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Geotechnics / Environment / Groundwater

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EBH Environmental Services Pty Ltd
60 Donaldson Street
North Wyong NSW 2259

Project 82880.00
15 September 2022
R.038.Rev0
MJH:bjk

Attention: David Burgun

Email: david@ebhenvironmentalservices.com.au

Characterisation Sampling and Testing - June 2022 (Lot 47)
Recovered Aggregate Assessment Program
60 Donaldson Street, North Wyong

1. Introduction

This letter report presents the results of characterisation sampling and testing of recovered aggregate processed at the EBH Environmental Services Pty Ltd (EBH) facility, located at 60 Donaldson Street, Wyong. This assessment was commissioned by David Burgun of EBH. The sampling and testing was undertaken with respect to "The Recovered Aggregate Order 2014" developed under the Protection of the Environment Operations (Waste) Regulation 2014 (EPA, 2014a).

It is understood that materials are processed on a continual basis and that characterisation and routine testing is required. It is further understood that EBH is processing multiple waste streams, however, this characterisation report pertains to generally rock, concrete and brick input materials that are crushed and screened to produce a 20 mm minus product identified as "Lot 47".

This assessment focuses only on the processed stockpiled materials identified and described in this report. It does not cover any other materials that may be removed for disposal or recycling.

2. Scope of Works

Sampling was conducted with respect to Sections 4.1 and 4.2 of "The Recovered Aggregate Order 2014" (EPA, 2014a) and to Australian Standard 1141.3.1-2012 "Methods for Sampling and Testing Aggregates – Sampling – Aggregates" (SA, 2012). The scope of the characterisation sampling and testing comprised:

- Inspection of processed stockpile and excavation of exploratory test pits into the stockpile to facilitate the collection of representative samples;
- Sampling in accordance with Section 4.2 of "The Recovered Aggregate Order 2014" (EPA, 2014a);
- Testing of the recovered samples for the chemicals and other attributes as specified in Table 1 of "The Recovered Aggregate Order 2014" (EPA, 2014a); and

- Provision of this characterisation sampling and testing assessment report classifying the identified materials in accordance with “The Recovered Aggregate Order 2014” (EPA, 2014a).

Asbestos testing was not completed for this characterisation sampling and testing event as it is not required by EPA (2014a).

3. Site Description

EBH Environmental Services (EBH) facility is located at 60 Donaldson Street, Wyong (refer Figure 1).

Figure 1 – Site Locality (sourced from Metromap.com.au, dated 15 August 2021)

At the time of the characterisation sampling (17 June 2022) the processed (crushed and screened) materials had been placed into a single stockpile identified as Lot 47 (select material). The stockpile comprised concrete with minor brick/tile (20 mm minus product).

4. Assessment Criteria

The following guideline was used as comparative criteria to assess the environmental quality of the samples collected from the stockpiled materials:

- "The Recovered Aggregate Order 2014" (EPA, 2014a). This order sets out the requirements for sampling and testing of Recovered Aggregate materials. The "Maximum Average Concentration for Characterisation Testing" and "Absolute Maximum Concentration" of chemical and other material property results of the stockpiled materials need to comply with the threshold levels for the material to be classified as Recovered Aggregate.

5. Field Work Methods

Exploratory test pits were excavated into the stockpiled materials. The test pits were completed to facilitate a visual inspection and sampling of the materials by an experienced technician.

As part of the investigation, 20 composited samples (i.e. each composited sample comprised five discrete sub-samples combined into a single sample in the field) were collected from each of the processed concrete materials and analysed in a NATA accredited laboratory. The samples were stored on ice during transportation to the laboratory.

The number of samples collected met the frequency specified in Section 4.2.1 of "The Recovered Aggregate Order 2014" (EPA, 2014a) for characterisation sampling.

Environmental sampling was performed with reference to standard operating procedures outlined in the DP *Field Procedures Manual*. All sampling data was recorded on DP's Chain-of-Custody sheets, and the general sampling procedure comprised:

- Changing of disposable gloves between each sampling event to minimise the risk of cross-contamination;
- Decontaminating sampling equipment using a 3% solution of phosphate free detergent (Liquinox) and tap water prior to collecting each sample;
- Transferring samples into laboratory-prepared glass jars and bulk sampling bags;
- Labelling sample containers with individual and unique identification, including project number, sample location and sample depth; and
- Placing the glass jars into a cooled, insulated and sealed container while on site.

6. Field Work Observations

The stockpiled materials were assessed on 17 June 2022. Each exploratory test pit encountered consistent stockpile conditions comprising grey sandy gravel (concrete and trace brick/tile). Only very minor quantities of foreign materials were observed within the stockpiled materials, estimated to be less than the threshold levels specified in Table 1 of "The Recovered Aggregate Order 2014" (EPA, 2014a). The foreign materials observed comprised metal, plastic and wood.

7. Laboratory Results

Twenty (20) composited samples collected from stockpiled processed waste stream (i.e. 20 samples from Lot 47) were analysed for the following suite of contaminants nominated in "The Recovered Aggregate Order 2014" (EPA, 2014a). The analysis was undertaken by Envirolab Services Pty Ltd (a NATA accredited laboratory):

- Metals (As, Cd, Cr, Cu, Hg, Pb, Ni and Zn); and
- Electrical conductivity (EC).

Testing for the specified Foreign Materials Content (viz. metal, plaster, rubber, plastic, paper, cloth, paint, wood and other vegetable matter) was undertaken by DP's in-house earthworks laboratory in accordance with the NSW Roads and Maritime Services (RMS) test method T276 on composite bulk samples.

The results of the laboratory testing are summarised in Table 1.

A review of laboratory quality control test results was undertaken and, in summary, indicated that the accuracy and precision of the soil testing procedures, as inferred by the QA/QC data, is considered to be of sufficient standard to allow the data reported to then be used to interpret contamination conditions.

Table 1 – Results of Recovered Aggregate Routine Testing, Chemicals and Other Material Requirements (Lot 47 Stockpile)

Sample ID	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	EC (dS/m)	Metal %	Plaster %	Rubber, Plastic, Paper, Cloth, Paint, Wood and Other Vegetable Matter %
Lot47/A	<PQL	<PQL	29	24	7	<PQL	28	32	0.56	0.00	0.00	0.00
Lot47/B	<PQL	<PQL	28	23	8	<PQL	29	31	0.69	0.00	0.00	0.00
Lot47/C	<PQL	<PQL	26	19	5	<PQL	28	37	0.66	0.00	0.00	0.00
Lot47/D	<PQL	<PQL	30	30	8	<PQL	32	34	0.58	0.00	0.00	0.00
Lot47/E	<PQL	<PQL	36	30	7	<PQL	38	36	0.67	0.00	0.00	0.00
Lot47/F	<PQL	<PQL	31	24	6	<PQL	31	31	0.60	0.00	0.00	0.00
Lot47/G	<PQL	<PQL	33	26	6	<PQL	33	31	0.65	0.00	0.00	0.00
Lot47/H	<PQL	<PQL	32	25	7	<PQL	35	27	0.65	0.00	0.00	0.00
Lot47/I	<PQL	<PQL	25	23	7	<PQL	26	38	0.88	0.00	0.00	0.00
Lot47/J	<PQL	<PQL	32	32	8	<PQL	31	34	0.63	0.00	0.00	0.00
Lot47/K	<PQL	<PQL	36	29	8	<PQL	34	40	0.58	0.00	0.00	0.00
Lot47/L	<PQL	<PQL	35	24	6	<PQL	31	33	0.77	0.00	0.00	0.00
Lot47/M	5	<PQL	38	29	9	<PQL	35	42	0.59	0.00	0.00	0.00
Lot47/N	<PQL	<PQL	29	22	8	<PQL	29	31	0.57	0.00	0.00	0.00
Lot47/O	<PQL	<PQL	25	19	4	<PQL	26	24	0.66	0.00	0.00	0.00
Lot47/P	<PQL	<PQL	30	33	8	<PQL	25	32	0.61	0.00	0.00	0.00
Lot47/Q	<PQL	<PQL	33	23	7	<PQL	32	32	0.66	0.00	0.00	0.00
Lot47/R	<PQL	<PQL	29	23	7	<PQL	26	31	0.79	0.00	0.00	0.00
Lot47/S	<PQL	<PQL	30	35	9	<PQL	29	39	0.70	0.00	0.00	0.00
Lot47/T	<PQL	0.6	28	27	6	<PQL	33	31	0.70	0.00	0.00	0.00
Average Concentration	<PQL	<PQL	31	26	7	<PQL	31	33	0.66	0.00	0.00	0.00
PQL	4	0.4	1	1	1	0.1	1	1	-	0.01	0.01	0.01
The Recovered Aggregate Order[1]	40 [20]	1.5 [0.5]	120 [60]	150 [60]	150 [75]	1.0 [0.5]	80 [40]	350 [200]	3 [1.5]	2 [1]	0.5 [0.25]	0.3 [0.2]
Waste Guidelines – General Solid Waste[2]	100	20	100	NC	100	4	40	NC	NC	NC	NC	NC

Notes:

[1] *The Recovered Aggregate Order 2014 issued under the Protection of the Environment Operations (Waste) Regulation 2014 – General Exemption Under Part 9, Clause 93 (EPA 2014a)*
Threshold values presented as Absolute Maximum Concentration & [Maximum Average Concentration for Characterisation]

[2] *Waste Classification Guidelines, Part 1: Classifying Waste* – NSW EPA, November 2014, Contaminant threshold values for General Solid Waste (EPA 2014b)

All total soil concentrations reported in mg/kg unless stated otherwise

PQL – Practical Quantitation Limits and a half PQL result was assumed in accordance with EPA 2014a

NC – No Criteria

***BOLD** – Samples exceed the absolute maximum concentration thresholds for "The Recovered Aggregate Order"*

8. Summary of Assessment

The concentrations of chemical analytes and other attribute parameters reported in Table 1 were less than the maximum average allowable and absolute maximum concentrations specified in Table 1 of EPA (2014a). Based on the sampling and laboratory results, the 20 composited samples collected from the stockpiled materials comply with EPA (2014a).

The stockpiled material as identified as Lot 47 comprising grey sandy gravel (concrete and trace brick/tile) would therefore be classified as *Recovered Aggregate* (EPA, 2014a) and would consequently be suitable for off-site reuse in accordance the "The Recovered Aggregate Exemption 2014" (EPA (2014b).

Please note that the current classification does not apply to materials beyond the limit of the assessment, or to materials different from the material types described above, or materials exhibiting signs of contamination (e.g. anthropogenic inclusions, fibro fragments, staining or odours). These materials, if encountered, should be stockpiled separately to be further assessed. Handling, transport and disposal of soil must be conducted in accordance with the Protection of the Environment Operations (POEO) Act 1997.

9. References

NSW EPA 2014a, *"*The Recovered Aggregate Order 2014" Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014, 24 November 2014.

NSW EPA 2014b, *"*The Recovered Aggregate Exemption 2014" Resource Recovery Exemption under Part 9, Clause 91 and 92 of the Protection of the Environment Operations (Waste) Regulation 2014, 24 November 2014.

NSW EPA 2014c, *"Waste Classification Guidelines, Part 1: Classifying Waste,* NSW Environmental Protection Authority (EPA), November 2014.

*SA 2012 "*Australian Standard 1141.3.1-2012 "Methods for Sampling and Testing Aggregates – Sampling – Aggregates", 2012.

10. Limitations

Douglas Partners (DP) has prepared this report for this project at 60 Donaldson Street, North Wyong in accordance with DP's proposal 205367.00 dated 26 May 2021 and acceptance received from David Burgun of EBH dated 26 May 2021. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of EBH Environmental Services Pty Ltd 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.

Further, the report is valid (for the purposes of disposal of material) for a period of three months only from the date of issue.

Please note that the current classification does not apply to materials beyond the limit of the sampled and tested stockpile, or to materials different from the material types described above, or materials exhibiting signs of contamination (e.g. total anthropogenic inclusions greater than 0.2%, fibro fragments, staining or odours). These materials, if encountered, should be stockpiled separately to be further assessed. Handling, transport and disposal of material must be conducted in accordance with the Protection of the Environment Operations (POEO) Act 1997.

Asbestos has not been detected by observation, either on the surface of the stockpile, or in fill materials at the test locations sampled. Building demolition materials, such as concrete, brick, tile, were, however, located in the stockpile, and these are considered as indicative of the possible presence of hazardous building materials (HBM), including asbestos. Hence no warranty can be given that asbestos is not present. It is understood that client completes their own quality control procedures to ensure that asbestos contaminated materials are not received at the site and are not processed into the stockpiled aggregate.

The sampling and testing completed has been undertaken with reference to the requirements and methods set-out in the EPA 2014a. DP is not responsible for quality assurance and quality control requirements of the processor/supplier of the recovered aggregate. The results provided in the report are indicative of the stockpile conditions on the site only at the specific sampling and/or testing locations, and then only at the time the work was carried out. Stockpile conditions can change abruptly due to variable waste streams and processing methods and also as a result of human influences. Such changes may occur after DP's sampling and 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 stockpile conditions 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.

Please note that Part 5.6, Section 143 of the POEO Act 1997 states that is an offence for waste to be transported to a place that cannot lawfully be used as a facility to accept that waste. It is the duty of the owner and transporter of the waste to ensure that the waste is disposed of appropriately and that suitable records are obtained and kept. DP accepts no liability for the unlawful disposal of waste materials from any site. DP accepts no responsibility for the material tracking, loading, management, transport or disposal of waste from the site. It is the duty of the owner and transporter of the waste to ensure that the waste is disposed of appropriately.

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

Yours faithfully
Douglas Partners Pty Ltd

Reviewed by

Matthew Harrison
Environmental Scientist

Brent Kerry
Environmental Engineer / Senior Associate

Attachments: Notes About This Report
Laboratory Certificates of Analysis & Chain of Custody Sheets

About this Report

November 2020

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.

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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.

continued next page

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.

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CERTIFICATE OF ANALYSIS 298411

Client Details

Client	Douglas Partners Tuggerah
Attention	Brent Kerry
Address	Unit 5, 3 Teamster Close, Tuggerah, NSW, 2259

Sample Details

Your Reference	**82880.00, Wyong**
Number of Samples	20 Soil
Date samples received	21/06/2022
Date completed instructions received	21/06/2022

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	28/06/2022
Date of Issue	27/06/2022

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Giovanni Agosti, Group Technical Manager
Josh Williams, Organics and LC Supervisor
Priya Samarawickrama, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Acid Extractable metals in soil						
Our Reference		298411-1	298411-2	298411-3	298411-4	298411-5
Your Reference	UNITS	Lot47/A	Lot47/B	Lot47/C	Lot47/D	Lot47/E
Date Sampled		17/06/2022	17/06/2022	17/06/2022	17/06/2022	17/06/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/06/2022	23/06/2022	23/06/2022	23/06/2022	23/06/2022
Date analysed	-	24/06/2022	24/06/2022	24/06/2022	24/06/2022	24/06/2022
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	29	28	26	30	36
Copper	mg/kg	24	23	19	30	30
Lead	mg/kg	7	8	5	8	7
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	28	29	28	32	38
Zinc	mg/kg	32	31	37	34	36

Acid Extractable metals in soil						
Our Reference		298411-6	298411-7	298411-8	298411-9	298411-10
Your Reference	UNITS	Lot47/F	Lot47/G	Lot47/H	Lot47/I	Lot47/J
Date Sampled		17/06/2022	17/06/2022	17/06/2022	17/06/2022	17/06/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/06/2022	23/06/2022	23/06/2022	23/06/2022	23/06/2022
Date analysed	-	24/06/2022	24/06/2022	24/06/2022	24/06/2022	24/06/2022
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	31	33	32	25	32
Copper	mg/kg	24	26	25	23	32
Lead	mg/kg	6	6	7	7	8
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	31	33	35	26	31
Zinc	mg/kg	31	31	27	38	34

Acid Extractable metals in soil						
Our Reference		298411-11	298411-12	298411-13	298411-14	298411-15
Your Reference	UNITS	Lot47/K	Lot47/L	Lot47/M	Lot47/N	Lot47/O
Date Sampled		17/06/2022	17/06/2022	17/06/2022	17/06/2022	17/06/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/06/2022	23/06/2022	23/06/2022	23/06/2022	23/06/2022
Date analysed	-	24/06/2022	24/06/2022	24/06/2022	24/06/2022	24/06/2022
Arsenic	mg/kg	<4	<4	5	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	36	35	38	29	25
Copper	mg/kg	29	24	29	22	19
Lead	mg/kg	8	6	9	8	4
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	34	31	35	29	26
Zinc	mg/kg	40	33	42	31	24

Acid Extractable metals in soil						
Our Reference		298411-16	298411-17	298411-18	298411-19	298411-20
Your Reference	UNITS	Lot47/P	Lot47/Q	Lot47/R	Lot47/S	Lot47/T
Date Sampled		17/06/2022	17/06/2022	17/06/2022	17/06/2022	17/06/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	23/06/2022	23/06/2022	23/06/2022	23/06/2022	23/06/2022
Date analysed	-	24/06/2022	24/06/2022	24/06/2022	24/06/2022	24/06/2022
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	0.6
Chromium	mg/kg	30	33	29	30	28
Copper	mg/kg	33	23	23	35	27
Lead	mg/kg	8	7	7	9	6
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	25	32	26	29	33
Zinc	mg/kg	32	32	31	39	31

Moisture						
Our Reference		298411-1	298411-2	298411-3	298411-4	298411-5
Your Reference	UNITS	Lot47/A	Lot47/B	Lot47/C	Lot47/D	Lot47/E
Date Sampled		17/06/2022	17/06/2022	17/06/2022	17/06/2022	17/06/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/06/2022	22/06/2022	22/06/2022	22/06/2022	22/06/2022
Date analysed	-	23/06/2022	23/06/2022	23/06/2022	23/06/2022	23/06/2022
Moisture	%	7.1	3.6	6.8	5.8	5.0

Moisture						
Our Reference		298411-6	298411-7	298411-8	298411-9	298411-10
Your Reference	UNITS	Lot47/F	Lot47/G	Lot47/H	Lot47/I	Lot47/J
Date Sampled		17/06/2022	17/06/2022	17/06/2022	17/06/2022	17/06/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/06/2022	22/06/2022	22/06/2022	22/06/2022	22/06/2022
Date analysed	-	23/06/2022	23/06/2022	23/06/2022	23/06/2022	23/06/2022
Moisture	%	7.1	5.8	5.2	7.0	5.5

Moisture						
Our Reference		298411-11	298411-12	298411-13	298411-14	298411-15
Your Reference	UNITS	Lot47/K	Lot47/L	Lot47/M	Lot47/N	Lot47/O
Date Sampled		17/06/2022	17/06/2022	17/06/2022	17/06/2022	17/06/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/06/2022	22/06/2022	22/06/2022	22/06/2022	22/06/2022
Date analysed	-	23/06/2022	23/06/2022	23/06/2022	23/06/2022	23/06/2022
Moisture	%	6.0	6.0	7.6	5.8	6.2

Moisture						
Our Reference		298411-16	298411-17	298411-18	298411-19	298411-20
Your Reference	UNITS	Lot47/P	Lot47/Q	Lot47/R	Lot47/S	Lot47/T
Date Sampled		17/06/2022	17/06/2022	17/06/2022	17/06/2022	17/06/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	22/06/2022	22/06/2022	22/06/2022	22/06/2022	22/06/2022
Date analysed	-	23/06/2022	23/06/2022	23/06/2022	23/06/2022	23/06/2022
Moisture	%	6.1	5.2	6.7	6.2	8.1

Misc Inorg - Soil						
Our Reference		298411-1	298411-2	298411-3	298411-4	298411-5
Your Reference	UNITS	Lot47/A	Lot47/B	Lot47/C	Lot47/D	Lot47/E
Date Sampled		17/06/2022	17/06/2022	17/06/2022	17/06/2022	17/06/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/06/2022	27/06/2022	27/06/2022	27/06/2022	27/06/2022
Date analysed	-	27/06/2022	27/06/2022	27/06/2022	27/06/2022	27/06/2022
Electrical Conductivity 1:5 soil:water	µS/cm	560	690	660	580	670

Misc Inorg - Soil						
Our Reference		298411-6	298411-7	298411-8	298411-9	298411-10
Your Reference	UNITS	Lot47/F	Lot47/G	Lot47/H	Lot47/I	Lot47/J
Date Sampled		17/06/2022	17/06/2022	17/06/2022	17/06/2022	17/06/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/06/2022	27/06/2022	27/06/2022	27/06/2022	27/06/2022
Date analysed	-	27/06/2022	27/06/2022	27/06/2022	27/06/2022	27/06/2022
Electrical Conductivity 1:5 soil:water	µS/cm	600	650	650	880	630

Misc Inorg - Soil						
Our Reference		298411-11	298411-12	298411-13	298411-14	298411-15
Your Reference	UNITS	Lot47/K	Lot47/L	Lot47/M	Lot47/N	Lot47/O
Date Sampled		17/06/2022	17/06/2022	17/06/2022	17/06/2022	17/06/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/06/2022	27/06/2022	27/06/2022	27/06/2022	27/06/2022
Date analysed	-	27/06/2022	27/06/2022	27/06/2022	27/06/2022	27/06/2022
Electrical Conductivity 1:5 soil:water	µS/cm	580	770	590	570	660

Misc Inorg - Soil						
Our Reference		298411-16	298411-17	298411-18	298411-19	298411-20
Your Reference	UNITS	Lot47/P	Lot47/Q	Lot47/R	Lot47/S	Lot47/T
Date Sampled		17/06/2022	17/06/2022	17/06/2022	17/06/2022	17/06/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	27/06/2022	27/06/2022	27/06/2022	27/06/2022	27/06/2022
Date analysed	-	27/06/2022	27/06/2022	27/06/2022	27/06/2022	27/06/2022
Electrical Conductivity 1:5 soil:water	µS/cm	610	660	790	700	700

Method ID	Methodology Summary
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	298411-2
Date prepared	-			23/06/2022	1	23/06/2022	23/06/2022		23/06/2022	23/06/2022
Date analysed	-			24/06/2022	1	24/06/2022	24/06/2022		24/06/2022	24/06/2022
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	109	89
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	111	84
Chromium	mg/kg	1	Metals-020	<1	1	29	31	7	109	98
Copper	mg/kg	1	Metals-020	<1	1	24	26	8	109	122
Lead	mg/kg	1	Metals-020	<1	1	7	8	13	109	88
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	118	114
Nickel	mg/kg	1	Metals-020	<1	1	28	30	7	110	89
Zinc	mg/kg	1	Metals-020	<1	1	32	35	9	107	86

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	23/06/2022	23/06/2022		[NT]	[NT]
Date analysed	-			[NT]	11	24/06/2022	24/06/2022		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	11	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	11	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	11	36	31	15	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	11	29	23	23	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	11	8	6	29	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	11	34	31	9	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	11	40	32	22	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			27/06/2022	1	27/06/2022	27/06/2022		27/06/2022	[NT]
Date analysed	-			27/06/2022	1	27/06/2022	27/06/2022		27/06/2022	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	1	560	640	13	107	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	12	27/06/2022	27/06/2022		[NT]	[NT]
Date analysed	-			[NT]	12	27/06/2022	27/06/2022		[NT]	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	[NT]	12	770	810	5	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	82880.00	**Suburb:**	Wyong	**To:**	Envirolab
Project Name:	Recovered Aggregate	**Order Number**			
Project Manager:	Brent Kerry	**Sampler:**	BK	**Attn:**	Aileen
Emails:	brent.kerry@douglaspartners.com.au			**Phone:**	
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☑			**Email:**	
Prior Storage:	☑ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	Yes ☐	No ☑	(If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	*Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols	Asbestos 500 ml	EC			Notes/preservation
Lot47/A	1	17/06/22	S	G	X						X			
Lot 47/B	2	17/06/22	S	G	X						X			
Lot47/C	3	17/06/22	S	G	X						X			
Lot 47/D	4	17/06/22	S	G	X						X			
Lot47/E	5	17/06/22	S	G	X						X			
Lot 47/F	6	17/06/22	S	G	X						X			
Lot47/G	7	17/06/22	S	G	X						X			
Lot 47/H	8	17/06/22	S	G	X						X			
Lot47/I	9	17/06/22	S	G	X						X			
Lot 47/J	10	17/06/22	S	G	X						X			
Lot47/K	11	17/06/22	S	G	X						X			
Lot 47/L	12	17/06/22	S	G	X						X			
Lot47/M	13	17/06/22	S	G	X						X			
Lot 47/N	14	17/06/22	S	G	X						X			
Lot47/O	15	17/06/22	S	G	X						X			
PQL (S) mg/kg														**ANZECC PQLs req'd for all water analytes** ☐

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 289 298411
Date Received: 21/06/22
Time Received: 10:15
Received By: CH
Temp: Cool/Ambient 14.6
Cooling: Ice/Icepack
Security: Intact/Broken/None

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Lab Report/Reference No:

Metals to Analyse: 8HM unless specified here:

Total number of samples in container: 20 **Relinquished by:** 20/06/2022 **Transported to laboratory by:** TNT

Send Results to: Douglas Partners Pty Ltd **Address** Unit 5, 3 Teamster Close, Tuggerah **Phone:** 4351 1422 **Fax:**

Signed: **Received by:** Christine 0255-16 **Date & Time** 21/06/22 10:15

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	82880.00	**Suburb:**	Wyong	**To:**	Envirolab
Project Name:	Recovered Aggregate	**Order Number**			
Project Manager:	Brent Kerry	**Sampler:**	BK	**Attn:**	Aileen
Emails:	brent.kerry@douglaspartners.com.au			**Phone:**	
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☑			**Email:**	
Prior Storage:	☑ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	Yes ☐	No ☑	(If YES, then handle, transport and store in accordance with FPM HAZID)

Sample ID	Lab ID	Sampling Date	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	*Heavy Metals	OCP/OPP PCB	TRH and BTEX	PAH	Total Phenols	Asbestos 500 ml	EC			Notes/preservation
Lot47/P	16	17/06/22	S	G	X						X			
Lot47/Q	17	17/06/22	S	G	X						X			
Lot47/R	18	17/06/22	S	G	X						X			
Lot47/S	19	17/06/22	S	G	X						X			
Lot47/T	20	17/06/22	S	G	X						X			
PQL (S) mg/kg														

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200
Job No: 298411
Date Received: 21/06/22
Time Received: 10:15
Received By: CM
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

ANZECC PQLs req'd for all water analytes ☐

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Lab Report/Reference No:

Metals to Analyse: 8HM unless specified here:

Total number of samples in container: 20 **Relinquished by:** 20/06/2022 **Transported to laboratory by:** TNT

Send Results to: Douglas Partners Pty Ltd **Address** Unit 5, 3 Teamster Close, Tuggerah **Phone:** 4351 1422 **Fax:**

Signed: **Received by:** Chris Hine **Date & Time** 21/06/22 10:15

Douglas Partners
Geotechnics / Environment / Groundwater

Douglas Partners Pty Ltd
ABN 75 053 980 117
www.douglaspartners.com.au
Unit 5, 3 Teamster Close
Tuggerah NSW 2259
Phone (02) 4351 1422
Fax (02) 4351 1410

Results of Foreign Materials Content of Recycled Crushed Concrete T276

Client:	**EBH Environmental Services**	**Project No:**	82880.00
		Report No:	82880_25
Project:	Recovered Aggregate Testing	**Report Date:**	17-07-2022
		Date Sampled:	25-06-2022
Location:	60 Donaldson Street, Wyong	**Date of Test:**	28-06-2022
		Page:	1 of 2

SAMPLE NO	DEPTH (m)	DESCRIPTION	FOREIGN MATERIAL TYPE (% Retained on 4.75mm Sieve)		
			TYPE I	TYPE II	TYPE III
Lot47/A	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/B	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/C	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/D	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/E	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/F	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/G	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/H	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/I	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/J	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/K	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/L	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00

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

Sampling Method(s): Sampled by Douglas Partners' Engineers

Remarks: Testing undertaken to isolate - Type I (**Metal** only), Type II (**Plaster** only) and all Type III contaminants to satisfy "The Recovered Aggregates Order 2014"

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

NATA Accredited Laboratory Number: 828

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards. Accredited for compliance with ISO/IEC 17025

Tested: HC
Checked: SP

Sam Pigott
Senior Technician

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Geotechnics / Environment / Groundwater

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Phone (02) 4351 1422
Fax (02) 4351 1410

Results of Foreign Materials Content of Recycled Crushed Concrete T276

Client:	**EBH Environmental Services**	**Project No:**	82880.00
		Report No:	82880_25
Project:	Recovered Aggregate Testing	**Report Date:**	17-07-2022
		Date Sampled:	25-06-2022
Location:	60 Donaldson Street, Wyong	**Date of Test:**	28-06-2022
		Page:	2 of 2

SAMPLE NO	DEPTH (m)	DESCRIPTION	FOREIGN MATERIAL TYPE (% Retained on 4.75mm Sieve)		
			TYPE I	TYPE II	TYPE III
Lot47/M	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/N	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/O	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/P	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/Q	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/R	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/S	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00
Lot47/T	Stockpile	Grey Sandy Gravel	0.00	0.00	0.00

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

Sampling Method(s): Sampled by Douglas Partners' Engineers

Remarks: Testing undertaken to isolate - Type I (**Metal** only), Type II (**Plaster** only) and all Type III contaminants to satisfy "The Recovered Aggregates Order 2014"

NATA
ACCREDITED FOR TECHNICAL COMPETENCE

NATA Accredited Laboratory Number: 828

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards. Accredited for compliance with ISO/IEC 17025

Tested: HC
Checked: SP

Sam Pigott
Senior Technician

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