



Metro Coastline Sand Sampling

Department for Environment and Water

31 March 2022



Document Control

File 21118.02 R01 31032022
Revision 0
Date issued 31 March 2022
Author(s) R.L
Peer review L.B
Quality Check T.S

Document Distribution

Revision	Date Issued	Client	Other	Doc ID
0	31 March 2022	1 x PDF	-	EP-2022_372_F_0

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1. INTRODUCTION

Environmental Projects were commissioned by the Department for Environment and Water (DEW) to undertake stage two of the sand sampling along the Adelaide metropolitan coastline, at 17 locations between West Lakes Shore and Seacliff. DEW require sand profile sampling along the entire Adelaide metro coastline from North Haven to Kingston Park, to inform the design of the northern sand pumping pipeline, as well as for the entire Metro Beach Management Project.

This report augments the stage one sampling report prepared by Environmental Projects (dated 3 December 2022) and completes the required Metro Beach Management Project beach profile sand sampling. The site location plan is provided in Figure 1-1.

1.1 Objective

The objectives of the assessment were to:

- determine the particle size distribution (PSD) across the profile of the beach at 17 locations through the collection of samples from four key locations along the profile:
 - toe of dune/top of beach (TOB)
 - high water mark (HWM)
 - mean sea level (MSL)
 - saturated zone (SZ) (nominally in 0.5 m of water at low tide)
- determine the calcium carbonate concentrations of sand samples collected along the beach profile
- collect additional sand samples at the HWM, for clay fraction analysis by DEW.

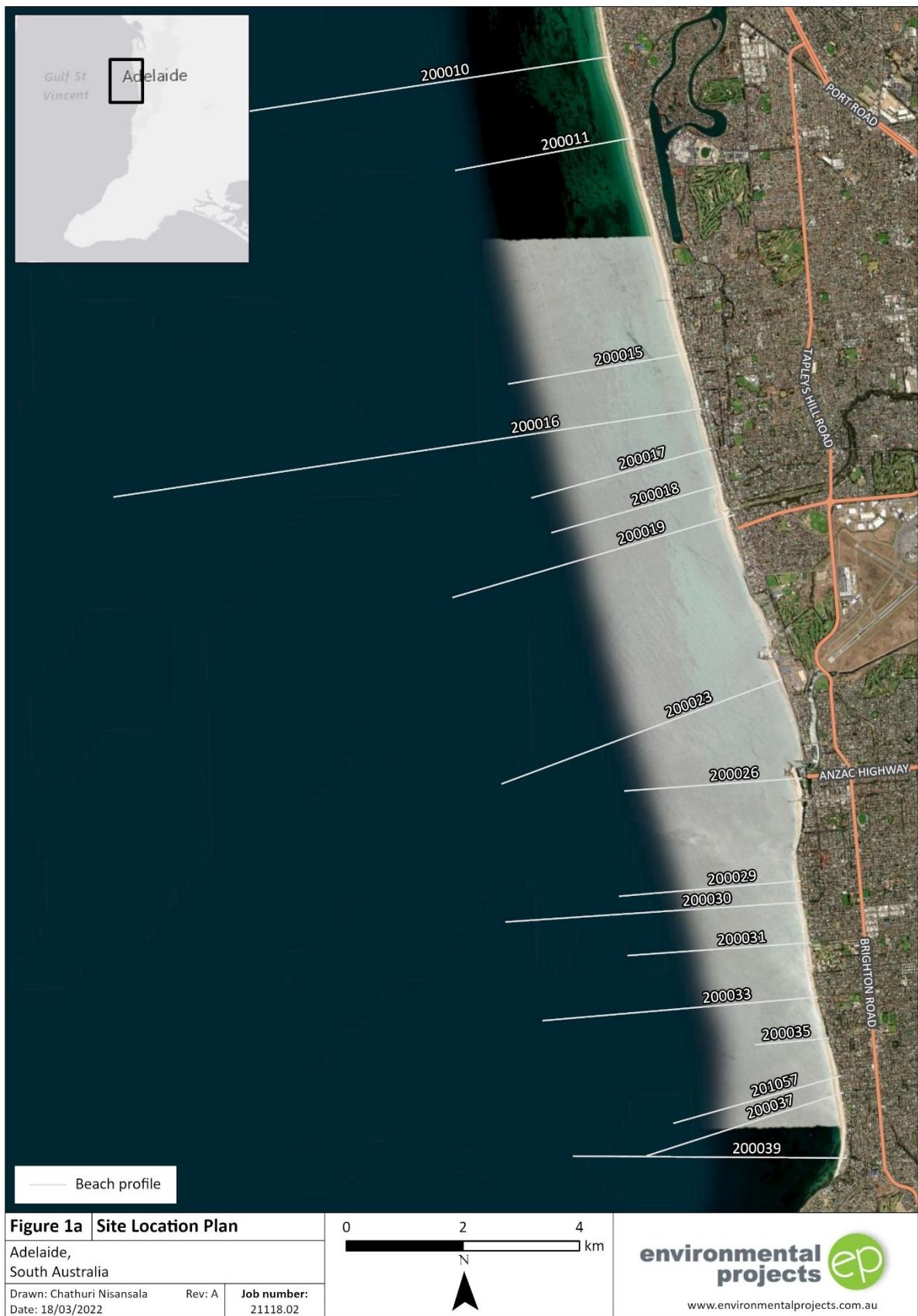


Figure 1-1: Site location plan – West Lakes Shore to Seacliff

2. METHODOLOGY

2.1 Regulatory Guidance

Intrusive assessment of shallow soils at the subject site was completed with reference to the guidance in the following publications:

- Australian Standard (AS) 4482.1-2005: Guide to the investigation and sampling of sites with potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds
- National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013 (ASC NEPM)
- SA EPA Guidelines for the assessment and remediation of site contamination, 2018.

2.2 Data Quality Objectives

The data quality objectives (DQO's), quality assurance (QA) and quality control (QC) requirements and QC acceptable limits are provided in **Appendix A**.

2.3 Sampling Methodology

Sand sampling was undertaken on five days over the period 28 January to 3 February 2022, working around the low tide times, using the methodology summarised in Table 2-1. Some minor variation to the original project sampling methodology was required.

Table 2-1: Sand Sampling Methodology

Activity	Details
EHS Plan	Prior to fieldwork, Environmental Projects prepared a site-specific EHS plan to identify known hazards to the health and safety of project personnel and the environment, based on an understanding of the proposed work and Environmental Projects experience with similar projects. All Environmental Projects personnel and subcontractors onsite were required to understand and comply with all control measures.
Profile sample location	Sample location coordinates are provided in Appendix B .
Soil bore drilling and sampling	<p>Sampling was undertaken on 28 and 31 January, and 1, 2 and 3 February 2022, across 17 previously established profiles, at four key points along the profile, for a total of 77 primary samples collected for analysis. The maximum sampled depth was 1.0 metre below ground level (m BGL). Sample locations were located consistently across the beach face from the TOB to the SZ mark at locations determined onsite and recorded directly to ARCGIS Field Maps. The TOB sample was marked and collected from within 1 m of the top of the beach. The HWM was located from the previous high tide mark at the profile. The SZ sample was collected at low tide (within 2 hours each side of the low tide time) and in a water depth of approximately 0.5 m. The MSL was approximated by halving the distance between the SZ and the HWM.</p> <p>Each location was drilled to the maximum depth achievable using a hand auger, with captured material deposited into a soil core tray for logging.</p> <p>Samples were collected into laboratory supplied sample bags from a composite created from the full length of the drill hole at each location.</p> <p>Duplicate samples were collected from an additional drill hole located in close proximity to the primary sample location (nominally within one metre).</p>

Activity	Details
	<p>Additionally, a subsample of the primary sample at 17 HWM locations was collected and provided directly to DEW for internal clay fraction analysis. These are identified on the soil logs in Appendix C.</p>
Variation to original project methodology	<p>During preparation for stage two of the Metro Beach Management Project (the work this report presents), an issue with the historical location data was identified by DEW, which required the development of new location coordinates along each profile.</p> <p>During stage one sampling it was identified that the proposed low water mark (LWM) location would be completely inundated at all times, during the lowest point of the tidal range. Inundation levels were in excess of 0.5 m as measured during sampling at the SZ sample locations. Therefore, in consultation with DEW, the establishment of a SZ location at each profile was to be undertaken. The SZ location was to be in approximately 0.5 m of water.</p> <p>At each SZ location, two holes were drilled using the hand auger, with the first to approximately 0.2 m BGL. The second hole was drilled adjacent the first (the original hole collapsed as soon as the hand auger was removed, making exact hole location identification impossible). The second hole was drilled to 0.4 m BGL and then placed in a lower core adjacent the original core in the core tray. The two cores were then subsequently logged and sampled as a single core and composite sample. The two cores from SB30 are shown below as an example.</p> 
Soil logging and photographs	<p>Material collected at each location were logged in general accordance with Standards Australia (2017) Geotechnical Site Investigations AS1726. Soil logs are provided in Appendix C. Photos were captured via the ARCGIS Field Maps Application and uploaded to the project database.</p> <p>Where applicable, log descriptions included information on:</p> <ul style="list-style-type: none"> • particle size • colour • odour • moisture content at time of logging • shell content i.e. shell grit and whole shell inclusions • vegetation inclusions.
Sample handling	Samples were handled exclusively by Environmental Projects personnel and stored in suitable plastic sample bags supplied by the primary contract laboratory.
Sample preservation and delivery	All samples were stored under ambient conditions in a secure storage container, immediately after sampling and during delivery to the NATA accredited primary laboratory.
Decontamination of sampling equipment	Drilling augers and rods and core trays were cleaned between sampling locations by scrubbing with a stiff bristle brush and rinsing with seawater.

Activity	Details
Quality control duplicate sampling and testing	12 blind coded duplicate samples were obtained to meet QA/QC requirements. Laboratory certificates are provided in Appendix D .
Laboratory analysis	<p>Envirolab was contracted as the primary laboratory for analysis of primary and intra-laboratory duplicate samples.</p> <p>Selected samples were analysed for the following:</p> <ul style="list-style-type: none"> • PSD Wet Sieving in accordance with AS 1289.3.6.1 (sieve sample sizes- 9.5, 4.75, 2.36, 1.18, 0.600, 0.425, 0.300, 0.212, 0.150 and 0.075 mm) • calcium carbonate content analysis using method M19A1 and the entire composite sample.

2.3.1 Sample location coordinates

The coordinates for the dune toe/top of beach and saturated zone sampling locations are provided in Table 2-2. A full list of coordinates is provided in **Appendix B**. Sampling locations are shown in Figure 2-1 to Figure 2-6.

Table 2-2: Sampling location coordinates (MGA 2020)

Location ID	Profile	Eastings	Northings
Dune toe/Top of beach locations			
SB04	200010	269460.6884	6139060.7848
SB78	200011	269834.2785	6137664.3208
SB70	200015	270755.1329	6133960.6195
SB41	200016	271012.1508	6133013.0373
SB62	200017	271182.2041	6132334.9281
SB58	200018	271359.9923	6131711.9632
SB51	200019	271457.9542	6131157.3379
SB50	200023	272408.8842	6128378.3105
SB39	200026	272685.2039	6126678.1641
SB42	200029	272719.5387	6124921.2331
SB25	200030	272762.3958	6124555.186
SB28	200031	272879.3031	6123859.0056
SB24	200033	273017.9263	6122924.9376
SB23	200035	273191.2425	6122215.5399
SB16	201057	273373.3575	6121557.3833
SB09	200037	273398.1204	6121264.4511
SB05	200039	273453.1952	6120164.7781

Location ID	Profile	Eastings	Northings
Saturated zone locations			
SB01	200010	269365.4799	6139046.3972
SB74	200011	269663.9713	6137637.1658
SB66	200015	270623.9043	6133938.9659
SB45	200016	270899.2359	6132997.192
SB60	200017	271108.49	6132314.4265
SB56	200018	271206.6574	6131669.284
SB53	200019	271360.5137	6131128.6052
SB46	200023	272323.6276	6128345.7865
SB33	200026	272495.638	6126660.205
SB36	200029	272637.4971	6124914.3115
SB29	200030	272685.5085	6124551.9381
SB30	200031	272812.398	6123854.608
SB18	200033	272913.4621	6122916.0092
SB17	200035	273093.5674	6122206.7107
SB10	201057	273248.6998	6121522.6259
SB15	200037	273286.7282	6121229.1297
SB07	200039	273332.2728	6120169.1717

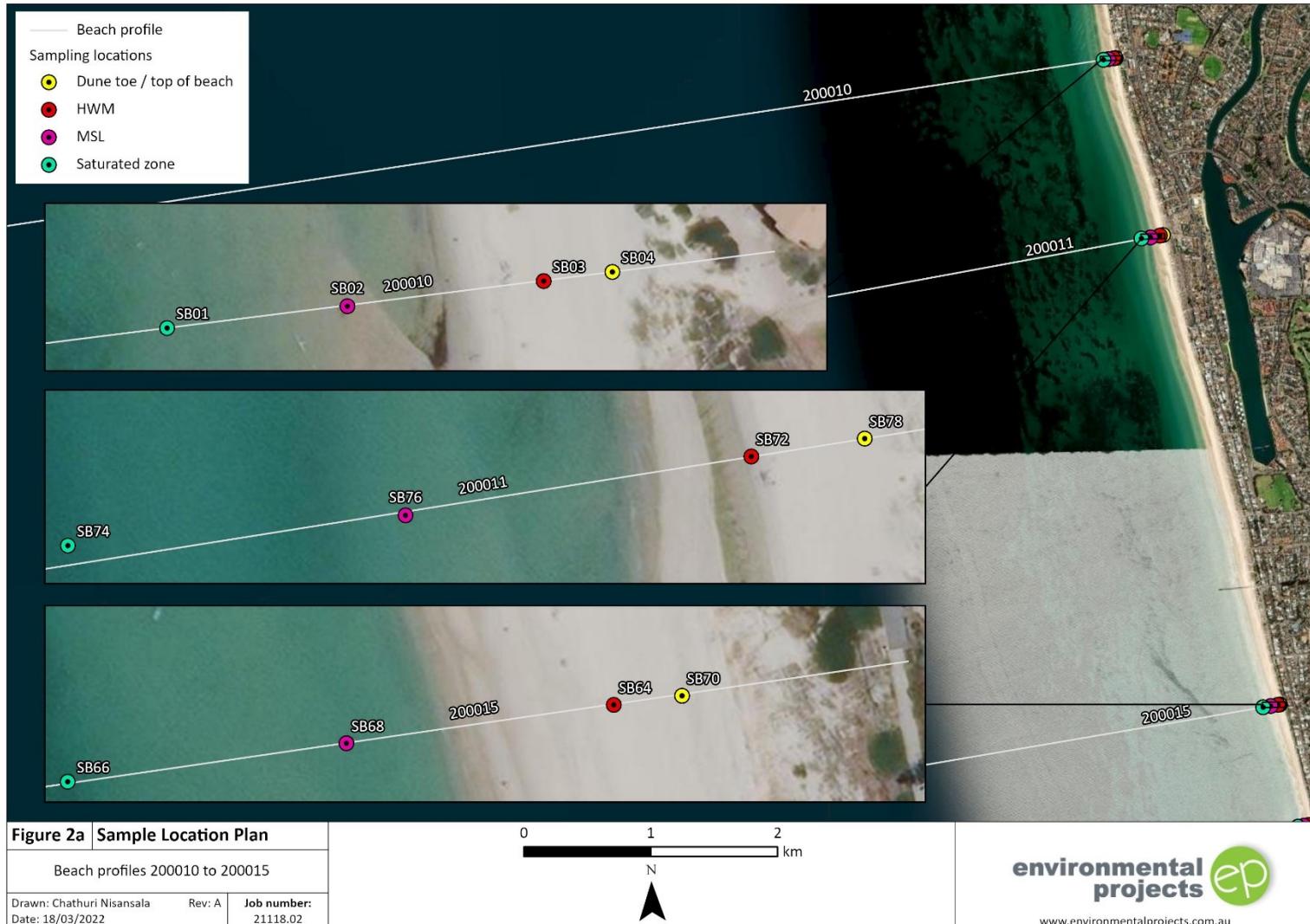


Figure 2-1: Sample location plan – 200010, 200011, 200015 – West Lakes Shore to Grange



Figure 2-2: Sample location plan – 200016, 200017, 200018 – Henley Beach

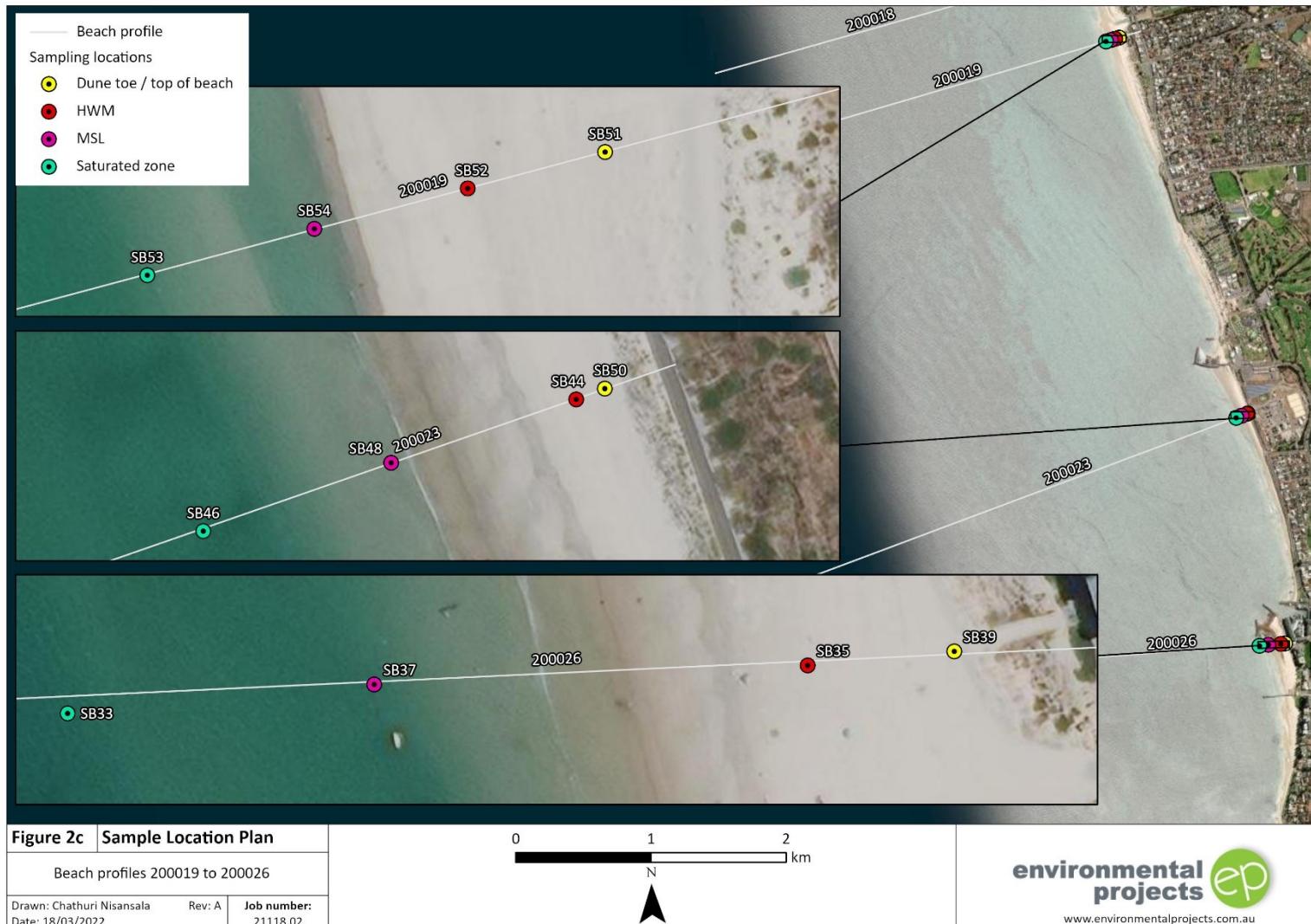


Figure 2-3: Sample location plan – 200019, 200023, 200026 – River Torrens to Glenelg



Figure 2-4: Sample location plan – 200029, 200030, 200031 – Glenelg South to Somerton

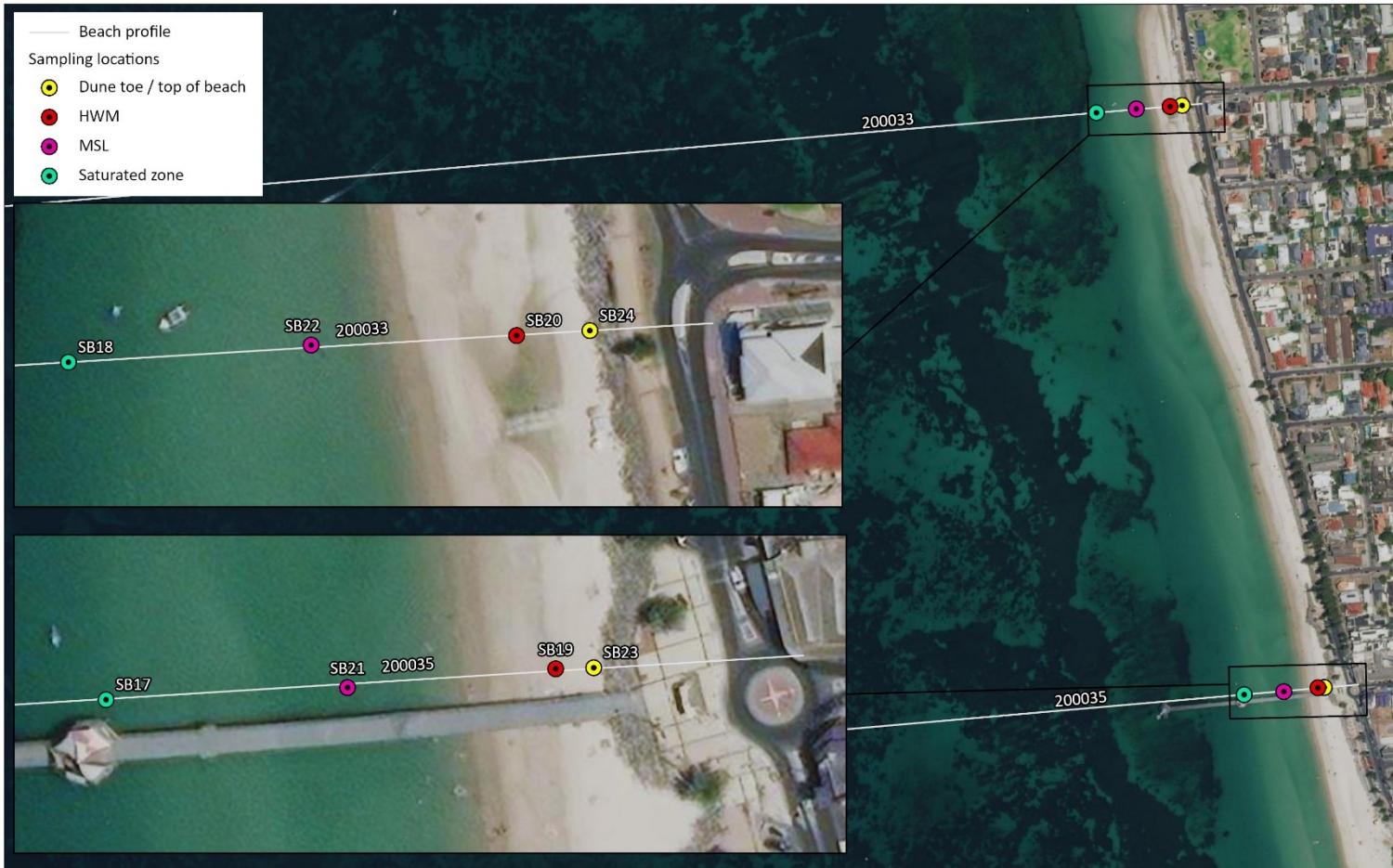


Figure 2e | Sample Location Plan

Beach profiles 200033 to 200035

Drawn: Chathuri Nisansala	Rev: A	Job number:
Date: 18/03/2022		21118.02

0 250 500 m



Figure 2-5: Sample location plan – 200033, 200035 – Hove to Brighton Jetty

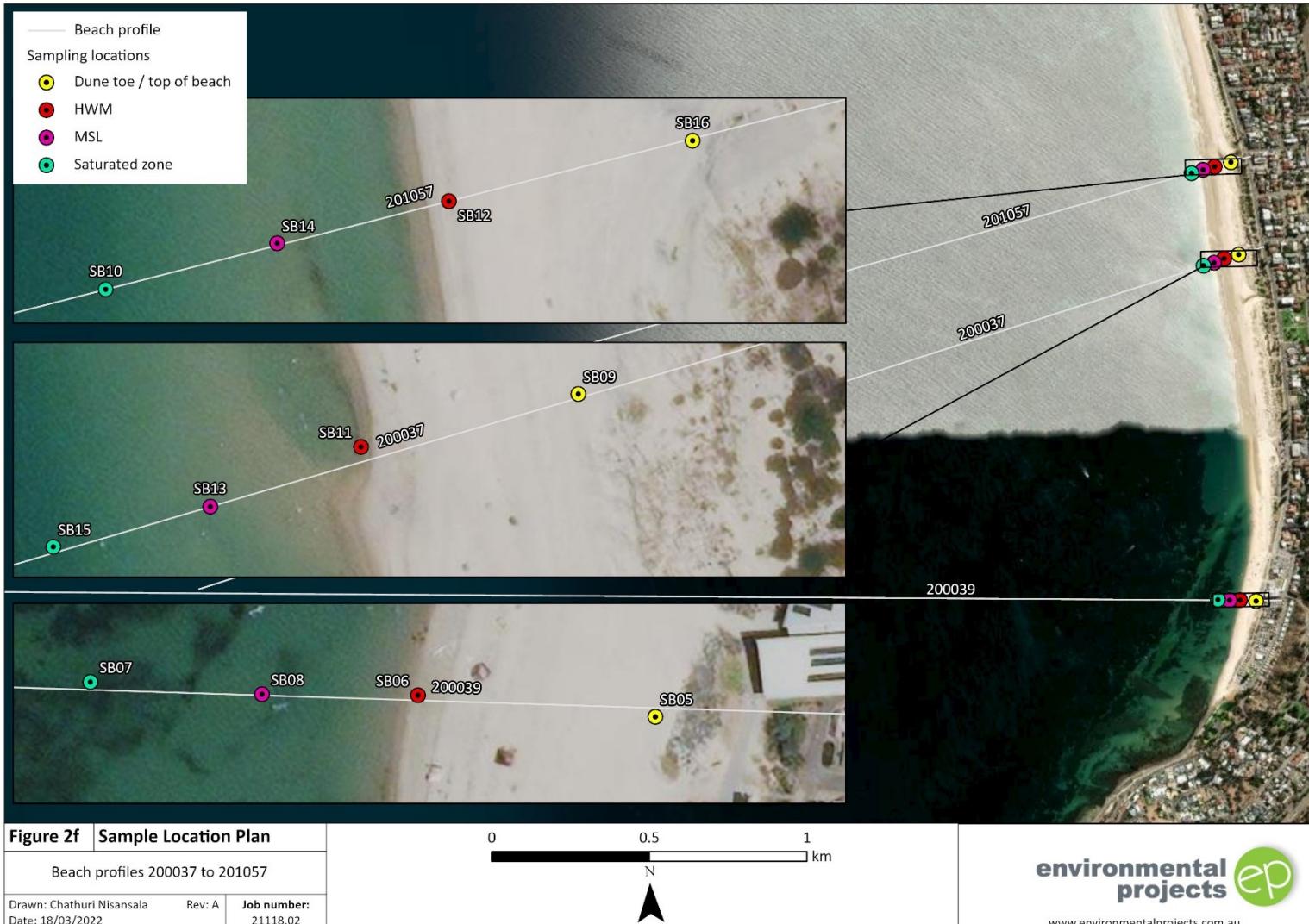


Figure 2-6: Sample location plan – 201057, 200037, 200039 – South Brighton to Seadcliff

3. RESULTS

3.1 Field results

Sampling locations in the dry zone of the beach profile (toe of the dune) primarily consisted of a fine to coarse grained sand, of a beige or pale grey to pale brown colour, with some vegetation, shell grit and shells. Sample holes were drilled to between 0.3 m BGL to 1.0 m BGL, with refusal due to compaction or rock/stones occurring in shallower holes.

High water mark (HWM) locations were generally logged as fine to coarse grained sand, of a beige to pale brown to grey colour with shell grit, and some small shells. Sample holes were drilled to between 0.5 m BGL and 1 m BGL, with refusal due to compaction or rock/stones occurring in shallower holes. A sulphur odour was detected at SB55 (profile 200018).

Mean sea level (MSL) locations were drilled to between 0.3 m BGL and 0.7 m BGL, at which point the hole would collapse due to water saturation. Sand was recorded as fine to coarse grained, pale brown to pale grey and dark grey, with coarse shell grit and some shells. A fine to medium grained, grey sand/silt was recorded at the bottom of holes SB37, SB31 and SB21. A red-brown clay was recorded at the bottom of holes SB34 and SB08. A sulphur odour was detected at SB68 (profile 200015).

Saturated zone (SZ) samples were drilled to a between 0.3 to 0.55 m BGL in nominally 0.5 m of water. Sand was generally recorded as fine to coarse grained, pale brown to grey and dark grey in colour with shell grit and some small shells. A fine to medium grained, grey to dark grey sand/silt was recorded at holes SB45, SB33 and SB29. A grey sandy clay was recorded at the bottom of hole SB60, and a fine to medium grained, dark beige clay/sand recorded at SB15.

Soil logs are provided in [Appendix C](#).

3.2 Analytical results

Table 3-1 and Table 3-2 provide wet sieving results formatted by profile and sample location. The PSD results for the <75 mm and <37.5 mm fractions have been excluded as they both had a 100 per cent pass through rate. The <19 mm and <9.5 mm fractions also had a 100 per cent pass through rate for all samples. The <4.75 mm fraction had only three samples (SB06, SB07 and SB38) return less than 100 per cent pass through. Profiles that recorded silt and clay material had higher pass through rates for fractions below <0.212 mm.

The results of the PSD analysis do not indicate a discernible pattern along the coastline, with the exception that sand from the samples collected from the toe of the dune from profiles south of West Beach (profile 200023) generally appear to consist of finer sand than the northern profiles, however the difference is not considered to be significant.

Calcium carbonate content varied between 2.3 per cent (SB41 and SB38) and 21 per cent (SB07). There was no discernible pattern of calcium carbonate levels from the northern to southern profiles.

Laboratory certificates are provided in [Appendix D](#).

Table 3-1: Sample location by profile

Profile Number	Sample	Carbonate Estimate* (%)	<19 mm (%)	<9.5 mm (%)	<4.75 mm (%)	<2.36 mm (%)	<1.18 mm (%)	<0.6 mm (%)	<0.425 mm (%)	<0.3 mm (%)	<0.212 mm (%)	<0.15 mm (%)	<0.075 mm (%)
200010	SB01	11	100	100	100	100	100	99	94	78	51	18	4
	SB02	12	100	100	100	100	99	96	93	80	59	28	4
	SB03	11	100	100	100	97	94	89	74	47	23	5	1
	SB04	3.3	100	100	100	100	100	100	96	69	24	2	1
200011	SB74	14	100	100	100	99	99	97	93	76	40	12	2
	SB76	8.2	100	100	100	100	100	99	99	99	98	92	24
	SB72	6.2	100	100	100	99	98	95	81	55	27	26	8
	SB78	3	100	100	100	100	100	99	95	65	23	6	1
200015	SB66	7.9	100	100	100	100	100	97	95	87	59	18	1
	SB68	6.6	100	100	100	98	98	95	89	65	28	10	2
	SB64	4	100	100	100	99	97	92	85	56	13	1	<1
	SB70	2.9	100	100	100	100	100	99	95	70	20	2	<1
200016	SB45	12	100	100	100	96	94	87	81	67	47	22	3
	SB47	8.7	100	100	100	98	94	85	75	54	23	6	1
	SB43	8.7	100	100	100	97	95	88	77	48	16	3	1
	SB41	2.3	100	100	100	100	100	100	99	81	31	8	2
200017	SB60	11	100	100	100	97	94	89	86	78	63	32	6
	SB61	8.8	100	100	100	97	94	90	83	61	30	11	2
	SB59	3.8	100	100	100	100	100	99	94	75	28	5	1
	SB62	3.7	100	100	100	99	99	98	96	82	37	6	2
200018	SB56	7.4	100	100	100	100	99	99	95	77	35	12	3
	SB57	12	100	100	100	98	96	87	72	48	21	7	1
	SB55	6.4	100	100	100	99	98	94	83	54	19	1	<1
	SB58	3.4	100	100	100	100	100	98	96	65	27	6	1
200019	SB53	9	100	100	100	100	100	99	98	95	89	74	40
	SB54	7	100	100	100	98	95	83	68	40	16	5	2
	SB52	4.3	100	100	100	100	100	99	97	89	63	27	4
	SB51	4.1	100	100	100	99	99	98	95	77	35	8	1
200023	SB46	7.8	100	100	100	100	99	98	95	90	76	53	3
	SB48	9.7	100	100	100	98	95	87	79	64	41	21	7
	SB44	4.1	100	100	100	100	100	100	99	98	88	52	19

Profile Number	Sample	Carbonate Estimate* (%)	<19 mm (%)	<9.5 mm (%)	<4.75 mm (%)	<2.36 mm (%)	<1.18 mm (%)	<0.6 mm (%)	<0.425 mm (%)	<0.3 mm (%)	<0.212 mm (%)	<0.15 mm (%)	<0.075 mm (%)
	SB50	3.5	100	100	100	100	100	99	99	98	79	36	9
200026	SB33	12	100	100	100	98	96	92	90	87	80	54	7
	SB37	10	100	100	100	100	99	98	97	96	87	43	3
	SB35	6.4	100	100	100	99	98	93	88	76	53	21	4
	SB39	3.4	100	100	100	100	100	100	98	88	53	16	2
200029	SB36	9.7	100	100	100	96	94	92	89	83	68	47	5
	SB40	7.5	100	100	100	95	87	72	56	34	11	3	2
	SB38	2.3	100	100	99	98	96	88	78	56	22	13	4
	SB42	2.8	100	100	100	100	100	99	95	73	24	2	1
200030	SB29	7.6	100	100	100	96	94	92	88	81	62	33	3
	SB31	6.4	100	100	100	99	98	92	83	71	40	14	1
	SB27	2.7	100	100	100	100	100	96	82	58	19	5	1
	SB25	3	100	100	100	100	100	95	84	56	16	5	1
200031	SB30	10	100	100	100	96	94	92	88	83	67	30	3
	SB34	7.3	100	100	100	93	90	83	75	60	30	11	2
	SB26	3.6	100	100	100	100	100	99	97	77	32	8	1
	SB28	3.1	100	100	100	100	100	100	98	84	33	8	2
200033	SB18	8.3	100	100	100	100	100	99	99	96	84	47	3
	SB22	5.6	100	100	100	100	100	94	82	62	35	15	2
	SB20	7.1	100	100	100	99	98	92	76	52	26	6	1
	SB24	3.6	100	100	100	100	99	99	97	85	51	9	1
200035	SB17	5.3	100	100	100	98	96	93	90	79	36	8	1
	SB21	9.3	100	100	100	98	96	87	78	56	17	3	1
	SB19	6.6	100	100	100	96	91	76	63	43	19	5	1
	SB23	3.8	100	100	100	100	100	100	96	75	31	7	1
201057	SB10	9.9	100	100	100	99	99	97	97	94	83	57	5
	SB14	6.5	100	100	100	99	97	86	72	52	24	8	2
	SB12	5.3	100	100	100	98	97	90	76	52	21	3	<1
	SB16	7.9	100	100	100	98	96	86	79	69	41	18	2
200037	SB15	11	100	100	100	99	98	97	95	83	28	2	1
	SB13	10	100	100	100	98	96	85	71	44	15	2	<1

Profile Number	Sample	Carbonate Estimate* (%)	<19 mm (%)	<9.5 mm (%)	<4.75 mm (%)	<2.36 mm (%)	<1.18 mm (%)	<0.6 mm (%)	<0.425 mm (%)	<0.3 mm (%)	<0.212 mm (%)	<0.15 mm (%)	<0.075 mm (%)
	SB11	5.5	100	100	100	98	96	85	71	44	15	2	<1
	SB09	3.3	100	100	100	100	99	98	95	74	25	5	<1
200039	SB07	21	100	100	87	80	78	72	65	52	40	25	3
	SB08	14	100	100	100	100	100	97	95	92	90	84	49
	SB06	9.8	100	100	97	94	88	72	59	44	30	15	6
	SB05	6.1	100	100	100	99	99	97	90	72	37	13	1

Table 3-2: Profile by sample location

Profile Number	Sample	Carbonate Estimate* (%)	<19 mm (%)	<9.5 mm (%)	<4.75 mm (%)	<2.36 mm (%)	<1.18 mm (%)	<0.6 mm (%)	<0.425 mm (%)	<0.3 mm (%)	<0.212 mm (%) (%)	<0.15 mm (%)	<0.075 mm (%)	
Dune toe / Top of beach	200010	SB04	3.3	100	100	100	100	100	96	69	24	2	1	
	200011	SB78	3	100	100	100	100	99	95	65	23	6	1	
	200015	SB70	2.9	100	100	100	100	99	95	70	20	2	<1	
	200016	SB41	2.3	100	100	100	100	100	99	81	31	8	2	
	200017	SB62	3.7	100	100	100	99	99	96	82	37	6	2	
	200018	SB58	3.4	100	100	100	100	100	96	65	27	6	1	
	200019	SB51	4.1	100	100	100	99	99	95	77	35	8	1	
	200023	SB50	3.5	100	100	100	100	99	99	98	79	36	9	
	200026	SB39	3.4	100	100	100	100	100	98	88	53	16	2	
	200029	SB42	2.8	100	100	100	100	100	95	73	24	2	1	
	200030	SB25	3	100	100	100	100	100	95	84	56	16	5	
	200031	SB28	3.1	100	100	100	100	100	98	84	33	8	2	
	200033	SB24	3.6	100	100	100	100	99	99	97	85	51	9	
	200035	SB23	3.8	100	100	100	100	100	96	75	31	7	1	
HWM	201057	SB16	7.9	100	100	100	98	96	86	79	69	41	18	2
	200037	SB09	3.3	100	100	100	100	99	98	95	74	25	5	<1
	200039	SB05	6.1	100	100	100	99	99	97	90	72	37	13	1
	200010	SB03	11	100	100	100	97	94	89	74	47	23	5	1
	200011	SB72	6.2	100	100	100	99	98	95	81	55	27	26	8
	200015	SB64	4	100	100	100	99	97	92	85	56	13	1	<1
	200016	SB43	8.7	100	100	100	97	95	88	77	48	16	3	1
	200017	SB59	3.8	100	100	100	100	100	99	94	75	28	5	1
	200018	SB55	6.4	100	100	100	99	98	94	83	54	19	1	<1
	200019	SB52	4.3	100	100	100	100	99	97	89	63	27	4	1
	200023	SB44	4.1	100	100	100	100	100	99	98	88	52	19	1
	200026	SB35	6.4	100	100	100	99	98	93	88	76	53	21	4
	200029	SB38	2.3	100	100	99	98	96	88	78	56	22	13	4
	200030	SB27	2.7	100	100	100	100	100	96	82	58	19	5	1
	200031	SB26	3.6	100	100	100	100	100	99	97	77	32	8	1
	200033	SB20	7.1	100	100	100	99	98	92	76	52	26	6	1
	200035	SB19	6.6	100	100	100	96	91	76	63	43	19	5	1

Profile Number	Sample	Carbonate Estimate* (%)	<19 mm (%)	<9.5 mm (%)	<4.75 mm (%)	<2.36 mm (%)	<1.18 mm (%)	<0.6 mm (%)	<0.425 mm (%)	<0.3 mm (%)	<0.212 mm (%)(%)	<0.15 mm (%)	<0.075 mm (%)
201057	SB12	5.3	100	100	100	98	97	90	76	52	21	3	<1
200037	SB11	5.5	100	100	100	98	96	85	71	44	15	2	<1
200039	SB06	9.8	100	100	97	94	88	72	59	44	30	15	6
MSL	200010	SB02	12	100	100	100	99	96	93	80	59	28	4
	200011	SB76	8.2	100	100	100	99	99	99	99	98	92	24
	200015	SB68	6.6	100	100	100	98	98	95	89	65	28	2
	200016	SB47	8.7	100	100	100	98	94	85	75	54	23	1
	200017	SB61	8.8	100	100	100	97	94	90	83	61	30	2
	200018	SB57	12	100	100	100	98	96	87	72	48	21	1
	200019	SB54	7	100	100	100	98	95	83	68	40	16	5
	200023	SB48	9.7	100	100	100	98	95	87	79	64	41	7
	200026	SB37	10	100	100	100	100	99	98	97	96	87	43
	200029	SB40	7.5	100	100	100	95	87	72	56	34	11	3
	200030	SB31	6.4	100	100	100	99	98	92	83	71	40	14
	200031	SB34	7.3	100	100	100	93	90	83	75	60	30	11
	200033	SB22	5.6	100	100	100	100	94	82	62	35	15	2
	200035	SB21	9.3	100	100	100	98	96	87	78	56	17	3
	201057	SB14	6.5	100	100	100	99	97	86	72	52	24	8
	200037	SB13	10	100	100	100	98	96	85	71	44	15	2
	200039	SB08	14	100	100	100	100	100	97	95	92	90	84
Saturated Zone	200010	SB01	11	100	100	100	100	100	99	94	78	51	18
	200011	SB74	14	100	100	100	99	99	97	93	76	40	12
	200015	SB66	7.9	100	100	100	100	100	97	95	87	59	18
	200016	SB45	12	100	100	100	96	94	87	81	67	47	22
	200017	SB60	11	100	100	100	97	94	89	86	78	63	32
	200018	SB56	7.4	100	100	100	100	99	99	95	77	35	12
	200019	SB53	9	100	100	100	100	99	98	95	89	74	40
	200023	SB46	7.8	100	100	100	100	99	98	95	90	76	53
	200026	SB33	12	100	100	100	98	96	92	90	87	80	54
	200029	SB36	9.7	100	100	100	96	94	92	89	83	68	47
	200030	SB29	7.6	100	100	100	96	94	92	88	81	62	33
	200031	SB30	10	100	100	100	96	94	92	88	83	67	30

Profile Number	Sample	Carbonate Estimate* (%)	<19 mm (%)	<9.5 mm (%)	<4.75 mm (%)	<2.36 mm (%)	<1.18 mm (%)	<0.6 mm (%)	<0.425 mm (%)	<0.3 mm (%)	<0.212 mm (%)(%)	<0.15 mm (%)	<0.075 mm (%)
200033	SB18	8.3	100	100	100	100	100	99	99	96	84	47	3
200035	SB17	5.3	100	100	100	98	96	93	90	79	36	8	1
201057	SB10	9.9	100	100	100	99	99	97	97	94	83	57	5
200037	SB15	11	100	100	100	99	98	97	95	83	28	2	1
200039	SB07	21	100	100	87	80	78	72	65	52	40	25	3

3.2.1 Particle size distribution d50

The median d50 results ranged between 76.52 µm (SB08) and 418.05 µm (SB11) and are presented in Table 3-3. Detailed PSD results are provided in **Appendix D**.

Table 3-3: PSD (d50) summary results

Sample	d50 value (µm)	Sample	d50 value (µm)	Sample	d50 value (µm)
SB01	209.97	SB24	209.81	SB47	290.15
SB02	193.54	SB25	289.14	SB48	250.00
SB03	312.43	SB26	250.00	SB50	169.71
SB04	260.21	SB27	283.21	SB51	241.97
SB05	243.38	SB28	241.47	SB52	266.16
SB06	349.66	SB29	186.83	SB53	167.62
SB07	283.78	SB30	187.07	SB54	342.53
SB08	76.52	SB31	237.46	SB55	290.69
SB09	256.63	SB32	158.90	SB56	238.59
SB10	139.63	SB33	143.34	SB57	308.77
SB11	418.05	SB34	271.77	SB58	266.65
SB12	295.74	SB35	207.00	SB59	250.63
SB13	328.32	SB36	159.18	SB60	186.13
SB14	295.43	SB37	159.87	SB61	269.98
SB15	144.44	SB38	286.71	SB62	232.89
SB16	237.14	SB39	206.85	SB64	288.98
SB17	231.18	SB40	389.43	SB66	198.00
SB18	154.67	SB41	246.39	SB68	263.48
SB19	343.43	SB42	252.49	SB70	263.95
SB20	292.04	SB43	310.11	SB72	285.61
SB21	284.35	SB44	208.21	SB74	103.54
SB22	370.51	SB45	222.67	SB76	235.35
SB23	274.88	SB46	145.83	SB78	271.29

4. QUALITY CONTROL

Data validation results are provided in **Appendix A**.

The results of the QA/QC process and testing data (Table A-3, **Appendix A**) provided appropriate confidence the data could be relied upon for the purposes of this assessment.

Duplicate RPD results are presented in Table 4-1. RPD exceedances are attributed to the duplicate collection process which required the duplicate sample to be collected from a separate hole, located in close proximity to the primary sampling location, and the non-homogenous nature of particle size distribution between samples.

Table 4-1: Duplicate RPD results

	Carbonate Estimate*	<75 mm	<37.5 mm	<19 mm	<9.5 mm	<4.75 mm	<2.36 mm	<1.18 mm	<0.6 mm	<0.425 mm	<0.3 mm	<0.212 mm	<0.15 mm	<0.075 mm
Dup 1	3.6	100	100	100	100	100	100	99	97	92	65	26	5	1
SB04	3.3	100	100	100	100	100	100	100	100	96	69	24	2	1
RPD	9	0	0	0	0	0	0	-1	-3	-4	-6	8	86	0
Dup 5	3.8	100	100	100	100	100	100	99	98	95	83	44	8	1
SB24	3.6	100	100	100	100	100	100	99	99	97	85	51	9	1
RPD	5	0	0	0	0	0	0	0	-1	-2	-2	-15	-12	0
Dup 7	3.8	100	100	100	100	100	100	100	100	98	80	33	8	1
SB26	3.6	100	100	100	100	100	100	100	99	97	77	32	8	1
RPD	5	0	0	0	0	0	0	0	1	1	4	3	0	0
Dup 9	4.5	100	100	100	100	100	98	96	87	78	56	17	3	1
SB38	2.3	100	100	100	100	99	98	96	88	78	56	22	13	4
RPD	65	0	0	0	0	1	0	0	-1	0	0	-26	-125	-120
Dup 10	4.7	100	100	100	100	100	98	95	83	68	40	16	5	2
SB51	4.1	100	100	100	100	100	99	99	98	95	77	35	8	1
RPD	14	0	0	0	0	0	-1	-4	-17	-33	-63	-75	-46	67
Dup 13	5.5	100	100	100	100	100	99	98	95	81	55	27	26	6
SB64	4	100	100	100	100	100	99	97	92	85	56	13	1	<1
RPD	32	0	0	0	0	0	0	1	3	-5	-2	70	185	0

5. CONCLUSIONS

17 locations along the Adelaide metropolitan coastline were sampled and analysed for PSD and calcium carbonate concentrations to inform the engineering design of the sand pumping pipeline.

68 primary composite samples were collected and analysed with PSD wet sieving conducted in accordance with AS 1289.3.6.1. Sieve sample sizes ranged from 9.5 mm to 0.075 mm, with results presented as per cent passed through. The results of the PSD analysis do not indicate a discernible pattern along the coastline, with the exception that sand from the samples collected from the toe of the dune from profiles south of West Beach (profile 200023) generally appear to consist of finer sand than the northern profiles, however the difference is not considered to be significant.

Calcium carbonate content analysis using method M19A1 was also undertaken. Calcium carbonate content ranged from 2.3 per cent (SB41 and SB38) and 21 per cent (SB07), and the median d₅₀ result ranged between 76.52 µm (SB08) and 418.05 µm (SB11). There was no discernible pattern of calcium carbonate levels from the northern to southern profiles.

Sand was relatively uniform along the beach profiles, with a fine to coarse grained sand varying in colour from beige, pale brown to brown, pale grey to grey and dark grey, reported in the sampling points. A fine to medium grained, grey sand/silt, a grey sandy clay and a red/brown clay, were recorded in a small number of some soil bores. Shell grit, small whole shells and vegetation matter were recorded in samples across a number of profiles.

This report must be read in conjunction with the limitations described in Section 6.

6. LIMITATIONS

Scope of Services

This environmental site assessment report (“the report”) has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the client and Environmental Projects (“scope of services”). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints

Reliance on Data

In preparing the report, Environmental Projects has relied upon data, surveys, analyses, designs and plans as well as any other information provided by the client and other individuals and organisations, most of which are referred to in the report (“the data”). Except as otherwise stated in the report, Environmental Projects has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report (“conclusions”) are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Environmental Projects will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to Environmental Projects.

Environmental Conclusions

In accordance with the scope of services, Environmental Projects has relied upon the data and conducted environmental field monitoring and/or testing in the preparation of the report. The nature and extent of monitoring and/or testing conducted is described in the report.

On all sites, varying degrees of non-uniformity of the vertical and horizontal soil or groundwater conditions are encountered. Hence no monitoring, common testing or sampling techniques can eliminate the possibility that monitoring or testing results/samples are not totally representative of soil and/or groundwater conditions encountered. The conclusions are based upon the data and the environmental field monitoring and/or testing and are therefore merely indicative of the environmental condition of the site at the time of preparing the report, including the presence or otherwise of contaminants or emissions.

Also, it should be recognised that site conditions, including the extent and concentration of contaminants, can change with time.

Within the limitations imposed by the scope of services, the monitoring testing, sampling and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

Report for Benefit of Client

The report has been prepared for the benefit of the client and no other party. Environmental Projects assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitations matters arising from any negligent act or omission of Environmental Projects or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the

report or the accuracy or completeness of any conclusion and should make their own enquiries and obtain independent advice in relation to such matters.

Other Limitations

Environmental Projects will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

Appendix A

Data Quality

Data Quality Objectives

The ASC NEPM recommends use of the data quality objective (DQO) process (described in detail in ASC NEPM Schedule B2, Appendix B) to assess the accuracy and reliability of a dataset to ensure any risk-based conclusions or recommendations that will rely on that dataset are not influenced by sampling or measurement error. The DQO process develops the decision performance criteria, which outline the acceptable limits of error that limit the potential for uncertainties in the data.

Data quality indicators (DQI's) (outlined in ASC NEPM Schedule B2, Appendix B) are a measurable way to assess the reliability of field procedures and analytical data that highlight any exceedances of the performance criteria. To ensure the DQI's are met, specific quality assurance (QA) and quality control (QC) procedures must be followed.

Table A-1 illustrates the QA/QC requirements relating to each DQI adopted during the assessment.

Table A-1: QA/QC Requirements

Assessment Component	Quality Assurance		Quality Control	
	QA Component	DQI Addressed	QC Component	DQI Addressed
Soil bores Groundwater well drilling and installation Soil vapour sampling Test Pits	Suitably experienced operator	Representativeness	-	-
	Bore/installation details recorded on log sheet	Representativeness and Completeness	-	-
	Standard operating procedure (SOP) followed	Comparability	-	-
Soil lithology recording	Suitably experienced and trained field personnel	Accuracy, representativeness, comparability, and completeness	-	-
	Lithology and observations recorded on soil log sheet	Representativeness and comparability	-	-
	Photographs of test pits and site	Representativeness and comparability	-	-
Sample collection	Standard operation procedures followed	Comparability	-	-
	Suitably experienced and trained field personnel	Accuracy, representativeness, comparability, and completeness	-	-
	All sampling equipment decontaminated prior to use (by field personnel and/or rental company if applicable) and between sample locations and consumables changed between locations (i.e. pump bladder)	Accuracy, representativeness, completeness	Equipment rinsate blank samples	Precision

Assessment Component	Quality Assurance		Quality Control	
	QA Component	DQI Addressed	QC Component	DQI Addressed
	Measurement equipment calibrated (i.e. PID, gas detection meter, water quality meter)	Accuracy, precision	Calibration records	Accuracy, precision
Sample preservation	Laboratory supplied sample containers only, pre-dosed with preservative where required	Precision, comparability, completeness	Recommended sample holding times met	Completeness
	Standard operating procedures followed	Comparability	-	-
Sample handling and transportation	Chain of custody documentation used	Accuracy	Trip blank samples	Accuracy, precision
Laboratory analysis	NATA accredited laboratories used	Precision, accuracy, comparability, completeness	Intra-laboratory and inter-laboratory field duplicate relative percentage differences (RPDs)	Precision and accuracy
			Internal laboratory duplicates, matrix spikes and surrogate spikes	Precision, completeness

Table A-2 outlines the acceptable limits for the QC samples described in Table A-1.

The RPD% for a pair of duplicate concentrations is calculated using the formula:

$$\text{RPD (\%)} = \frac{100(x_1 - x_2)}{x}$$

where x_1, x_2 = duplicate results and x = mean of duplicate results.

According to the ASC NEPM:

- typical RPD values for soils are in the range of $\pm 30\%$
- typical RPD values for groundwater are in the range of $\pm 20\%$.

Table A-2: QC Acceptable Limits

QC Sample	Minimum Frequency	Formula	Acceptable Limit
Blind-coded intra-laboratory field duplicates	1 in 20 (soil and soil vapour) 1 in 10 (groundwater)	Relative percent difference	-30% to +30% (soil and soil vapour) -20% to +20% (groundwater)
Laboratory Control Sample	1 in 20	Standard Recovery	70% to 130%
Matrix Spikes	1 in 10	Standard Recovery	70% to 130%
Surrogate Spikes	1 in 10	Standard Recovery	70% to 130%
Inter-laboratory duplicates	1 in 20 (soil and soil vapour) 1 in 10 (groundwater)	Relative percent difference	30% to +30% (soil and soil vapour) -20% to +20% (groundwater)
Field Split Sample	1 in 20	Relative percent difference	-50% to +50%
Laboratory Duplicate	1 in 20	Relative percent difference	<30%
Field Trip Blank	One per batch of samples	Laboratory PQL	<PQL
Field Equipment Rinse	One per day of sampling	Laboratory PQL	<PQL
Laboratory Method Blank	1 in 20	Laboratory PQL	<PQL
Holding Times	Every sample	-	All samples should be extracted and analysed within the hold times for the requested analytes
Completion (%)	-	Relative Completion	>90%

Data Validation

QA/QC requirements for this assessment are outlined in Table A-3. The acceptance criteria for laboratory replicates and recoveries are detailed in RPDs within the ranges described in Table A-3 were considered to show acceptable agreement with the dataset and conversely, relatively poor agreement where a RPD was outside this range.

Generally, higher RPD values occur for organic compounds, and where low concentrations of an analyte are recorded.

Table A-3: Data Validation

QA/QC Requirement	Outcome	Comment
Chain of custody documentation completed	Yes	All samples were transported under Environmental Projects COC procedures. A copy of the COC is provided in Appendix D .
Samples delivered to laboratory within sample holding times and with correct preservative	Yes	All samples were delivered to the laboratories within the sample holding times and in the appropriate laboratory-supplied bags.
Limits of reporting less than screening criteria	Yes	Laboratory practical quantitation limit (PQLs) were below the screening criterion.
All analyses NATA accredited	Yes	Envirolab are NATA accredited for the analyses performed.
Equipment calibrations	N/A	No field screening equipment was used as part of the assessment.
Intra-laboratory and inter-laboratory field duplicate testing frequency of at least 5% (1 in 20)	Yes	In accordance with ASC NEPM, duplicate testing frequency for key analytes complied with the required 5% of primary samples.
A majority of intra-laboratory field duplicate samples reported RPDs within +/-30% recommended by ASC NEPM	Yes	<p>All duplicates were within acceptable ranges except for:</p> <ul style="list-style-type: none"> • SB04/DUP01: <0.15 mm (86%) • SB38/DUP09: calcium carbonate (65%), <0.15 mm (-125%) and <0.075 mm (-120%) • SB51/DUP10: <0.425 mm (-33%), <0.3 mm (-63%), <0.212 mm (-75%), <0.15 mm (-46%) and <0.075 mm (67%) • SB64/DUP13: calcium carbonate (32%), <0.212 mm (70%) and <0.15 mm (185%). <p>RPD exceedances are attributed to the duplicate collection process which required the duplicate sample to be collected from a separate hole, located in close proximity to the primary sampling location, and the non-homogenous nature of particle size distribution between samples.</p>
Field trip blanks frequency of at least one per batch	Yes	No trip blank was required due to the nature of the testing, which is limited to PSD and calcium carbonate content.
Equipment Rinsate Blank frequency of at least one per batch	N/A	No equipment rinsate was collected during the sampling program due to the nature of testing, which is limited to PSD and calcium carbonate content.
Acceptable laboratory QC results	Yes	Laboratory certificates are provided in Appendix D .

Appendix B

Sample Location Coordinates

Location ID	Profile	Eastings	Northings
Dune toe/Top of beach locations			
SB04	200010	269460.6884	6139060.7848
SB78	200011	269834.2785	6137664.3208
SB70	200015	270755.1329	6133960.6195
SB41	200016	271012.1508	6133013.0373
SB62	200017	271182.2041	6132334.9281
SB58	200018	271359.9923	6131711.9632
SB51	200019	271457.9542	6131157.3379
SB50	200023	272408.8842	6128378.3105
SB39	200026	272685.2039	6126678.1641
SB42	200029	272719.5387	6124921.2331
SB25	200030	272762.3958	6124555.186
SB28	200031	272879.3031	6123859.0056
SB24	200033	273017.9263	6122924.9376
SB23	200035	273191.2425	6122215.5399
SB16	201057	273373.3575	6121557.3833
SB09	200037	273398.1204	6121264.4511
SB05	200039	273453.1952	6120164.7781
High water mark locations			
SB03	200010	269446.0066	6139058.4635
SB72	200011	269810.0548	6137659.8911
SB64	200015	270740.5521	6133958.3093
SB43	200016	270985.8969	6133010.8549
SB59	200017	271178.3828	6132333.8723
SB55	200018	271341.7331	6131706.7564
SB52	200019	271428.707	6131148.8326
SB44	200023	272402.8189	6128375.8604
SB35	200026	272653.8825	6126674.3917
SB38	200029	272716.9807	6124921.1075
SB27	200030	272761.7061	6124555.7386
SB26	200031	272877.1562	6123858.9442
SB20	200033	273003.2562	6122923.5876
SB19	200035	273183.6168	6122215.1353

Location ID	Profile	Eastings	Northings
SB12	201057	273321.5869	6121543.2129
SB11	200037	273351.9639	6121252.039
SB06	200039	273402.363	6120168.0798
Mean sea level locations			
SB02	200010	269404.037	6139052.0336
SB76	200011	269736.2184	6137645.4589
SB68	200015	270683.4476	6133948.6814
SB47	200016	270945.6367	6133004.6342
SB61	200017	271142.7576	6132324.143
SB57	200018	271276.2039	6131688.3108
SB54	200019	271396.0625	6131139.3984
SB48	200023	272363.5163	6128361.3591
SB37	200026	272561.1498	6126668.0214
SB40	200029	272676.6611	6124917.2886
SB31	200030	272717.192	6124552.3661
SB34	200031	272843.7327	6123856.4753
SB22	200033	272962.0799	6122920.6524
SB21	200035	273141.9589	6122210.3477
SB14	201057	273285.1195	6121533.3501
SB13	200037	273320.0654	6121238.527
SB08	200039	273369.0255	6120167.4831
Saturated zone locations			
SB01	200010	269365.4799	6139046.3972
SB74	200011	269663.9713	6137637.1658
SB66	200015	270623.9043	6133938.9659
SB45	200016	270899.2359	6132997.192
SB60	200017	271108.49	6132314.4265
SB56	200018	271206.6574	6131669.284
SB53	200019	271360.5137	6131128.6052
SB46	200023	272323.6276	6128345.7865
SB33	200026	272495.638	6126660.205
SB36	200029	272637.4971	6124914.3115
SB29	200030	272685.5085	6124551.9381

Location ID	Profile	Eastings	Northings
SB30	200031	272812.398	6123854.608
SB18	200033	272913.4621	6122916.0092
SB17	200035	273093.5674	6122206.7107
SB10	201057	273248.6998	6121522.6259
SB15	200037	273286.7282	6121229.1297
SB07	200039	273332.2728	6120169.1717

Appendix C

Soil Logs



ENVIRONMENTAL SOIL BORE SB01 (LWN)

PROJECT NUMBER	21118.02	DATE	28/01/2022	PROFILE NUMBER	200010		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.4 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB01			.	SAND, fine to coarse grained, trace shell grit.	W	
0.4				.	SAND, fine to coarse grained, dark grey.	W	
0.6							
0.8							
1					End of hole at 0.4 m BGL.		



ENVIRONMENTAL SOIL BORE SB02 (MSC)

PROJECT NUMBER	21118.02	DATE	28/01/2022	PROFILE NUMBER	200010		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.45 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB02			.	SAND, fine to coarse grained, pale grey/brown.	W	
				.	SAND, fine to coarse grained, dark grey, mild sulphur odour.	W	
0.4				.	SAND, fine to coarse grained, grey, shell grit, mild sulphur odour.	W	
0.6					End of hole at 0.45 m BGL.		
0.8							
1							



ENVIRONMENTAL SOIL BORE SB03 (HWM)

PROJECT NUMBER	21118.02	DATE	28/01/2022	PROFILE NUMBER	200010		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.8 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
	SB03			.	SAND, fine to medium grained, pale brown.	D	
0.2				.	SAND, fine to coarse grained, pale brown.	M	
0.4				.		W/ S	
0.6				.	SAND, fine to coarse grained, pale brown, shell grit.	W	
0.8				.	End of hole at 0.8 m BGL, hole collapsed due to saturation.		
1							



ENVIRONMENTAL SOIL BORE SB04 (Toe)

PROJECT NUMBER 21118.02		DATE 28/01/2022		PROFILE NUMBER 200010							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.2	SB04	DUP 1		.	SAND, fine to medium grained, pale brown.	D					
0.4				.							
0.6				.	SAND, fine to medium grained, pale brown, some vegetation.	M					
0.8				.	SAND, fine to medium grained, pale brown.	M					
1					End of hole at 1.0 m BGL.						



ENVIRONMENTAL SOIL BORE SB74 (LWM)

PROJECT NUMBER 21118.02		DATE 03/02/2022		PROFILE NUMBER 200011							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY N. A							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.35 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB74			.	SAND. fine to medium grained, grey, trace shell grit.						
				.	SAND, fine to medium grained, dark grey.						
0.4					End of hole at 0.35 m BGL.						
0.6											
0.8											
1											



ENVIRONMENTAL SOIL BORE SB76 (MSL)

PROJECT NUMBER 21118.02		DATE 03/02/2022		PROFILE NUMBER 200011							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY N. A							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.55 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.0	SB76			.	SAND, fine to coarse grained, pale brown, trace shell grit.						
0.2				.	SAND, fine to medium grained, grey, with shell grit.						
0.4											
0.6					End of hole at 0.55 m BGL.						
0.8											
1.0											



ENVIRONMENTAL SOIL BORE SB72 (HWM)

PROJECT NUMBER 21118.02		DATE 03/02/2022		PROFILE NUMBER 200011							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.2	SB72			.	SAND, fine to medium grained, pale grey.	M					
0.4				.							
0.6				.							
0.8				.	SAND, fine to coarse grained, pale brown, trace fine rounded gravel, some shell grit.	S					
1					End of hole at 1.0 m BGL.						



ENVIRONMENTAL SOIL BORE SB78 (Toe)

PROJECT NUMBER 21118.02		DATE 03/02/2022		PROFILE NUMBER 200011							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.0	SB78			.	SAND, fine to medium grained, pale grey.	D					
0.2				.							
0.4				.	SAND, fine to medium grained, pale brown, trace shell grit.	M					
0.6				.							
0.8				.	SAND, fine to medium grained, pale brown with brown inclusions, shell grit and trace vegetation.	M					
1.0					End of hole at 1.0 m BGL.						



ENVIRONMENTAL SOIL BORE SB66 (LWM)

PROJECT NUMBER	21118.02	DATE	03/02/2022	PROFILE NUMBER	200015		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.4 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB66			.	SAND, fine to coarse grained, pale brown.	S	
0.4				.	SAND, fine to coarse grained, grey, with some shell grit.	S	
0.6					End of hole at 0.4 m BGL. Hole collapse due to saturation.		
0.8							
1							



ENVIRONMENTAL SOIL BORE SB10 (LWM)

PROJECT NUMBER	21118.02	DATE	31/01/2022	PROFILE NUMBER	201057		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.4 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.0	SB10			.	SAND, fine to medium grained, grey/dark grey mottled.	S	
0.2				.	SAND, fine to medium grained, dark grey, some shells <3 cm in diameter.	S	
0.4				.	End of hole at 0.4 m BGL, hole collapsed due to saturation.		
0.6							
0.8							
1.0							



ENVIRONMENTAL SOIL BORE SB64 (HWM)

PROJECT NUMBER 21118.02		DATE 03/02/2022		PROFILE NUMBER 200015							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.0	SB64	DUP 13		.	SAND, fine to coarse grained, beige.	D					
0.2				.	SAND, fine to coarse grained, beige, trace shell grit.	M					
0.4				.	SAND, fine to coarse grained, pale brown, with shell grit.	W					
0.6				.	SAND, fine to coarse grained, pale brown.	S					
0.8					End of hole at 1.0 m BGL.						
1.0											



ENVIRONMENTAL SOIL BORE SB70 (Toe)

PROJECT NUMBER 21118.02		DATE 03/02/2022		PROFILE NUMBER 200015							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.0	SB70			.	SAND, fine to coarse grained sand, beige.	D					
0.2				.							
0.4				.	SAND, fine to coarse grained, beige with trace grey.	D					
0.6				.							
0.8				.	SAND, fine to coarse grained, beige with trace grey.	M					
1.0					End of hole at 1.0 m BGL.						



ENVIRONMENTAL SOIL BORE SB45 (LWM)

PROJECT NUMBER 21118.02		DATE 03/02/2022		PROFILE NUMBER 200016							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY N. A							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.55 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB45			.	SAND/SILT, fine to medium grained, grey.	S					
				.	SAND/SILT, fine to medium grained, grey/pale brown.	S					
				.	SAND/SILT, fine to medium grained, dark grey, clumping.	S					
				.	SAND/SILT, fine to medium grained, dark grey, some shell grit.	S					
0.4											
0.6					End of hole at 0.55 mBGL.						
0.8											
1											



ENVIRONMENTAL SOIL BORE SB47 (MSL)

PROJECT NUMBER 21118.02		DATE 03/02/2022		PROFILE NUMBER 200016							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY N. A							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.7 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB47			.	SAND, fine to coarse grained, pale brown.	W					
0.4				.	SAND/SILT, fine to coarse grained, brown/grey, clumps, some shell grit <2 mm.	S					
0.6				.	SAND/SILT, fine to medium grained, grey/black, some shells <4 mm.	S					
0.8					End of hole at 0.7 mBGL.						
1											



ENVIRONMENTAL SOIL BORE SB43 (HWM)

PROJECT NUMBER 21118.02		DATE 03/02/2022		PROFILE NUMBER 200016							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY N. A							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB43	DUP 12		.	SAND, fine to medium grained, pale tan.	M					
0.4				.	SAND, fine to coarse grained, pale tan, trace shell grit <2 mm.	M					
0.6				.	SAND, fine to coarse grained, beige, shell grit <3 to 4 mm.	W					
0.8											
1					End of hole at 1.0 m BGL.						



ENVIRONMENTAL SOIL BORE SB41 (Toe)

PROJECT NUMBER 21118.02		DATE 03/02/2022		PROFILE NUMBER 200016							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY N. A							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB41			.	SAND, fine to medium grained, pale grey.	D					
0.4				.	SAND, fine to medium grained, pale grey with black flecks.	M					
0.6				.	SAND, fine to coarse grained, pale brown, dark flecks.	M					
0.8											
1					End of hole at 1.0 m BGL (rocks/stones).						



ENVIRONMENTAL SOIL BORE SB60 (LWM)

PROJECT NUMBER 21118.02		DATE 02/02/2022		PROFILE NUMBER 200017							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.4 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB60			.	SAND, fine to coarse grained, pale brown, some shell grit.						
				.	SAND, fine to coarse grained, grey.						
0.4					Sandy CLAY, low plasticity, grey, some fine shell grit.						
					End of hole at 0.4 m BGL, hole collapsed due to saturation.						
0.6											
0.8											
1											



ENVIRONMENTAL SOIL BORE SB61 (MSC)

PROJECT NUMBER 21118.02		DATE 02/02/2022		PROFILE NUMBER 200017							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.5 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB61			.	SAND, fine to medium grained, pale brown.	M					
					SAND, fine to coarse grained, grey, with shell grit.	S					
					SAND, fine to coarse grained, grey, rounded gravel, trace shell grit and shells < 25 mm in diameter.	S					
0.4											
0.6											
0.8											
1											



ENVIRONMENTAL SOIL BORE SB59 (HWM)

PROJECT NUMBER	21118.02	DATE	02/02/2022	PROFILE NUMBER	200017		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.6 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB59			.	SAND, fine to medium grained.	M	
0.4				.	Increasing moisture content.		
0.6					End of hole at 0.6 m BGL, refusal on rock.		
0.8							
1							



ENVIRONMENTAL SOIL BORE SB20 (HWM)

PROJECT NUMBER 21118.02		DATE 31/01/2022		PROFILE NUMBER 200033							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.0	SB20			.	SAND, fine to coarse grained, beige.	D					
0.2				.	Moisture content increasing.	M					
0.4				.							
0.6				.							
0.8				.	SAND, fine to coarse grained, grey/pale brown mottle, shell grit.	S					
1.0				.	End of hole at 1.0 m BGL.						



ENVIRONMENTAL SOIL BORE SB56 (LWM)

PROJECT NUMBER 21118.02		DATE 02/02/2022		PROFILE NUMBER 200018							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.35 m BGL											
COMMENTS General sulphur odour on beach											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.2	SB56			.	SAND, fine to coarse grained, pale brown with trace grey mottling, trace shell grit.	S					
				.	SAND, fine to coarse grained, grey, with some vegetation.	S					
0.4					End of hole at 0.35 m BGL, hole collapsed due to saturation.						
0.6											
0.8											
1											



ENVIRONMENTAL SOIL BORE SB57 (MSL)

PROJECT NUMBER 21118.02		DATE 02/02/2022		PROFILE NUMBER 200018							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.55 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB57			.	SAND, fine to coarse grained, pale brown, with shell grit.	S					
0.4				.	SAND, fine to coarse grained, pale brown with trace grey mottling.	S					
0.6				.	SAND, fine to coarse grained, grey, shell grit and trace vegetation.	S					
0.8					End of hole at 0.55 m BGL.						
1											



ENVIRONMENTAL SOIL BORE SB55 (MSC)

PROJECT NUMBER	21118.02	DATE	02/02/2022	PROFILE NUMBER	200018		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.95 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
	SB55			.	SAND, fine to coarse grained, beige.	D	
0.2				.	SAND, fine to coarse grained, pale brown.	M	Mild sulphur odour
0.4				.			
0.6				.			
0.8				.	SAND, fine to coarse grained, pale brown, with shell grit.	S	
-1					End of hole at 0.95 m BGL, hole collapsed due to saturation.		



ENVIRONMENTAL SOIL BORE SB58 (Toe)

PROJECT NUMBER	21118.02	DATE	02/02/2022	PROFILE NUMBER	200018		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	1.0 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
	SB58			.	SAND, fine to medium grained, beige, vegetation.	D	
0.2				✓ ✓ ✓ ✓	Vegetation layer (seagrass).	D	
0.4				.	SAND, fine to medium grained, grey.	D	
0.6				.			
0.8				.	SAND, fine to medium plasticity, pale brown.	D	
1					End of hole at 1.0 m BGL.		



ENVIRONMENTAL SOIL BORE SB53 (LWM)

PROJECT NUMBER	21118.02	DATE	02/02/2022	PROFILE NUMBER	200019		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.4 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.0	SB53			.	SAND, fine to coarse grained, grey with trace pale brown.	S	
0.2				.	SAND, fine to coarse grained, grey.	S	
0.4				.	End of hole at 0.4 m BGL, hole collapsed due to saturation.		
0.6							
0.8							
1.0							



ENVIRONMENTAL SOIL BORE SB54 (MSC)

PROJECT NUMBER 21118.02		DATE 02/02/2022		PROFILE NUMBER 200019							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.4 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB54			.	SAND, fine to coarse grained, pale brown.	M					
0.4				.	SAND, fine to coarse grained, pale brown/grey, shell grit.	S					
0.6					End of hole at 0.45 m BGL, hole collapsed due to saturation.						
0.8											
1											



ENVIRONMENTAL SOIL BORE SB52 (LWM)

PROJECT NUMBER 21118.02		DATE 02/02/2022		PROFILE NUMBER 200019							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.2	SB52	DUP 11		.	SAND, fine to medium grained, beige.	M					
0.4				.							
0.6				.	SAND, fine to coarse grained, pale brown, some shells <25 mm in diameter, trace vegetation inclusion.	W					
0.8				.							
1				.	SAND, fine to coarse grained, pale brown.	S					
					End of hole at 1.0 m BGL.						



ENVIRONMENTAL SOIL BORE SB51 (Toe)

PROJECT NUMBER 21118.02		DATE 02/02/2022		PROFILE NUMBER 200019							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.2	SB51	DUP 10		.	SAND, fine to medium grained, beige, trace vegetation.	D					
0.4				.							
0.6				.	Slight increase in moisture.	SM					
0.8				.							
1				.	End of hole at 1.0 m BGL.						



ENVIRONMENTAL SOIL BORE SB46 (LWM)

PROJECT NUMBER 21118.02		DATE 01/02/2022		PROFILE NUMBER 200023							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.4 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.0	SB46			.	SAND, fine to medium grained, pale brown, trace shells <2 mm in diameter.	S					
0.2				.	SAND, fine to medium grained, grey.	S					
0.4					End of hole at 0.4 m BGL, hole collapsed due to saturation.						
0.6											
0.8											
1.0											



ENVIRONMENTAL SOIL BORE SB48 (MSL)

PROJECT NUMBER	21118.02	DATE	01/02/2022	PROFILE NUMBER	200023		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.65 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB48			.	SAND, fine to medium grained, pale brown, trace shell fragments <2 mm in diameter.	W	
0.4				.	SAND, fine to coarse grained, grey, shell fragments <4 mm in diameter.	W	
0.6				.	Increasing moisture.	S	
0.8					End of hole at 0.65 m BGL.		
1							



ENVIRONMENTAL SOIL BORE SB44 (HWM)

PROJECT NUMBER 21118.02		DATE 01/02/2022		PROFILE NUMBER 200023							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.0	SB44			.	SAND, fine to medium grained, beige.	D					
0.2				.							
0.4				.	SAND, fine to coarse grained, beige with trace grey inclusions.	W					
0.6				.							
0.8				.							
1.0				.	End of hole at 1.0 mBGL.						



ENVIRONMENTAL SOIL BORE SB50 (Toe)

PROJECT NUMBER	21118.02	DATE	01/02/2022	PROFILE NUMBER	200023		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.3 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB50			.	SAND, fine to coarse grained, beige, with some vegetation.	D	
0.4					End of hole at 0.3 m BGL, refusal on rock.		
0.6							
0.8							
1							



ENVIRONMENTAL SOIL BORE SB33

PROJECT NUMBER	21118.02	DATE	01/02/2022	PROFILE NUMBER	200026		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	N. A		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.3 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB33			.	SAND/SILT, fine to medium grained, dark grey.	S	
0.4					End of hole at 0.3 m BGL.		
0.6							
0.8							
1							



ENVIRONMENTAL SOIL BORE SB37 (MSL)

PROJECT NUMBER	21118.02	DATE	01/02/2022	PROFILE NUMBER	200026		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	N. A		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.6 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
	SB37			.	SAND, fine to medium grained, pale brown with black staining.	S	
0.2				.	SAND/SILT, fine to medium grained, grey, fine shells.	S	
0.4				.			
0.6				.	End of hole at 0.6 m BGL.		
0.8				.			
1				.			



ENVIRONMENTAL SOIL BORE SB35 (HWM)

PROJECT NUMBER 21118.02		DATE 01/02/2022		PROFILE NUMBER 200026							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY N. A							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.7 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB35			.	SAND, fine to medium grained, pale brown, shell grit present, fine stones.	D					
0.4				.	SAND, fine to coarse grained, pale brown.	M					
0.6				.	SAND, fine to coarse grained, pale brown, small shells.	M					
0.8					End of hole at 0.7 m BGL.						
1											



ENVIRONMENTAL SOIL BORE SB39 (Toe)

PROJECT NUMBER 21118.02		DATE 01/02/2022		PROFILE NUMBER 200026							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A			LOGGED BY N. A						
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.6 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
	SB39	DUP 6		.	SAND, fine to medium grained, pale grey.	D					
0.2				.	SAND, fine to medium grained, pale tan.	M					
0.4											
0.6					End of hole at 0.6 m BGL.						
0.8											
1											



ENVIRONMENTAL SOIL BORE SB36 (LWM)

PROJECT NUMBER	21118.02	DATE	01/02/2022	PROFILE NUMBER	200029		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	N. A		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.35 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
	SB36			.	SAND, fine to coarse grained, pale brown, trace vegetation.	S	
0.2				.	SAND, fine to coarse grained, grey, trace shell grit.	S	
0.4					End of hole at 0.35 m BGL, hole collapsed due to saturation.		
0.6							
0.8							
1							



ENVIRONMENTAL SOIL BORE SB40 (MSC)

PROJECT NUMBER 21118.02		DATE 01/02/2022		PROFILE NUMBER 200029							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY N. A							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.4 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB40			.	SAND, fine to coarse grained, pale brown, trace shell grit.	S					
				.	SAND, fine to coarse grained, pale brown, trace shell grit.	S					
				*	SAND, predominantly shell grit with fine to coarse grained sand.	S					
0.4					End of hole at 0.4 m BGL, hole collapsed due to saturation.						
0.6											
0.8											
1											



ENVIRONMENTAL SOIL BORE SB38 (HWM)

PROJECT NUMBER 21118.02		DATE 01/02/2022		PROFILE NUMBER 200029							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY N. A							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.2	SB38	DUP 9		.	SAND, fine to coarse grained, beige.	M					
0.4				.							
0.6				.	SAND, fine to coarse grained, beige, shell grit.	W					
0.8				.	Large shell pieces <4 mm in diameter.						
1				.	End of hole at 1.0 m BGL.						



ENVIRONMENTAL SOIL BORE SB42 (Toe)

PROJECT NUMBER 21118.02		DATE 01/02/2022		PROFILE NUMBER 200029							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY N. A							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.55 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB42			.	SAND, fine to coarse grained, beige.	D					
0.4				.	Slight increase in moisture.	M					
0.6					End of hole at 0.55 m BGL, refusal on stone.						
0.8											
1											



ENVIRONMENTAL SOIL BORE SB29 (LWM)

PROJECT NUMBER	21118.02	DATE	01/02/2022	PROFILE NUMBER	200030		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	N. A		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.4 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
	SB29			.	SAND, fine to medium grained, dark grey.	S	
0.2				.	SAND/SILT, fine to medium grained, pale grey.		
0.4				.	End of hole at 0.4 m BGL.		
0.6							
0.8							
1							



ENVIRONMENTAL SOIL BORE SB31 (MSL)

PROJECT NUMBER	21118.02	DATE	01/02/2022	PROFILE NUMBER	200030		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	N. A		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.3 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
	SB31			.	SAND, fine to coarse grained, pale tan/brown.	S	
0.2				.	SAND/SILT, fine to medium grained, grey, dark staining.	S	
0.4					End of hole at 0.3 m BGL, due to saturation		
0.6							
0.8							
1							



ENVIRONMENTAL SOIL BORE SB27 (HWM)

PROJECT NUMBER 21118.02		DATE 01/02/2022		PROFILE NUMBER 200030							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY N. A							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.75 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB27			.	SAND, fine to medium grained, pale beige.	M					
0.4				.	SAND, fine to medium grained, beige, black staining throughout.	M					
0.6				.	SAND, fine to coarse grained, dark beige.	W					
0.8					End of hole at 0.75 m BGL.						
1											



ENVIRONMENTAL SOIL BORE SB44 (HWM)

PROJECT NUMBER 21118.02		DATE 01/02/2022		PROFILE NUMBER 200023							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.0	SB44			.	SAND, fine to medium grained, beige.	D					
0.2				.							
0.4				.	SAND, fine to coarse grained, beige with trace grey inclusions.	W					
0.6				.							
0.8				.							
1.0				.	End of hole at 1.0 mBGL.						



ENVIRONMENTAL SOIL BORE SB30 (LWM)

PROJECT NUMBER 21118.02		DATE 01/02/2022		PROFILE NUMBER 200031							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.4 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.0	SB30			.	SAND, fine to coarse grained, grey with brown mottle.	S					
0.2				.	SAND, fine to coarse grained, brown with trace grey inclusions, fine gravel and shell grit.	S					
0.4					End of hole at 0.4 m BGL, hole collapsed due to saturation.						
0.6											
0.8											
1.0											



ENVIRONMENTAL SOIL BORE SB34 (MSL)

PROJECT NUMBER 21118.02		DATE 01/02/2022		PROFILE NUMBER 200031							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.45 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.2	SB34			.	SAND, fine to medium grained, beige, trace shell grit.	S					
0.4				.	SAND, fine to coarse grained, beige, shell grit and trace gravel.	S					
0.6					CLAY, medium to high plasticity, red brown.	S					
0.8					End of hole at 0.45 m BGL.						
1											



ENVIRONMENTAL SOIL BORE SB26 (HWM)

PROJECT NUMBER 21118.02		DATE 01/02/2022		PROFILE NUMBER 200031							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS Located 3m from rockwall											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB26	DUP 7		.	SAND, fine to coarse grained, beige.	D					
0.4				.	Moisture content increasing.	M					
0.6				.							
0.8				.	Moisture content increasing.	W					
1					End of hole at 1.0 m BGL.						



ENVIRONMENTAL SOIL BORE SB28 (Toe)

PROJECT NUMBER	21118.02	DATE	01/02/2022	PROFILE NUMBER	200031		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.5 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB28			.	SAND, fine to coarse grained, beige.	D	
0.4				.			
0.6				.	End of hole at 0.5 m BGL, refusal on stones.		
0.8				.			
1				.			



ENVIRONMENTAL SOIL BORE SB18 (LWM)

PROJECT NUMBER	21118.02	DATE	31/01/2022	PROFILE NUMBER	200033		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.45 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.0	SB18			.	SAND, fine to medium grained, grey/dark grey mottled.	S	
0.2				.	SAND, fine to medium grained, pale brown.	S	
0.4				.			
0.6					End of hole at 0.45 m BGL, hole collapsed due to saturation.		
0.8							
1.0							



ENVIRONMENTAL SOIL BORE SB22 (MSC)

PROJECT NUMBER	21118.02	DATE	31/01/2022	PROFILE NUMBER	200033		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.4 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB22			.	SAND, fine to coarse grained, pale brown, trace shell grit.	S	
0.4				.	SAND, fine to coarse grained, grey brown mottle, shell grit.	S	
0.6							
0.8							
1							



ENVIRONMENTAL SOIL BORE SB20 (HWM)

PROJECT NUMBER 21118.02		DATE 31/01/2022		PROFILE NUMBER 200033							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.0	SB20			.	SAND, fine to coarse grained, beige.	D					
0.2				.	Moisture content increasing.	M					
0.4				.							
0.6				.							
0.8				.	SAND, fine to coarse grained, grey/pale brown mottle, shell grit.	S					
1.0				.	End of hole at 1.0 m BGL.						



ENVIRONMENTAL SOIL BORE SB24 (Toe)

PROJECT NUMBER	21118.02	DATE	31/01/2022	PROFILE NUMBER	200033		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.45 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB24	DUP 5	.	.	SAND, fine to coarse grained, beige.	D	
0.4			.	.			
0.6			.	.	End of hole at 0.45 m BGL, refusal on rock.		
0.8			.	.			
1			.	.			



ENVIRONMENTAL SOIL BORE SB17 (LWM)

PROJECT NUMBER	21118.02	DATE	31/01/2022	PROFILE NUMBER	200035		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	N. A		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.4 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.0	SB17			.	SAND, fine to medium grained, grey/tan mottle.	S	
0.2				.	SAND, fine to medium grained, grey.	S	
0.4				.	End of hole at 0.4 m BGL, hole collapsed due to saturation.		
0.6							
0.8							
1.0							



ENVIRONMENTAL SOIL BORE SB21 (MSL)

PROJECT NUMBER 21118.02		DATE 31/01/2022		PROFILE NUMBER 200035							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY N.A							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.4 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.2	SB21			.	SAND, medium to coarse grained, beige, shells present <10 mm in diameter.	S	Tidal pool				
0.4				.	SAND/SILT, fine to medium grained, shells <3 mm in diameter.	S					
0.6											
0.8											
1											



ENVIRONMENTAL SOIL BORE SB19 (HWM)

PROJECT NUMBER	21118.02	DATE	31/01/2022	PROFILE NUMBER	200035		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	N. A		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.5 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
	SB19			.	SAND, fine to medium grained, pale beige.	M	
0.2				.	SAND, fine to coarse grained, beige, with shells <15 cm in diameter.	M	
0.4				.			
0.6					End of hole at 0.5 m BGL, due to compaction.		
0.8							
1							



ENVIRONMENTAL SOIL BORE SB23

PROJECT NUMBER	21118.02	DATE	31/01/2022	PROFILE NUMBER	200037		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	N. A		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.5 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB23	DUP 4	.	.	SAND: fine to medium grained, pale beige.	D	
0.4			.	.			
0.6			.	.	End of hole at 0.5 m BGL.		
0.8			.	.			
1			.	.			



ENVIRONMENTAL SOIL BORE SB10 (LWM)

PROJECT NUMBER	21118.02	DATE	31/01/2022	PROFILE NUMBER	201057		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.4 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.0	SB10			.	SAND, fine to medium grained, grey/dark grey mottled.	S	
0.2				.	SAND, fine to medium grained, dark grey, some shells <3 cm in diameter.	S	
0.4				.	End of hole at 0.4 m BGL, hole collapsed due to saturation.		
0.6							
0.8							
1.0							



ENVIRONMENTAL SOIL BORE SB14 (MSC)

PROJECT NUMBER 21118.02		DATE 31/01/2022		PROFILE NUMBER 201057							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.45 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.2	SB14			.	SAND, fine to medium grained, pale brown.	S					
					SAND, fine to coarse grained, grey/brown mottle, shell grit.	S					
					SAND, fine to coarse grained, grey.	S					
0.4					End of hole at 0.45 m BGL, hole collapsed due to saturation.						
0.6											
0.8											
1											



ENVIRONMENTAL SOIL BORE SB12 (HWM)

PROJECT NUMBER 21118.02		DATE 31/01/2022		PROFILE NUMBER 201057							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 1.0 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.2	SB12	DUP 3	.	.	SAND, fine to medium grained, beige, with dark mottling.	D					
0.4			.	.	SAND, fine to coarse grained, brown, shell grit.	M					
0.6			.	.							
0.8			.	.	SAND, fine to medium grained, pale brown with grey mottling.	S					
1			.	.	End of hole at 1.0 m BGL.						



ENVIRONMENTAL SOIL BORE SB16 (Toe)

PROJECT NUMBER	21118.02	DATE	31/01/2022	PROFILE NUMBER	201057		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	R. L		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	1.0 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
	SB16			.	SAND, fine to medium grained, beige.	D	
0.2				.	SAND, fine to coarse grained, mottled pale brown/pale grey, vegetation.	D	
0.4				.			
0.6				.			
0.8				.	SAND, fine to coarse grained, grey.	D	
				.	SAND, fine to coarse grained, mottled grey/brown.	M	
1					End of hole at 1.0 m BGL.		



ENVIRONMENTAL SOIL BORE SB13 (MSL)

PROJECT NUMBER	21118.02	DATE	31/01/2022	PROFILE NUMBER	200037		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	N. A		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.35 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
	SB13			.	SAND, fine to medium grained, dark beige.	S	
0.2				.	SAND/SHALE, fine to coarse grained, dark grey.	S	
0.4					End of hole at 0.35 m BGL, hole collapsed due to saturation.		
0.6							
0.8							
1							



ENVIRONMENTAL SOIL BORE SB11 (HWM)

PROJECT NUMBER	21118.02	DATE	31/01/2022	PROFILE NUMBER	200037		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	N. A		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.5 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB11			.	SAND, fine to medium grained, pale grey.	D	
0.4				.	SAND, fine to coarse grained, beige.	M	
0.6					End of hole at 0.5 m BGL, due to compaction.		
0.8							
1							



ENVIRONMENTAL SOIL BORE SB09 (Toe)

PROJECT NUMBER	21118.02	DATE	31/01/2022	PROFILE NUMBER	200037		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	N. A		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.3 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB09			.	SAND, fine to medium grained, pale beige, trace vegetation.	D	
0.4					End of hole at 0.3 m BGL, due to compaction.		
0.6							
0.8							
1							



ENVIRONMENTAL SOIL BORE SB07 (LWM)

PROJECT NUMBER	21118.02	DATE	31/01/2022	PROFILE NUMBER	200039		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	A. N		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.4 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB07			.	SAND, fine to coarse grained, dark grey with trace brown.	S	
0.4				.	SAND, fine to coarse grained, dark grey with pale grey mottle, trace round gravel.	S	
0.6							
0.8							
1							



ENVIRONMENTAL SOIL BORE SB08 (MSL)

PROJECT NUMBER	21118.02	DATE	31/01/2022	PROFILE NUMBER	200039		
PROJECT NAME	Metro Coastline Sand Sampling	DRILLING COMPANY	N/A	LOGGED BY	A. N		
CLIENT	Dept of Environment and Water	DRILLER	N/A				
ADDRESS	81-95 Waymouth St, Adelaide	DRILLING METHOD	Hand Auger				
		TOTAL DEPTH	0.4 m BGL				
COMMENTS							
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations
0.2	SB08			.	SAND, fine to medium grained, grey.	S	
				.	SAND, fine to medium grained, dark grey, sulphur odour.	S	
0.4					CLAY, medium to high plasticity, red/brown.	S	
					End of hole at 0.4 m BGL, hole collapsed due to saturation.		
0.6							
0.8							
1							



ENVIRONMENTAL SOIL BORE SB06 (HWM)

PROJECT NUMBER 21118.02		DATE 31/01/2022		PROFILE NUMBER 200039							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY A. N							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.85 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture	Additional Observations				
0.0	SB06			.	SAND, fine to medium grained, beige, trace vegetation.	M					
0.2				.	SAND, fine to coarse grained, pale brown, shell grit and fine shells.	M					
0.4				.							
0.6				.							
0.8				.	SAND, fine to medium grained, dark grey.	S					
1.0					End of hole at 0.85 m BGL, hole collapsed due to saturation.						



ENVIRONMENTAL SOIL BORE SB05 (Toe)

PROJECT NUMBER 21118.02		DATE 31/01/2022		PROFILE NUMBER 200039							
PROJECT NAME Metro Coastline Sand Sampling		DRILLING COMPANY N/A		LOGGED BY R. L							
CLIENT Dept of Environment and Water		DRILLER N/A									
ADDRESS 81-95 Waymouth St, Adelaide		DRILLING METHOD Hand Auger									
TOTAL DEPTH 0.7 m BGL											
COMMENTS											
Depth (m)	Samples	Duplicate	PID	Graphic Log	Material Description	Moisture					
0.2	SB05	DUP 2		.	SAND, fine to medium grained, pale beige.	D					
0.4				.	Increase in moisture.	M					
0.6				.							
0.8					End of hole at 0.7 m BGL, refusal on stones.						
1											

Appendix D

Laboratory Certificates

CHAIN OF CUSTODY DOCUMENTATION - Environmental Projects



Project Title : Additional Metro Coastline Sand Sampling

Job Number : 21118.02

Project Manager: Lisa Baile

Phone: 0407 713 536

Primary Laboratory: EnviroLab

Email: lisa.baile@environmentalprojects.com.au

Laboratory Quote Ref: 21SA142

richard.lewis@environmentalprojects.com.au

Results to: Lab.Results@environmentalprojects.com.au

richard.lewis@environmentalprojects.com.au

Invoice to: accounts@environmentalprojects.com.au

Secondary Laboratory: ALS

Laboratory Quote Ref:

COC REFERENCE		
COC- 01		

Turnaround Required	
Standard	

Contract Laboratory Sample ID	Sample ID	Date Sampled	Sample Matrix / Type	CHEMICAL TESTING REQUIRED												Additional Comments / Notes
				PSD wet sieving	PSD hydrometer	Calcium carbonate content										
1	SB99	28/1/22	Sand	1	1	1										
2	SB32	28/1/22		1	1	1										
3	SB15	28/1/22		1	1	1										
4	SB01	28/1/22		1	1	1										
5	SB02	28/1/22		1	1	1										
6	SB03	28/1/22		1	1	1										
7	SB04	28/1/22		1	1	1										
8	Dup1	28/1/22		1	1	1										
9	SB05	31/1/22	Sand	1	1	1										
10	SB06			1	1	1										
11	SB07			1	1	1										
12	SB08			1	1	1										
13	SB10			1	1	1										
14	SB12			1	1	1										
15	SB14			1	1	1										
16	SB16			1	1	1										
17	SB18			1	1	1										
18	SB20			1	1	1										
19	SB22			1	1	1										
20	SB24			1	1	1										
21	Dup2															
22	Dup3															
23	Dups			1	1	1										
24	SB09			1	1	1										
25	SB17			1	1	1										
26	SB19			1	1	1										
27	SB15			1	1	1										
28	SB11			1	1	1										
29	SB10			1	1	1										

EnviroLab Services
12 Ashley St
Chatswood NSW 2067
Ph. (02) 9910 6200

Job No: 287867
Date Received: 02/02/2022
Time Received: 11:30
Received by: [Signature]
Temp: Cool/Ambient
Container: Icepack
Security: Intact/Broken/None

CHAIN OF CUSTODY DOCUMENTATION - Environmental Projects

Project Title : Additional Metro Coastline Sand Sampling

Job Number : 21118.02

Project Manager: Lisa Baile

Phone: 0407 713 536

Email: lisa.baile@environmentalprojects.com.au

richard.lewis@environmentalprojects.com.au

Results to: lab_results@environmentalprojects.com.au

richard.lewis@environmentalprojects.com.au

Invoce to: accounts@environmentalprojects.com.au

Primary Laboratory: EnviroLab

Laboratory Quote Ref: 21SA132

Secondary Laboratory: ALS

Laboratory Quote Ref:

EP
EnviroLab Services
12 Ashby St
Chatswood NSW 2067
Ph: (02) 9910 6200

To: 287915.

Date Received: 3.2.22
Time Received:

Per: V.J By:

Temp: 200/Ambient

Cooling: chiller

Turnaround Required: 1 week

Standard

COC REFERENCE
COC-02

Contract Laboratory Sample ID	Sample ID	Date Sampled	Sample Matrix / Type	CHEMICAL TESTING REQUIRED								Additional Comments / Notes
				PSD wet sieving	Calcium carbonate content	PSD hydrometer						
30	SB46	6/1/22	Sand	1	1	1						
31	SB48			1	1	1						
32	SB44			1	1	1						
33	SB50			1	1	1						
34	SB33			1	1	1						
35	SB37			1	1	1						
36	SB38			1	1	1						
37	SB39			1	1	1						
38	SB06			1	1							
39	SB38			1	1	1						
40	SB40			1	1							
41	SB42			1	1	1						
42	SB29			1	1	1						
43	SB31			1	1	1						
44	SB25			1	1	1						
45	SB27			1	1	1						
46	SB20			1	1	1						
47	SB34			1	1	1						
48	SB26			1	1	1						
49	SB28			1	1	1						
50	DWP7			1	1	1						
51	DWP9			1	1	1						
52	DWP6											
53	DWP4	3/1/22										
54	SB21	3/1/22		1	1	1						
55	SB23	3/1/22		1	1	1						

CHAIN OF CUSTODY DOCUMENTATION - Environmental Projects



Project Title : Additional Metro Coastline Sand Sampling
 Job Number : 21118.02
 Project Manager: Lisa Bailie
 Phone: 0407 713 536 Primary Laboratory: EnviroLab
 Email: lisa.bailie@environmentalprojects.com.au
richard.lewis@environmentalprojects.com.au Laboratory Quote Ref: 21SA142
 Results to: Lab.Results@environmentalprojects.com.au
richard.lewis@environmentalprojects.com.au Secondary Laboratory: ALS
 Invoice to: accounts@environmentalprojects.com.au Laboratory Quote Ref:

COC REFERENCE	Turnaround Required
COC-03	Standard

SAMPLE DETAILS				CHEMICAL TESTING REQUIRED												Additional Comments / Notes	
Contract Laboratory Sample ID	Sample ID	Date Sampled	Sample Matrix / Type	PSD wet sieving	PSD hydrometer	Calcium carbonate content											Additional Comments / Notes
56	SB60	2/2/22	Sand	1	1	1											Envirolab Services 12 Ashley St Chatswood NSW 2067 Ph: (02) 9410 6200
57	SB61			1	1	1											Job No: 287867
58	SB59			1	1	1											Date Received: 1/2/22 Time Received: 0900 Received by: 30 Temp: Cool/Ambient Cooling: Ice/Icepack Security: Intact/Broken/None
59	SB62			1	1	1											20°C
60	SB56			1	1	1											JAN
61	SB51			1	1	1											
62	SB55			1	1	1											
63	SB58			1	1	1											
64	SB51			1	1	1											
65	SB52			1	1	1											
66	SB53			1	1	1											
67	SB54			1	1	1											
68	Dup10			1	1	1											
69	Dup11	+	-													HOLD	
70	SB76	3/2/22	Sand	1	1	1											
71	SB74			1	1	1											
72	SB43			1	1	1											
73	SB45			1	1	1											
74	SB47			1	1	1											
75	SB41			1	1	1											
76	SB70			1	1	1											
77	SB66			1	1	1											
78	SB68			1	1	1											
79	SB64			1	1	1											
80	SB78			1	1	1											
81	SB72			1	1	1											
82	Dup13			+	1	1											
83	Dup12	-	-													HOLD	

CERTIFICATE OF ANALYSIS 287867

Client Details

Client	Environmental Projects
Attention	Lisa Bailie
Address	Suite 3/117 King William St, ADELAIDE, SA, 5000

Sample Details

Your Reference	<u>21118.02, Additional Metro Coastline Sand Sampling</u>
Number of Samples	83 Soil
Date samples received	02/02/2022
Date completed instructions received	02/02/2022

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	18/02/2022
Date of Issue	18/02/2022
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Diego Bigolin, Inorganics Supervisor
Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Misc Inorg - Soil						
Our Reference		287867-1	287867-2	287867-3	287867-4	287867-5
Your Reference	UNITS	SB99	SB32	SB15	SB01	SB02
Date Sampled		28/01/2022	28/01/2022	28/01/2022	28/01/2022	28/01/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	12	14	11	11	12
Misc Inorg - Soil						
Our Reference		287867-6	287867-7	287867-8	287867-9	287867-10
Your Reference	UNITS	SB03	SB04	DUP1	SB05	SB06
Date Sampled		28/01/2022	28/01/2022	28/01/2022	31/01/2022	31/01/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	11	3.3	3.6	6.1	9.8
Misc Inorg - Soil						
Our Reference		287867-11	287867-12	287867-13	287867-14	287867-15
Your Reference	UNITS	SB07	SB08	SB10	SB12	SB14
Date Sampled		31/01/2022	31/01/2022	31/01/2022	31/01/2022	31/01/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	21	14	9.9	5.3	6.5
Misc Inorg - Soil						
Our Reference		287867-16	287867-17	287867-18	287867-19	287867-20
Your Reference	UNITS	SB16	SB18	SB20	SB22	SB24
Date Sampled		31/01/2022	31/01/2022	31/01/2022	31/01/2022	31/01/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	7.9	8.3	7.1	5.6	3.6
Misc Inorg - Soil						
Our Reference		287867-23	287867-24	287867-25	287867-26	287867-27
Your Reference	UNITS	DUP5	SB09	SB17	SB19	SB15
Date Sampled		31/01/2022	31/01/2022	31/01/2022	31/01/2022	31/01/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	3.8	3.3	5.3	6.6	11

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Misc Inorg - Soil						
Our Reference		287867-28	287867-29	287867-30	287867-31	287867-32
Your Reference	UNITS	SB11	SB13	SB46	SB48	SB44
Date Sampled		31/01/2022	31/01/2022	01/02/2022	01/02/2022	01/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	5.5	10	7.8	9.7	4.1
Misc Inorg - Soil						
Our Reference		287867-33	287867-34	287867-35	287867-36	287867-37
Your Reference	UNITS	SB50	SB33	SB37	SB35	SB39
Date Sampled		01/02/2022	01/02/2022	01/02/2022	01/02/2022	01/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	3.5	12	10	6.4	3.4
Misc Inorg - Soil						
Our Reference		287867-38	287867-39	287867-40	287867-41	287867-42
Your Reference	UNITS	SB36	SB38	SB40	SB42	SB29
Date Sampled		01/02/2022	01/02/2022	01/02/2022	01/02/2022	01/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	9.7	2.3	7.5	2.8	7.6
Misc Inorg - Soil						
Our Reference		287867-43	287867-44	287867-45	287867-46	287867-47
Your Reference	UNITS	SB31	SB25	SB27	SB30	SB34
Date Sampled		01/02/2022	01/02/2022	01/02/2022	01/02/2022	01/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	6.4	3.0	2.7	10	7.3
Misc Inorg - Soil						
Our Reference		287867-48	287867-49	287867-50	287867-51	287867-54
Your Reference	UNITS	SB26	SB28	DUP7	DUP9	SB21
Date Sampled		01/02/2022	01/02/2022	01/02/2022	01/02/2022	31/01/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	3.6	3.1	3.8	4.5	9.3

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Misc Inorg - Soil						
Our Reference		287867-55	287867-56	287867-57	287867-58	287867-59
Your Reference	UNITS	SB23	SB60	SB61	SB59	SB62
Date Sampled		31/01/2022	02/02/2022	02/02/2022	02/02/2022	02/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	3.8	11	8.8	3.8	3.7

Misc Inorg - Soil						
Our Reference		287867-60	287867-61	287867-62	287867-63	287867-64
Your Reference	UNITS	SB56	SB57	SB55	SB58	SB51
Date Sampled		02/02/2022	02/02/2022	02/02/2022	02/02/2022	02/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	7.4	12	6.4	3.4	4.1

Misc Inorg - Soil						
Our Reference		287867-65	287867-66	287867-67	287867-68	287867-70
Your Reference	UNITS	SB52	SB53	SB54	DUP10	SB76
Date Sampled		02/02/2022	02/02/2022	02/02/2022	02/02/2022	03/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	4.3	9.0	7.0	4.7	8.2

Misc Inorg - Soil						
Our Reference		287867-71	287867-72	287867-73	287867-74	287867-75
Your Reference	UNITS	SB74	SB43	SB45	SB47	SB41
Date Sampled		03/02/2022	03/02/2022	03/02/2022	03/02/2022	03/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	14	8.7	12	8.7	2.3

Misc Inorg - Soil						
Our Reference		287867-76	287867-77	287867-78	287867-79	287867-80
Your Reference	UNITS	SB70	SB66	SB68	SB64	SB78
Date Sampled		03/02/2022	03/02/2022	03/02/2022	03/02/2022	03/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022	11/02/2022	11/02/2022	11/02/2022
Carbonate Estimate*	%	2.9	7.9	6.6	4.0	3.0

Misc Inorg - Soil			
Our Reference		287867-81	287867-82
Your Reference	UNITS	SB72	DUP13
Date Sampled		03/02/2022	03/02/2022
Type of sample		Soil	Soil
Date prepared	-	11/02/2022	11/02/2022
Date analysed	-	11/02/2022	11/02/2022
Carbonate Estimate*	%	6.2	5.5

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-1	287867-2	287867-3	287867-4	287867-5
Your Reference		SB99	SB32	SB15	SB01	SB02
Date Sampled		28/01/2022	28/01/2022	28/01/2022	28/01/2022	28/01/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	100	100	100	100	100
<2.36mm	%	100	99	99	100	100
<1.18mm	%	100	98	98	100	99
<0.6mm	%	100	95	97	99	96
<0.425mm	%	98	90	95	94	93
<0.3mm	%	97	79	83	78	80
<0.250mm	%	96	73	35	64	70
<0.212mm	%	93	67	28	51	59
<0.15mm	%	68	47	2	18	28
<0.075mm	%	20	8	1	4	4
<0.020mm	%	3	<1	<1	<1	<1
Clay <0.002mm	%	4	1	<1	<1	<1

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-6	287867-7	287867-8	287867-9	287867-10
Your Reference		SB03	SB04	DUP1	SB05	SB06
Date Sampled		28/01/2022	28/01/2022	28/01/2022	31/01/2022	31/01/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	100	100	100	100	97
<2.36mm	%	97	100	100	99	94
<1.18mm	%	94	100	99	99	88
<0.6mm	%	89	100	97	97	72
<0.425mm	%	74	96	92	90	59
<0.3mm	%	47	69	65	72	44
<0.250mm	%	32	45	44	53	36
<0.212mm	%	23	24	26	37	30
<0.15mm	%	5	2	5	13	15
<0.075mm	%	1	1	1	1	6
<0.020mm	%	<1	<1	<1	<1	<1
Clay <0.002mm	%	<1	<1	<1	<1	<1

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-11	287867-12	287867-13	287867-14	287867-15
Your Reference		SB07	SB08	SB10	SB12	SB14
Date Sampled		31/01/2022	31/01/2022	31/01/2022	31/01/2022	31/01/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	87	100	100	100	100
<2.36mm	%	80	100	99	98	99
<1.18mm	%	78	100	99	97	97
<0.6mm	%	72	97	97	90	86
<0.425mm	%	65	95	97	76	72
<0.3mm	%	52	92	94	52	52
<0.250mm	%	45	91	89	33	35
<0.212mm	%	40	90	83	21	24
<0.15mm	%	25	84	57	3	8
<0.075mm	%	3	49	5	<1	2
<0.020mm	%	<1	7	<1	<1	<1
Clay <0.002mm	%	<1	23	<1	<1	<1

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-16	287867-17	287867-18	287867-19	287867-20
Your Reference		SB16	SB18	SB20	SB22	SB24
Date Sampled		31/01/2022	31/01/2022	31/01/2022	31/01/2022	31/01/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	100	100	100	100	100
<2.36mm	%	98	100	99	100	100
<1.18mm	%	96	100	98	94	99
<0.6mm	%	86	99	92	82	99
<0.425mm	%	79	99	76	62	97
<0.3mm	%	69	96	52	35	85
<0.250mm	%	54	92	37	23	70
<0.212mm	%	41	84	26	15	51
<0.15mm	%	18	47	6	2	9
<0.075mm	%	2	3	1	1	1
<0.020mm	%	<1	<1	<1	<1	<1
Clay <0.002mm	%	<1	<1	<1	<1	<1

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-23	287867-24	287867-25	287867-26	287867-27
Your Reference		DUP5	SB09	SB17	SB19	SB15
Date Sampled		31/01/2022	31/01/2022	31/01/2022	31/01/2022	31/01/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	100	100	100	100	100
<2.36mm	%	100	100	98	96	100
<1.18mm	%	99	99	96	91	99
<0.6mm	%	98	98	93	76	99
<0.425mm	%	95	95	90	63	98
<0.3mm	%	83	74	79	43	94
<0.250mm	%	65	46	63	29	89
<0.212mm	%	44	25	36	19	83
<0.15mm	%	8	5	8	5	54
<0.075mm	%	1	<1	1	1	5
<0.020mm	%	<1	<1	<1	<1	<1
Clay <0.002mm	%	<1	<1	<1	<1	<1

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-28	287867-29	287867-30	287867-31	287867-32
Your Reference		SB11	SB13	SB46	SB48	SB44
Date Sampled		31/01/2022	31/01/2022	01/02/2022	01/02/2022	01/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	100	100	100	100	100
<2.36mm	%	98	98	100	98	100
<1.18mm	%	96	96	99	95	100
<0.6mm	%	85	85	98	87	99
<0.425mm	%	71	71	95	79	98
<0.3mm	%	44	44	90	64	88
<0.250mm	%	25	25	83	50	71
<0.212mm	%	15	15	76	41	52
<0.15mm	%	2	2	53	21	19
<0.075mm	%	<1	<1	3	7	1
<0.020mm	%	<1	<1	<1	<1	<1
Clay <0.002mm	%	<1	<1	<1	1	<1

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-33	287867-34	287867-35	287867-36	287867-37
Your Reference		SB50	SB33	SB37	SB35	SB39
Date Sampled		01/02/2022	01/02/2022	01/02/2022	01/02/2022	01/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	100	100	100	100	100
<2.36mm	%	100	98	100	99	100
<1.18mm	%	100	96	99	98	100
<0.6mm	%	99	92	98	93	100
<0.425mm	%	99	90	97	88	98
<0.3mm	%	98	87	96	76	88
<0.250mm	%	93	85	93	64	71
<0.212mm	%	79	80	87	53	53
<0.15mm	%	36	54	43	21	16
<0.075mm	%	9	7	3	4	2
<0.020mm	%	<1	<1	<1	<1	<1
Clay <0.002mm	%	1	<1	<1	<1	<1

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-38	287867-39	287867-40	287867-41	287867-42
Your Reference		SB36	SB38	SB40	SB42	SB29
Date Sampled		01/02/2022	01/02/2022	01/02/2022	01/02/2022	01/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	100	99	100	100	100
<2.36mm	%	96	98	95	100	96
<1.18mm	%	94	96	87	100	94
<0.6mm	%	92	88	72	99	92
<0.425mm	%	89	78	56	95	88
<0.3mm	%	83	56	34	73	81
<0.250mm	%	76	35	20	49	72
<0.212mm	%	68	22	11	24	62
<0.15mm	%	47	13	3	2	33
<0.075mm	%	5	4	2	1	3
<0.020mm	%	<1	<1	<1	<1	<1
Clay <0.002mm	%	<1	1	<1	<1	<1

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-43	287867-44	287867-45	287867-46	287867-47
Your Reference		SB31	SB25	SB27	SB30	SB34
Date Sampled		01/02/2022	01/02/2022	01/02/2022	01/02/2022	01/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	100	100	100	100	100
<2.36mm	%	99	100	100	96	93
<1.18mm	%	98	100	100	94	90
<0.6mm	%	92	95	96	92	83
<0.425mm	%	83	84	82	88	75
<0.3mm	%	71	56	58	83	60
<0.250mm	%	55	30	34	76	43
<0.212mm	%	40	16	19	67	30
<0.15mm	%	14	5	5	30	11
<0.075mm	%	1	1	1	3	2
<0.020mm	%	<1	<1	<1	<1	<1
Clay <0.002mm	%	<1	<1	<1	<1	<1

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-48	287867-49	287867-50	287867-51	287867-54
Your Reference		SB26	SB28	DUP7	DUP9	SB21
Date Sampled		01/02/2022	01/02/2022	01/02/2022	01/02/2022	31/01/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	100	100	100	100	100
<2.36mm	%	100	100	100	98	98
<1.18mm	%	100	100	100	96	96
<0.6mm	%	99	100	100	87	87
<0.425mm	%	97	98	98	78	78
<0.3mm	%	77	84	80	56	56
<0.250mm	%	50	55	53	36	36
<0.212mm	%	32	33	33	17	17
<0.15mm	%	8	8	8	3	3
<0.075mm	%	1	2	1	1	1
<0.020mm	%	<1	<1	<1	<1	<1
Clay <0.002mm	%	<1	<1	<1	<1	<1

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-55	287867-56	287867-57	287867-58	287867-59
Your Reference		SB23	SB60	SB61	SB59	SB62
Date Sampled		31/01/2022	02/02/2022	02/02/2022	02/02/2022	02/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	100	100	100	100	100
<2.36mm	%	100	97	97	100	99
<1.18mm	%	100	94	94	100	99
<0.6mm	%	100	89	90	99	98
<0.425mm	%	96	86	83	94	96
<0.3mm	%	75	78	61	75	82
<0.250mm	%	51	71	43	50	61
<0.212mm	%	31	63	30	28	37
<0.15mm	%	7	32	11	5	6
<0.075mm	%	1	6	2	1	2
<0.020mm	%	<1	<1	<1	<1	<1
Clay <0.002mm	%	<1	<1	<1	<1	<1

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-60	287867-61	287867-62	287867-63	287867-64
Your Reference		SB56	SB57	SB55	SB58	SB51
Date Sampled		02/02/2022	02/02/2022	02/02/2022	02/02/2022	02/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	100	100	100	100	100
<2.36mm	%	100	98	99	100	99
<1.18mm	%	99	96	98	100	99
<0.6mm	%	99	87	94	98	98
<0.425mm	%	95	72	83	96	95
<0.3mm	%	77	48	54	65	77
<0.250mm	%	56	31	33	43	54
<0.212mm	%	35	21	19	27	35
<0.15mm	%	12	7	1	6	8
<0.075mm	%	3	1	<1	1	1
<0.020mm	%	<1	<1	<1	<1	<1
Clay <0.002mm	%	<1	<1	<1	<1	<1

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-65	287867-66	287867-67	287867-68	287867-70
Your Reference		SB52	SB53	SB54	DUP10	SB76
Date Sampled		02/02/2022	02/02/2022	02/02/2022	02/02/2022	03/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	100	100	100	100	100
<2.36mm	%	100	100	98	98	99
<1.18mm	%	99	99	95	95	99
<0.6mm	%	97	98	83	83	97
<0.425mm	%	89	95	68	68	93
<0.3mm	%	63	89	40	40	76
<0.250mm	%	44	83	24	24	56
<0.212mm	%	27	74	16	16	40
<0.15mm	%	4	40	5	5	12
<0.075mm	%	1	3	2	2	2
<0.020mm	%	<1	<1	<1	<1	<1
Clay <0.002mm	%	<1	<1	<1	<1	<1

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-71	287867-72	287867-73	287867-74	287867-75
Your Reference		SB74	SB43	SB45	SB47	SB41
Date Sampled		03/02/2022	03/02/2022	03/02/2022	03/02/2022	03/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	100	100	100	100	100
<2.36mm	%	100	97	96	98	100
<1.18mm	%	99	95	94	94	100
<0.6mm	%	99	88	87	85	100
<0.425mm	%	99	77	81	75	99
<0.3mm	%	99	48	67	54	81
<0.250mm	%	99	29	57	35	52
<0.212mm	%	98	16	47	23	31
<0.15mm	%	92	3	22	6	8
<0.075mm	%	24	1	3	1	2
<0.020mm	%	<1	<1	<1	<1	<1
Clay <0.002mm	%	2	<1	<1	<1	<1

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

Particle Size Distribution in Soils						
Our Reference	UNITS	287867-76	287867-77	287867-78	287867-79	287867-80
Your Reference		SB70	SB66	SB68	SB64	SB78
Date Sampled		03/02/2022	03/02/2022	03/02/2022	03/02/2022	03/02/2022
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022	08/02/2022	08/02/2022	08/02/2022
<75mm	%	100	100	100	100	100
<37.5mm	%	100	100	100	100	100
<19mm	%	100	100	100	100	100
<9.5mm	%	100	100	100	100	100
<4.75mm	%	100	100	100	100	100
<2.36mm	%	100	100	98	99	100
<1.18mm	%	100	100	98	97	100
<0.6mm	%	99	97	95	92	99
<0.425mm	%	95	95	89	85	95
<0.3mm	%	70	87	65	56	65
<0.250mm	%	42	76	44	29	39
<0.212mm	%	20	59	28	13	23
<0.15mm	%	2	18	10	1	6
<0.075mm	%	<1	1	2	<1	1
<0.020mm	%	<1	<1	<1	<1	<1
Clay <0.002mm	%	<1	<1	<1	<1	<1

Particle Size Distribution in Soils			
Our Reference	UNITS	287867-81	287867-82
Your Reference		SB72	DUP13
Date Sampled		03/02/2022	03/02/2022
Type of sample		Soil	Soil
Date prepared	-	07/02/2022	07/02/2022
Date analysed	-	08/02/2022	08/02/2022
<75mm	%	100	100
<37.5mm	%	100	100
<19mm	%	100	100
<9.5mm	%	100	100
<4.75mm	%	100	100
<2.36mm	%	99	99
<1.18mm	%	98	98
<0.6mm	%	95	95
<0.425mm	%	81	81
<0.3mm	%	55	55
<0.250mm	%	37	37
<0.212mm	%	27	27
<0.15mm	%	26	26
<0.075mm	%	8	6
<0.020mm	%	<1	<1
Clay <0.002mm	%	1	1

Method ID	Methodology Summary
Inorg-054	Carbonates in Soil - Soil is titrated with dilute HCl and residual acid is titrated. Based upon Rayment and Lyons 2011.
Inorg-107	Particle Size Distribution using AS1269.3.6.3 and AS1269.3.6.1 and in house INORG-107.

Client Reference: 21118.02, Additional Metro Coastline Sand Sampling

QUALITY CONTROL: Misc Inorg - Soil							Duplicate		Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			11/02/2022	1	11/02/2022	11/02/2022		11/02/2022	[NT]
Date analysed	-			11/02/2022	1	11/02/2022	11/02/2022		11/02/2022	[NT]
Carbonate Estimate*	%	0.01	Inorg-054	<0.01	1	12	13	8	96	[NT]

QUALITY CONTROL: Misc Inorg - Soil							Duplicate		Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date prepared	-			[NT]	11	11/02/2022	11/02/2022		11/02/2022	[NT]
Date analysed	-			[NT]	11	11/02/2022	11/02/2022		11/02/2022	[NT]
Carbonate Estimate*	%	0.01	Inorg-054	[NT]	11	21	19	10	101	[NT]

QUALITY CONTROL: Misc Inorg - Soil							Duplicate		Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date prepared	-			[NT]	23	11/02/2022	11/02/2022		11/02/2022	[NT]
Date analysed	-			[NT]	23	11/02/2022	11/02/2022		11/02/2022	[NT]
Carbonate Estimate*	%	0.01	Inorg-054	[NT]	23	3.8	3.7	3	96	[NT]

QUALITY CONTROL: Misc Inorg - Soil							Duplicate		Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	30	11/02/2022	11/02/2022		11/02/2022	[NT]
Date analysed	-			[NT]	30	11/02/2022	11/02/2022		11/02/2022	[NT]
Carbonate Estimate*	%	0.01	Inorg-054	[NT]	30	7.8	7.9	1	98	[NT]

QUALITY CONTROL: Misc Inorg - Soil							Duplicate		Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	43	11/02/2022	11/02/2022		[NT]	[NT]
Date analysed	-			[NT]	43	11/02/2022	11/02/2022		[NT]	[NT]
Carbonate Estimate*	%	0.01	Inorg-054	[NT]	43	6.4	5.5	15	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil							Duplicate		Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	51	11/02/2022	11/02/2022		[NT]	[NT]
Date analysed	-			[NT]	51	11/02/2022	11/02/2022		[NT]	[NT]
Carbonate Estimate*	%	0.01	Inorg-054	[NT]	51	4.5	4.3	5	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil							Duplicate		Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	65	11/02/2022	11/02/2022		[NT]	[NT]
Date analysed	-			[NT]	65	11/02/2022	11/02/2022		[NT]	[NT]
Carbonate Estimate*	%	0.01	Inorg-054	[NT]	65	4.3	4.4	2	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil							Duplicate		Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	71	11/02/2022	11/02/2022		[NT]	[NT]
Date analysed	-			[NT]	71	11/02/2022	11/02/2022		[NT]	[NT]
Carbonate Estimate*	%	0.01	Inorg-054	[NT]	71	14	13	7	[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 AIOP 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.



DATA QUALITY ASSESSMENT SUMMARY

Report Details

Envirolab Report Reference	<u>287867</u>
Client ID	Environmental Projects
Project Reference	21118.02, Additional Metro Coastline Sand Sampling
Date Issued	18/02/2022

QC DATA

All laboratory QC data was within the Envirolab Group's specifications.

HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPH/ISO/NEPM/USEPA reference documents and standards) are compliant.

Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

QC Evaluation

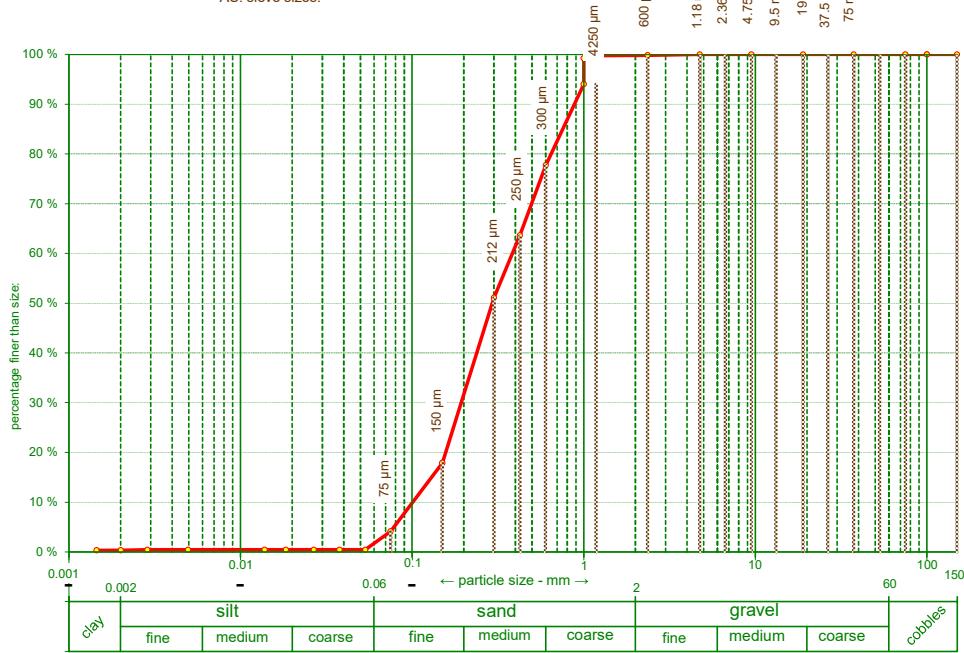
Duplicate(s) was performed as per NEPM frequency	✓
Laboratory Control Sample(s) were analysed with the samples received	✓
A Method Blank was performed with the samples received	✓
Matrix spike(s) was performed as per NEPM frequency (Not Applicable for Air samples)	✓

Refer to Certificate of Analysis for all Quality Control data.

PARTICLE SIZE DISTRIBUTION

287867-4

AS. sieve sizes:



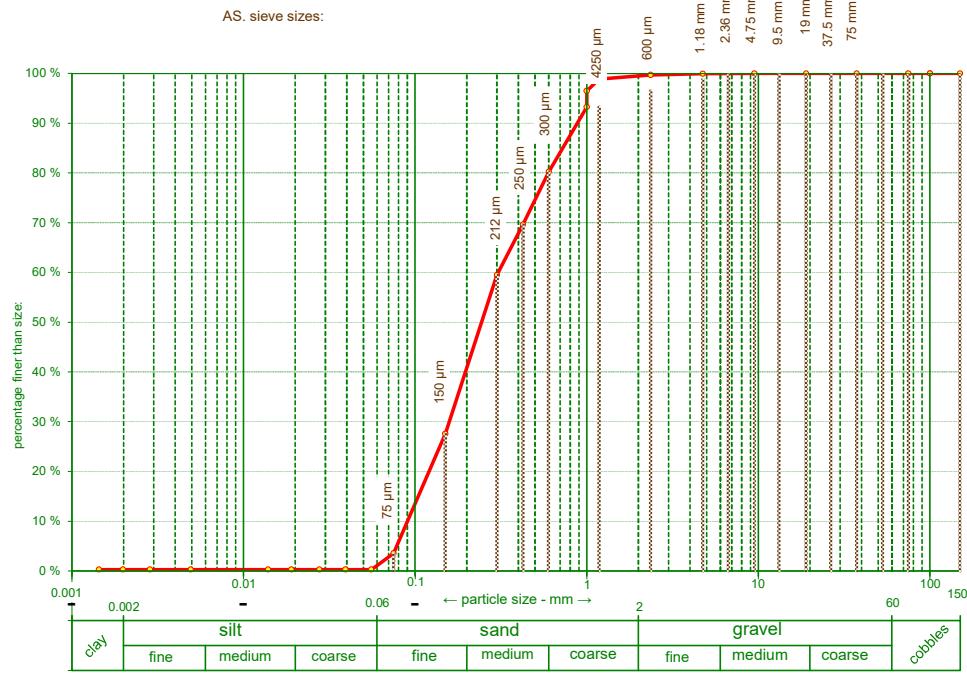
Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	53.4	0.4
100	100.0	37.8	0.4
75	100.0	26.7	0.4
37.5	100.0	18.4	0.4
19	100.0	13.8	0.4
9.5	100.0	4.9	0.4
4.75	100.0	2.9	0.4
2.36	99.8	2.0	0.3
1.18	99.8	1.5	0.3
600 μm	99.2		
425 μm	94.0		
300 μm	77.7		
250 μm	63.6		
212 μm	51.1		
150 μm	17.9		
75 μm	4.1		

NOTES:

d₅₀ 209.97 μm

PARTICLE SIZE DISTRIBUTION

287867-5



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.5	0.3
100	100.0	39.3	0.3
75	100.0	27.8	0.3
37.5	100.0	19.0	0.3
19	100.0	13.9	0.3
9.5	100.0	4.9	0.3
4.75	100.0	2.9	0.3
2.36	99.7	2.0	0.3
1.18	98.8	1.4	0.3
600 μm	96.5		
425 μm	93.2		
300 μm	80.2		
250 μm	69.6		
212 μm	59.5		
150 μm	27.6		
75 μm	3.5		

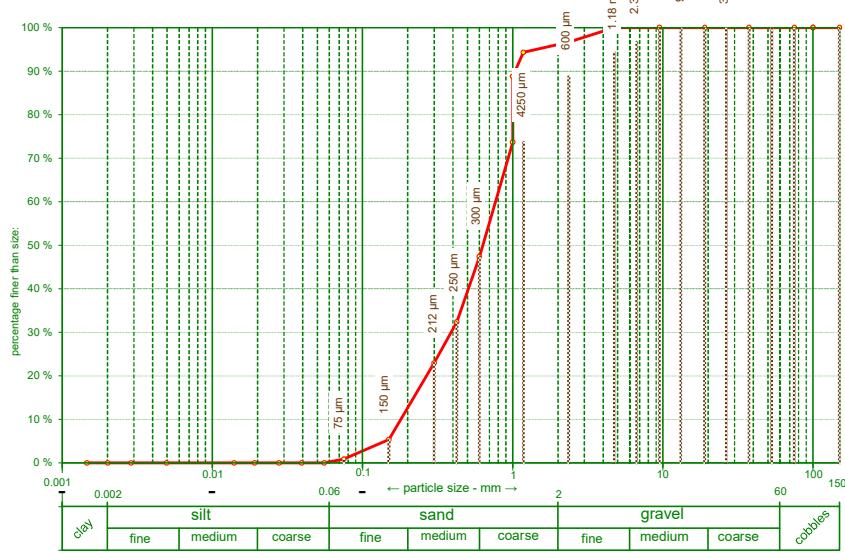
NOTES:

d₅₀ 193.54 μm

PARTICLE SIZE DISTRIBUTION

287867-6

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.6	0.0
100	100.0	39.3	0.0
75	100.0	27.8	0.0
37.5	100.0	19.1	0.0
19	100.0	14.0	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	96.7	2.0	0.0
1.18	94.3	1.5	0.0
600 μm	88.8		
425 μm	73.7		
300 μm	47.4		
250 μm	32.4		
212 μm	23.0		
150 μm	5.4		
75 μm	0.9		

NOTES:

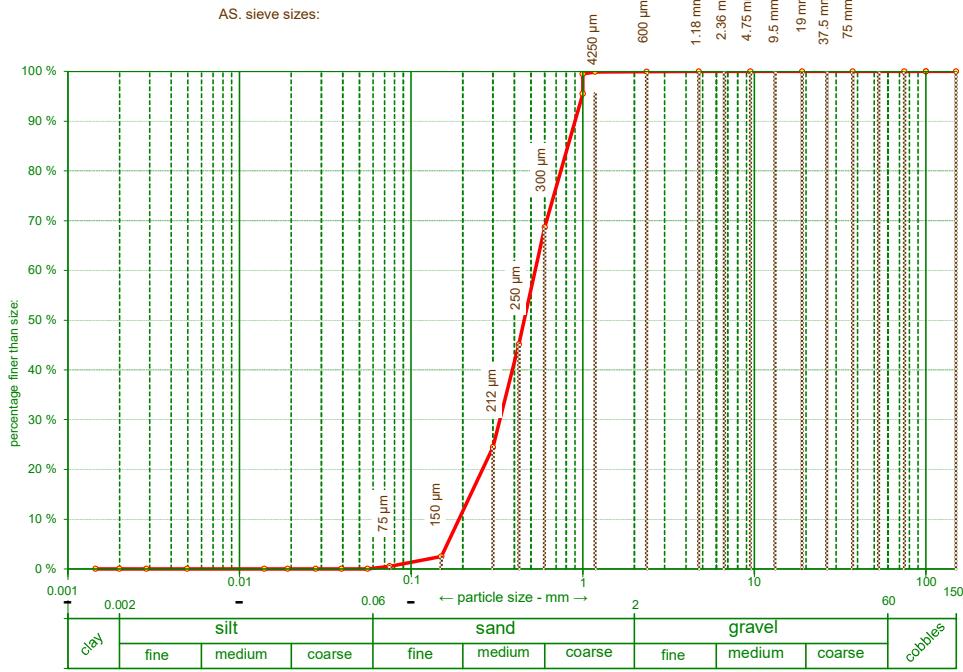
d₅₀ 312.43 μm

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PARTICLE SIZE DISTRIBUTION

287867-7

AS. sieve sizes:



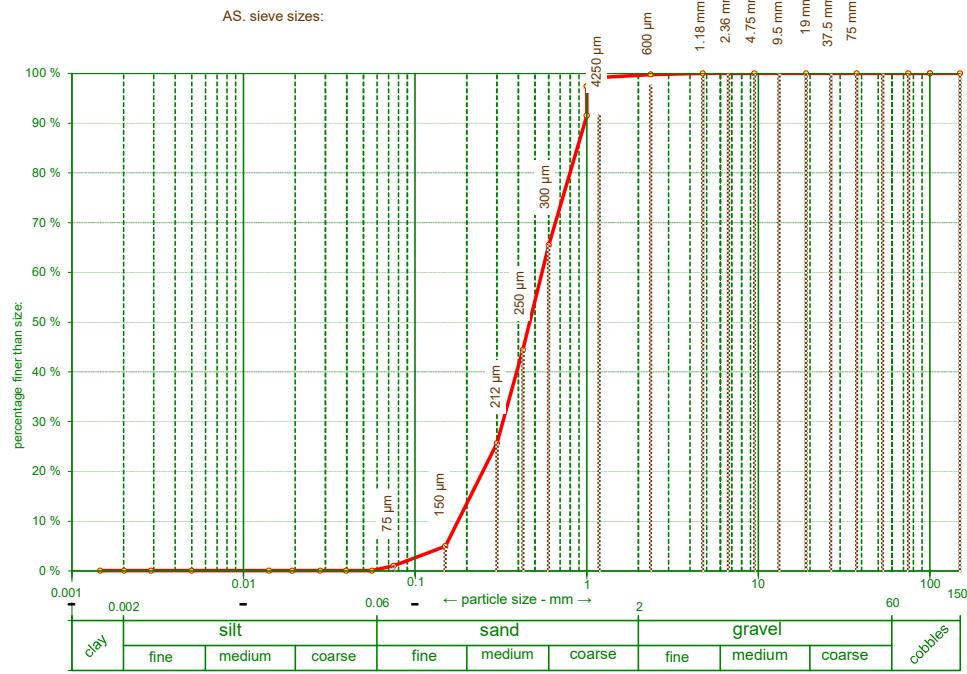
Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.7	0.0
100	100.0	39.4	0.0
75	100.0	27.8	0.0
37.5	100.0	19.1	0.0
19	100.0	13.9	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	100.0	2.0	0.0
1.18	99.9	1.4	0.0
600 μm	99.5		
425 μm	95.5		
300 μm	68.7		
250 μm	45.2		
212 μm	24.5		
150 μm	2.5		
75 μm	0.6		

NOTES:

d50 260.21

PARTICLE SIZE DISTRIBUTION

287867-8



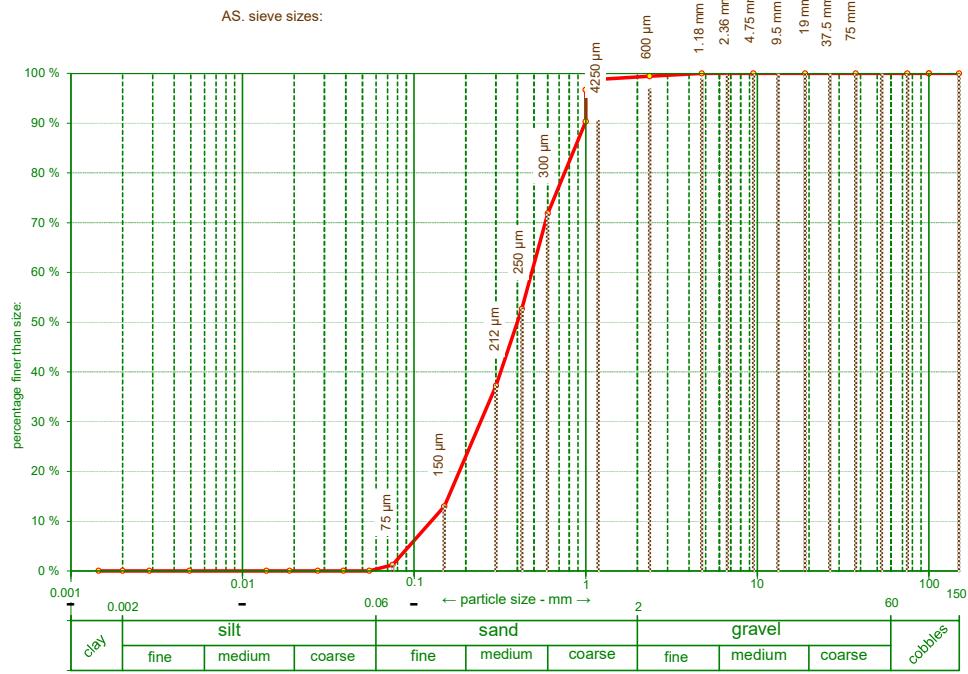
Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	56.0	0.0
100	100.0	39.6	0.0
75	100.0	28.0	0.0
37.5	100.0	19.2	0.0
19	100.0	14.1	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	99.8	2.0	0.0
1.18	99.2	1.5	0.0
600 μm	97.5		
425 μm	91.5		
300 μm	65.5		
250 μm	44.5		
212 μm	25.7		
150 μm	5.0		
75 μm	1.0		

NOTES:

d50	263.1
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PARTICLE SIZE DISTRIBUTION

287867-9



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	54.8	0.0
100	100.0	38.8	0.0
75	100.0	27.4	0.0
37.5	100.0	18.8	0.0
19	100.0	13.8	0.0
9.5	100.0	4.9	0.0
4.75	100.0	2.9	0.0
2.36	99.5	2.0	0.0
1.18	98.8	1.5	0.0
600 μm	96.7		
425 μm	90.3		
300 μm	71.9		
250 μm	52.7		
212 μm	37.2		
150 μm	13.0		
75 μm	1.2		

NOTES:

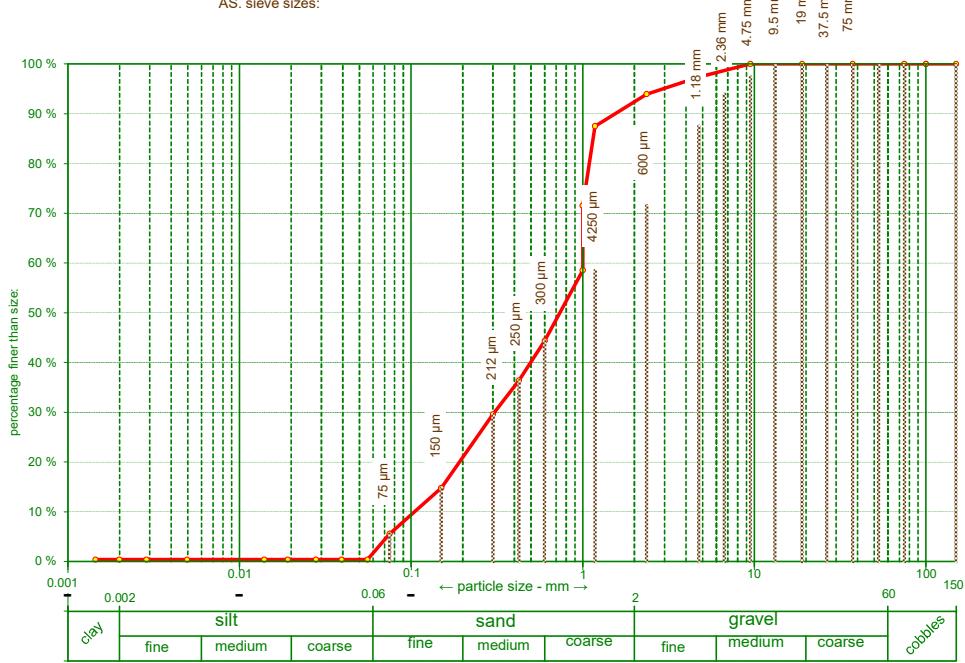
d₅₀ 243.38μm

Page 1 of 1

PARTICLE SIZE DISTRIBUTION

287867-10

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.7	0.4
100	100.0	39.4	0.4
75	100.0	27.9	0.4
37.5	100.0	19.1	0.4
19	100.0	14.0	0.4
9.5	100.0	5.0	0.4
4.75	97.4	2.9	0.4
2.36	94.0	2.0	0.4
1.18	87.5	1.4	0.4
600 μm	71.5		
425 μm	58.5		
300 μm	44.4		
250 μm	36.4		
212 μm	29.6		
150 μm	14.8		
75 μm	5.6		

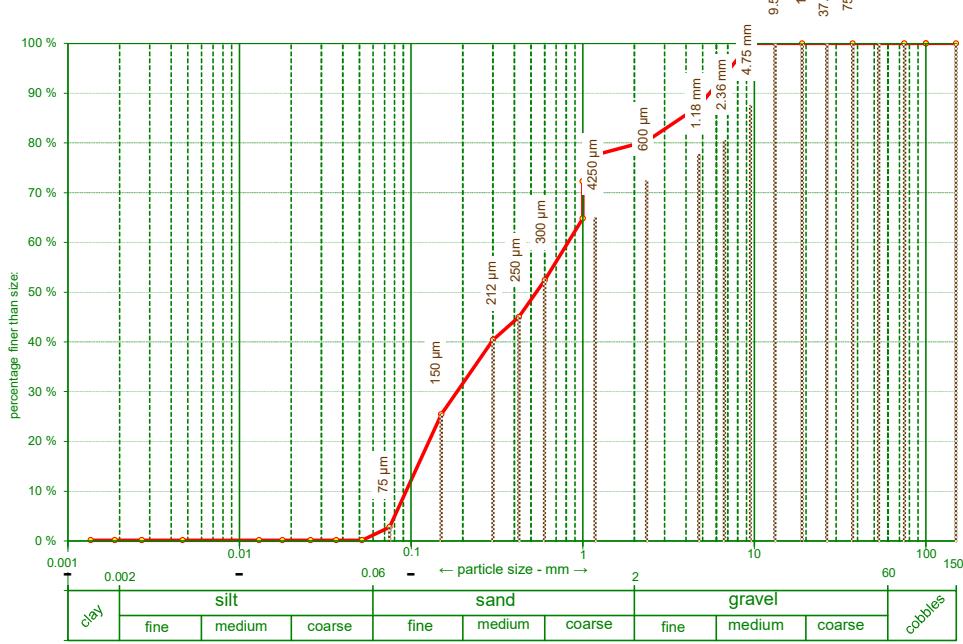
NOTES:

d50 349.665

PARTICLE SIZE DISTRIBUTION

287867-11

AS. sieve sizes:



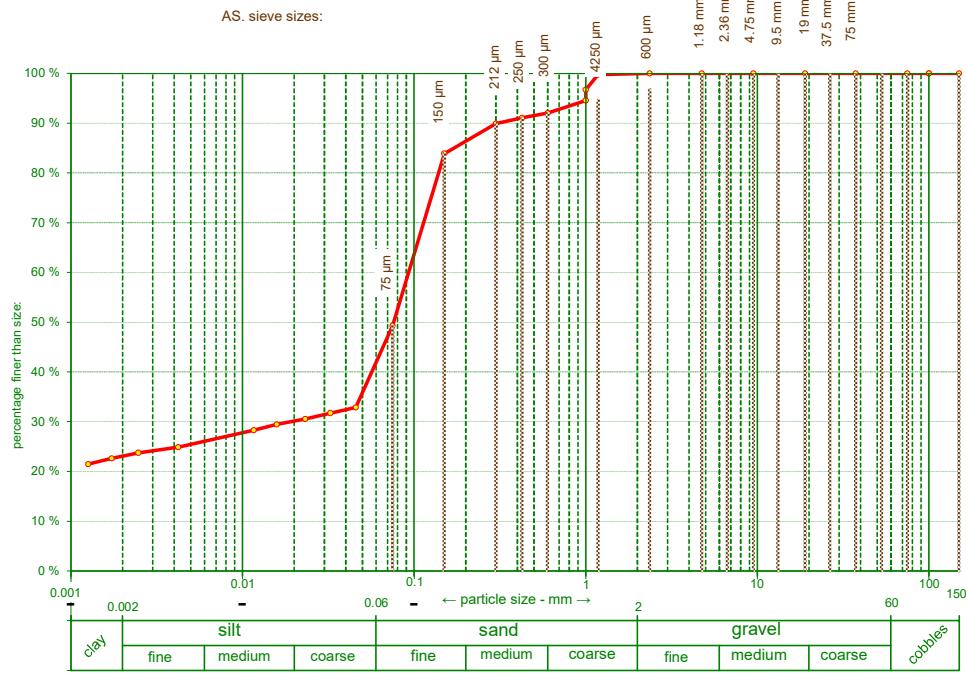
Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	51.8	0.2
100	100.0	36.7	0.2
75	100.0	25.9	0.2
37.5	100.0	17.8	0.2
19	100.0	13.0	0.2
9.5	100.0	4.7	0.2
4.75	87.4	2.7	0.2
2.36	80.3	1.9	0.2
1.18	77.5	1.4	0.2
600 μm	72.3		
425 μm	64.8		
300 μm	52.4		
250 μm	45.0		
212 μm	40.4		
150 μm	25.4		
75 μm	2.8		

NOTES:

d₅₀ 283.78

PARTICLE SIZE DISTRIBUTION

287867-12



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	45.7	32.9
100	100.0	32.6	31.7
75	100.0	23.2	30.6
37.5	100.0	15.8	29.4
19	100.0	11.6	28.3
9.5	100.0	4.2	24.9
4.75	100.0	2.5	23.7
2.36	100.0	1.7	22.6
1.18	99.7	1.3	21.5
600 μm	96.7		
425 μm	94.6		
300 μm	92.0		
250 μm	91.0		
212 μm	89.9		
150 μm	83.9		
75 μm	49.3		

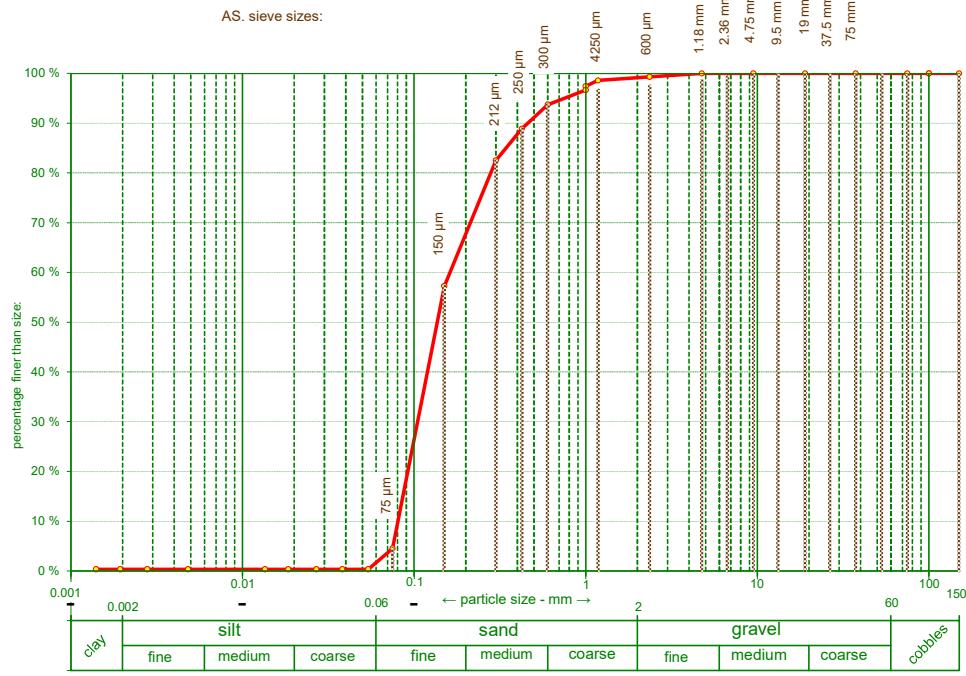
NOTES:

d₅₀ 76.52

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PARTICLE SIZE DISTRIBUTION

287867-13



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	54.0	0.3
100	100.0	38.2	0.3
75	100.0	27.0	0.3
37.5	100.0	18.5	0.3
19	100.0	13.5	0.3
9.5	100.0	4.8	0.3
4.75	100.0	2.8	0.3
2.36	99.3	1.9	0.3
1.18	98.6	1.4	0.3
600 μm	97.5		
425 μm	96.7		
300 μm	93.7		
250 μm	88.9		
212 μm	82.5		
150 μm	57.3		
75 μm	4.5		

NOTES:

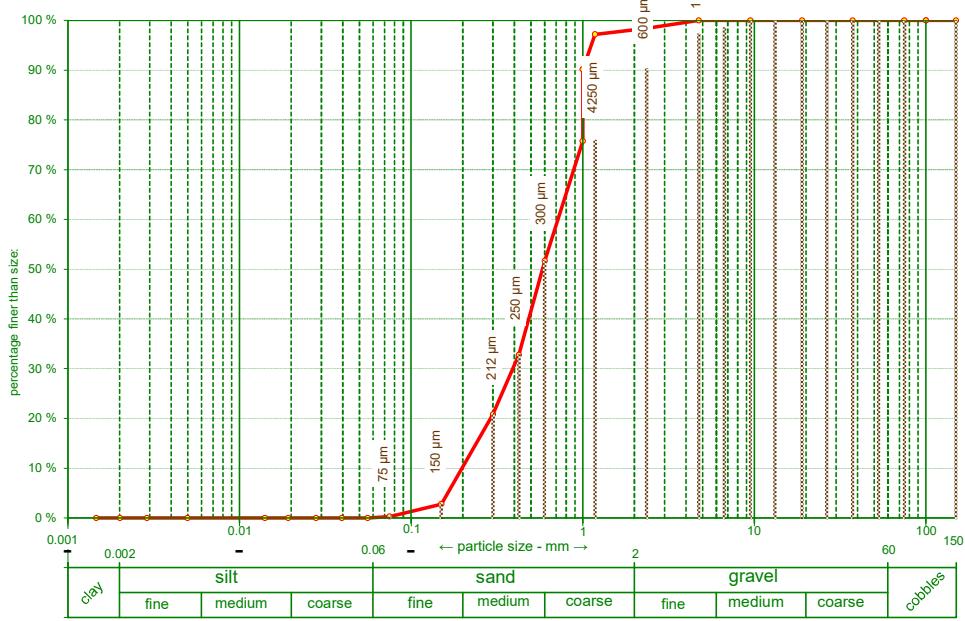
d₅₀ 139.63

Page 1 of 1

PARTICLE SIZE DISTRIBUTION

287867-14

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.9	0.0
100	100.0	39.5	0.0
75	100.0	28.0	0.0
37.5	100.0	19.2	0.0
19	100.0	14.1	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	98.4	2.0	0.0
1.18	97.2	1.5	0.0
600 μm	90.2		
425 μm	75.8		
300 μm	51.6		
250 μm	32.8		
212 μm	20.8		
150 μm	2.8		
75 μm	0.3		

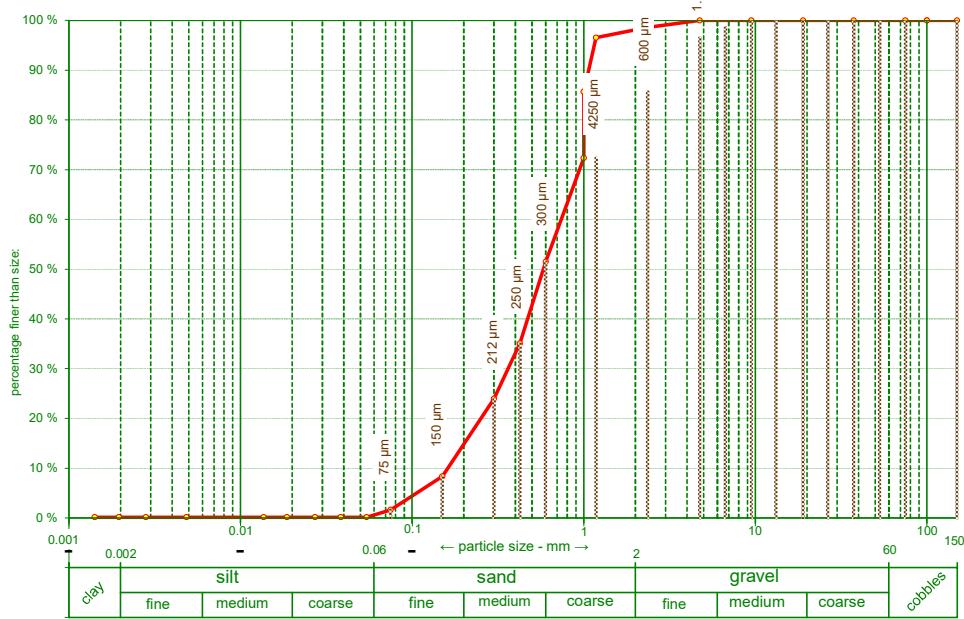
NOTES:

d₅₀ 295.74

PARTICLE SIZE DISTRIBUTION

287867-15

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	54.3	0.1
100	100.0	38.4	0.1
75	100.0	27.2	0.1
37.5	100.0	18.7	0.1
19	100.0	13.6	0.1
9.5	100.0	4.9	0.1
4.75	100.0	2.8	0.1
2.36	98.6	2.0	0.1
1.18	96.5	1.4	0.1
600 μm	85.7		
425 μm	72.4		
300 μm	51.5		
250 μm	35.1		
212 μm	24.0		
150 μm	8.4		
75 μm	1.6		

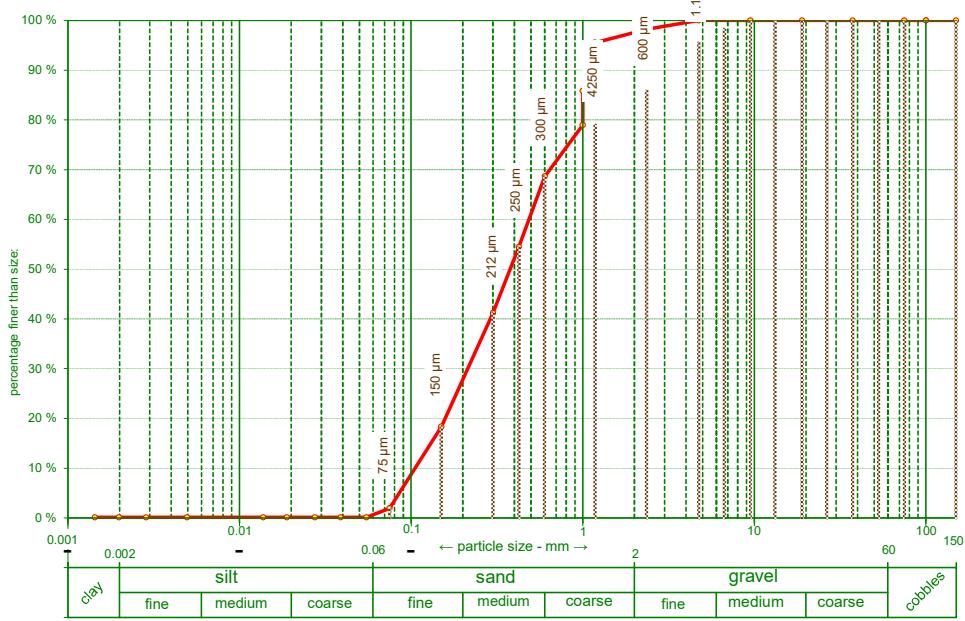
NOTES:

d50 295.43

PARTICLE SIZE DISTRIBUTION

287867-16

AS. sieve sizes:



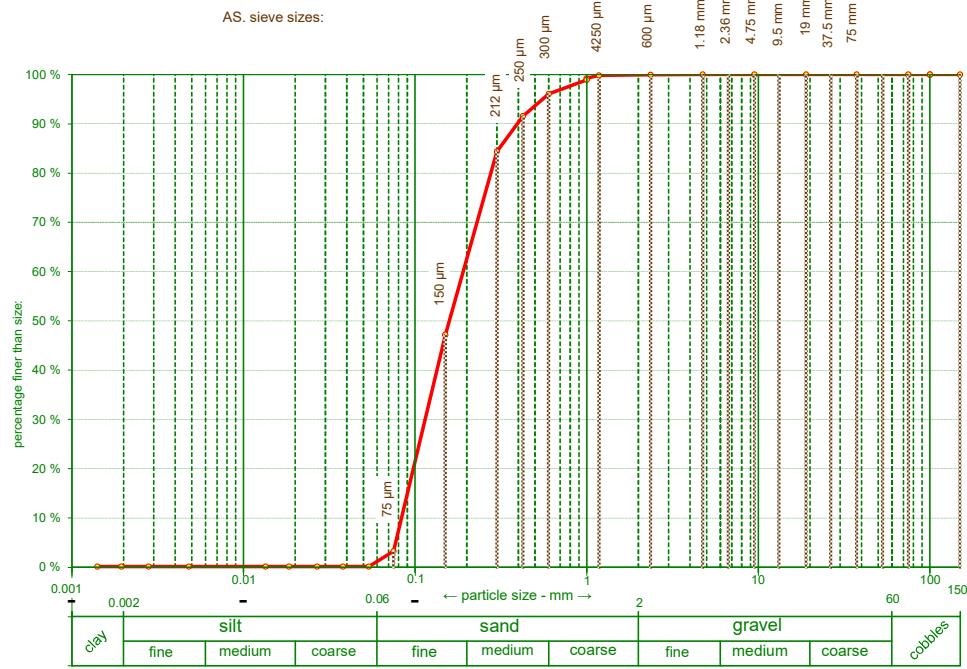
Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	54.9	0.1
100	100.0	38.8	0.1
75	100.0	27.5	0.1
37.5	100.0	18.8	0.1
19	100.0	13.8	0.1
9.5	100.0	4.9	0.1
4.75	100.0	2.9	0.1
2.36	98.2	2.0	0.1
1.18	95.5	1.4	0.1
600 μm	85.8		
425 μm	79.0		
300 μm	68.6		
250 μm	54.5		
212 μm	41.2		
150 μm	18.3		
75 μm	1.9		

NOTES:

d50 237.14

PARTICLE SIZE DISTRIBUTION

287867-17



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	53.7	0.2
100	100.0	38.0	0.2
75	100.0	26.9	0.2
37.5	100.0	18.4	0.2
19	100.0	13.5	0.2
9.5	100.0	4.8	0.2
4.75	100.0	2.8	0.2
2.36	99.9	1.9	0.2
1.18	99.8	1.4	0.2
600 μm	99.2		
425 μm	98.9		
300 μm	96.0		
250 μm	91.5		
212 μm	84.4		
150 μm	47.2		
75 μm	3.3		

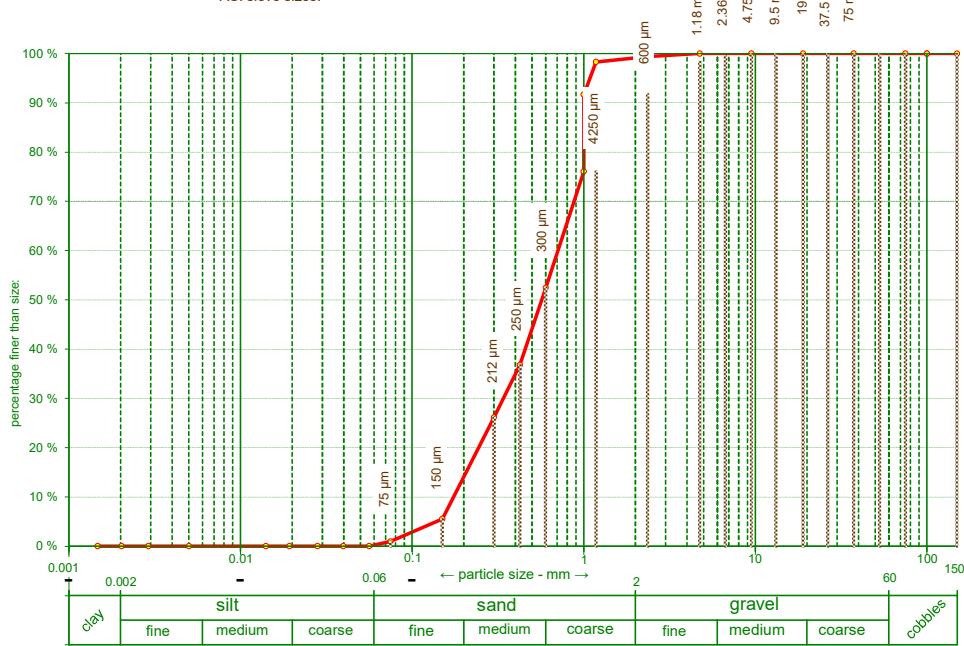
NOTES:

d₅₀ 154.67

PARTICLE SIZE DISTRIBUTION

287867-18

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	56.3	0.0
100	100.0	39.8	0.0
75	100.0	28.1	0.0
37.5	100.0	19.3	0.0
19	100.0	14.1	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	99.4	2.0	0.0
1.18	98.3	1.5	0.0
600 μm	91.7		
425 μm	76.1		
300 μm	52.5		
250 μm	36.8		
212 μm	26.2		
150 μm	5.6		
75 μm	1.0		

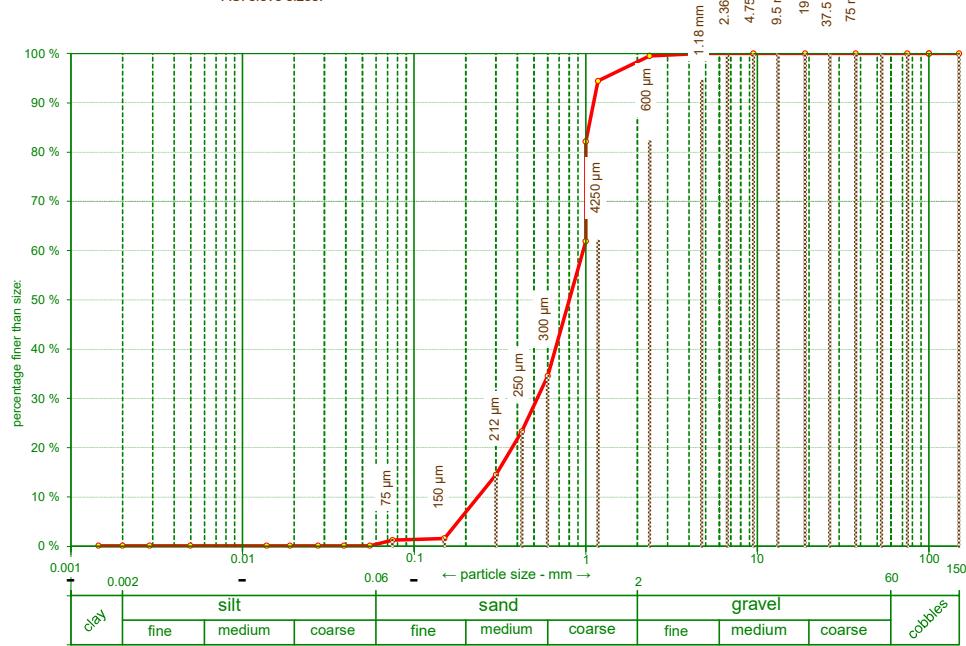
NOTES:

d50 292.04

PARTICLE SIZE DISTRIBUTION

287867-19

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size µm	% Passing
100	100.0	55.2	0.1
100	100.0	39.0	0.1
75	100.0	27.6	0.1
37.5	100.0	18.9	0.1
19	100.0	13.8	0.1
9.5	100.0	5.0	0.1
4.75	100.0	2.9	0.1
2.36	99.5	2.0	0.1
1.18	94.4	1.4	0.1
600 µm	82.1		
425 µm	61.9		
300 µm	34.6		
250 µm	23.4		
212 µm	14.5		
150 µm	1.6		
75 µm	1.3		

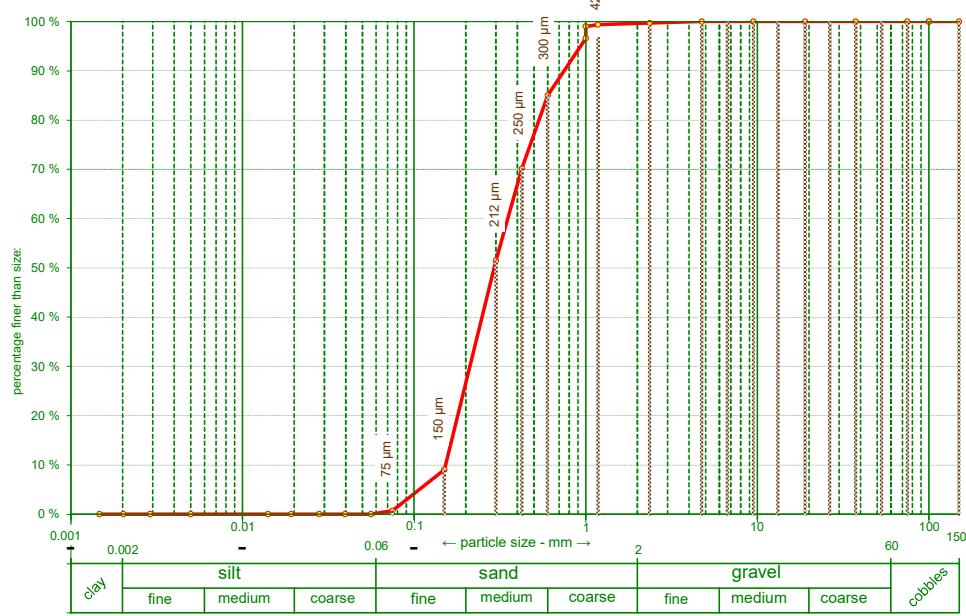
NOTES:

d50 370.51

PARTICLE SIZE DISTRIBUTION

287867-20

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size µm	% Passing
100	100.0	56.0	0.0
100	100.0	39.6	0.0
75	100.0	28.0	0.0
37.5	100.0	19.3	0.0
19	100.0	14.1	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	99.7	2.0	0.0
1.18	99.3	1.5	0.0
600 µm	99.0		
425 µm	96.6		
300 µm	85.0		
250 µm	70.1		
212 µm	51.5		
150 µm	9.1		
75 µm	0.7		

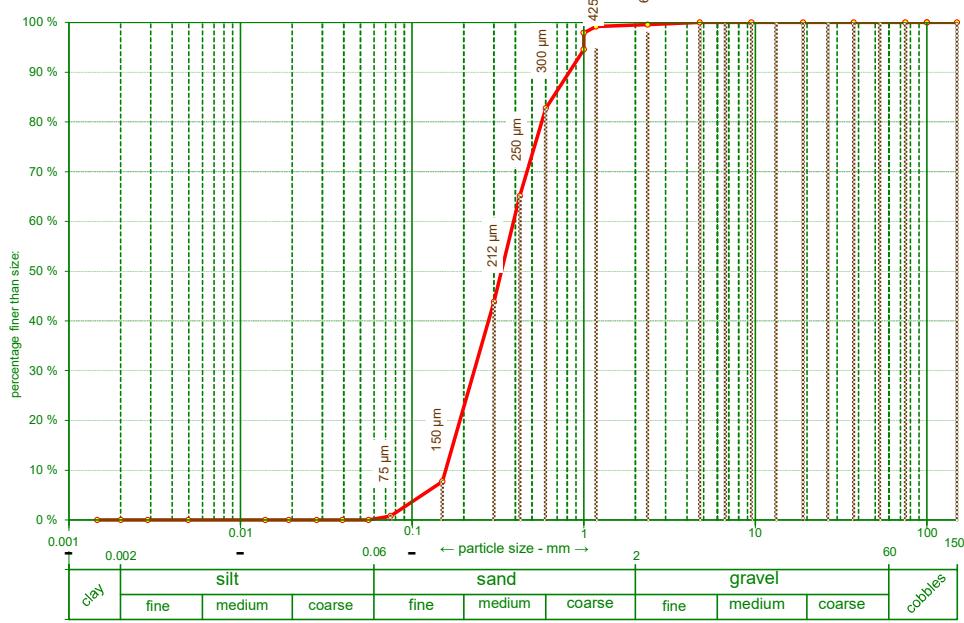
NOTES:

d₅₀ 209.81

PARTICLE SIZE DISTRIBUTION

287867-23

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.7	0.0
100	100.0	39.4	0.0
75	100.0	27.8	0.0
37.5	100.0	19.1	0.0
19	100.0	14.0	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	99.5	2.0	0.0
1.18	99.1	1.5	0.0
600 μm	97.9		
425 μm	94.6		
300 μm	82.7		
250 μm	65.1		
212 μm	43.8		
150 μm	7.7		
75 μm	0.8		

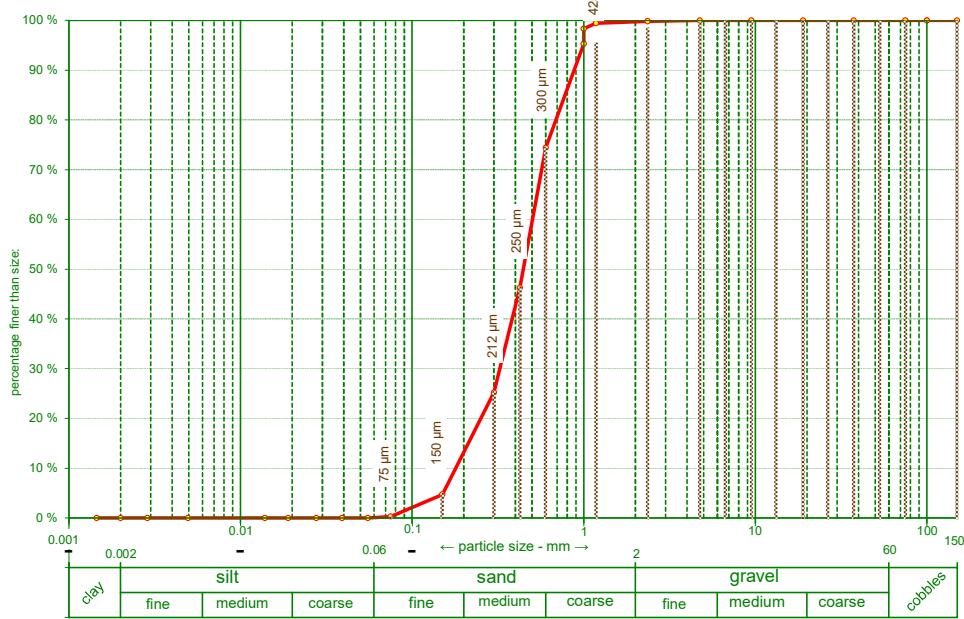
NOTES:

d50 223.06

PARTICLE SIZE DISTRIBUTION

287867-24

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.3	0.0
100	100.0	39.1	0.0
75	100.0	27.7	0.0
37.5	100.0	19.0	0.0
19	100.0	13.9	0.0
9.5	100.0	4.9	0.0
4.75	100.0	2.9	0.0
2.36	99.8	2.0	0.0
1.18	99.4	1.5	0.0
600 μm	98.3		
425 μm	95.3		
300 μm	74.4		
250 μm	46.3		
212 μm	25.2		
150 μm	4.7		
75 μm	0.3		

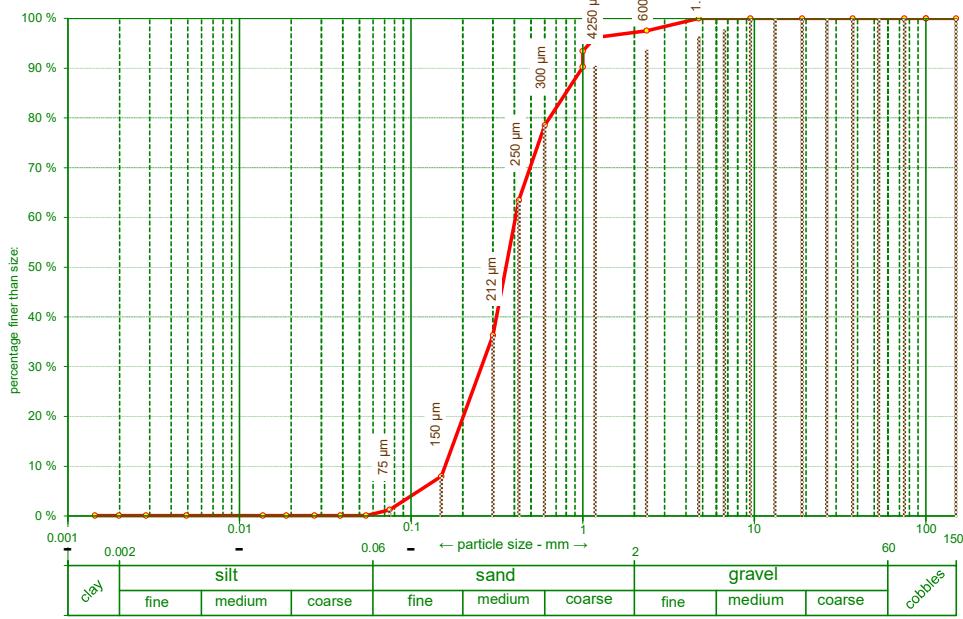
NOTES:

d50 256.63

PARTICLE SIZE DISTRIBUTION

287867-25

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	54.6	0.1
100	100.0	38.6	0.1
75	100.0	27.3	0.1
37.5	100.0	18.8	0.1
19	100.0	13.7	0.1
9.5	100.0	4.9	0.1
4.75	100.0	2.9	0.1
2.36	97.5	2.0	0.1
1.18	96.2	1.4	0.1
600 μm	93.5		
425 μm	90.2		
300 μm	78.5		
250 μm	63.5		
212 μm	36.3		
150 μm	8.0		
75 μm	1.3		

NOTES:

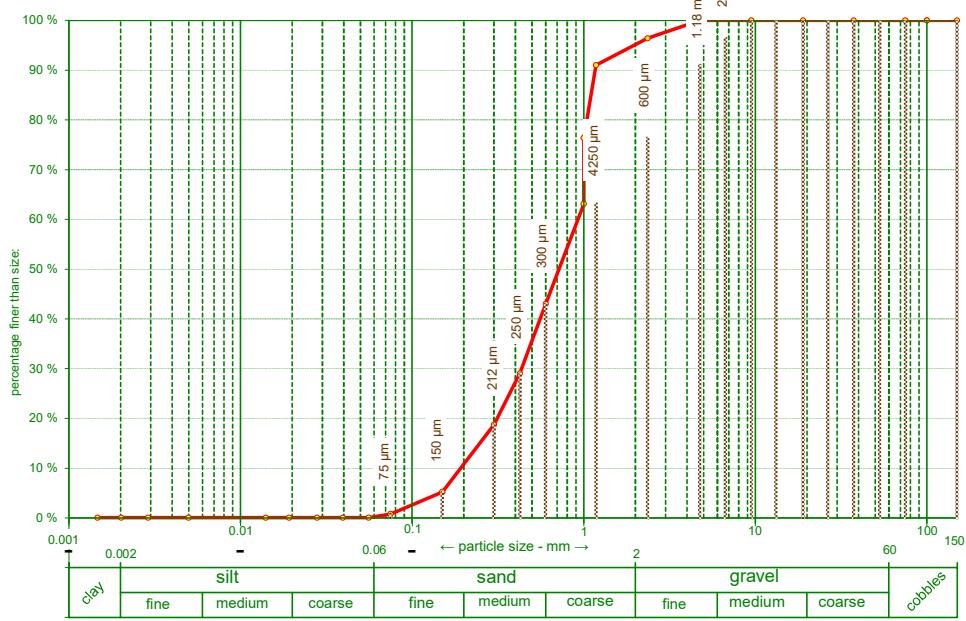
d₅₀ 231.18

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PARTICLE SIZE DISTRIBUTION

287867-26

AS. sieve sizes:



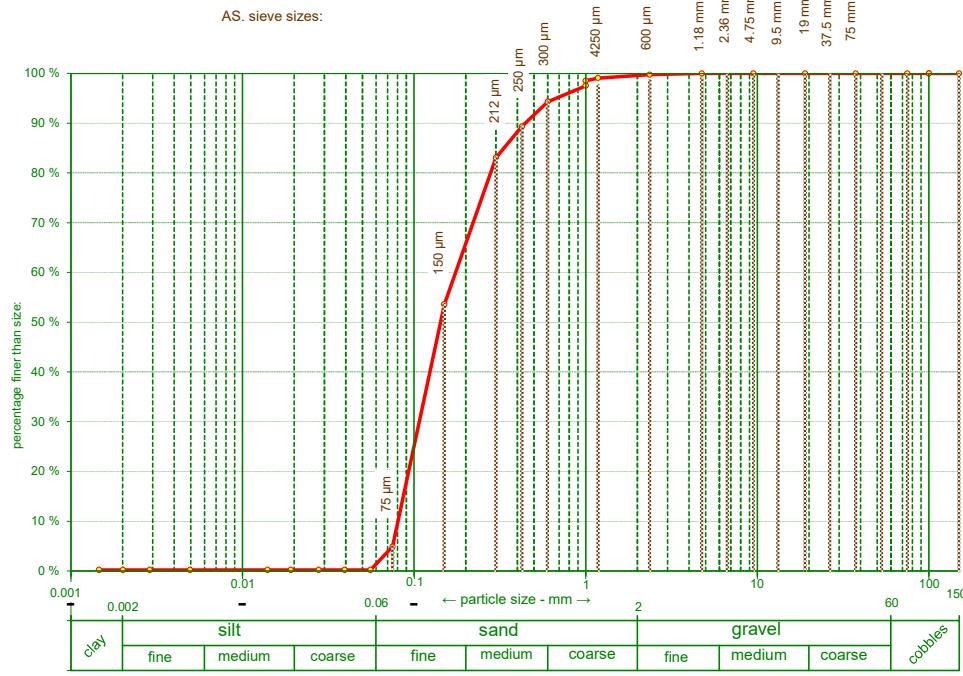
Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.8	0.0
100	100.0	39.5	0.0
75	100.0	27.9	0.0
37.5	100.0	19.2	0.0
19	100.0	14.0	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	96.4	2.0	0.0
1.18	91.0	1.5	0.0
600 μm	76.4		
425 μm	63.1		
300 μm	43.0		
250 μm	29.0		
212 μm	18.7		
150 μm	5.2		
75 μm	0.8		

NOTES:

d50 343.43

PARTICLE SIZE DISTRIBUTION

287867-27



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.7	0.2
100	100.0	39.4	0.2
75	100.0	27.8	0.2
37.5	100.0	19.1	0.2
19	100.0	14.0	0.2
9.5	100.0	5.0	0.2
4.75	100.0	2.9	0.2
2.36	99.8	2.0	0.2
1.18	99.1	1.5	0.2
600 μm	98.5		
425 μm	97.5		
300 μm	94.3		
250 μm	89.3		
212 μm	83.1		
150 μm	53.6		
75 μm	4.9		

NOTES:

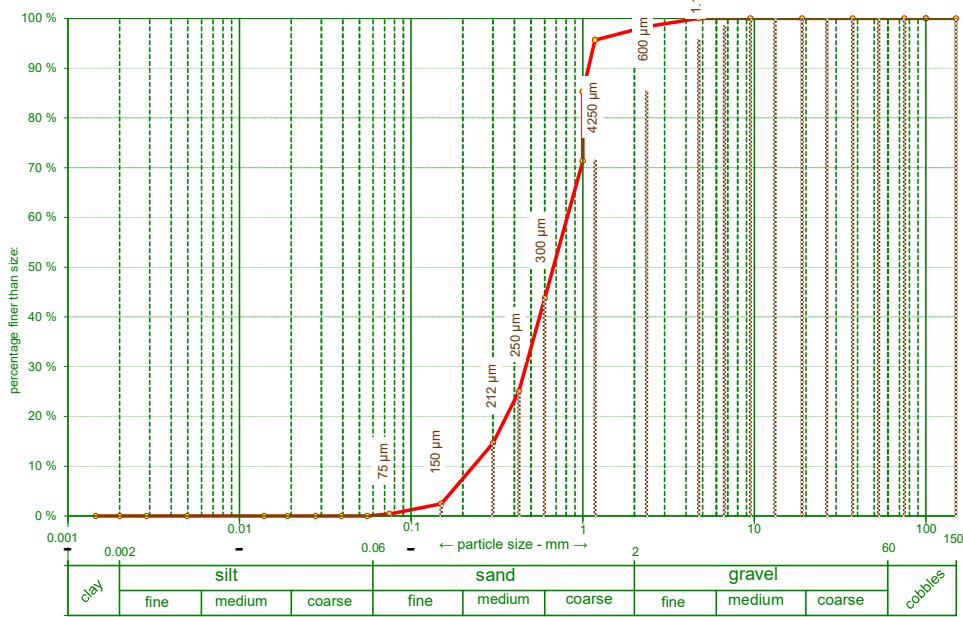
d50 144.44

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PARTICLE SIZE DISTRIBUTION

287867-28

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.6	0.0
100	100.0	39.3	0.0
75	100.0	27.8	0.0
37.5	100.0	19.1	0.0
19	100.0	13.9	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	98.4	2.0	0.0
1.18	95.7	1.5	0.0
600 μm	85.3		
425 μm	71.3		
300 μm	43.7		
250 μm	25.0		
212 μm	14.6		
150 μm	2.5		
75 μm	0.4		

NOTES:

d50 418.05

PARTICLE SIZE DISTRIBUTION

287867-29

AS. sieve sizes:



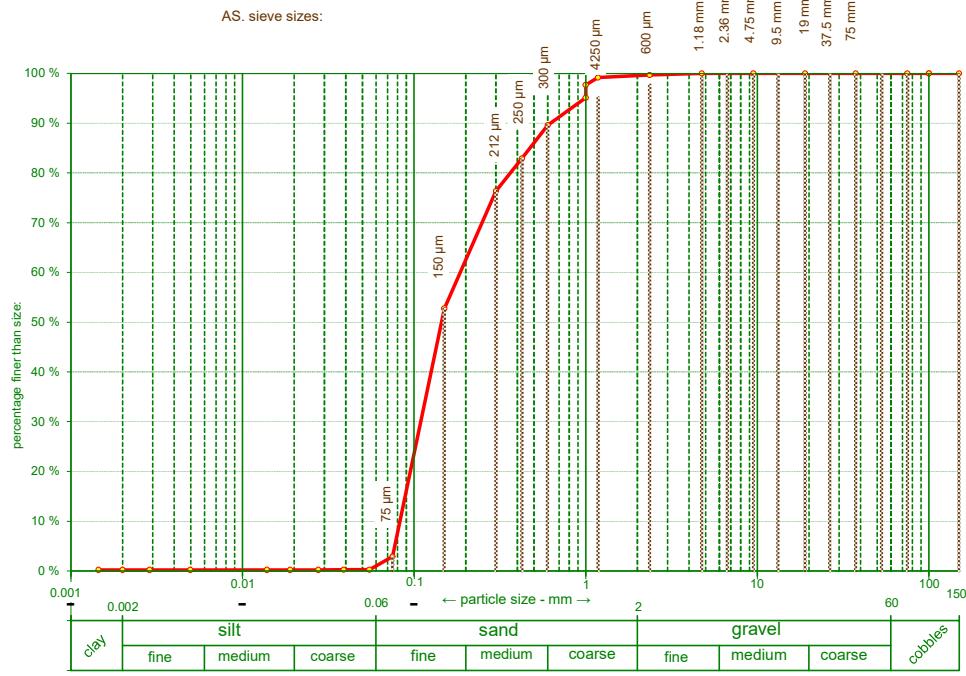
Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.8	0.0
100	100.0	39.4	0.0
75	100.0	27.9	0.0
37.5	100.0	19.2	0.0
19	100.0	14.0	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	98.4	2.0	0.0
1.18	95.7	1.5	0.0
600 μm	85.3		
425 μm	71.3		
300 μm	43.7		
250 μm	25.0		
212 μm	14.6		
150 μm	2.5		
75 μm	0.4		

NOTES:

d₅₀ 328.32

PARTICLE SIZE DISTRIBUTION

287867-30



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.0	0.3
100	100.0	38.9	0.3
75	100.0	27.7	0.2
37.5	100.0	19.0	0.2
19	100.0	13.9	0.2
9.5	100.0	5.0	0.2
4.75	100.0	2.9	0.2
2.36	99.7	2.0	0.2
1.18	99.2	1.4	0.2
600 μm	97.7		
425 μm	95.1		
300 μm	89.6		
250 μm	82.9		
212 μm	76.3		
150 μm	52.8		
75 μm	2.9		

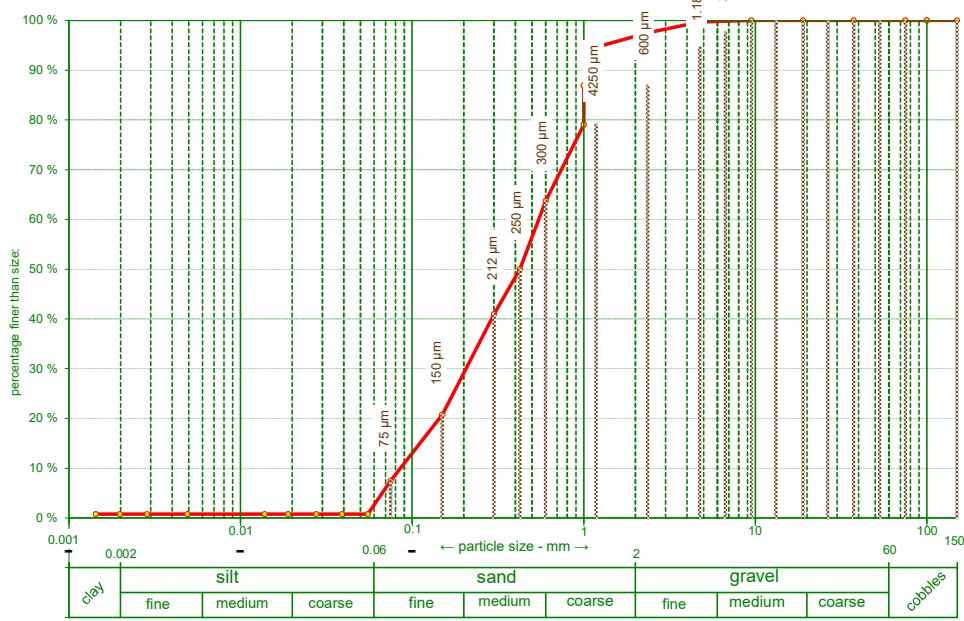
NOTES:

d50	145.83
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PARTICLE SIZE DISTRIBUTION

287867-31

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.2	0.7
100	100.0	39.1	0.7
75	100.0	27.6	0.7
37.5	100.0	19.0	0.7
19	100.0	13.8	0.7
9.5	100.0	4.9	0.7
4.75	99.7	2.9	0.7
2.36	97.5	2.0	0.7
1.18	94.6	1.4	0.7
600 μm	86.9		
425 μm	79.0		
300 μm	63.7		
250 μm	50.0		
212 μm	40.9		
150 μm	20.8		
75 μm	7.4		

NOTES:

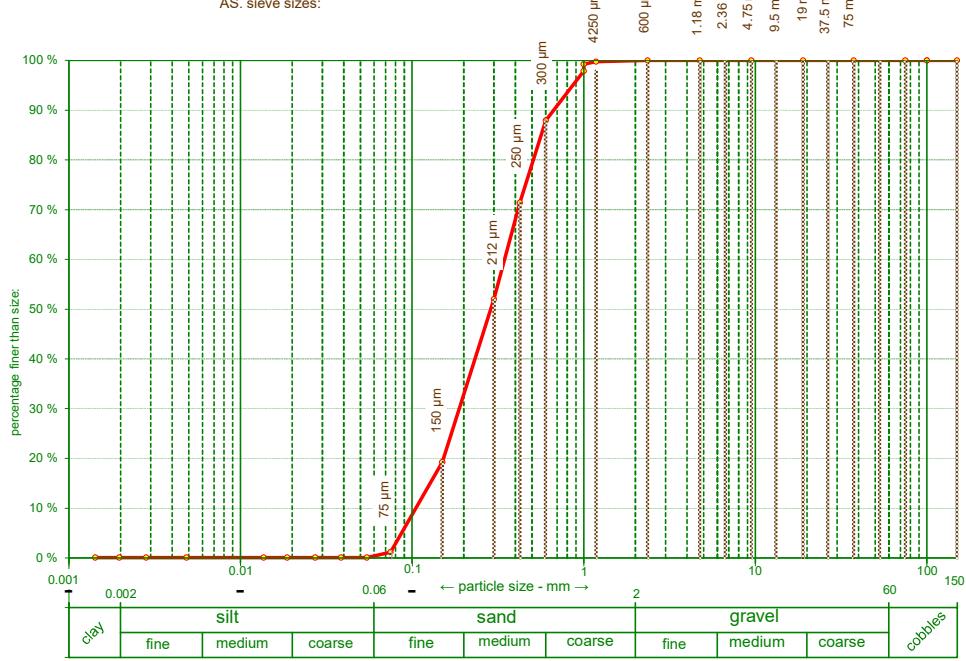
d50 250

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PARTICLE SIZE DISTRIBUTION

287867-32

AS. sieve sizes:



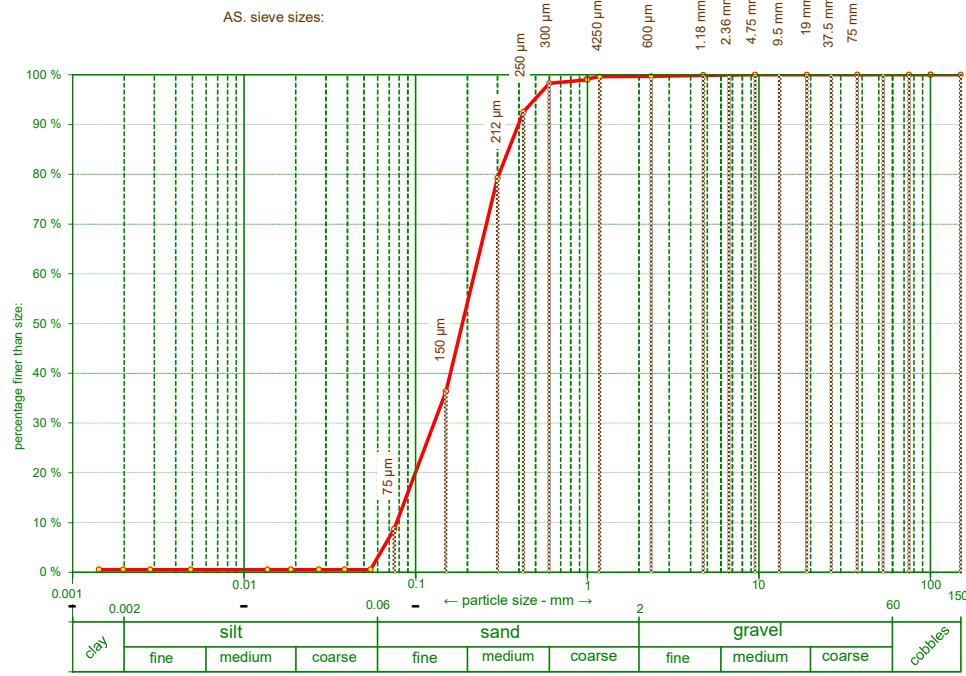
Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	54.5	0.1
100	100.0	38.6	0.1
75	100.0	27.3	0.1
37.5	100.0	18.7	0.1
19	100.0	13.7	0.1
9.5	100.0	4.9	0.1
4.75	100.0	2.8	0.1
2.36	100.0	2.0	0.1
1.18	99.8	1.4	0.1
600 μm	99.3		
425 μm	97.9		
300 μm	87.9		
250 μm	71.4		
212 μm	52.0		
150 μm	19.3		
75 μm	1.2		

NOTES:

d50 208.21

PARTICLE SIZE DISTRIBUTION

287867-33



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size µm	% Passing
100	100.0	54.5	0.5
100	100.0	38.5	0.5
75	100.0	27.3	0.5
37.5	100.0	18.7	0.5
19	100.0	13.7	0.5
9.5	100.0	4.9	0.5
4.75	99.9	2.8	0.5
2.36	99.7	2.0	0.5
1.18	99.6	1.4	0.5
600 µm	99.2		
425 µm	99.0		
300 µm	98.3		
250 µm	92.6		
212 µm	79.2		
150 µm	36.4		
75 µm	8.7		

NOTES:	
d50	169.71

PARTICLE SIZE DISTRIBUTION

287867-34

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	54.1	0.3
100	100.0	38.3	0.3
75	100.0	27.1	0.3
37.5	100.0	18.6	0.3
19	100.0	13.6	0.3
9.5	100.0	4.9	0.3
4.75	100.0	2.8	0.3
2.36	98.0	2.0	0.3
1.18	96.1	1.4	0.3
600 μm	92.0		
425 μm	90.2		
300 μm	87.1		
250 μm	84.7		
212 μm	80.1		
150 μm	54.2		
75 μm	7.4		

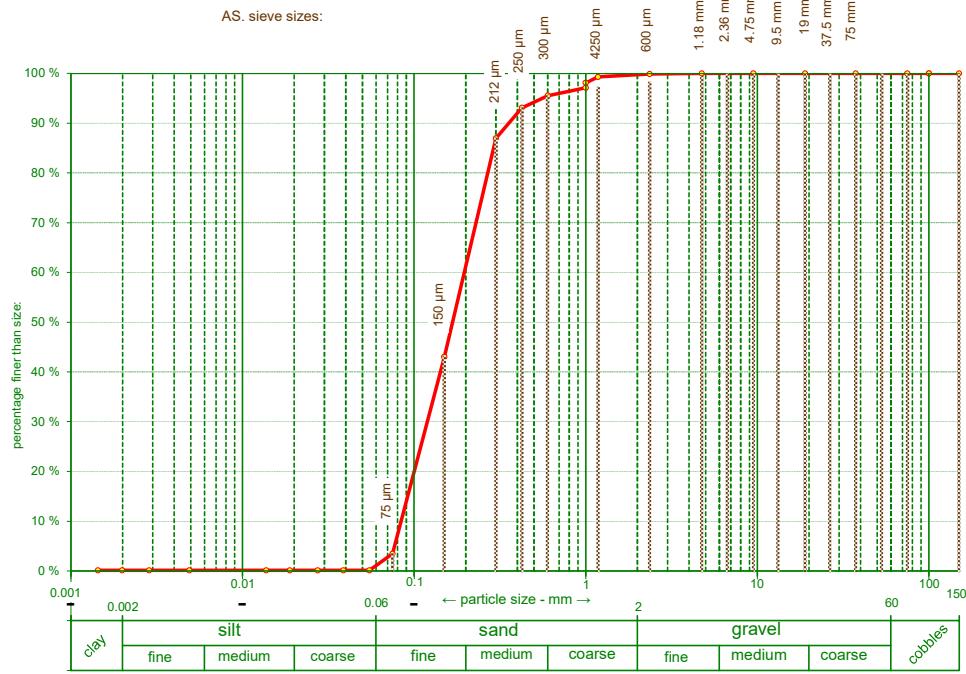
NOTES:

d₅₀ 143.34

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PARTICLE SIZE DISTRIBUTION

287867-35



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	54.9	0.1
100	100.0	38.8	0.1
75	100.0	27.4	0.1
37.5	100.0	18.9	0.1
19	100.0	13.8	0.1
9.5	100.0	4.9	0.1
4.75	100.0	2.9	0.1
2.36	99.9	2.0	0.1
1.18	99.3	1.4	0.1
600 μm	98.1		
425 μm	97.1		
300 μm	95.5		
250 μm	93.1		
212 μm	87.0		
150 μm	43.0		
75 μm	3.5		

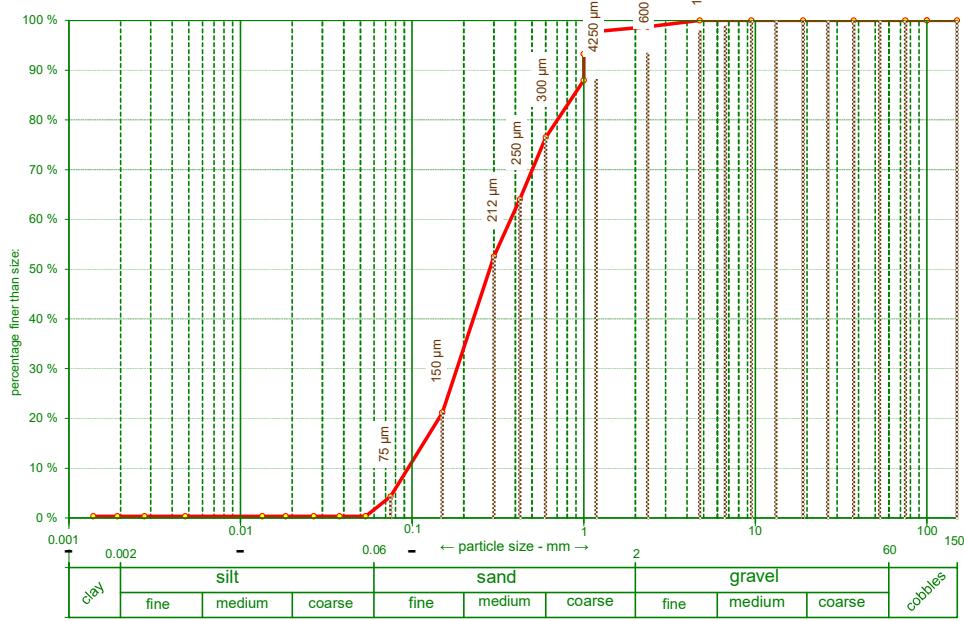
NOTES:

d50	159.87
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PARTICLE SIZE DISTRIBUTION

287867-36

AS. sieve sizes:



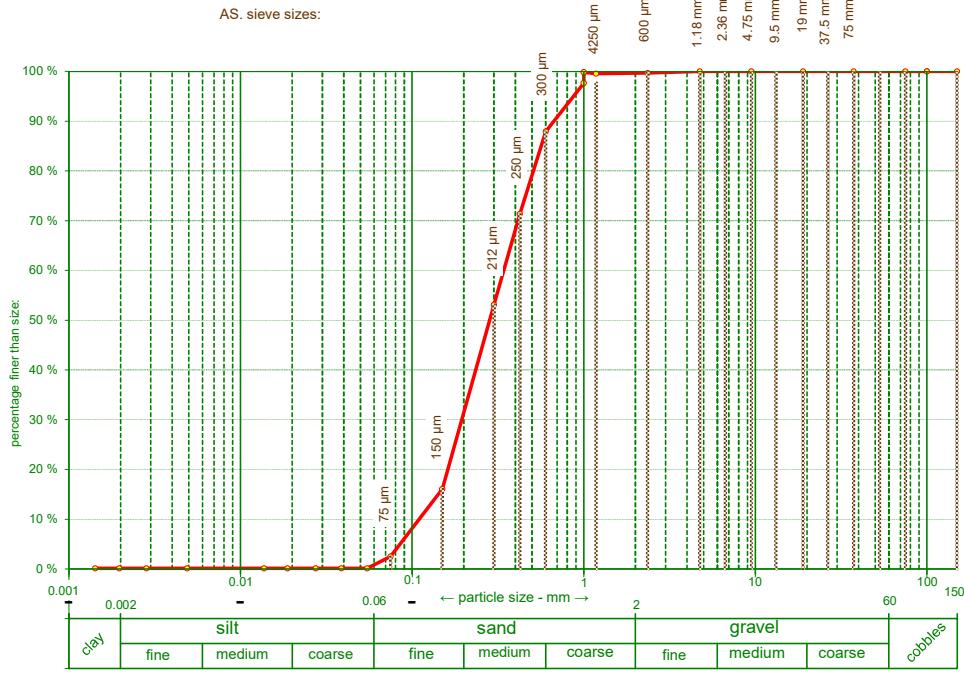
Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	53.5	0.3
100	100.0	37.8	0.3
75	100.0	26.8	0.3
37.5	100.0	18.4	0.3
19	100.0	13.4	0.3
9.5	100.0	4.8	0.3
4.75	100.0	2.8	0.3
2.36	98.7	1.9	0.3
1.18	97.8	1.4	0.3
600 μm	93.3		
425 μm	88.0		
300 μm	76.5		
250 μm	64.0		
212 μm	52.5		
150 μm	21.2		
75 μm	4.3		

NOTES:	
d50	207.00

PARTICLE SIZE DISTRIBUTION

287867-37

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	54.8	0.1
100	100.0	38.8	0.1
75	100.0	27.4	0.1
37.5	100.0	18.8	0.1
19	100.0	13.7	0.1
9.5	100.0	4.9	0.1
4.75	100.0	2.8	0.1
2.36	99.7	2.0	0.1
1.18	99.6	1.4	0.1
600 μm	99.8		
425 μm	97.7		
300 μm	87.9		
250 μm	71.4		
212 μm	53.1		
150 μm	16.1		
75 μm	2.5		

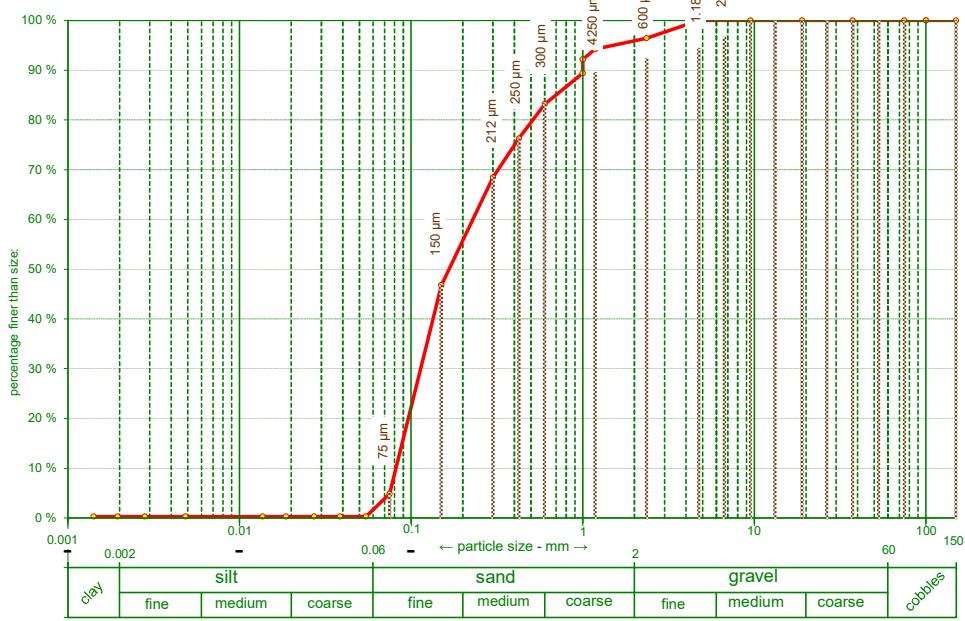
NOTES:

d₅₀ 206.85

PARTICLE SIZE DISTRIBUTION

287867-38

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	54.4	0.3
100	100.0	38.5	0.3
75	100.0	27.2	0.3
37.5	100.0	18.7	0.3
19	100.0	13.6	0.3
9.5	100.0	4.8	0.3
4.75	100.0	2.8	0.3
2.36	96.4	2.0	0.3
1.18	94.2	1.4	0.3
600 μm	92.2		
425 μm	89.4		
300 μm	83.2		
250 μm	76.3		
212 μm	68.4		
150 μm	46.8		
75 μm	4.8		

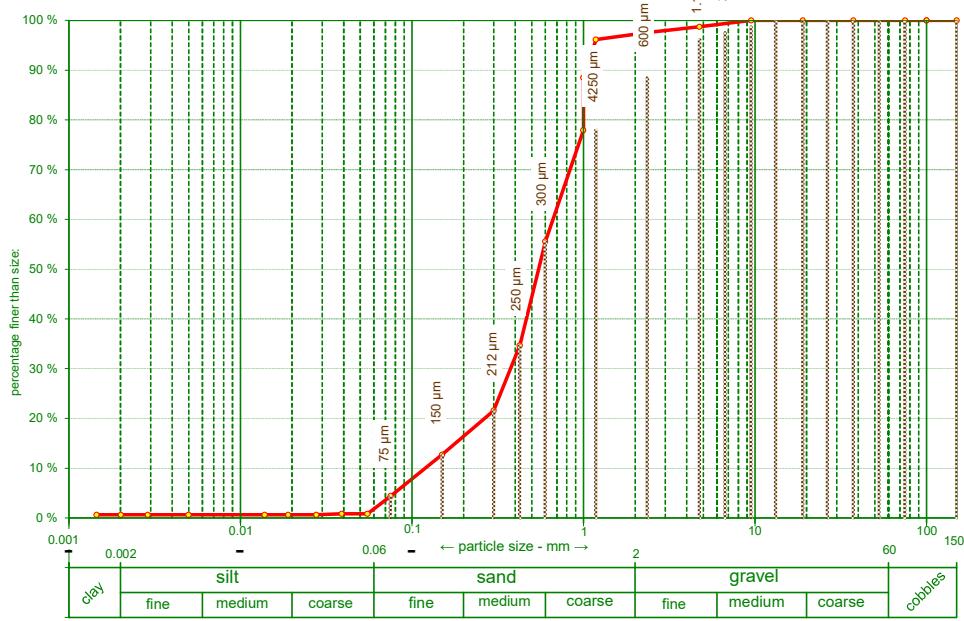
NOTES:

d₅₀ 159.18

PARTICLE SIZE DISTRIBUTION

287867-39

AS. sieve sizes:



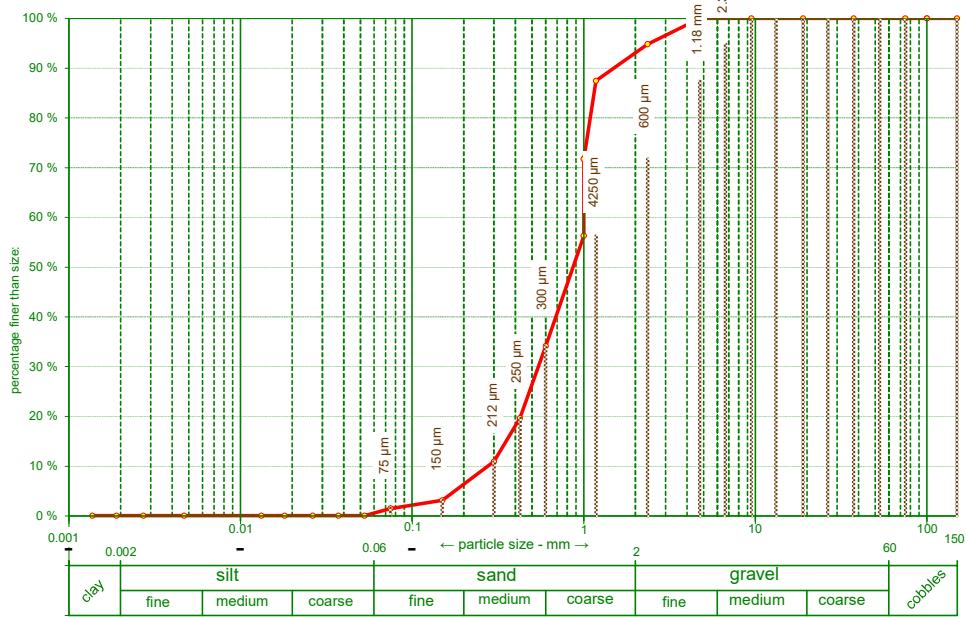
Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.0	0.8
100	100.0	38.9	0.8
75	100.0	27.7	0.6
37.5	100.0	19.0	0.6
19	100.0	13.9	0.6
9.5	100.0	5.0	0.6
4.75	98.7	2.9	0.6
2.36	97.6	2.0	0.6
1.18	96.1	1.5	0.6
600 μm	88.5		
425 μm	77.9		
300 μm	55.6		
250 μm	34.7		
212 μm	21.6		
150 μm	12.7		
75 μm	4.4		

NOTES:	
d50	286.71

PARTICLE SIZE DISTRIBUTION

287867-40

AS. sieve sizes:



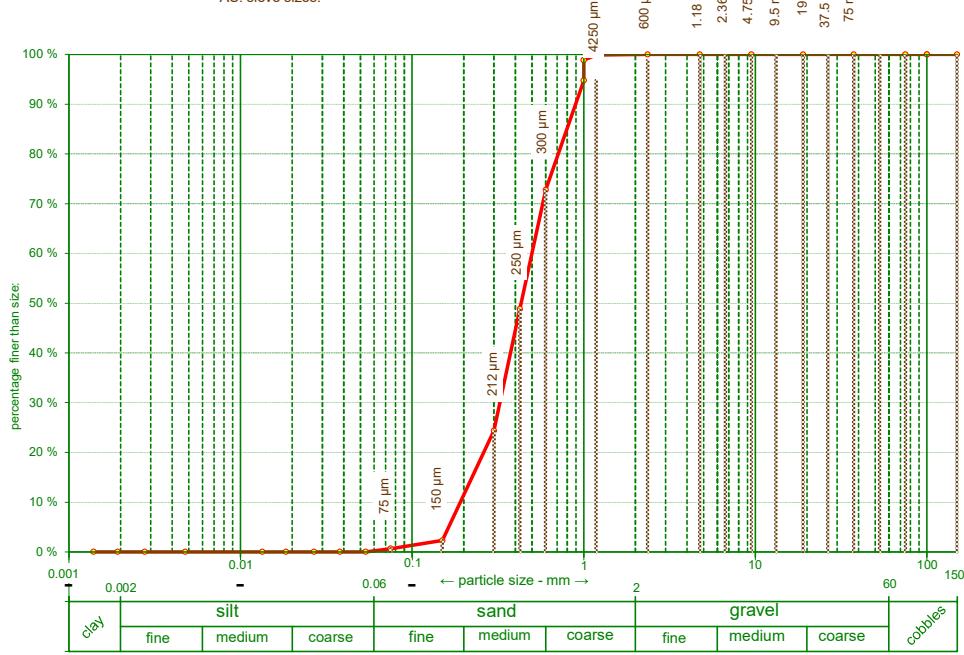
Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	52.8	0.1
100	100.0	37.3	0.1
75	100.0	26.4	0.1
37.5	100.0	18.1	0.1
19	100.0	13.2	0.1
9.5	100.0	4.7	0.1
4.75	100.0	2.7	0.1
2.36	94.8	1.9	0.1
1.18	87.5	1.4	0.1
600 μm	71.7		
425 μm	56.3		
300 μm	34.2		
250 μm	19.7		
212 μm	10.9		
150 μm	3.1		
75 μm	1.5		

NOTES:	
d50	389.43

PARTICLE SIZE DISTRIBUTION

287867-41

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	53.6	0.0
100	100.0	37.9	0.0
75	100.0	26.8	0.0
37.5	100.0	18.4	0.0
19	100.0	13.4	0.0
9.5	100.0	4.8	0.0
4.75	100.0	2.8	0.0
2.36	100.0	1.9	0.0
1.18	99.9	1.4	0.0
600 μm	98.9		
425 μm	94.8		
300 μm	72.8		
250 μm	48.8		
212 μm	24.4		
150 μm	2.3		
75 μm	0.7		

NOTES:

d50 252.49

PARTICLE SIZE DISTRIBUTION

287867-42

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.5	0.2
100	100.0	39.3	0.2
75	100.0	27.8	0.2
37.5	100.0	19.1	0.2
19	100.0	13.9	0.2
9.5	100.0	5.0	0.2
4.75	100.0	2.9	0.2
2.36	96.3	2.0	0.2
1.18	94.2	1.4	0.2
600 μm	92.0		
425 μm	87.9		
300 μm	81.0		
250 μm	72.0		
212 μm	61.7		
150 μm	32.9		
75 μm	2.7		

NOTES:

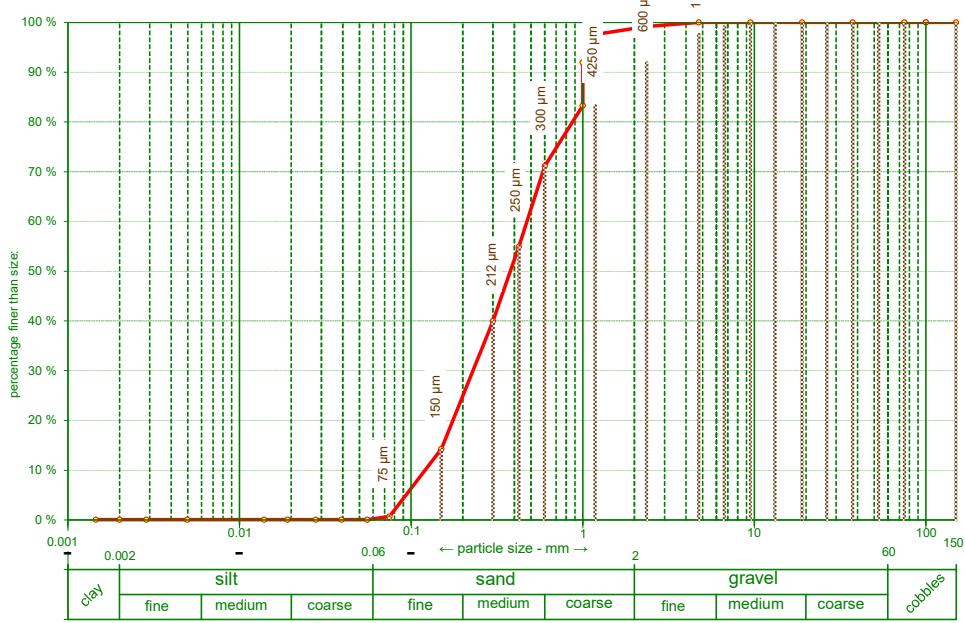
d₅₀ 186.83

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PARTICLE SIZE DISTRIBUTION

287867-43

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.6	0.0
100	100.0	39.3	0.0
75	100.0	27.8	0.0
37.5	100.0	19.1	0.0
19	100.0	13.9	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	99.2	2.0	0.0
1.18	97.6	1.5	0.0
600 μm	91.9		
425 μm	83.3		
300 μm	71.1		
250 μm	54.9		
212 μm	40.0		
150 μm	14.3		
75 μm	0.7		

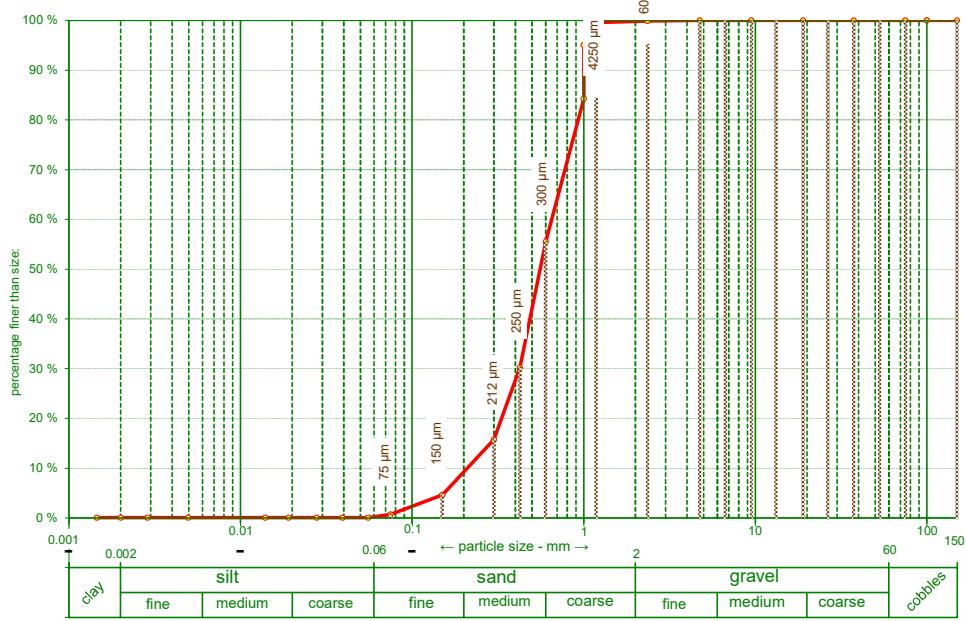
NOTES:

d₅₀ 237.46

PARTICLE SIZE DISTRIBUTION

287867-44

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.6	0.0
100	100.0	39.3	0.0
75	100.0	27.8	0.0
37.5	100.0	19.1	0.0
19	100.0	13.9	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	99.9	2.0	0.0
1.18	99.5	1.5	0.0
600 μm	95.1		
425 μm	84.2		
300 μm	55.5		
250 μm	30.2		
212 μm	15.8		
150 μm	4.6		
75 μm	0.7		

NOTES:

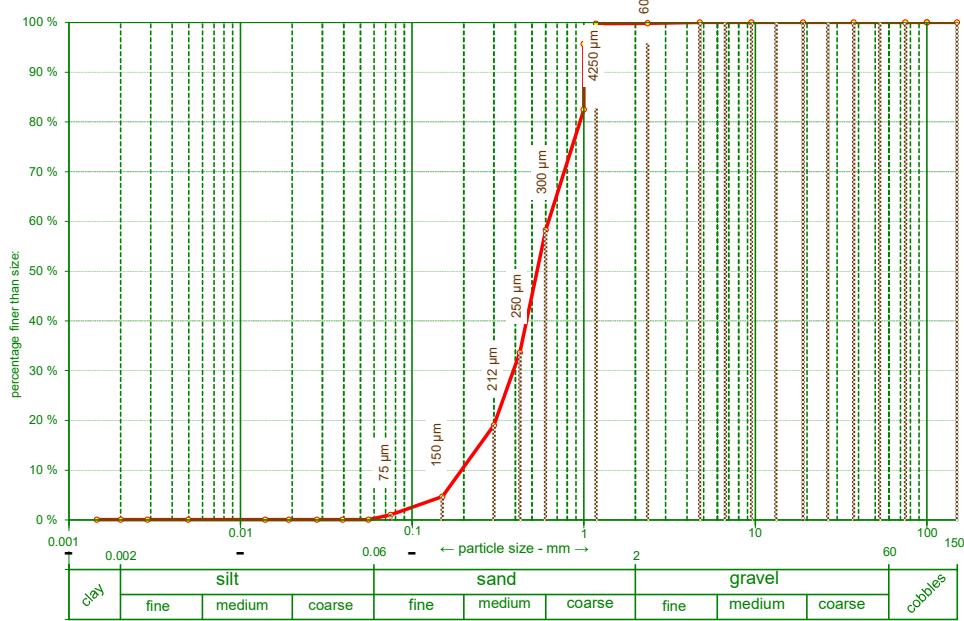
d50 289.14

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PARTICLE SIZE DISTRIBUTION

287867-45

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.7	0.0
100	100.0	39.4	0.0
75	100.0	27.9	0.0
37.5	100.0	19.1	0.0
19	100.0	14.0	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	99.8	2.0	0.0
1.18	99.7	1.5	0.0
600 μm	95.6		
425 μm	82.5		
300 μm	58.3		
250 μm	33.6		
212 μm	19.0		
150 μm	4.7		
75 μm	1.0		

NOTES:

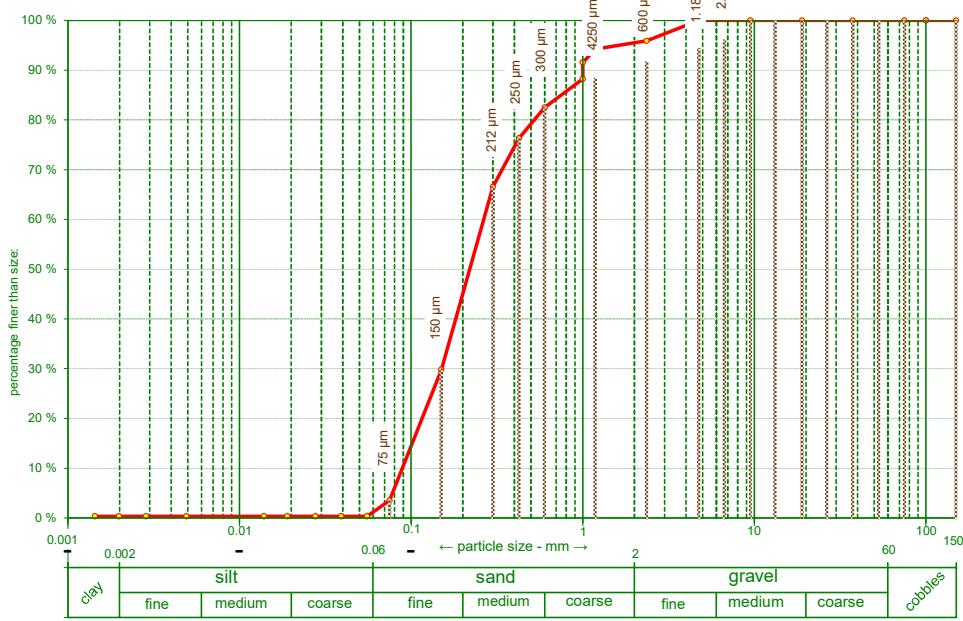
d50 283.21

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PARTICLE SIZE DISTRIBUTION

287867-46

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.4	0.3
100	100.0	39.2	0.3
75	100.0	27.7	0.3
37.5	100.0	19.0	0.3
19	100.0	13.9	0.3
9.5	100.0	4.9	0.3
4.75	100.0	2.9	0.3
2.36	95.9	2.0	0.3
1.18	94.2	1.4	0.3
600 μm	91.5		
425 μm	88.2		
300 μm	82.5		
250 μm	76.3		
212 μm	66.6		
150 μm	29.8		
75 μm	3.5		

NOTES:

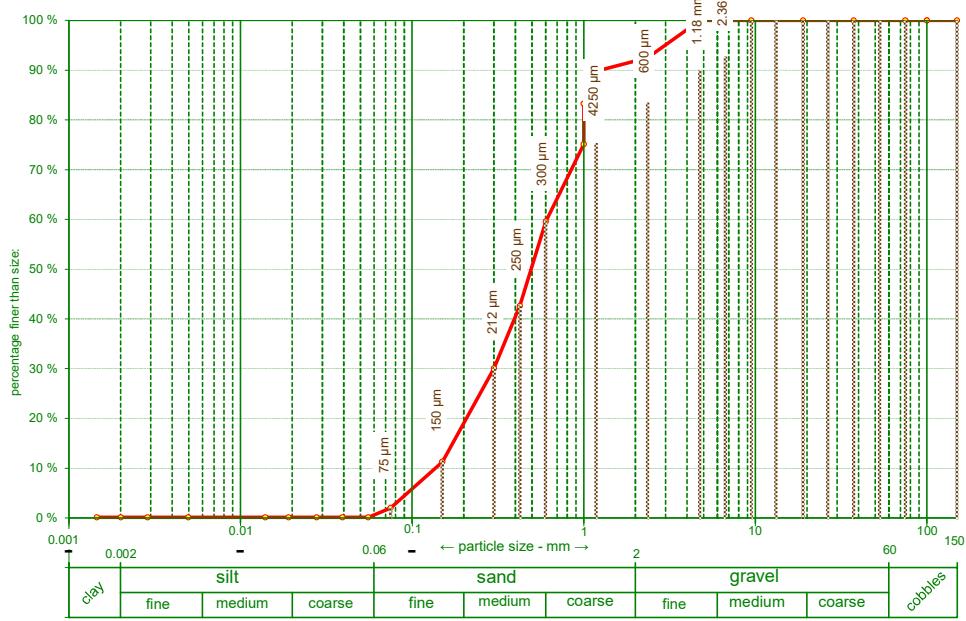
d₅₀ 184.07

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PARTICLE SIZE DISTRIBUTION

287867-47

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.6	0.1
100	100.0	39.3	0.1
75	100.0	27.8	0.1
37.5	100.0	19.1	0.1
19	100.0	13.9	0.1
9.5	100.0	5.0	0.1
4.75	100.0	2.9	0.1
2.36	92.5	2.0	0.1
1.18	89.8	1.5	0.1
600 μm	83.3		
425 μm	75.1		
300 μm	59.6		
250 μm	42.6		
212 μm	30.1		
150 μm	11.3		
75 μm	2.0		

NOTES:

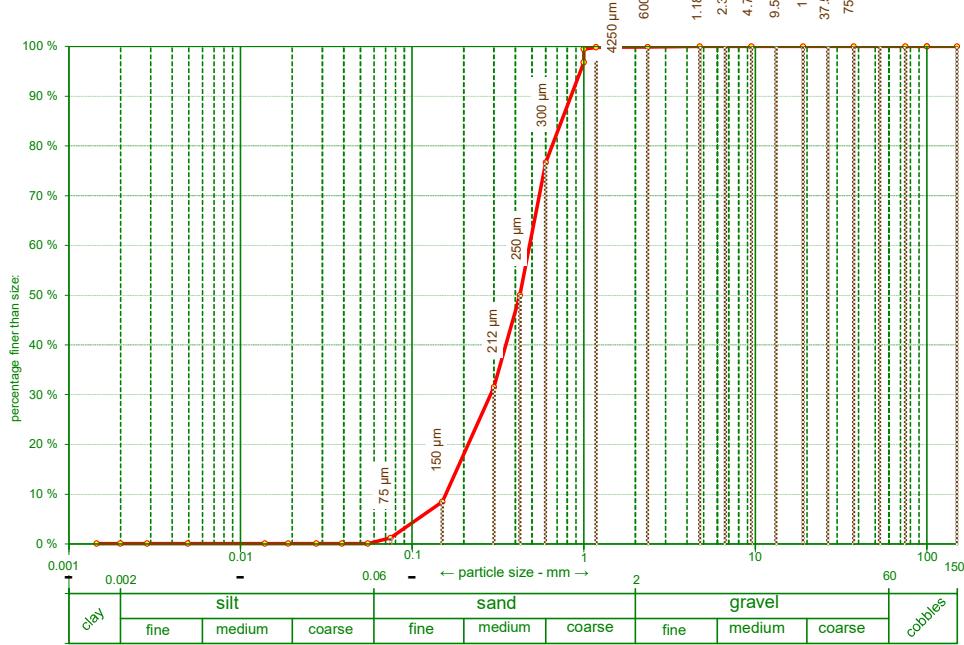
d₅₀ 271.77

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PARTICLE SIZE DISTRIBUTION

287867-48

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.3	0.1
100	100.0	39.1	0.1
75	100.0	27.6	0.1
37.5	100.0	19.0	0.1
19	100.0	13.9	0.1
9.5	100.0	4.9	0.1
4.75	100.0	2.9	0.1
2.36	99.9	2.0	0.1
1.18	99.8	1.4	0.1
600 μm	99.4		
425 μm	96.8		
300 μm	76.7		
250 μm	50.0		
212 μm	31.5		
150 μm	8.5		
75 μm	1.2		

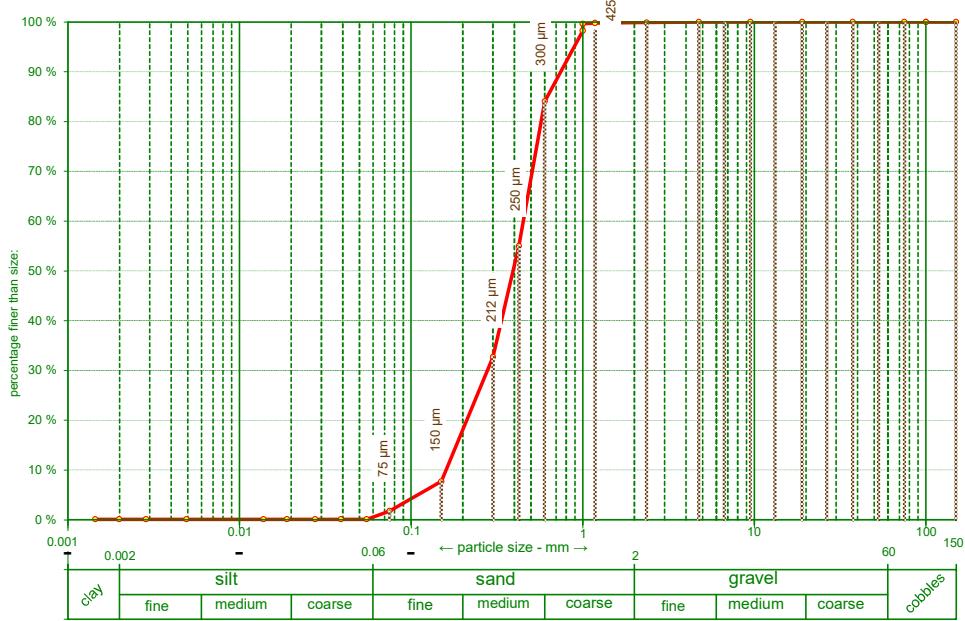
NOTES:

d50 250

PARTICLE SIZE DISTRIBUTION

287867-49

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size µm	% Passing
100	100.0	55.1	0.1
100	100.0	39.0	0.1
75	100.0	27.6	0.1
37.5	100.0	18.9	0.1
19	100.0	13.8	0.1
9.5	100.0	4.9	0.1
4.75	100.0	2.9	0.1
2.36	99.9	2.0	0.1
1.18	99.8	1.4	0.1
600 µm	99.6		
425 µm	98.2		
300 µm	84.0		
250 µm	55.0		
212 µm	32.7		
150 µm	7.7		
75 µm	1.8		

NOTES:

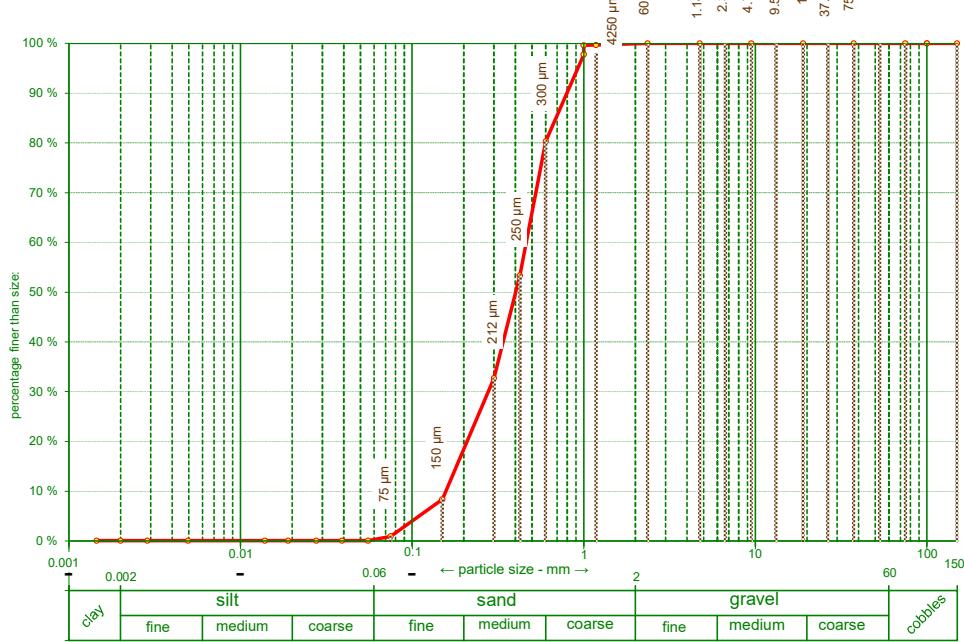
d₅₀ 241.47

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PARTICLE SIZE DISTRIBUTION

287867-50

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.3	0.0
100	100.0	39.1	0.0
75	100.0	27.7	0.0
37.5	100.0	19.0	0.0
19	100.0	13.9	0.0
9.5	100.0	4.9	0.0
4.75	100.0	2.9	0.0
2.36	100.0	2.0	0.0
1.18	99.7	1.5	0.0
600 μm	99.6		
425 μm	97.8		
300 μm	80.3		
250 μm	53.3		
212 μm	32.7		
150 μm	8.4		
75 μm	0.9		

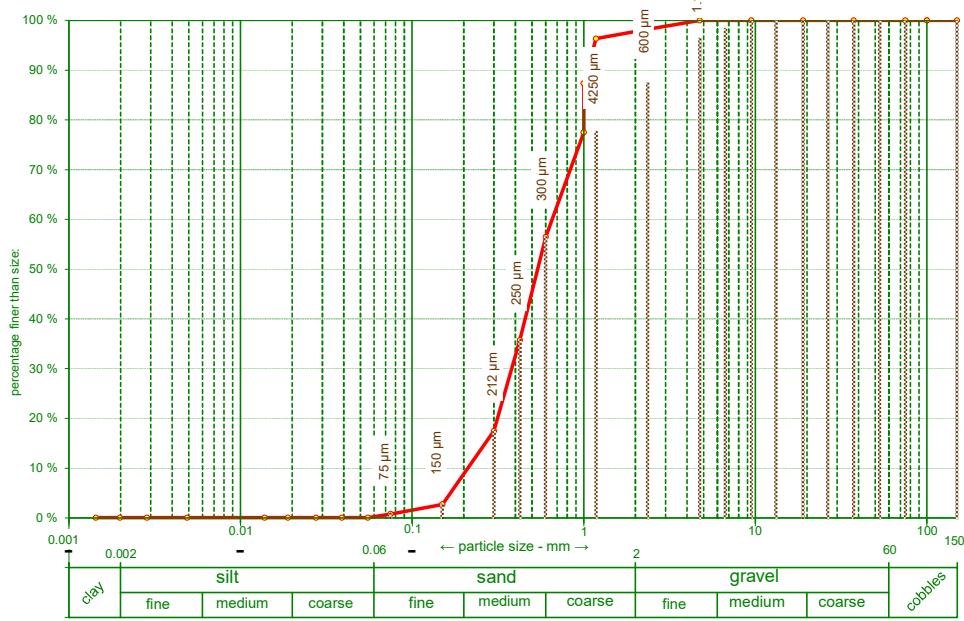
NOTES:

d50 243.88

PARTICLE SIZE DISTRIBUTION

287867-51

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.2	0.0
100	100.0	39.0	0.0
75	100.0	27.6	0.0
37.5	100.0	18.9	0.0
19	100.0	13.8	0.0
9.5	100.0	4.9	0.0
4.75	100.0	2.9	0.0
2.36	98.3	2.0	0.0
1.18	96.3	1.4	0.0
600 μm	87.3		
425 μm	77.5		
300 μm	56.5		
250 μm	35.8		
212 μm	17.5		
150 μm	2.7		
75 μm	0.8		

NOTES:

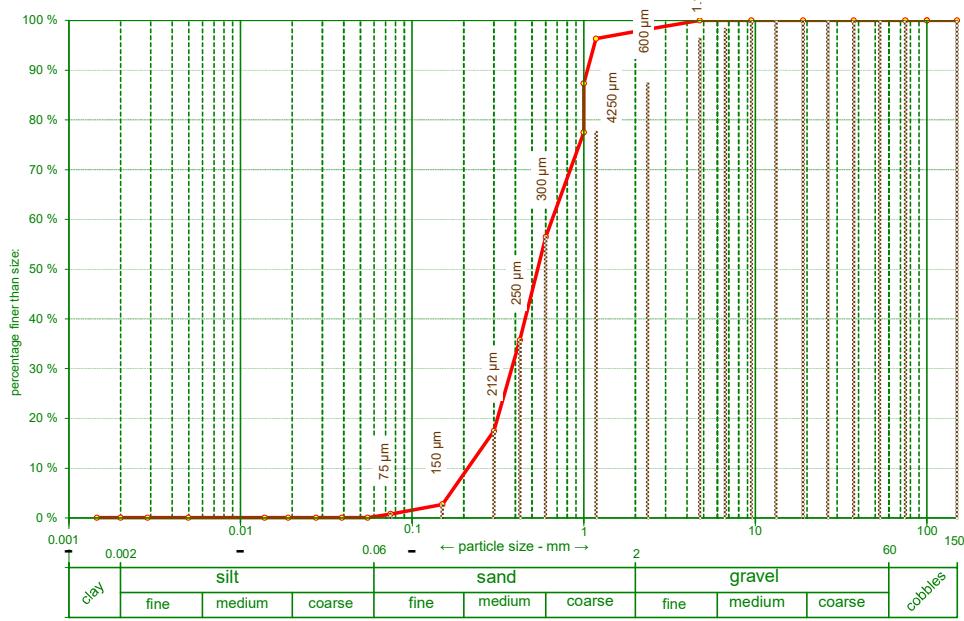
d50 284.35

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PARTICLE SIZE DISTRIBUTION

287867-54

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.1	0.0
100	100.0	39.0	0.0
75	100.0	27.6	0.0
37.5	100.0	18.9	0.0
19	100.0	13.9	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	98.3	2.0	0.0
1.18	96.3	1.5	0.0
600 μm	87.3		
425 μm	77.5		
300 μm	56.5		
250 μm	35.8		
212 μm	17.5		
150 μm	2.7		
75 μm	0.8		

NOTES:

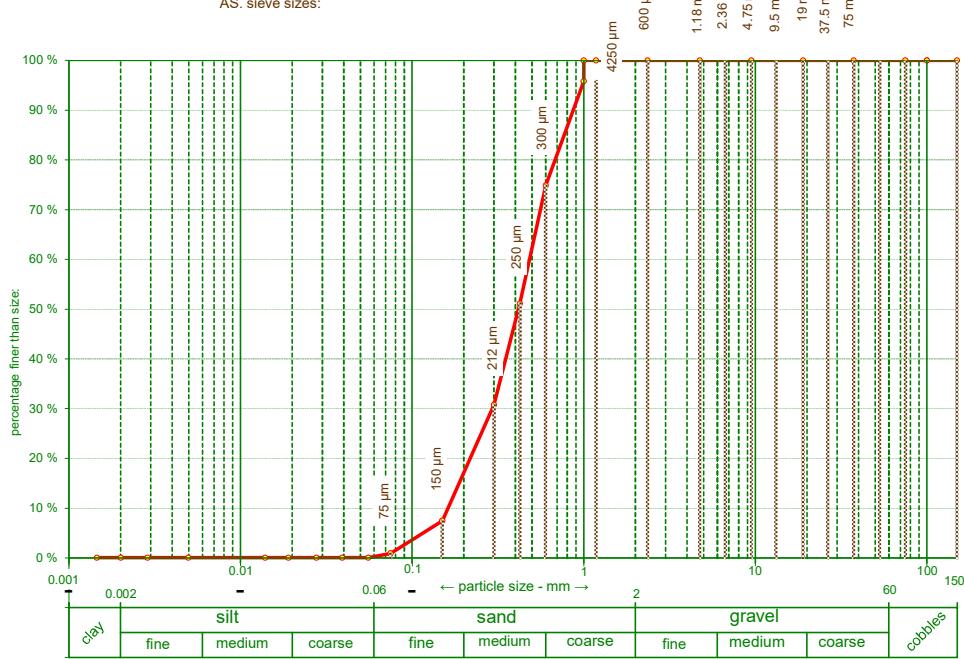
d₅₀ 284.35

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PARTICLE SIZE DISTRIBUTION

287867-55

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.5	0.0
100	100.0	39.3	0.0
75	100.0	27.7	0.0
37.5	100.0	19.0	0.0
19	100.0	13.9	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	100.0	2.0	0.0
1.18	100.0	1.5	0.0
600 μm	100.0		
425 μm	95.8		
300 μm	74.9		
250 μm	51.1		
212 μm	30.8		
150 μm	7.5		
75 μm	0.9		

NOTES:

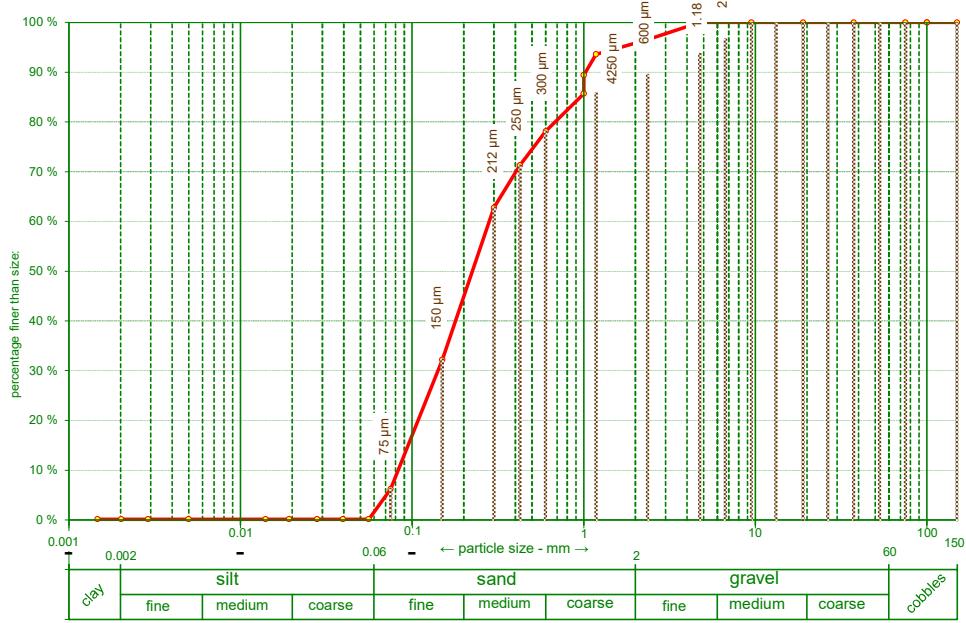
d₅₀ 274.88

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PARTICLE SIZE DISTRIBUTION

287867-56

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.9	0.2
100	100.0	39.5	0.2
75	100.0	27.9	0.2
37.5	100.0	19.2	0.2
19	100.0	14.0	0.2
9.5	100.0	5.0	0.2
4.75	100.0	2.9	0.2
2.36	96.6	2.0	0.2
1.18	93.6	1.5	0.2
600 μm	89.4		
425 μm	85.7		
300 μm	78.1		
250 μm	71.3		
212 μm	62.7		
150 μm	32.2		
75 μm	6.2		

NOTES:

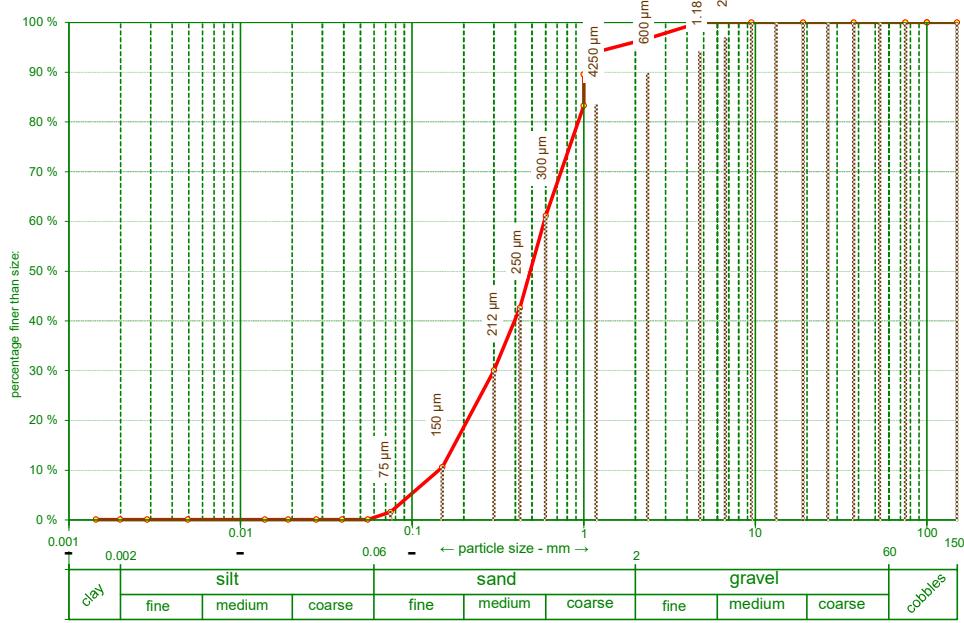
d₅₀ 186.13

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PARTICLE SIZE DISTRIBUTION

287867-57

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size µm	% Passing
100	100.0	55.3	0.1
100	100.0	39.1	0.1
75	100.0	27.7	0.1
37.5	100.0	19.0	0.1
19	100.0	13.9	0.1
9.5	100.0	4.9	0.1
4.75	100.0	2.9	0.1
2.36	96.7	2.0	0.1
1.18	94.0	1.4	0.1
600 µm	89.5		
425 µm	83.3		
300 µm	61.1		
250 µm	42.6		
212 µm	30.0		
150 µm	10.6		
75 µm	1.6		

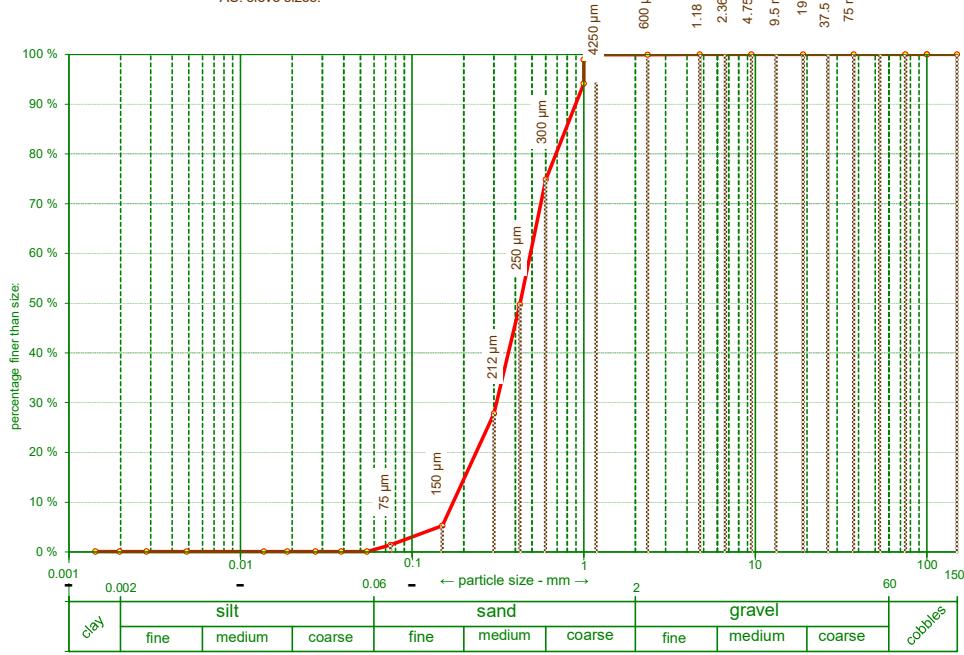
NOTES:

d₅₀ 269.98

PARTICLE SIZE DISTRIBUTION

287867-58

AS. sieve sizes:



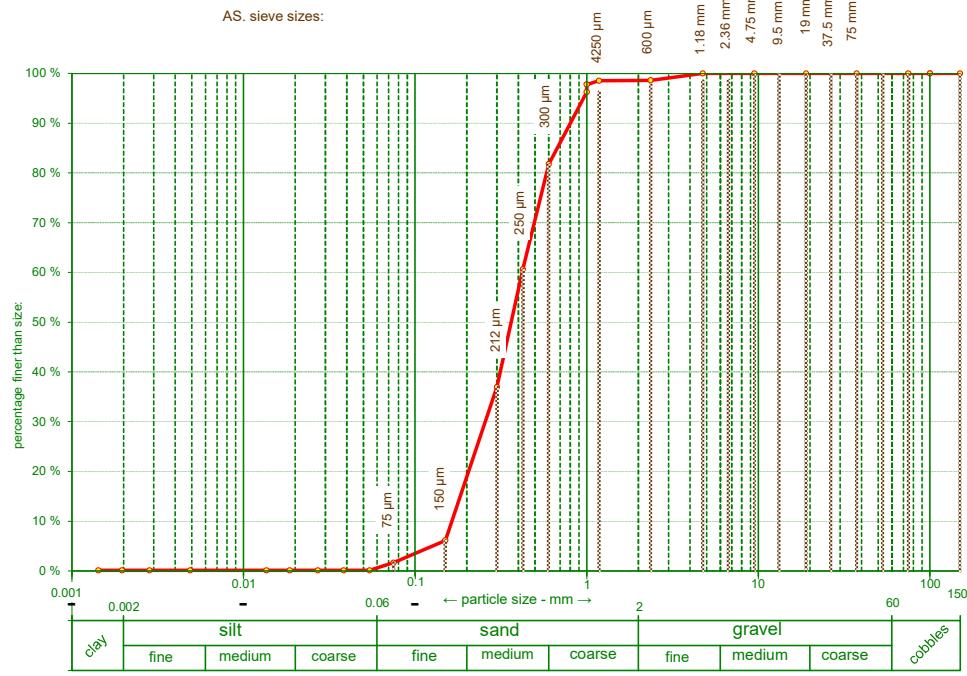
Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	54.7	0.1
100	100.0	38.7	0.1
75	100.0	27.3	0.1
37.5	100.0	18.8	0.1
19	100.0	13.7	0.1
9.5	100.0	4.9	0.1
4.75	100.0	2.8	0.1
2.36	99.9	2.0	0.1
1.18	99.9	1.4	0.1
600 μm	98.9		
425 μm	94.2		
300 μm	74.8		
250 μm	49.7		
212 μm	27.8		
150 μm	5.3		
75 μm	1.4		

NOTES:

d50 250.63

PARTICLE SIZE DISTRIBUTION

287867-59



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	54.3	0.1
100	100.0	38.4	0.1
75	100.0	27.1	0.1
37.5	100.0	18.6	0.1
19	100.0	13.6	0.1
9.5	100.0	4.9	0.1
4.75	100.0	2.8	0.1
2.36	98.6	2.0	0.1
1.18	98.5	1.4	0.1
600 μm	97.8		
425 μm	96.3		
300 μm	81.8		
250 μm	60.7		
212 μm	37.0		
150 μm	6.1		
75 μm	1.7		

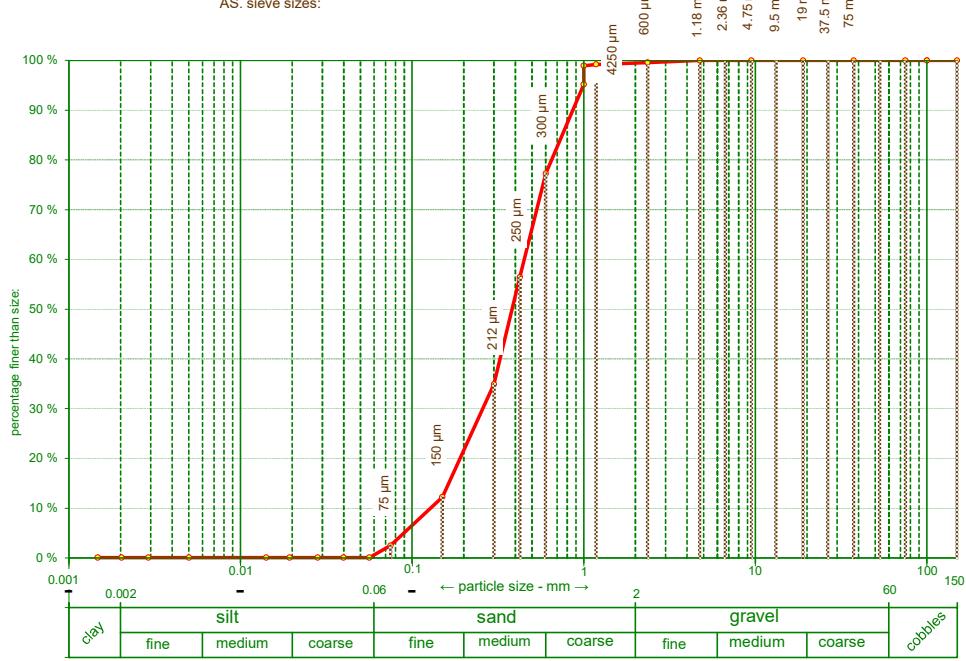
NOTES:

d50	232.89
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PARTICLE SIZE DISTRIBUTION

287867-60

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	56.3	0.1
100	100.0	39.8	0.1
75	100.0	28.2	0.1
37.5	100.0	19.3	0.1
19	100.0	14.1	0.1
9.5	100.0	5.0	0.1
4.75	100.0	2.9	0.1
2.36	99.6	2.0	0.1
1.18	99.2	1.5	0.1
600 μm	99.0		
425 μm	95.2		
300 μm	77.3		
250 μm	56.5		
212 μm	34.9		
150 μm	12.2		
75 μm	2.5		

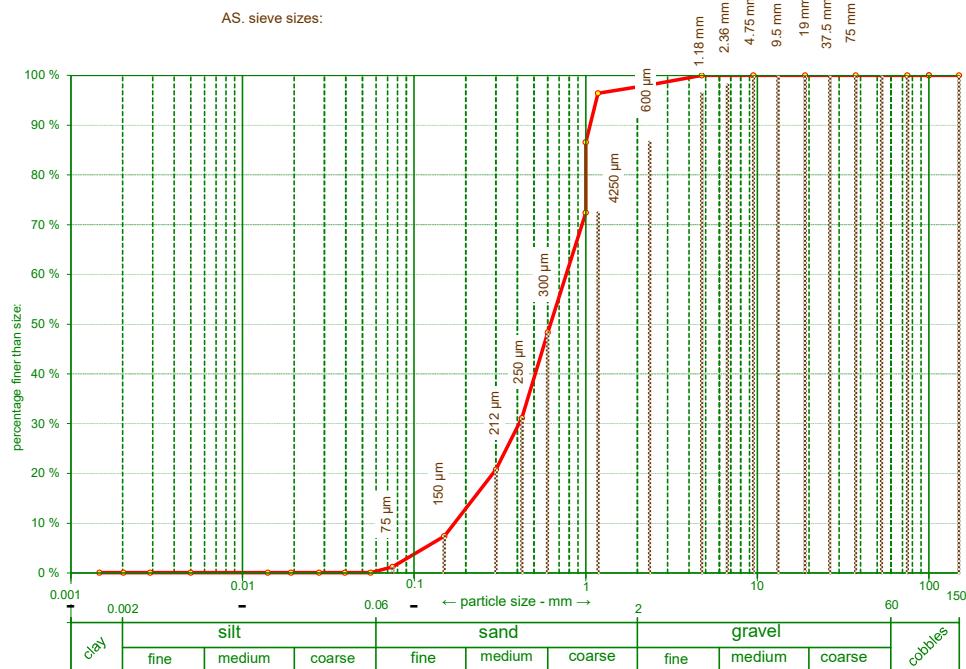
NOTES:

d₅₀ 238.59

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PARTICLE SIZE DISTRIBUTION

287867-61

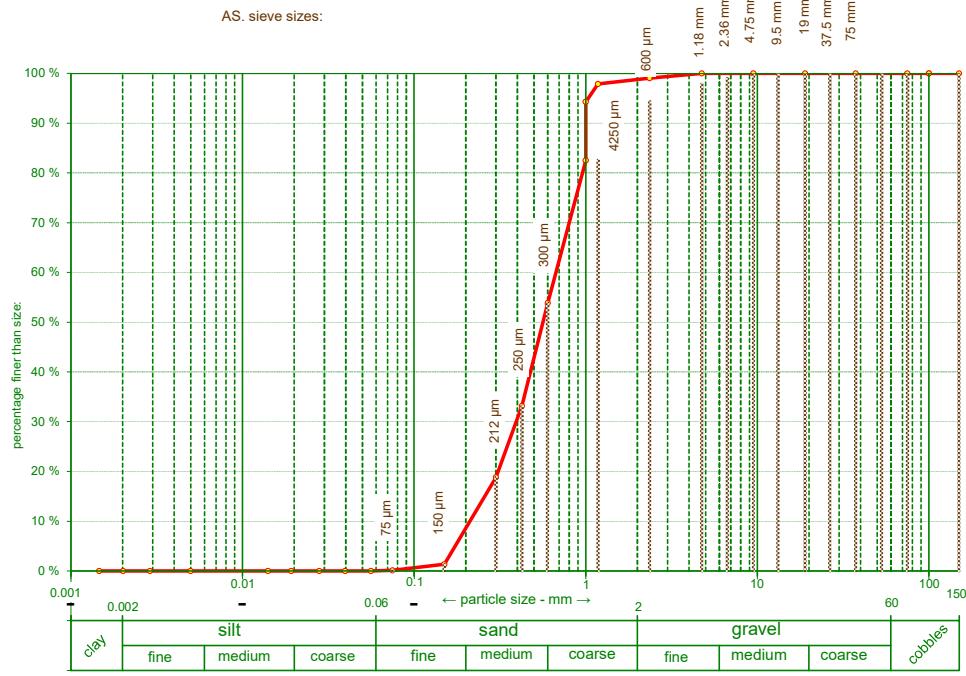


Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.9	0.0
100	100.0	39.5	0.0
75	100.0	28.0	0.0
37.5	100.0	19.2	0.0
19	100.0	14.0	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	98.1	2.0	0.0
1.18	96.4	1.5	0.0
600 μm	86.6		
425 μm	72.4		
300 μm	48.3		
250 μm	31.1		
212 μm	20.8		
150 μm	7.4		
75 μm	1.2		

NOTES:	
d50	308.77

PARTICLE SIZE DISTRIBUTION

287867-62



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	56.0	0.0
100	100.0	39.6	0.0
75	100.0	28.0	0.0
37.5	100.0	19.2	0.0
19	100.0	14.1	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	99.0	2.0	0.0
1.18	97.9	1.5	0.0
600 μm	94.3		
425 μm	82.5		
300 μm	53.9		
250 μm	33.2		
212 μm	18.8		
150 μm	1.3		
75 μm	0.1		

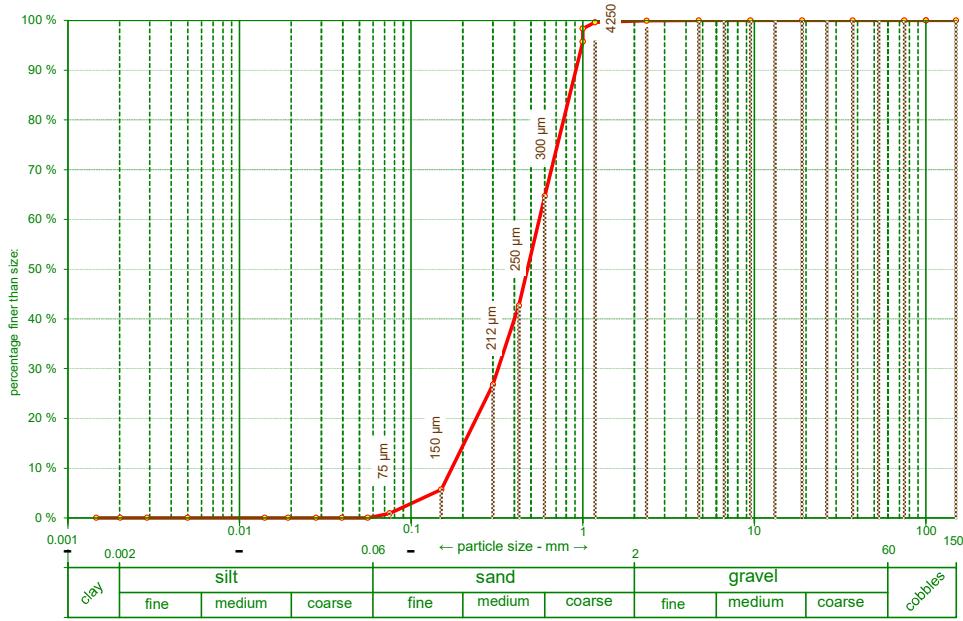
NOTES:

d50	290.69
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PARTICLE SIZE DISTRIBUTION

287867-63

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.8	0.0
100	100.0	39.5	0.0
75	100.0	27.9	0.0
37.5	100.0	19.2	0.0
19	100.0	14.0	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	99.9	2.0	0.0
1.18	99.6	1.5	0.0
600 μm	98.4		
425 μm	95.7		
300 μm	64.7		
250 μm	42.7		
212 μm	26.8		
150 μm	5.7		
75 μm	0.9		

NOTES:

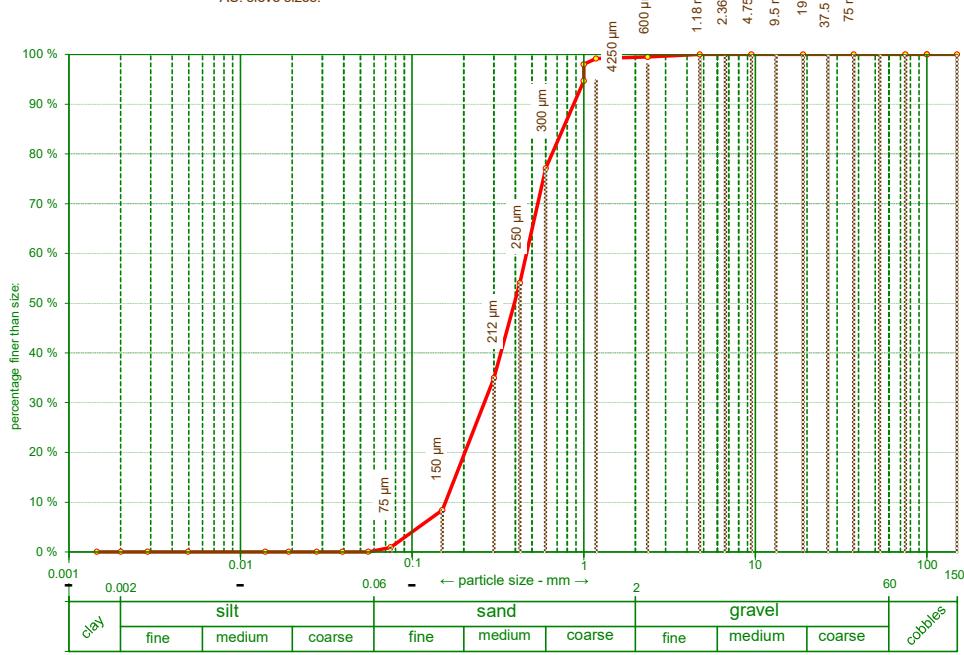
d₅₀ 266.65

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PARTICLE SIZE DISTRIBUTION

287867-64

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size µm	% Passing
100	100.0	55.6	0.0
100	100.0	39.3	0.0
75	100.0	27.8	0.0
37.5	100.0	19.1	0.0
19	100.0	13.9	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	99.5	2.0	0.0
1.18	99.2	1.5	0.0
600 µm	98.0		
425 µm	94.7		
300 µm	77.1		
250 µm	54.0		
212 µm	34.9		
150 µm	8.4		
75 µm	0.9		

NOTES:

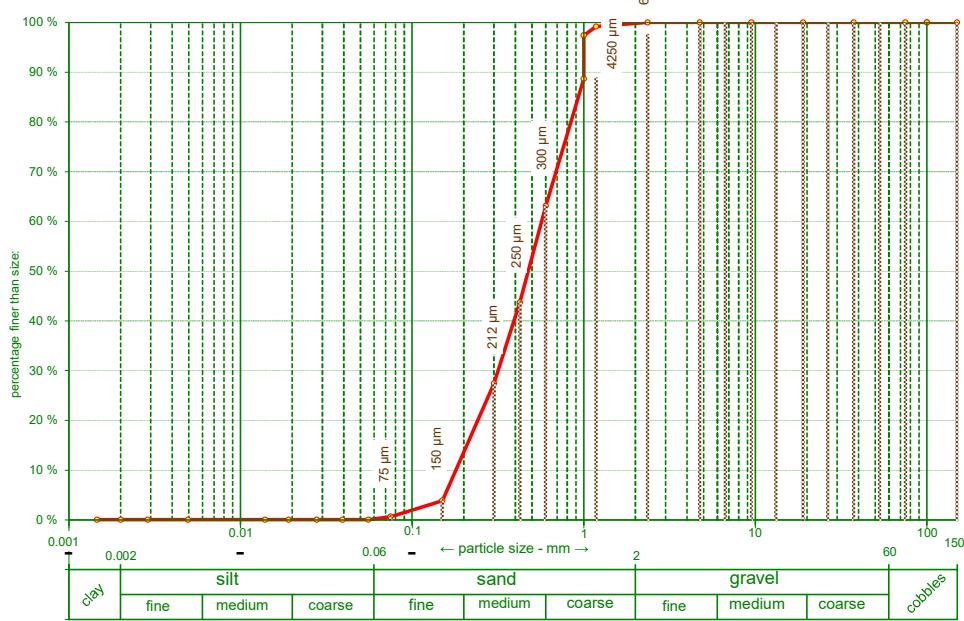
d₅₀ 241.97

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PARTICLE SIZE DISTRIBUTION

287867-65

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.6	0.0
100	100.0	39.3	0.0
75	100.0	27.8	0.0
37.5	100.0	19.1	0.0
19	100.0	13.9	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	100.0	2.0	0.0
1.18	99.2	1.5	0.0
600 μm	97.4		
425 μm	88.7		
300 μm	63.1		
250 μm	43.7		
212 μm	27.4		
150 μm	3.9		
75 μm	0.7		

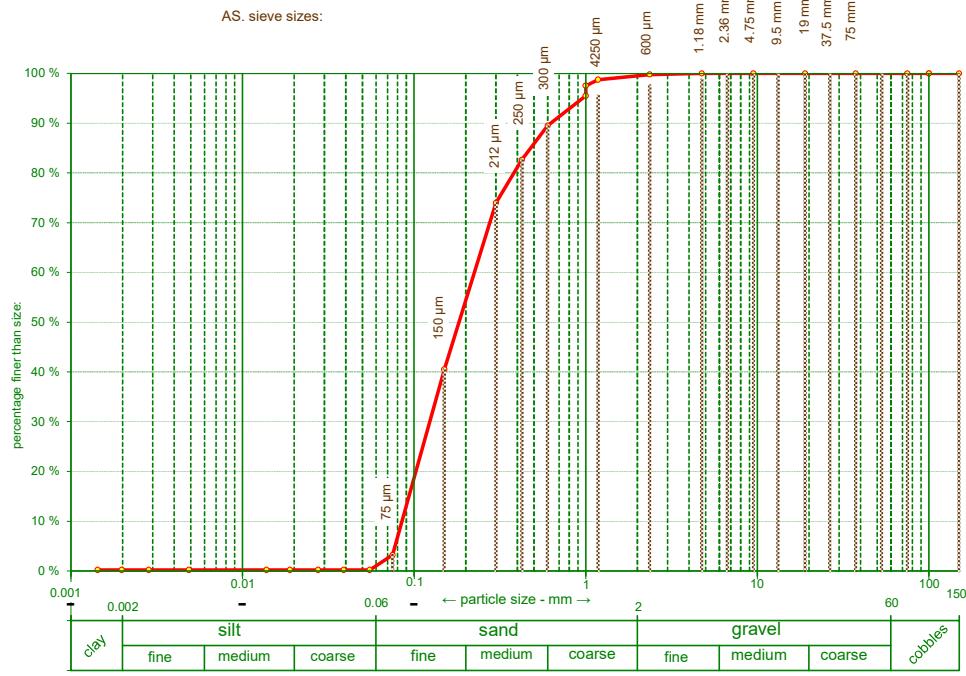
NOTES:

d₅₀ 266.16

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PARTICLE SIZE DISTRIBUTION

287867-66



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.0	0.2
100	100.0	38.9	0.2
75	100.0	27.6	0.2
37.5	100.0	18.9	0.2
19	100.0	13.8	0.2
9.5	100.0	4.9	0.2
4.75	100.0	2.8	0.2
2.36	99.8	2.0	0.2
1.18	98.8	1.4	0.2
600 μm	97.5		
425 μm	95.5		
300 μm	89.5		
250 μm	82.7		
212 μm	74.0		
150 μm	40.5		
75 μm	3.2		

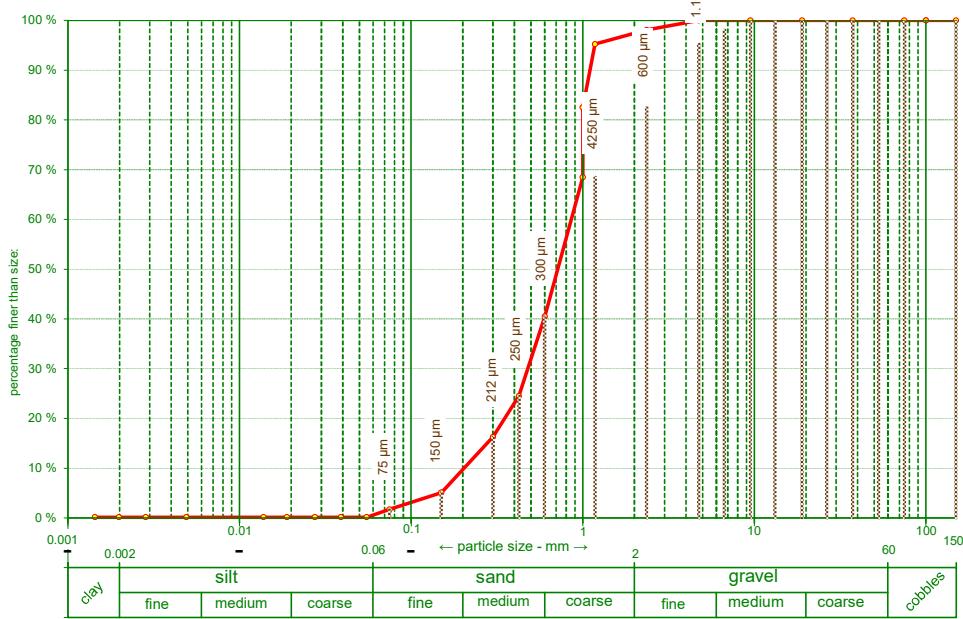
NOTES:

d₅₀ 167.62

PARTICLE SIZE DISTRIBUTION

287867-67

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.1	0.2
100	100.0	38.9	0.2
75	100.0	27.5	0.2
37.5	100.0	18.9	0.2
19	100.0	13.8	0.2
9.5	100.0	4.9	0.2
4.75	100.0	2.8	0.2
2.36	98.1	2.0	0.2
1.18	95.2	1.4	0.2
600 μm	82.5		
425 μm	68.5		
300 μm	40.5		
250 μm	24.5		
212 μm	16.3		
150 μm	5.1		
75 μm	1.7		

NOTES:

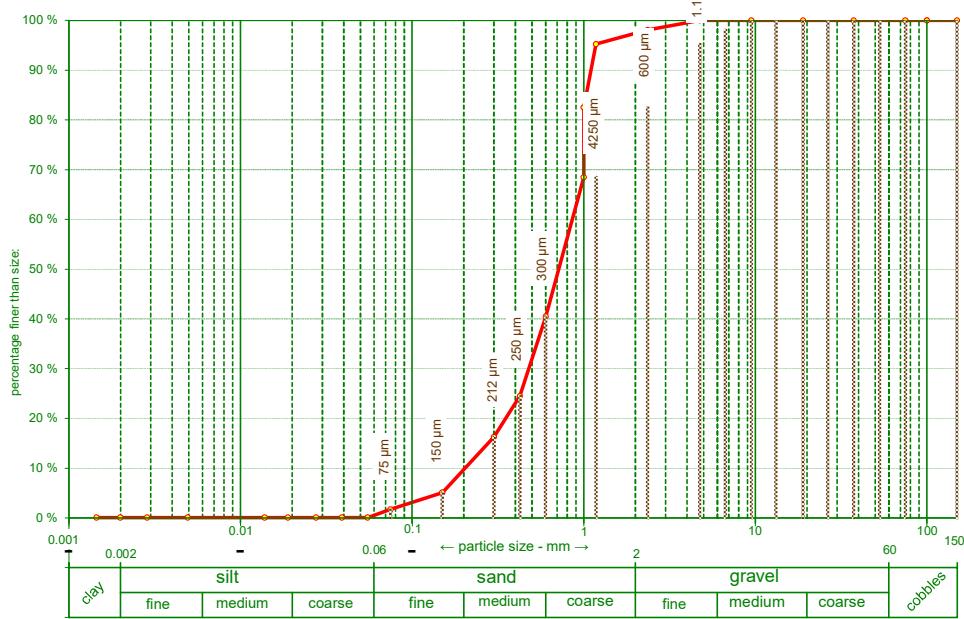
d50 342.53

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PARTICLE SIZE DISTRIBUTION

287867-68

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.2	0.1
100	100.0	39.0	0.1
75	100.0	27.6	0.1
37.5	100.0	18.9	0.1
19	100.0	13.8	0.1
9.5	100.0	4.9	0.1
4.75	100.0	2.9	0.1
2.36	98.1	2.0	0.1
1.18	95.2	1.4	0.1
600 μm	82.5		
425 μm	68.5		
300 μm	40.5		
250 μm	24.5		
212 μm	16.3		
150 μm	5.1		
75 μm	1.7		

NOTES:

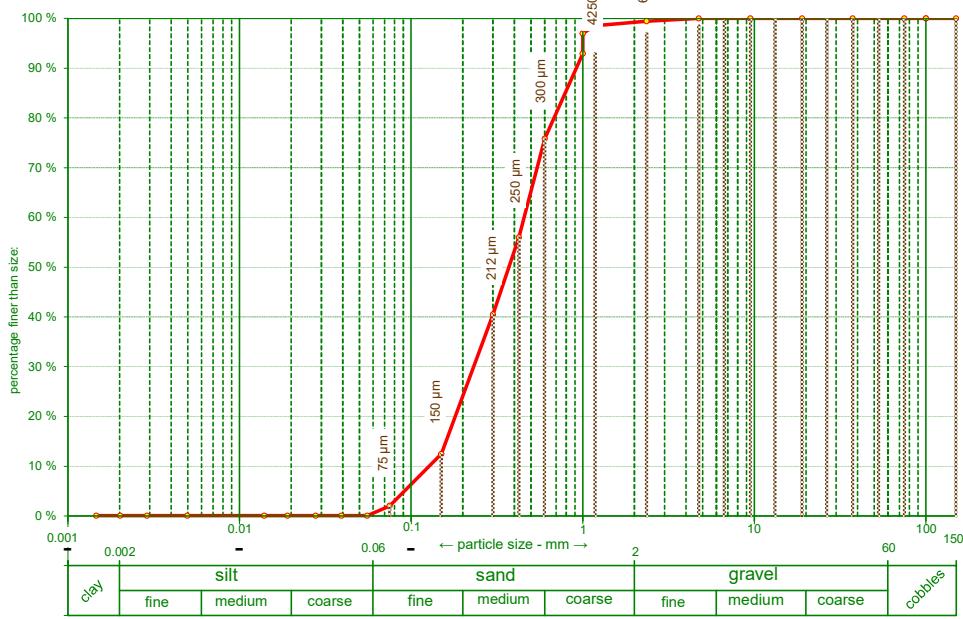
d50 342.53

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PARTICLE SIZE DISTRIBUTION

287867-70

AS. sieve sizes:



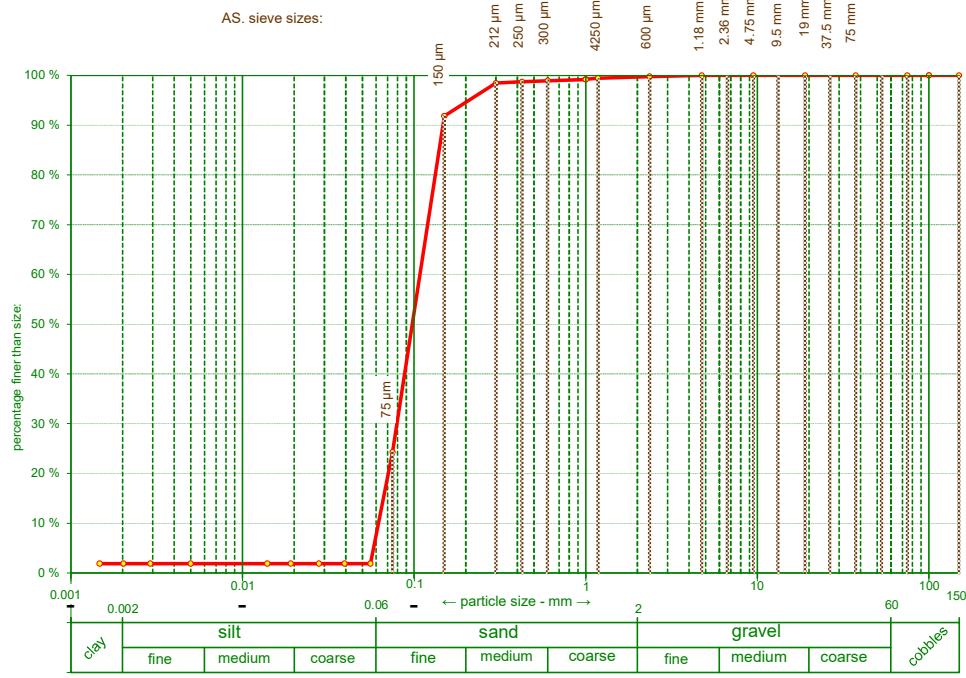
Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.6	0.1
100	100.0	39.3	0.1
75	100.0	27.8	0.1
37.5	100.0	19.1	0.1
19	100.0	13.9	0.1
9.5	100.0	5.0	0.1
4.75	100.0	2.9	0.1
2.36	99.5	2.0	0.1
1.18	98.5	1.5	0.1
600 μm	97.0		
425 μm	93.0		
300 μm	75.8		
250 μm	56.0		
212 μm	40.5		
150 μm	12.4		
75 μm	2.0		

NOTES:

d₅₀ 235.35

PARTICLE SIZE DISTRIBUTION

287867-71



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.7	1.9
100	100.0	39.4	1.9
75	100.0	27.9	1.9
37.5	100.0	19.1	1.9
19	100.0	14.0	1.9
9.5	100.0	5.0	1.9
4.75	100.0	2.9	1.9
2.36	99.8	2.0	1.9
1.18	99.5	1.5	1.9
600 μm	99.2		
425 μm	99.2		
300 μm	99.0		
250 μm	98.7		
212 μm	98.5		
150 μm	91.8		
75 μm	24.3		

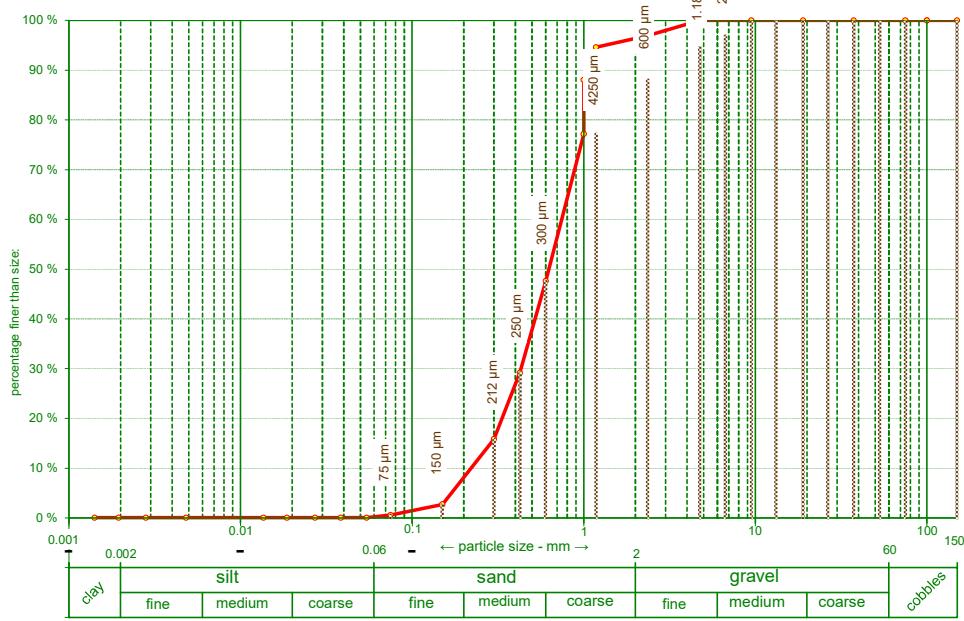
NOTES:

d50 103.54

PARTICLE SIZE DISTRIBUTION

287867-72

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	54.4	0.0
100	100.0	38.4	0.0
75	100.0	27.2	0.0
37.5	100.0	18.7	0.0
19	100.0	13.6	0.0
9.5	100.0	4.8	0.0
4.75	100.0	2.8	0.0
2.36	96.9	2.0	0.0
1.18	94.6	1.4	0.0
600 μm	88.0		
425 μm	77.2		
300 μm	47.6		
250 μm	29.2		
212 μm	15.9		
150 μm	2.7		
75 μm	0.6		

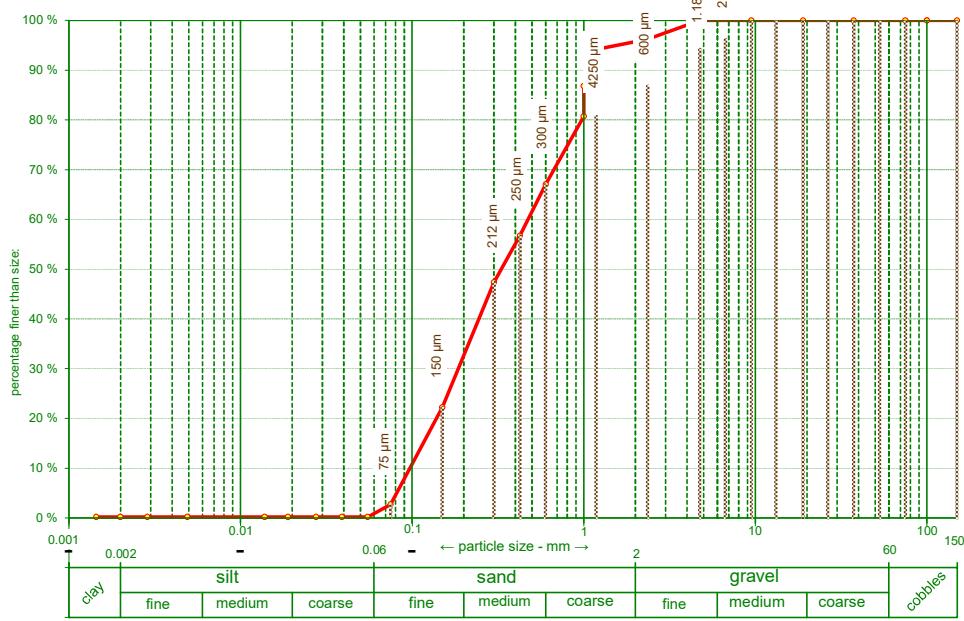
NOTES:

d50 310.11

PARTICLE SIZE DISTRIBUTION

287867-73

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.2	0.2
100	100.0	39.0	0.2
75	100.0	27.6	0.2
37.5	100.0	18.9	0.2
19	100.0	13.8	0.2
9.5	100.0	4.9	0.2
4.75	100.0	2.9	0.2
2.36	96.2	2.0	0.2
1.18	94.2	1.4	0.2
600 μm	86.8		
425 μm	80.7		
300 μm	67.0		
250 μm	56.7		
212 μm	47.4		
150 μm	22.2		
75 μm	2.7		

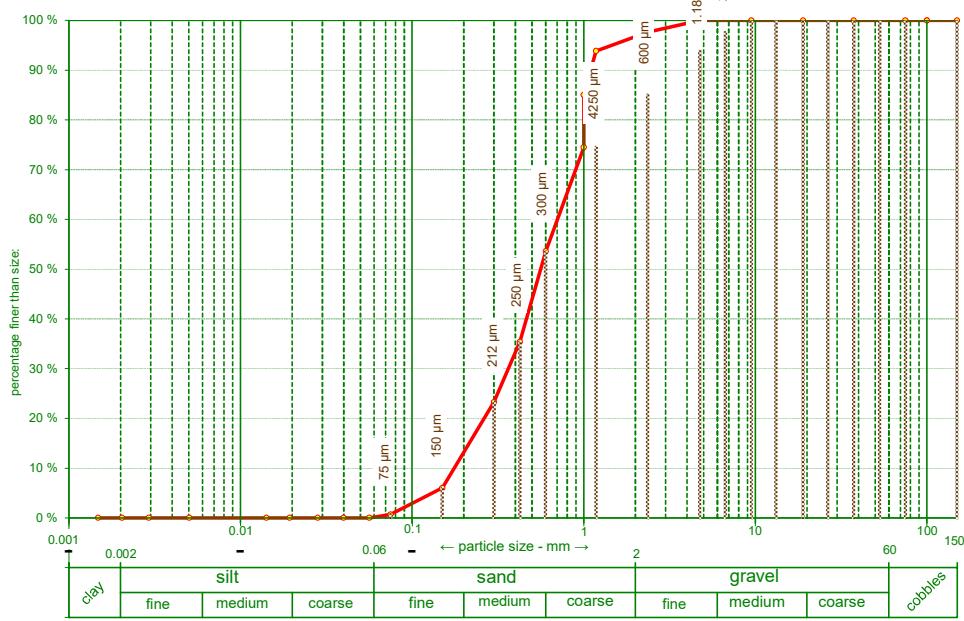
NOTES:	
d50	222.67

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PARTICLE SIZE DISTRIBUTION

287867-74

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	56.4	0.0
100	100.0	39.9	0.0
75	100.0	28.2	0.0
37.5	100.0	19.4	0.0
19	100.0	14.1	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	97.6	2.0	0.0
1.18	93.8	1.5	0.0
600 μm	85.0		
425 μm	74.5		
300 μm	53.6		
250 μm	35.4		
212 μm	23.3		
150 μm	6.0		
75 μm	0.7		

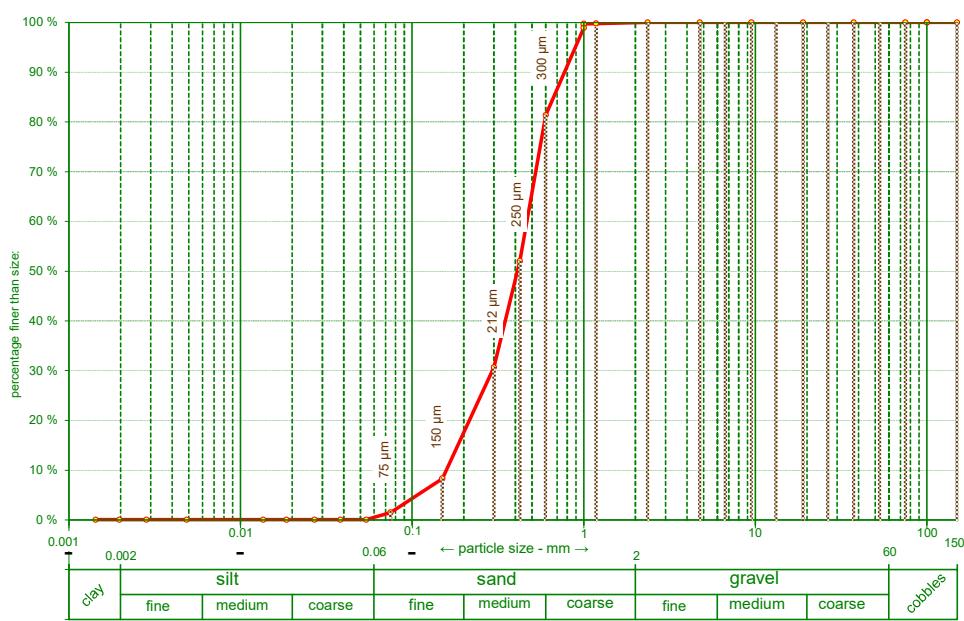
NOTES:

d50 290.15

PARTICLE SIZE DISTRIBUTION

287867-75

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	54.1	0.0
100	100.0	38.2	0.0
75	100.0	27.0	0.0
37.5	100.0	18.6	0.0
19	100.0	13.6	0.0
9.5	100.0	4.9	0.0
4.75	100.0	2.8	0.0
2.36	100.0	2.0	0.0
1.18	99.8	1.4	0.0
600 μm	99.7		
425 μm	98.9		
300 μm	81.3		
250 μm	52.0		
212 μm	30.7		
150 μm	8.3		
75 μm	1.5		

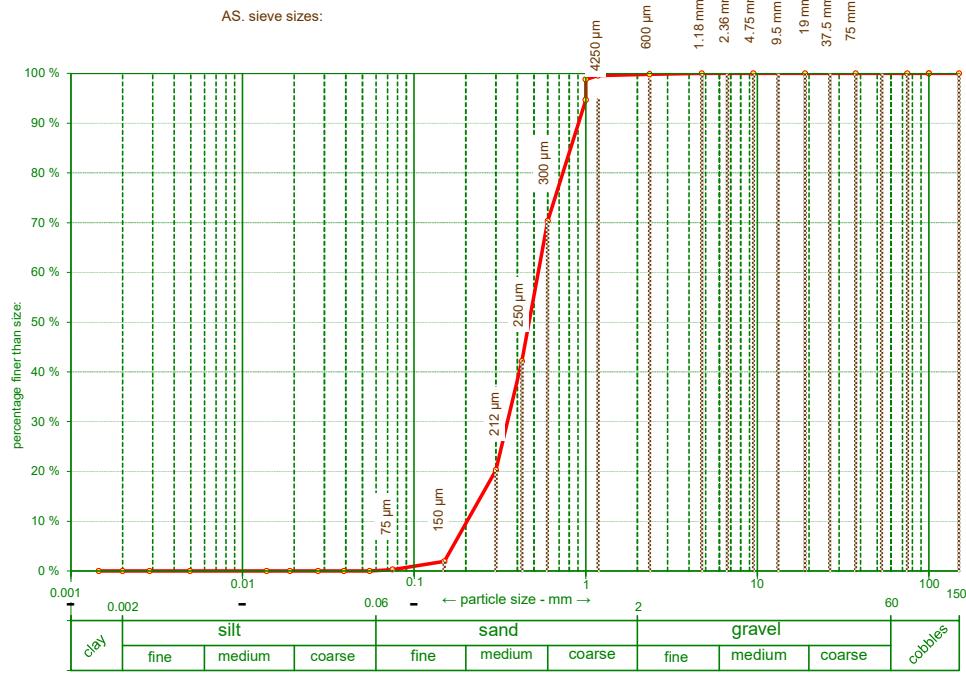
NOTES:

d₅₀ 246.39

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PARTICLE SIZE DISTRIBUTION

287867-76



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.1	0.0
100	100.0	39.0	0.0
75	100.0	27.6	0.0
37.5	100.0	18.9	0.0
19	100.0	13.8	0.0
9.5	100.0	4.9	0.0
4.75	100.0	2.9	0.0
2.36	99.8	2.0	0.0
1.18	99.6	1.5	0.0
600 μm	98.8		
425 μm	94.7		
300 μm	70.3		
250 μm	42.1		
212 μm	20.3		
150 μm	1.9		
75 μm	0.3		

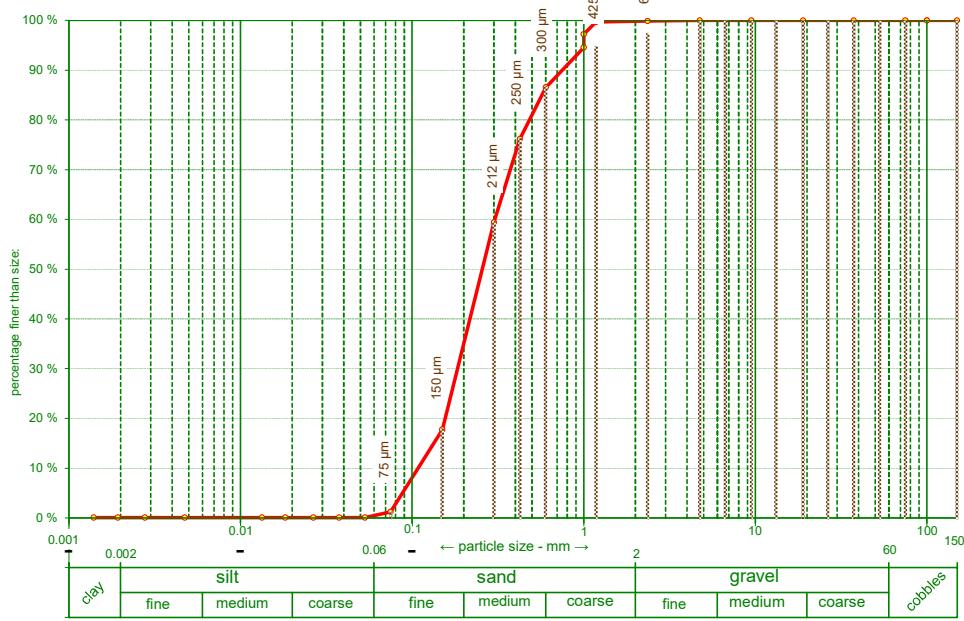
NOTES:

d50	263.95
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PARTICLE SIZE DISTRIBUTION

287867-77

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	53.2	0.1
100	100.0	37.6	0.1
75	100.0	26.6	0.1
37.5	100.0	18.3	0.1
19	100.0	13.3	0.1
9.5	100.0	4.7	0.1
4.75	100.0	2.8	0.1
2.36	99.9	1.9	0.1
1.18	99.7	1.4	0.1
600 μm	97.2		
425 μm	94.6		
300 μm	86.5		
250 μm	76.2		
212 μm	59.4		
150 μm	17.8		
75 μm	1.2		

NOTES:

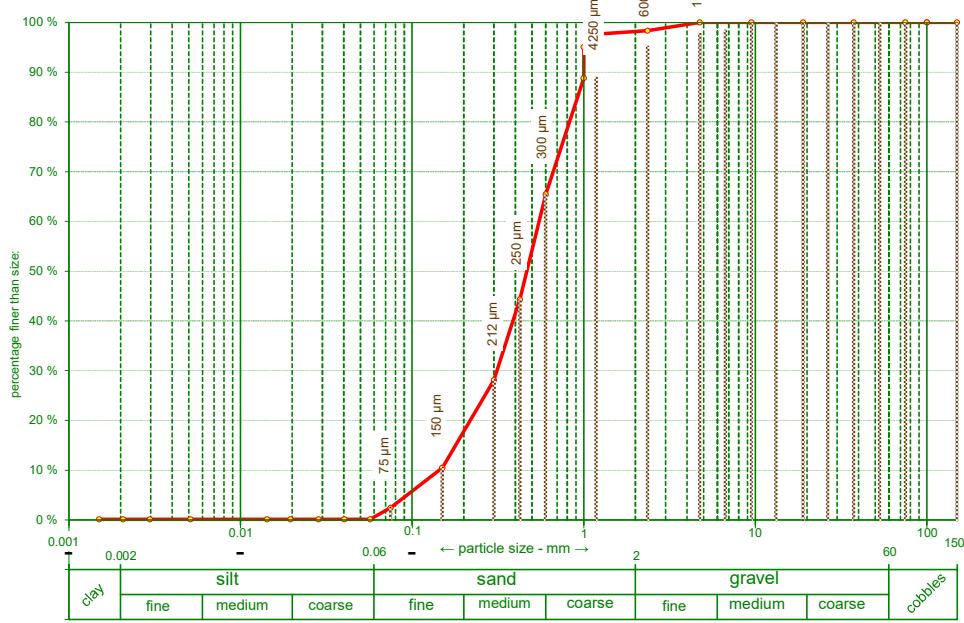
d₅₀ 198.00

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PARTICLE SIZE DISTRIBUTION

287867-78

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	57.0	0.1
100	100.0	40.3	0.1
75	100.0	28.5	0.1
37.5	100.0	19.6	0.1
19	100.0	14.3	0.1
9.5	100.0	5.1	0.1
4.75	100.0	3.0	0.1
2.36	98.3	2.1	0.1
1.18	97.6	1.5	0.1
600 μm	95.0		
425 μm	88.8		
300 μm	65.4		
250 μm	44.3		
212 μm	28.1		
150 μm	10.5		
75 μm	2.4		

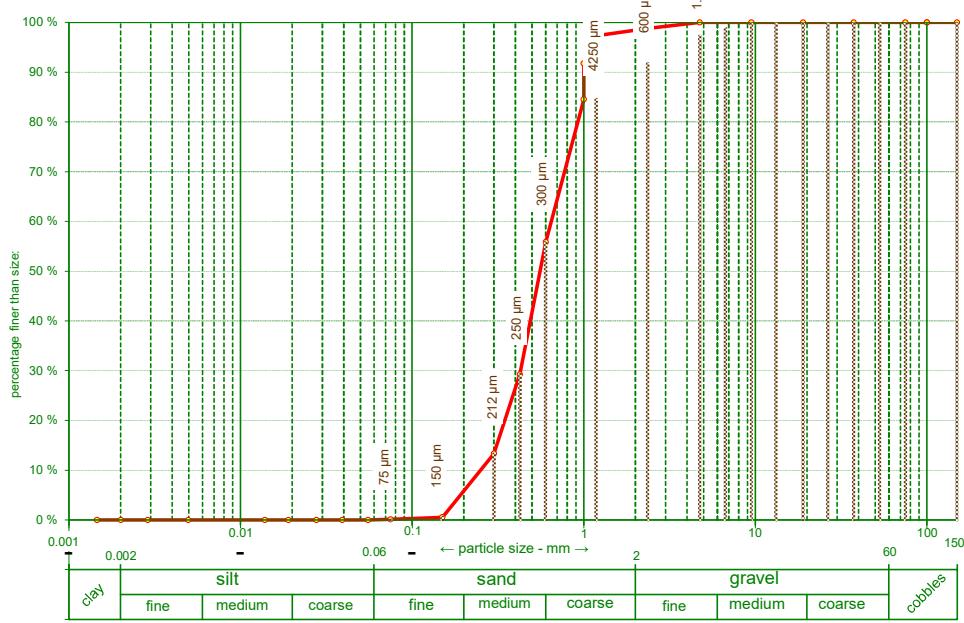
NOTES:

d₅₀ 263.48

PARTICLE SIZE DISTRIBUTION

287867-79

AS. sieve sizes:



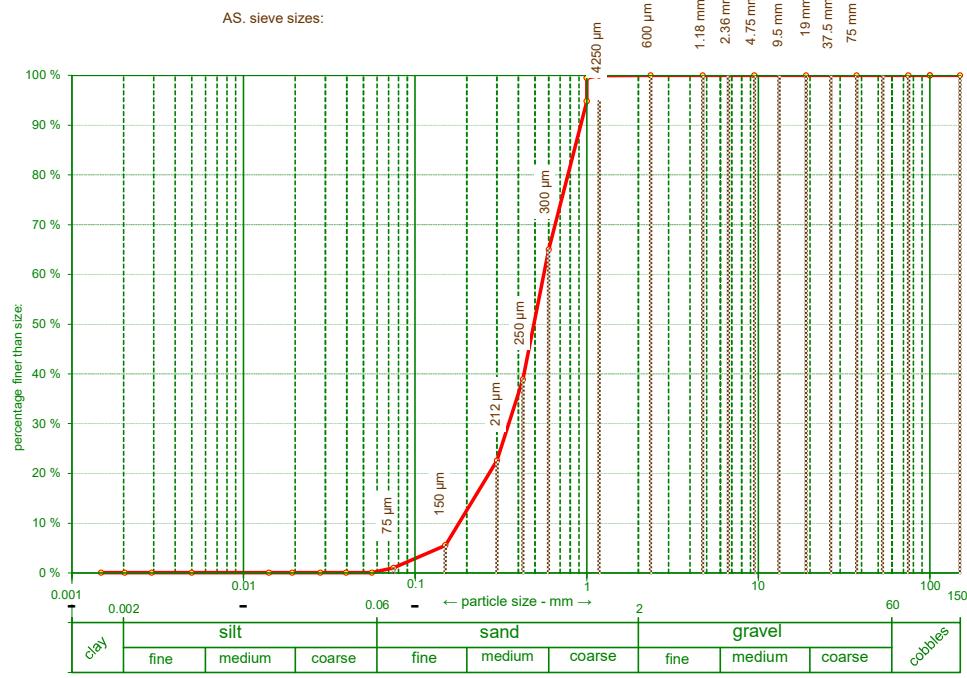
Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.4	0.0
100	100.0	39.2	0.0
75	100.0	27.7	0.0
37.5	100.0	19.0	0.0
19	100.0	13.9	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	98.8	2.0	0.0
1.18	97.3	1.5	0.0
600 μm	91.7		
425 μm	84.5		
300 μm	55.9		
250 μm	29.3		
212 μm	13.3		
150 μm	0.6		
75 μm	0.1		

NOTES:

d50 288.98

PARTICLE SIZE DISTRIBUTION

287867-80



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	56.1	0.0
100	100.0	39.7	0.0
75	100.0	28.0	0.0
37.5	100.0	19.3	0.0
19	100.0	14.1	0.0
9.5	100.0	5.0	0.0
4.75	100.0	2.9	0.0
2.36	100.0	2.0	0.0
1.18	99.9	1.5	0.0
600 μm	99.5		
425 μm	94.8		
300 μm	65.0		
250 μm	38.9		
212 μm	22.6		
150 μm	5.6		
75 μm	1.0		

NOTES:

d50	271.29
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PARTICLE SIZE DISTRIBUTION

287867-81

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.8	0.7
100	100.0	39.4	0.7
75	100.0	27.9	0.7
37.5	100.0	19.1	0.7
19	100.0	14.0	0.7
9.5	100.0	5.0	0.7
4.75	100.0	2.9	0.7
2.36	99.2	2.0	0.7
1.18	98.1	1.5	0.7
600 μm	95.3		
425 μm	81.4		
300 μm	55.3		
250 μm	37.0		
212 μm	26.5		
150 μm	25.6		
75 μm	7.9		

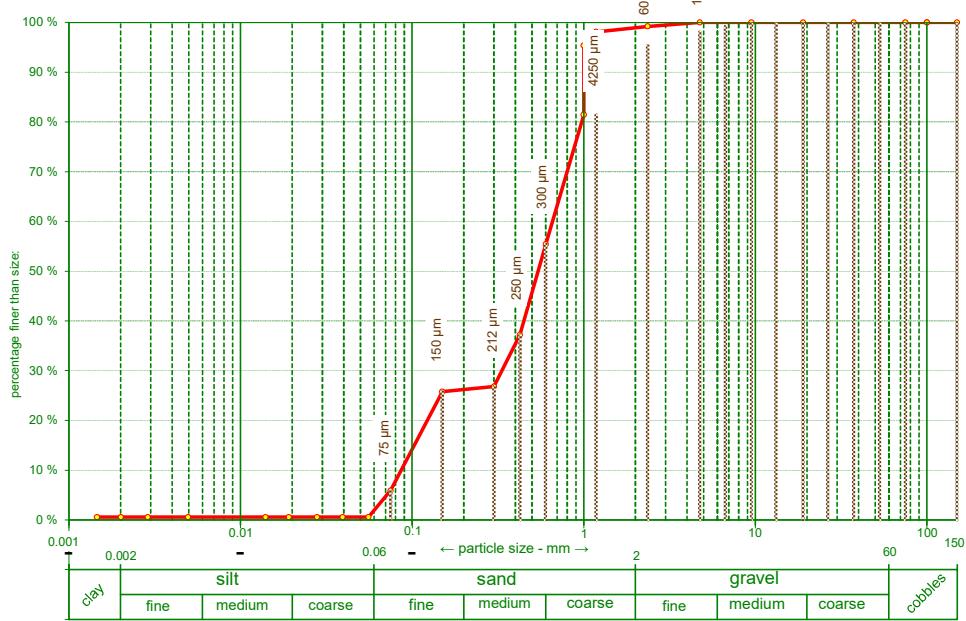
NOTES:

d₅₀ 285.61

PARTICLE SIZE DISTRIBUTION

287867-82

AS. sieve sizes:



Sieve Analysis		Hydrometer Analysis	
Sieve Size mm	% Passing	Particle Size μm	% Passing
100	100.0	55.7	0.6
100	100.0	39.4	0.6
75	100.0	27.9	0.6
37.5	100.0	19.2	0.6
19	100.0	14.0	0.6
9.5	100.0	4.9	0.6
4.75	100.0	2.9	0.6
2.36	99.2	2.0	0.6
1.18	98.1	1.5	0.6
600 μm	95.4		
425 μm	81.4		
300 μm	55.4		
250 μm	37.2		
212 μm	26.8		
150 μm	25.8		
75 μm	5.9		

NOTES:

d₅₀ 285.16