan of Goulburn Mulwaree Council dated 4 March 2020. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of Goulburn Mulwaree Council 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.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

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 between and beyond the sampling and/or testing locations. 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.

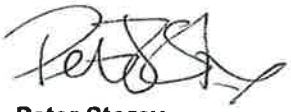
This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

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

Please contact the undersigned if you have any questions on this matter.

Yours faithfully
Douglas Partners Pty Ltd



Peter Storey
Senior Environmental Scientist

Reviewed by

Dean Woods
Senior Associate

Appendices:

Appendix A:	About this Report
Appendix B:	Drawings
Appendix C:	Laboratory Certificate of Analysis
Appendix D:	Site Photographs

Appendix A

About This Report

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

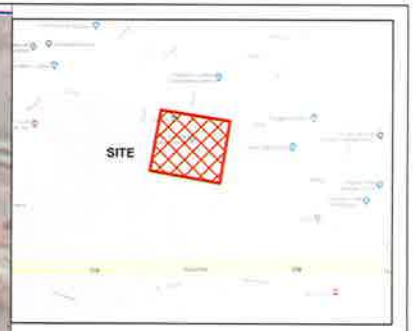
Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate 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.

Appendix B

Drawings



Locality Plan

LEGEND

- Approximate Site Boundary
- Stockpile Location
- Drainage Line
- Dam/Pond Location
- Approximate Test Location

0 20 40 60 80 100
1:2000 @ A3

NOTE: Base drawing from nearmap.com.au, dated 9 April 2019)

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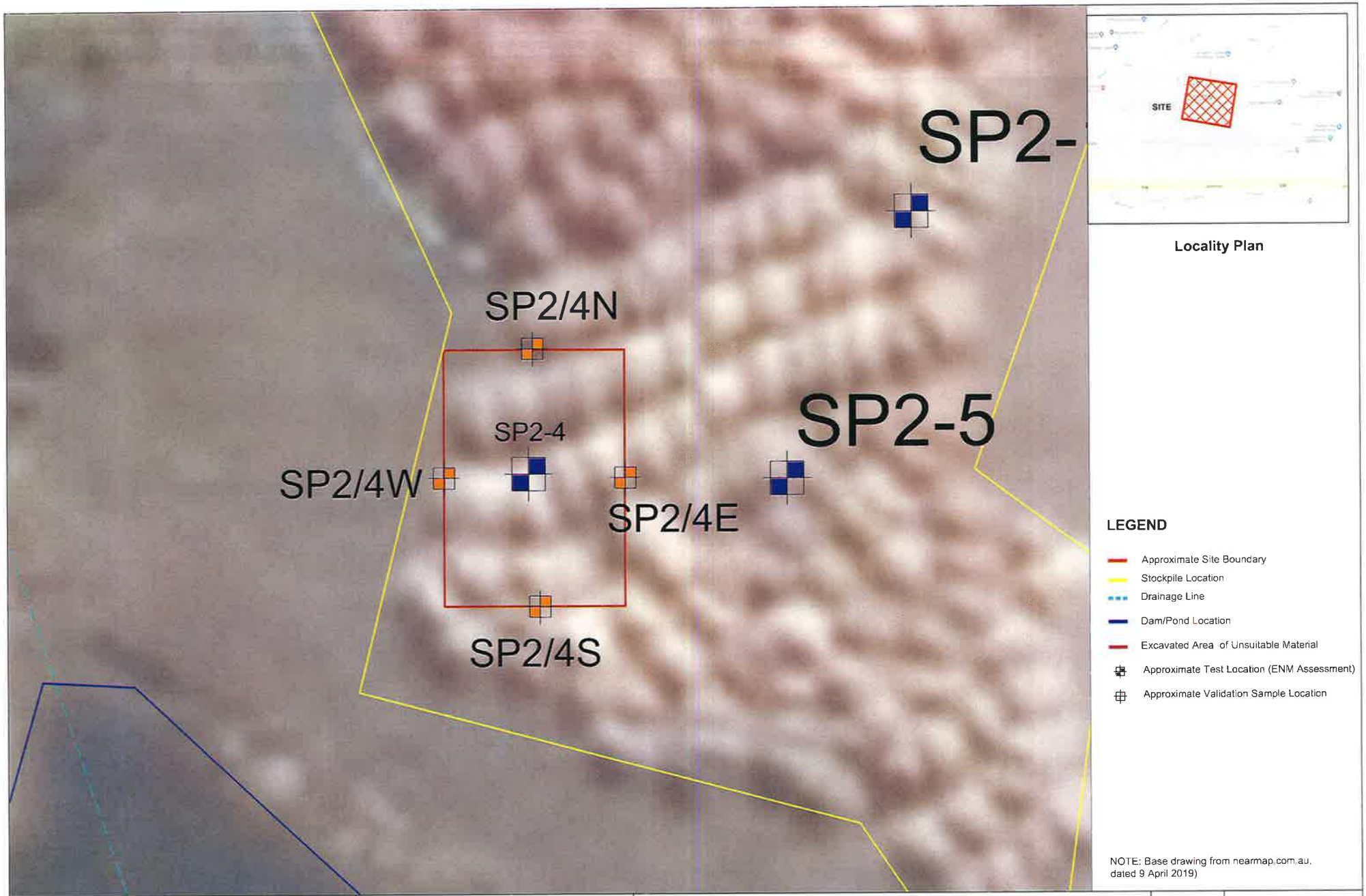
Geotechnics | Environment | Groundwater

CLIENT: Goulburn-Mulwaree Council		
OFFICE: Canberra	DRAWN BY: SDG	
SCALE: As Shown	DATE: 25.09.2020	

TITLE: **Site Layout and Features Plan**
Proposed Industrial Development
12 Tait Crescent, Goulburn

PROJECT No:	94319.02
DRAWING No:	1
REVISION:	0



Locality Plan

LEGEND

- Approximate Site Boundary
- Stockpile Location
- Drainage Line
- Dam/Pond Location
- Excavated Area of Unsuitable Material
- Approximate Test Location (ENM Assessment)
- Approximate Validation Sample Location

NOTE: Base drawing from nearmap.com.au, dated 9 April 2019)

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: Goulburn-Mulwaree Council		
OFFICE: Canberra	DRAWN BY: SDG	
SCALE: As Shown	DATE: 25.09.2020	

TITLE: **Extent of Unsuitable Material Removal**
Proposed Industrial Development
12 Tait Crescent, Goulburn

PROJECT No:	94319.02
DRAWING No:	2
REVISION:	0

Appendix C

Laboratory Certificate of Analysis

Material Test Report

Douglas Partners
Geotechnics / Environment / Groundwater
Douglas Partners Pty Ltd
Unanderra Laboratory
Unit 1/1 Luso Drive Unanderra NSW 2526
Phone: (02) 4271 1836
Fax: (02) 4271 1897
Email: anes.ibricic@douglaspartners.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

NATA
WORLD RECOGNISED ACCREDITATION

Approved Signatory: Anes Ibricic
Laboratory Manager
NATA Accredited Laboratory Number: 828

Report Number: **94319.01-1**
Issue Number: 1
Date Issued: 30/04/2020
Client: Goulburn Mulwaree Council
184-194 Bourke Street, Goulburn NSW 2580
Contact: Martin Wragge-Morley
Project Number: 94319.01
Project Name: Excavated Natural Material Assessment
Project Location: 12 Tait Crescent, (Lot 2, DP1238241), Goulburn
Work Request: 5574
Date Sampled: 18/03/2020
Dates Tested: 23/03/2020 - 27/04/2020
Sampling Method: Sampled by Engineering Department
The results apply to the sample as received

Foreign Materials Content of Recycled Crushed Concrete (RMS T276)						
Sample Number	WO-5574A	WO-5574B	WO-5574C	WO-5574D		
Date Sampled	18/03/2020	18/03/2020	18/03/2020	18/03/2020		
Sample Location	SP2/4 N	SP2/4 S	SP2/4 W	SP2/4 E		
Sample Depth	0 - 1.5m	1.0 - 1.5m	0 - 1.2m	1.0 - 1.8m		
Material	Brown - pale brown gravelly clay	Brown - pale brown gravelly clay	Brown - pale brown gravelly clay	Brown - pale brown gravelly clay		
Type I (%)	37.4	41.7	29.3	35.0		
Type II (%)	3.5	4.7	3.1	1.3		
Type III (%)	0.0	0.1	0.1	0.0		

Legend
Type I - Metal, Glass, Asphalt, Stone, Ceramics and Slag (other than blast furnace slag)
Type II - Plaster, Clay lumps and other Friable Material
Type III - Rubber, Plastic, Bitumen, Paper, Cloth, Paint, Wood and other Vegetable Matter

Appendix D

Site Photographs

Photo 1: View of excavation extent

Photo 2: View of excavation extent

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs**	PROJECT:	94319.02
	12 Tait Crescent	Plate	1
	Goulburn, NSW	REV:	A
	Client: Goulburn Mulwaree Council	DATE:	23-Sep-20

Photo 3: View of excavation extent

Photo 4: View of excavation extent

Douglas Partners Geotechnics | Environment | Groundwater	**Site Photographs**	PROJECT:	94319.02
	12 Tait Crescent	Plate	2
	Goulburn, NSW	REV:	A
	Client: Goulburn Mulwaree Council	DATE:	23-Sep-20