

**Kazac Civil Pty Ltd**  
**PO Box 391**  
**Wauchope NSW 2446**

Project 209310.00  
10 November 2022  
LIH

Attention: Steve Cusato

Email: [accounts@kazac.com.au](mailto:accounts@kazac.com.au)

**The Sanctuary Level 1**  
**John Oxley Drive, Thrumster**

## 1. Introduction

This report presents the results of geotechnical inspections and testing associated with filling operations for 'The Sanctuary' development, located on John Oxley Drive, Thrumster. The work was undertaken for Kazac Civil Pty Ltd.

The scope of work provided by Douglas Partners Pty Ltd (DP) comprised Level 1 Inspection and Testing services during the filling operations as defined in within AS 3798 (2007).

## 2. Bulk Filling

### 2.1 Extent of Works

The earthworks relevant to this report were carried out between 15 October 2021 to 18 March 2022 by Douglas Partners Pty Ltd. The extent of the relevant earthworks is shown on Drawing 1 attached.

### 2.2 Stripping Inspections and Test Rolling

The foundation areas were stripped of unsuitable materials and inspected by a senior soil technician from DP, who also witnessed test rolling prior to placement of fill. During the test rolling several area were considered unsuitable for placement of fill and DP advised the client to over-excavate to a suitable surface before placement of fill was undertaken. Test rolling was carried out on the exposed subgrade using a loaded scraper. The stripped subgrade comprised natural silty clay.

### 2.3 Fill Materials

The fill material was won from cuttings within the development and consisted of clay, silty clay and gravelly silty clay. Material that was considered unsuitable during test rolling, and was subsequently



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boxed out was reused in the deep fill areas following moisture reconditioning and blending with material that was won from the cuttings within the development.

## 2.4 Specification

DP was not provided specifications for compaction and along with the following has been adopted for this project:

- A maximum loose layer thickness of 300 mm;
- Minimum compaction of 98% density ratio (standard); and
- Moisture contents that are generally within 2% dry to 2% wet of optimum moisture content for standard compaction.

No test frequency was specified. A suggested testing frequency of one test per 500 m<sup>3</sup> or one test per layer per material type per 2500 m<sup>2</sup> would be appropriate for a 'Type 1' (ie large scale operations) from AS 3798 (2007). The technician selected test locations generally at a frequency of at least one test per layer per material type per 2500 m<sup>2</sup> in accordance with AS 3798 (2007). This frequency also depended on the amount of fill placed at any one time.

## 2.5 Placement and Testing of Fill

Fill materials were placed by scrapers and dump trucks, spread using either a 815 or 825 compactor and a D8 bulldozer and compacted using a 815 and 825 compactor. The fill was placed in layers of approximately 300 mm thick (loose). Following compaction each layer was tested to assess compliance with the above specification.

A senior technician from DP was present on-site full-time during placement and compaction of all fill between 15 October 2021 to 18 March 2022.

Density testing was conducted by using nuclear gauge method (AS 1289.5.8.1) and relative compaction was determined using the Hilt density ratio and Hilt moisture variation method (AS 1289.5.7.1). Levels were taken relative to site survey markings and coordinates were taken by the senior geotechnician with a handheld GPS or supplied by the site foreman. A summary of the test results are attached in the Project Summary Report and further summarised in Table 1 below. The approximate locations of the in-situ testing is shown in Drawing 1, which is attached.

**Table 1: Summary of Density Testing**

Item	Compaction	Moisture Variation
Specification	98% standard or greater	Within 2% dry to 2% wet of OMC
No. of Tests	216	216
Range of Results	98.0% to 110% Standard	2.5% wet to 2.5% dry of OMC
No. of Tests Outside the Specification	0	4
Mean (all tests, excluding retested failures)	103.5% standard	0.3% dry of OMC

\*OMC - optimum moisture content for standard compaction

(<sup>1</sup>) refer to comments below in relation to acceptance

Tests carried out during the Level 1 operation returned density ratios in excess of 98% standard compaction to meet the specifications of the project and AS3798 (2007).

The moisture contents were generally within the moisture specification with the exception of 4 tests that were only marginally out of the specification by 0.5% and are considered acceptable due to all other surrounding tests being within the specification.

Fill depths ranged from **approximately** 0.2 m to 3.0 m over the development.

Any filling carried out above these reduced levels or outside the period 15 October 2021 to 18 March 2022 does not form part of this Level 1 report.

### 3. Comments

DP undertook Level 1 Inspection and Testing of filling for placement of fill at the site. It is considered that the placement and compaction of filling by DP during the period between 15 October 2021 to 18 March 2022 as shown on Drawing 1 was generally undertaken in accordance with the specification for layer thickness, compaction and moisture variation and to a Level 1 Standard, as defined in Section 8 of AS 3798 (2007).

Based on the work carried out by DP on the project, it is considered that the fill is "Controlled Filling" in accordance with AS 2870 (2011).

DP does not guarantee the work of the earthworks contractor nor relieve their responsibility to produce a completed product conforming to the requirements of the specifications.

For building on filled areas, consideration should be given to the following:

- possible disturbance of the compacted filling by installation of services;

- possible additional filling has been placed outside of the period between 15 October 2021 to 18 March 2022;
- adequate confinement of the filled areas;
- the suitability of the filled land to support structures of various types without excessive deflection. In particular, the shrink-swell properties of the filling and natural soil must be considered in foundation/footing slab design within the residential subdivision; and
- variation in filling depth.

#### 4. References

AS3798. (2007). *Guidelines on earthworks for commercial and residential developments*. Australian Standards.

#### 5. Limitations

DP has prepared this report for John Oxley Drive, Thrumster also known as "The Sanctuary". The report is provided for the exclusive use of Kazac Civil Pty Ltd for this project only and for the purpose described in the report. It should not be used for other projects or by a third party. 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 notes 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 given in this report.

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

Yours faithfully

**Douglas Partners Pty Ltd**



**Luke Hetherington**

Laboratory Manager

Reviewed by



**Michael Gawn**

Principal

Attachments:      About this Report  
                        Project Summary Report  
                        Drawing 1 – Test Location Plan

## 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

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.

# Project Summary Report



**Report Date:** 07/11/2022  
**Client:** Kazac Civil Pty Ltd  
 PO Box 391, Wauchope NSW 2446  
**Contact:** Michelle Dawson  
**Project Number:** 209310.00  
**Project Name:** The Sanctuary Level 1  
**Project Location:** John Oxley Drive, Thrumster NSW  
**Specification:** Min 98% Standard Compaction  
**Test Methods:** AS 1289 5.7.1 STD & 5.8.1 & 2.1.1

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 Port Macquarie Laboratory  
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Lot #	Sample #	Test #	Date Sampled	Location	Easting	Northing	Elevation (m)	Layer	Relative Compaction (%)	Moisture Variation (%)	Moisture Content (%)	Field Wet Density (t/m³)
Level 1	PM-11993A	1	15/10/2021	Area G1	485367	6519988	9.7	**	106.5	0.5	32.1	1.96
Level 1	PM-11993B	2	15/10/2021	Area G1	488370	6520009	9.3	**	107.0	-0.5	32.3	1.94
Level 1	PM-11993C	3	15/10/2021	Area G1	485376	6520036	9.6	**	105.5	-0.5	32.1	1.91
Level 1	PM-11996A	4	18/10/2021	Area F	0484914	6519817	12.78	**	99.0	-1.5	30.5	1.93
**	PM-11999A	5	19/10/2021	Area F	0484861	6519786	15.55	**	104.0	0.0	32.6	1.99
**	PM-11999B	6	19/10/2021	Area F	0484886	6519803	14.98	**	102.0	-0.5	34.3	1.93
**	PM-11999C	7	19/10/2021	Area F	0484893	6519764	12.80	**	105.0	-0.5	33.0	1.97
**	PM-11999D	8	19/10/2021	Area F	0484903	6519775	12.40	**	107.0	2.0	32.7	1.98
**	PM-11999E	9	19/10/2021	Area F	0484904	6519791	12.66	**	104.5	-0.5	33.9	1.97
**	PM-11999F	10	19/10/2021	Area F	0484890	6519798	14.90	**	107.0	0.0	33.0	1.98
**	PM-11999G	11	19/10/2021	Area F	0484865	6519720	13.19	**	108.5	0.0	34.1	2.05
**	PM-12006A	12	20/10/2021	Area F	0484889	6519772	13.56	**	107.0	0.0	34.2	2.02
**	PM-12006B	13	20/10/2021	Area F	0484900	6519778	12.96	**	110.0	0.0	34.7	2.06
**	PM-12006C	14	20/10/2021	Area F	0484899	6519762	12.98	**	105.5	-0.5	32.3	1.99
**	PM-12008A	15	21/10/2021	Area G2	0485394	6520104	9.58	**	106.0	-1.0	36.8	1.96
**	PM-12008B	16	21/10/2021	Area G2	0485389	6520131	10.59	**	103.5	-1.0	33.2	1.95
**	PM-12008C	17	21/10/2021	Area F	0484864	6519782	15.22	**	104.0	0.0	30.8	1.98
**	PM-12008D	18	21/10/2021	Area F	0484883	6519781	14.53	**	103.5	0.0	32.1	2.01
**	PM-12014A	19	22/10/2021	Area F	0484872	6519728	13.52	**	100.5	-0.5	29.3	1.92
**	PM-12014B	20	22/10/2021	Area F	0484894	6519727	12.87	**	102.5	-0.5	35.4	1.93
**	PM-12014C	21	22/10/2021	Area F	0484883	6519726	13.14	**	105.0	0.5	31.5	1.98
**	PM-12014D	22	22/10/2021	Area G3	0485559	6520145	4.45	**	101.0	-2.0	31.1	1.95
**	PM-12014E	23	22/10/2021	Area G3	0485579	6520155	3.89	**	103.0	0.0	31.2	1.93
**	PM-12014F	24	22/10/2021	Area G3	0485567	6520120	3.90	**	103.5	1.0	26.6	1.97
**	PM-12014G	25	22/10/2021	Area G3	0485545	6520111	4.30	**	103.0	-0.5	25.5	2.02
**	PM-12014H	26	22/10/2021	Area G2	0485410	6520113	10.09	**	102.5	1.5	24.4	1.92
**	PM-12014I	27	22/10/2021	Area G2	0485411	6520139	11.06	**	105.5	0.0	28.7	1.96
**	PM-12030A	28	26/10/2021	Area G2	0485388	6520098	9.88	**	103.5	-2.0	32.2	1.95
**	PM-12030B	29	26/10/2021	Area G2	0485390	6520122	10.30	**	107.0	-1.5	32.4	1.99
**	PM-12030C	30	26/10/2021	Area G2	0485415	6520136	11.64	**	107.5	0.0	27.8	1.98
**	PM-12030D	31	26/10/2021	Area G2	0485418	6520114	10.69	**	102.5	-0.5	26.8	1.98
**	PM-12030E	32	26/10/2021	Area G1	0485415	6519977	7.26	**	104.5	1.0	35.5	1.91
**	PM-12030F	33	26/10/2021	Area G1	0485422	6519961	7.62	**	107.5	0.0	35.4	1.98
**	PM-12037A	34	27/10/2021	Area G2	0485407	6520146	11.72	**	105.0	-0.5	27.9	2.05
**	PM-12037B	35	27/10/2021	Area G2	0485415	6520132	12.20	**	105.5	2.0	27.0	2.02
**	PM-12037C	36	27/10/2021	Area G1	0485411	6519974	8.36	**	104.5	1.5	30.3	1.94
**	PM-12037D	37	27/10/2021	Area G1	0485423	6520005	8.42	**	102.0	2.0	34.2	1.88
**	PM-12037E	38	27/10/2021	Area G2	0485436	6520128	10.70	**	103.0	1.5	26.2	1.99
**	PM-12037F	39	27/10/2021	Area G2	0485423	6520140	12.38	**	102.0	1.5	24.4	1.98
**	PM-12055A	40	28/10/2021	Area D	0485218	6519866	12.96	**	102.0	0.5	31.3	1.92
**	PM-12055B	41	28/10/2021	Area D	0485266	6519878	13.96	**	101.0	-0.5	32.9	1.93
**	PM-12055C	42	28/10/2021	Area G3	0485560	6520133	4.03	**	102.5	2.5	29.3	1.93
**	PM-12055D	43	28/10/2021	Area G3	0485582	6520138	3.70	**	106.0	2.0	29.8	2.00
**	PM-12055E	44	28/10/2021	Area D	0485288	6519870	15.78	**	107.0	2.0	32.9	1.99
**	PM-12055F	45	28/10/2021	Area D	0485277	6519873	15.20	**	105.5	1.0	33.0	1.98
**	PM-12055G	46	28/10/2021	Area D	0485251	6519865	14.90	**	105.0	-0.5	33.4	1.98
**	PM-12055H	47	28/10/2021	Area D	0485254	6519880	14.43	**	102.0	-0.5	35.2	1.92
**	PM-12055I	48	28/10/2021	Area D	0485231	6519887	12.61	**	103.5	-0.5	35.8	1.92

Lot #	Sample #	Test #	Date Sampled	Location	Easting	Northing	Elevation (m)	Layer	Relative Compaction (%)	Moisture Variation (%)	Moisture Content (%)	Field Wet Density (t/m3)
**	PM-12055J	49	28/10/2021	Area G1	0485410	6520003	7.94	**	104.0	1.0	33.9	1.93
**	PM-12055K	50	28/10/2021	Area G3	0485562	6520121	4.56	**	101.5	-0.5	30.8	1.95
**	PM-12066A	51	29/10/2021	Area G3	0485558	6520134	5.18	**	104.0	-1.5	32.9	1.97
**	PM-12066B	52	29/10/2021	Area G3	0485542	6520122	4.91	**	103.0	-2.0	32.4	1.97
**	PM-12066C	53	29/10/2021	Area G1	0485401	6519985	8.94	**	100.0	2.0	31.6	1.88
**	PM-12071A	54	30/10/2021	Area G3	0485585	6520156	3.79	**	104.0	0.5	32.7	1.96
**	PM-12071B	55	30/10/2021	Area G3	0485603	6520186	3.65	**	102.0	0.5	34.3	1.92
**	PM-12074A	56	01/11/2021	Area G2	0485468	6520147	10.05	**	105.5	2.0	32.6	1.96
**	PM-12074B	57	01/11/2021	Area G2	0485516	6520137	6.59	**	107.0	2.0	32.6	1.99
**	PM-12074C	58	01/11/2021	Area G2	0485508	6520116	6.99	**	104.0	0.5	28.5	1.97
**	PM-12074D	59	01/11/2021	Area G2	0485499	6520133	7.71	**	105.5	0.5	27.0	1.99
**	PM-12074E	60	01/11/2021	Area G2	0485479	6520127	8.29	**	105.5	1.5	28.7	1.98
**	PM-12074F	61	01/11/2021	Area G1	0485407	6520055	8.01	**	103.5	2.0	26.5	1.95
**	PM-12082A	62	02/11/2021	Area G3	0485573	6520161	4.54	**	106.0	2.0	29.3	1.98
**	PM-12082B	63	02/11/2021	Area G3	0485572	6520180	5.00	**	107.5	2.5	31.5	2.00
**	PM-12082C	64	02/11/2021	Area G2	0485445	6520109	8.08	**	102.5	2.0	29.7	1.92
**	PM-12082D	65	02/11/2021	Area G1	0485415	6520018	8.92	**	105.0	2.0	25.1	1.92
**	PM-12091A	66	03/11/2021	Area G3	0485568	6520175	5.25	**	104.0	1.0	26.1	1.94
**	PM-12091B	67	03/11/2021	Area G3	0485564	6520149	4.94	**	107.5	1.5	31.7	1.94
**	PM-12091C	68	03/11/2021	Area G3	0485615	6520183	4.29	**	106.0	2.0	33.6	1.95
**	PM-12091D	69	03/11/2021	Area D	0485234	6519900	10.54	**	105.5	2.0	31.0	1.93
**	PM-12098A	70	04/11/2021	Area G3	0485550	6520125	5.37	**	108.0	2.0	33.2	1.98
**	PM-12098B	71	04/11/2021	Area G3	0485523	6520119	6.42	**	105.5	1.5	31.1	1.94
**	PM-12107A	72	05/11/2021	Area G1	0485392	6520019	9.40	**	107.0	0.5	35.0	1.96
**	PM-12107B	73	05/11/2021	Area G1	0485398	6520058	9.09	**	105.0	0.5	35.6	1.93
**	PM-12107C	74	05/11/2021	Area G2	0485422	6520100	10.00	**	104.5	0.0	34.4	1.93
**	PM-12107D	75	05/11/2021	Area D	0485227	6519914	10.85	**	105.5	2.0	29.9	1.93
**	PM-12112A	76	06/11/2021	Area E1	0485074	6519763	13.02	**	104.5	1.5	31.8	1.92
**	PM-12112B	77	06/11/2021	Area E1	0485060	6519744	13.51	**	105.0	2.0	30.4	1.93
**	PM-12116A	78	09/11/2021	Area D	0485328	6519895	13.90	**	107.5	0.5	31.2	1.93
**	PM-12116B	79	09/11/2021	Area D	0485291	6519896	13.22	**	108.5	0.5	28.8	1.93
**	PM-12116C	80	09/11/2021	Area D	0485253	6519905	11.68	**	107.0	1.0	36.6	1.91
**	PM-12128A	81	10/11/2021	Area E1	0485099	6519809	10.66	**	105.5	0.0	27.5	1.95
**	PM-12128B	82	10/11/2021	Area E1	0485075	6519787	10.99	**	106.0	0.0	32.7	1.94
**	PM-12128C	83	10/11/2021	Area E1	0485059	6519757	12.06	**	105.0	0.0	31.7	1.93
**	PM-12128D	84	10/11/2021	Area F	0484904	6519763	11.89	**	99.0	0.5	31.2	1.90
**	PM-12128E	85	10/11/2021	Area F	0484886	6519768	13.08	**	98.5	0.0	29.3	1.90
**	PM-12134A	86	11/11/2021	Area D	0485169	6519873	10.74	**	105.0	-0.5	37.8	1.96
**	PM-12134B	87	11/11/2021	Area E1	0485143	6519838	11.30	**	106.0	0.0	39.0	1.96
**	PM-12134C	88	11/11/2021	Area E1	0485091	6519807	11.09	**	100.5	1.0	31.9	1.90
**	PM-12134D	89	11/11/2021	Area E1	0485065	6519782	11.34	**	105.0	0.0	32.7	1.96
**	PM-12144A	90	15/11/2021	Area G3	0485608	6520198	4.57	**	104.5	-1.0	27.8	1.93
**	PM-12144B	91	15/11/2021	Area G2	0485445	6520068	7.86	**	104.0	-1.0	33.5	1.92
**	PM-12147A	92	16/11/2021	Area G3	0485585	6520139	5.13	**	102.0	0.5	28.1	1.95
**	PM-12147B	93	16/11/2021	Area G3	0485525	6520113	6.74	**	106.5	1.5	27.0	2.01
**	PM-12147C	94	16/11/2021	Area G3	0485511	6520113	7.76	**	106.0	2.0	29.3	2.00
**	PM-12157A	95	17/11/2021	Area G2	0485495	6520129	8.67	**	104.5	2.0	27.2	1.96
**	PM-12157B	96	17/11/2021	Area G2	0485477	6520115	9.11	**	106.0	0.5	33.4	1.96
**	PM-12157C	97	17/11/2021	Area E1	0485042	6519803	9.22	**	100.5	1.0	27.2	1.93
**	PM-12157D	98	17/11/2021	Area E1	0485087	6519802	12.34	**	103.5	0.0	35.0	1.93
**	PM-12157E	99	17/11/2021	Area E1	0485065	6519779	12.68	**	104.0	0.5	31.8	1.97
**	PM-12157F	100	17/11/2021	Area E1	0485038	6519748	12.98	**	104.0	0.0	34.0	2.01
**	PM-12157G	101	17/11/2021	Area E1	0485039	6519808	8.79	**	102.5	0.0	35.1	1.91
**	PM-12157H	102	17/11/2021	Area E1	0485026	6519795	9.60	**	104.0	-0.5	34.4	1.95
**	PM-12166A	103	18/11/2021	Area G2	0485454	6520113	9.92	**	106.5	0.0	32.9	2.05
**	PM-12166B	104	18/11/2021	Area G2	0485427	6520102	10.33	**	103.0	0.5	31.8	1.92
**	PM-12166C	105	18/11/2021	Area G2	0485432	6520127	12.43	**	106.5	2.0	31.1	1.98
**	PM-12166D	106	18/11/2021	Area G2	0485480	6520136	9.25	**	104.5	1.5	29.7	1.96
**	PM-12166E	107	18/11/2021	Area G2	0485464	6520148	10.50	**	103.5	2.0	27.3	1.92
**	PM-12171A	108	19/11/2021	Area G2	0485438	6520102	10.70	**	105.0	0.0	30.9	1.93
**	PM-12171B	109	19/11/2021	Area G2	0485445	6520089	9.72	**	103.0	0.5	30.8	1.93

Lot #	Sample #	Test #	Date Sampled	Location	Easting	Northing	Elevation (m)	Layer	Relative Compaction (%)	Moisture Variation (%)	Moisture Content (%)	Field Wet Density (t/m3)
**	PM-12171C	110	19/11/2021	Area E1	0485018	6519807	9.04	**	101.5	0.0	30.0	1.90
**	PM-12171D	111	19/11/2021	Area E1	0485051	6519835	8.56	**	104.0	-1.0	33.4	1.93
**	PM-12177A	112	20/11/2021	Area E1	0485057	6519822	9.98	**	104.0	0.5	26.3	1.92
**	PM-12177B	113	20/11/2021	Area E1	0485059	6519802	10.26	**	103.0	0.5	30.3	1.91
**	PM-12177C	114	20/11/2021	Area E1	0485038	6519781	10.49	**	103.5	-2.0	30.0	1.92
**	PM-12177D	115	20/11/2021	Area G1	0485322	6520037	7.35	**	105.0	-2.0	32.7	1.92
**	PM-12183A	116	24/11/2021	Area E1	0485043	6519725	16.01	**	105.5	0.5	34.7	1.90
**	PM-12183B	117	24/11/2021	Area E1	0485053	6519747	14.96	**	106.5	0.0	34.0	1.92
**	PM-12183C	118	24/11/2021	Area E1	0485065	6519766	14.01	**	106.0	0.0	32.8	1.93
**	PM-12183D	119	24/11/2021	Area E1	0485082	6519796	13.32	**	103.0	0.5	33.0	1.90
**	PM-12193A	120	29/11/2021	Area D	0485200	6519870	12.73	**	102.5	-0.5	28.1	1.92
**	PM-12193B	121	29/11/2021	Area D	0485193	6519888	11.86	**	104.5	-0.5	28.6	1.97
**	PM-12193C	122	29/11/2021	Area D	0485180	6519879	11.12	**	101.0	-2.5	36.8	1.89
**	PM-12193D	123	29/11/2021	Area D	0485223	6519867	13.48	**	109.5	-1.0	35.2	2.02
**	PM-12193E	124	29/11/2021	Area D	0485339	6519867	16.44	**	102.5	1.0	26.4	1.95
**	PM-12193F	125	29/11/2021	Area D	04885369	6519864	15.38	**	102.0	0.0	26.0	1.99
**	PM-12195A	126	30/11/2021	Area D	485401	6519860	14.0	**	104.5	0.5	29.3	2.01
**	PM-12195B	127	30/11/2021	Area D	485418	6519857	12.9	**	102.0	0.5	27.6	1.98
**	PM-12195C	128	30/11/2021	Area D	485436	6519844	11.8	**	100.5	0.5	28.1	1.94
**	PM-12195D	129	30/11/2021	Area D	485169	6519874	10.9	**	99.0	0.5	32.5	1.92
**	PM-12208A	130	03/12/2021	Area E1	0485056	6519737	15.31	**	103.0	-0.5	29.5	1.92
**	PM-12208B	131	03/12/2021	Area E1	0485044	6519727	16.02	**	101.0	0.0	24.6	1.94
**	PM-12208C	132	03/12/2021	Area E1	0485056	6519754	14.35	**	101.5	1.0	27.9	1.93
**	PM-12208D	133	03/12/2021	Area G1	0485405	6520008	9.66	**	107.0	1.0	30.6	1.94
**	PM-12208E	134	03/12/2021	Area G1	0485413	6520032	9.89	**	100.0	-0.5	31.8	1.94
**	PM-12210A	135	04/12/2021	Area G1	0485409	6519986	9.41	**	99.5	-1.0	25.6	1.94
**	PM-12210B	136	04/12/2021	Area G1	0485387	6520036	9.98	**	100.5	0.0	24.8	1.96
**	PM-12216A	137	06/12/2021	Area E1	0485053	6519782	11.79	**	98.5	-0.5	29.5	1.94
**	PM-12216B	138	06/12/2021	Area E1	0485039	6519762	11.94	**	101.0	0.5	27.6	1.96
**	PM-12216C	139	06/12/2021	Area E1	0485066	6519829	10.31	**	99.5	2.0	29.2	1.92
**	PM-12232A	140	10/12/2021	Area D	0485391	6519896	11.14	**	100.0	0.0	31.2	1.93
**	PM-12232B	141	10/12/2021	Area D	0485406	6519886	10.80	**	101.5	-0.5	29.3	1.92
**	PM-12232C	142	10/12/2021	Area D	0485428	6519872	10.09	**	100.5	-1.0	30.1	1.92
**	PM-12232D	143	10/12/2021	Area D	0485188	6519879	12.10	**	101.5	0.0	28.6	1.96
**	PM-12232E	144	10/12/2021	Area D	0485179	6519882	11.56	**	100.0	1.5	22.4	1.96
**	PM-12242A	145	13/12/2021	Area E1	0485029	6519778	9.82	**	99.5	-2.0	34.7	1.94
**	PM-12242B	146	13/12/2021	Area E1	0485038	6519818	9.47	**	98.5	-2.0	33.2	1.93
**	PM-12242C	147	13/12/2021	Area E1	0485005	6519808	9.57	**	99.5	-2.0	34.5	1.90
**	PM-12242D	148	13/12/2021	Area E1	0485022	6519829	9.17	**	100.0	-2.0	32.5	1.92
**	PM-12242E	149	13/12/2021	Area E1	0485048	6519844	8.73	**	100.0	-2.5	30.7	1.89
**	PM-12250A	150	14/12/2021	Area E1	0485000	6519741	11.02	**	101.5	1.5	25.6	1.92
**	PM-12250B	151	14/12/2021	Area E1	0485003	6519766	10.39	**	102.0	1.0	31.8	1.92
**	PM-12250C	152	14/12/2021	Area E1	0485029	6519768	11.70	**	100.5	1.0	30.3	1.89
**	PM-12250D	153	14/12/2021	Area E1	0485039	6519788	11.23	**	104.5	2.0	32.8	1.94
**	PM-12250E	154	14/12/2021	Area E1	0485008	6519761	11.43	**	102.0	1.0	25.8	1.92
**	PM-12250F	155	14/12/2021	Area E1	0485007	6519738	12.34	**	100.5	1.0	24.3	1.91
**	PM-12259A	156	15/12/2021	Area D	0485165	6519923	8.99	**	100.5	1.0	22.6	1.94
**	PM-12259B	157	15/12/2021	Area D	0485166	6519902	9.40	**	103.5	1.5	25.4	1.97
**	PM-12259C	158	15/12/2021	Area D	0485891	6519890	8.68	**	104.0	2.0	25.6	1.98
**	PM-12259D	159	15/12/2021	Area D	0485143	6519862	9.80	**	105.5	0.5	26.8	2.02
**	PM-12259E	160	15/12/2021	Area G1	0485377	6520058	9.82	**	104.0	0.5	23.0	2.03
**	PM-12259F	161	15/12/2021	Area G1	0485402	6520029	10.17	**	102.5	0.5	23.5	1.98
**	PM-12259G	162	15/12/2021	Area G1	0485397	6520014	9.83	**	101.5	1.0	25.9	1.97
**	PM-12259H	163	15/12/2021	Area G1	0485402	6519997	9.51	**	102.5	1.0	26.2	1.96
**	PM-12268A	164	16/12/2021	Area F	0484986	6519805	9.85	**	100.0	0.0	23.7	1.98
**	PM-12268B	165	16/12/2021	Area F	0484953	6519800	10.37	**	101.5	0.5	26.6	1.98
**	PM-12268C	166	16/12/2021	Area G1	0485328	6520037	7.71	**	108.5	1.0	26.8	2.11
**	PM-12268D	167	16/12/2021	Area G1	0485313	6520040	7.45	**	108.0	0.5	25.7	2.10
**	PM-12272A	168	17/12/2021	Area G1	0485346	6520059	7.36	**	101.0	-0.5	27.5	1.94

Lot #	Sample #	Test #	Date Sampled	Location	Easting	Northing	Elevation (m)	Layer	Relative Compaction (%)	Moisture Variation (%)	Moisture Content (%)	Field Wet Density (t/m3)
**	PM-12272B	169	17/12/2021	Area G1	0485326	6520018	8.05	**	98.5	-1.0	26.2	1.93
**	PM-12272C	170	17/12/2021	Area F	0484972	6519799	10.40	**	99.5	0.0	26.2	1.91
**	PM-12272D	171	17/12/2021	Area E1	0485013	6519824	10.81	**	103.0	-0.5	30.4	1.97
**	PM-12278A	172	18/12/2021	Area E1	0485120	6519796	13.00	**	103.0	1.5	20.2	1.94
**	PM-12278B	173	18/12/2021	Area G1	0485337	6520023	8.63	**	100.0	0.0	22.5	1.92
**	PM-12280A	174	20/12/2021	Area G1	485331	6520074	7.5	**	104.0	1.5	29.3	1.94
**	PM-12280B	175	20/12/2021	Area G1	485301	6520037	7.8	**	106.0	2.0	29.2	1.98
**	PM-12280C	176	20/12/2021	Area E1	485077	6519845	10.1	**	100.0	0.0	28.3	1.91
**	PM-12280D	177	20/12/2021	Area E1	485064	6519844	10.2	**	100.5	0.5	27.5	1.91
**	PM-12280E	178	20/12/2021	Area E1	485034	6519838	10.0	**	100.5	0.5	26.8	1.90
**	PM-12280F	179	20/12/2021	Area E1	485014	6519820	10.4	**	105.0	0.5	22.5	2.02
**	PM-12289A	180	22/12/2021	Area F	484937	6519798	11.1	**	104.0	0.5	24.9	2.02
**	PM-12289B	181	22/12/2021	Area F	484963	6519798	11.1	**	105.0	0.0	28.6	2.04
**	PM-12289C	182	22/12/2021	Area F	485003	6519800	11.1	**	106.5	0.0	29.7	2.06
**	PM-12289D	183	22/12/2021	Area E1	485009	6519742	12.6	**	101.0	0.5	23.1	1.97
**	PM-12289E	184	22/12/2021	Area E1	485020	6519756	12.3	**	103.5	0.0	26.9	2.03
**	PM-12289F	185	22/12/2021	Area E1	485024	6519786	11.3	**	104.5	1.5	28.1	2.00
**	PM-12289G	186	22/12/2021	Area E1	485044	6519799	11.4	**	108.0	1.0	33.6	2.06
**	PM-12299A	187	12/01/2022	Area F	0484920	6519890	11.55	**	102.5	-0.5	34.1	1.92
**	PM-12299B	188	12/01/2022	Area F	0484905	6519905	11.95	**	102.5	-0.5	33.7	1.93
**	PM-12299C	189	12/01/2022	Area F	0484897	6519923	11.76	**	101.0	-0.5	34.5	1.90
**	PM-12306A	190	13/01/2022	Area G1	0485361	6520057	8.37	**	103.0	0.0	29.1	1.99
**	PM-12306B	191	13/01/2022	Area G1	0485335	6520030	9.23	**	98.0	0.0	26.2	1.93
**	PM-12306C	192	13/01/2022	Area C	0485465	6519722	11.79	**	103.0	-0.5	28.4	1.94
**	PM-12306D	193	13/01/2022	Area C	0485466	6519743	11.50	**	106.5	-1.0	32.9	2.02
**	PM-12306E	194	13/01/2022	Area C	0485469	6519775	10.80	**	102.0	0.5	31.6	1.90
**	PM-12316A	195	14/01/2022	Area C	0485482	6519758	11.03	**	100.0	1.5	27.0	1.90
**	PM-12316B	196	14/01/2022	Area C	0485470	6519745	11.99	**	101.5	0.0	28.9	1.92
**	PM-12316C	197	14/01/2022	Area C	0485471	6519709	12.40	**	105.5	1.5	27.2	2.00
**	PM-12316D	198	14/01/2022	Area C	0485464	6519693	13.41	**	98.5	-0.5	25.1	1.92
**	PM-12316E	199	14/01/2022	Area C	0485470	6519770	12.69	**	102.0	-0.5	26.9	1.92
**	PM-12316F	200	14/01/2022	Area C	0485465	6519758	11.81	**	106.5	2.0	26.0	1.98
**	PM-12316G	201	14/01/2022	Area C	0485490	6519735	10.33	**	106.5	1.5	28.0	1.96
**	PM-12316H	202	14/01/2022	Area C	0485493	6519758	9.29	**	106.5	2.0	23.9	2.03
**	PM-12320A	203	17/01/2022	Area C	0485509	6519702	9.97	**	101.0	1.5	27.9	1.90
**	PM-12320B	204	17/01/2022	Area C	0485497	6519715	10.21	**	101.0	1.0	25.4	1.93
**	PM-12320C	205	17/01/2022	Area C	0485492	6519742	9.71	**	103.0	1.0	28.1	1.92
**	PM-12320D	206	17/01/2022	Area C	0485519	6519767	6.81	**	107.0	0.5	28.9	2.09
**	PM-12320E	207	17/01/2022	Area C	0485526	6519748	7.07	**	106.0	0.0	30.1	2.08
**	PM-12320F	208	17/01/2022	Area C	0485525	6519709	8.57	**	101.5	1.0	27.7	1.90
**	PM-12336A	209	18/01/2022	Area A	0485253	6519691	16.34	**	99.5	0.0	27.6	1.89
**	PM-12336B	210	18/01/2022	Area A	0485269	6519696	17.18	**	99.5	1.0	24.8	1.90
**	PM-12336C	211	18/01/2022	Area C	0485530	6519746	7.46	**	103.0	-1.0	34.2	1.93
**	PM-12336D	212	18/01/2022	Area C	0485519	6519703	9.68	**	104.0	0.0	29.8	1.92
**	PM-12556A	213	18/03/2022	Area C	0485474	6519681	10.55	**	101.5	-1.0	29.0	1.98
**	PM-12556B	214	18/03/2022	Area C	0485464	6519680	11.87	**	100.0	0.0	33.0	1.87
**	PM-12556C	215	18/03/2022	Area C	0485513	6519683	8.56	**	100.5	-0.5	33.3	1.88
**	PM-12556D	216	18/03/2022	Area C	0485486	6519684	10.48	**	99.0	0.0	26.6	1.88

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC

