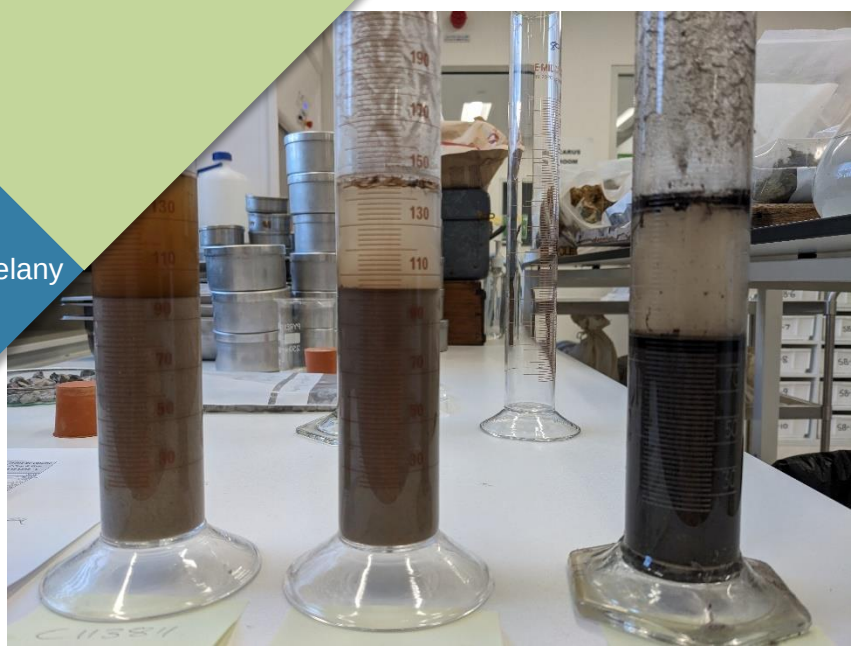
MINERAL RESOURCES TASMANIA

Quarry & Laboratory Report

LJN2024-050

MRT Sand Project Lot 2 Particle Size Distribution and Clay and Fine Sediment Analysis, Southeast Coast Sands

An unpublished Mineral Resources Report for:
Travis Holmes & Mineral Resources Tasmania



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Mineral Resources Tasmania
Department of State Growth

Tasmanian Government

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SUMMARY

Fifty-seven siliceous sands were submitted for testing by Travis Holmes on behalf of the Mineral Resources Tasmania Sand Sampling Program. The testing regimen was determined by T. Holmes based on industry requirements and included dry sieving to assess particle size distribution with a subset of the samples also assessed for clay and fine silt proportions by settling method (AS 1141.33:2015). The samples were off-white to pale cream-yellow to chocolate brown, predominantly medium to fine grained sands, with a minority of samples having coarse sand to gravel/cobbles present.

Three samples exhibited a higher proportion of coarse sand and gravel/cobbles (C113820, C113821 & C113822). Likewise, most samples tested had <10% clay/silt fraction with 13 having a higher proportion (C113821, C113822, E200666, E200667, E200671, E203138, E203139, E203147, E203149, E203153, E203155, E203156 and E203157). Of those 13 samples, 2 tested by the AS 1141.33 were confirmed by that method to have clay/silt fraction >10% (C113821, C113822) along with one not tested by dry sieving (C113825).

1. INTRODUCTION

Fifty-seven samples of predominantly fine to medium grained, silica rich sands were submitted for analysis by Travis Holmes as part of the Mineral Resources Tasmania (MRT) Sands Resource Program. While being reasonably visually consistent, there were variations across the samples. These variations were predominantly in colour (indicative of clay and/or iron oxides), grain angularity and organic content, while some samples exhibiting gap-graded gravel and cobbles.

All bar four samples were subject to Particle Size Distribution (PSD) testing and a subset was taken from seven samples to assess the clay and fine silt content of the sands by a hydraulic settling method (AS 1141.33:2015).

2. SAMPLE PREPARATION

Samples were dried to a constant mass, riffle split, photographed and broken into sub-samples for the testing. The testing regimen was determined by T. Holmes based on industry requirements and building on existing datasets. The quantity of material subsampled for sieving was based on a visual assessment of mean grain size, as per AS 1289.1.1. Due to the predominantly fine-grained nature of the sands, this required small sample sizes for sieving (~50-200g) to reduce the degree of sieve overloading. As per AS 1289.1.1, this also involved removing some of the largest gravel and cobble particles so as not to significantly affect the PSD results. A ~100g riffle split subsample of fine aggregate was used for AS 1141.33 testing.

3. SAMPLE DESCRIPTIONS

The samples tested were visually predominantly fine to medium grained, silica rich sands, with some variability across the samples. The variations were predominantly in colour (off-white to pale grey, pale yellow and brown, indicating variable amounts of organic matter, clays and oxidation), grain angularity, and organic content, while

some samples exhibited a gap-graded gravel and cobble component. See Table 1 and Figures 1 to 57 for full sample details.

Table 1. *Southeast Coast MRT Sand Project Sample Lot 2*

Sample No.	Site	Description	mE, gda94	mN, gda94	Process
C113811	Lazenby Sand	Lazenby sand. Outcropping sand layer one meter below soil layer. White, very fine grained, subangular to subrounded, quartz rich sand with minor bracken fern roots fragments. Pit face sample.	540190	5240800	Dry Sieve, Clay/Silt Settling
C113812	Lazenby Sand	Lazenby “sharps” sand from washed stockpile. Well-sorted, very fine grained, subangular to subrounded, white quartz rich sand.	540190	5240800	Dry Sieve
C113813	South Arm	Angular to subangular, fine to medium grained, brown quartz rich sand.	540127	5240895	Dry Sieve
C113814	South Arm	Very fine to fine grained, light brown, polylithic, quartz rich, subangular to subrounded sand.	540127	5240895	Dry Sieve
C113815	South Arm	Fine grained, light brown, polylithic, quartz rich, subangular to subrounded, well-sorted “sharps” sand with trace broken shell impurities.	540127	5240895	Dry Sieve
C113817	South Arm	Males "dune sand". Medium to coarse grained, light brown, polylithic, quartz rich, subangular to subrounded sand with shell fragments and occasional pebbles.	540200	5236700	Dry Sieve
C113819	Llanherne Spit	RNB Trading Sieved Stockpile. Tan, quartz-rich, subangular to subrounded, well-sorted, 0.1-0.2mm dune sand.	545307	5257680	Dry Sieve

Sample No.	Site	Description	mE, gda94	mN, gda94	Process
C113820	Pioneer	Sieved Tailings Stockpile. 0.1-0.5mm, tan, subangular quartz sand. Stockpiled product, mined from Pioneer mine tailings pile, transported to Llanherne Spit Mine for blending with Seven Mile Beach sand for concrete mix.	578370	5452379	Dry Sieve
C113821	Connellys Marsh	Clay rich, dark brown, fat sand. Mostly fine grained (0.1-0.3mm) with frequent 30-50mm cobbles, dark brown, hard packed sandy clay.	560227	5251331	Dry Sieve, Clay/Silt Settling
C113822	Dunalley	Dark brown, sandy clay clumping into dried, hard packed, friable cobbles.	561799	5250227	Dry Sieve, Clay/Silt Settling
C113823	Forcett	Well-sorted, fine grained, quartz rich, cream to tan, subangular to subrounded sand with bracken root fragments. Auger sample from 1.5-2.0m depth. Hand auger sampled at base of old pit.	556926	5260111	Clay/Silt Settling
C113824	Forcett	Well-sorted, fine grained, quartz rich, cream to white, subangular to subrounded sand with bracken root fragments. Auger sample from base of pit at 1.0-1.5m depth.	556868	5260108	Clay/Silt Settling
C113825	Forcett	Well-sorted, fine grained, quartz rich, cream to white, subangular to subrounded sand with bracken root fragments. Auger sample from base of pit at 1.5-2.0m depth.	556811	5260349	Clay/Silt Settling
C113826	Forcett	Well-sorted, fine grained, quartz rich, cream to white, subangular to subrounded sand with bracken root fragments. Auger sample at 0.5-0.7m depth.	556985	5260543	Clay/Silt Settling
E200622	Marion Bay	Fine grained sand.	571180	5258125	Dry Sieve
E200630	Carlton Sand Deposit	Light brown sand.	553613	5254034	Dry Sieve
E200633	Carlton Sand Deposit	White sand (pink?).	553413	5253684	Dry Sieve
E200637	Carlton Sand Deposit	Light tan sand.	553413	5253684	Dry Sieve
E200638	Carlton Sand Deposit	Brown sand.	553413	5253684	Dry Sieve

Sample No.	Site	Description	mE, gda94	mN, gda94	Process
E200639	Carlton Sand Deposit	White sand.	553413	5253684	Dry Sieve
E200641	Carlton Sand Deposit	Tan sand.	553613	5253484	Dry Sieve
E200642	Carlton Sand Deposit	White sand becoming brown at depth.	553613	5253484	Dry Sieve
E200643	Carlton Sand Deposit	Dark brown sand.	553613	5253484	Dry Sieve
E200657	Carlton Sand Deposit	Light brown sand.	553813	5253484	Dry Sieve
E200664	Carlton Sand Deposit	Light grey sand.	553663	5253884	Dry Sieve
E200666	Carlton Sand Deposit	Light grey sand.	553813	5253834	Dry Sieve
E200667	Carlton Sand Deposit	Light grey sand.	554013	5253884	Dry Sieve
E200671	Carlton Sand Deposit	Tan grey sand.	554013	5254184	Dry Sieve
E200681	Carlton Sand Deposit	Tan sand.	552963	5254034	Dry Sieve
E200685	Copping/Bedding Hill	Fine grained, grey sand.	560525	5256698	Dry Sieve
E200691	Copping/Bedding Hill	Fine grained, brown-grey sand.	560525	5256698	Dry Sieve
E200693	Copping/Bedding Hill	Fine sand to white-grey clayey sand.	560525	5256698	Dry Sieve
E200698	Copping/Bedding Hill	Fine grained, light brown sand.	560525	5256698	Dry Sieve
E200779	Brown Mountain Road Pit, Campania	Fine grained, grey-tan sand.	538663	5280144	Dry Sieve
E200781	Brown Mountain Road Pit, Campania	White sand.	538663	5280144	Dry Sieve

Sample No.	Site	Description	mE, gda94	mN, gda94	Process
E200790	Brown Mountain Road Pit, Campania	Fine grained, grey sand.	538563	5279684	Dry Sieve
E200791	Brown Mountain Road Pit, Campania	Reddy brown clayey sand	538450	5279500	Dry Sieve
E200799	Brown Mountain Road Pit, Campania	Fine grained, grey-tan sand.	538713	5280194	Dry Sieve
E200800	Brown Mountain Road Pit, Campania	Fine grained, grey-tan sand.	538713	5280194	Dry Sieve
E201074	Brown Mountain Road Pit, Campania	Mottled grey to red-brown sand.	538713	5279929	Dry Sieve
E203090	Sand River, Buckland	Grey sand, loose.	557243	5287584	Dry Sieve
E203130	Langdon, Brown Mountain Road Sand Deposits	Sand.	538663	5280134	Dry Sieve
E203131	Langdon, Brown Mountain Road Sand Deposits	Sand.	538663	5280134	Dry Sieve
E203134	Langdon, Brown Mountain Road Sand Deposits	Fine grained, tan sand, red-brown mottled sand, becoming grey clayey sand at base.	538608	5280034	Dry Sieve
E203137	Sand River, Buckland	Clayey sand.	557283	5287324	Dry Sieve
E203138	Sand River, Buckland	Brown sand, loose.	557268	5287304	Dry Sieve
E203139	Sand River, Buckland	Loose quartz sand.	557223	5287579	Dry Sieve
E203141	Sand River, Buckland	Brown and grey, sandy clay. Clay layer at 3.9m.	557233	5287474	Dry Sieve

Sample No.	Site	Description	mE, gda94	mN, gda94	Process
E203144	Sand River, Buckland	Clay and sandy clay.	557333	5287284	Dry Sieve
E203146	Sand River, Buckland	Light coloured, almost white gravel and sand (boulders of sandstone rounded up to 100mm across).	557243	5287584	Dry Sieve
E203147	Sand River, Buckland	Grey sand.	557263	5287514	Dry Sieve
E203149	Sand River, Buckland	Grey and brown mottled clay.	557253	5287344	Dry Sieve
E203152	Sand River, Buckland	Loose, brown sand, some roots, then brown clayey sand with blocky fracture, then clayey sand layer at 3.8-4.1m.	557253	5287434	Dry Sieve
E203153	Sand River, Buckland	Loose, brown sand.	557308	5287294	Dry Sieve
E203155	Sand River, Buckland	Light brown and grey sand, slightly consolidated.	557263	5287474	Dry Sieve
E203156	Sand River, Buckland	Brown and grey sand	557253	5287404	Dry Sieve
E203157	Sand River, Buckland	Very light brown, fine sand	557223	5287579	Dry Sieve
E203160	Sand River, Buckland	Loose, light brown sand.	557263	5287379	Dry Sieve

Figure 1. *C113811. Lazenby sand. Outcropping sand layer one meter below soil layer. White, very fine grained, subangular to subrounded, quartz rich sand with minor bracken fern roots fragments. Pit face sample.*

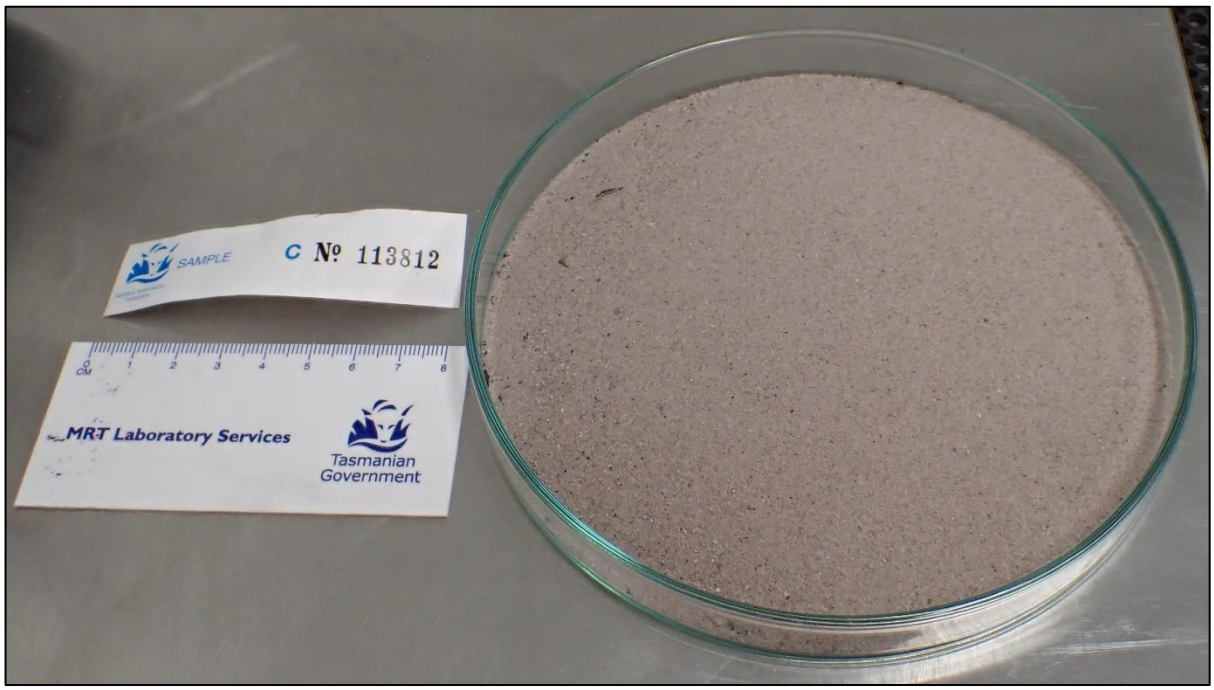

Figure 2. *C113812. Lazenby "sharps" sand from washed stockpile. Well-sorted, very fine grained, subangular to subrounded, white quartz rich sand.*

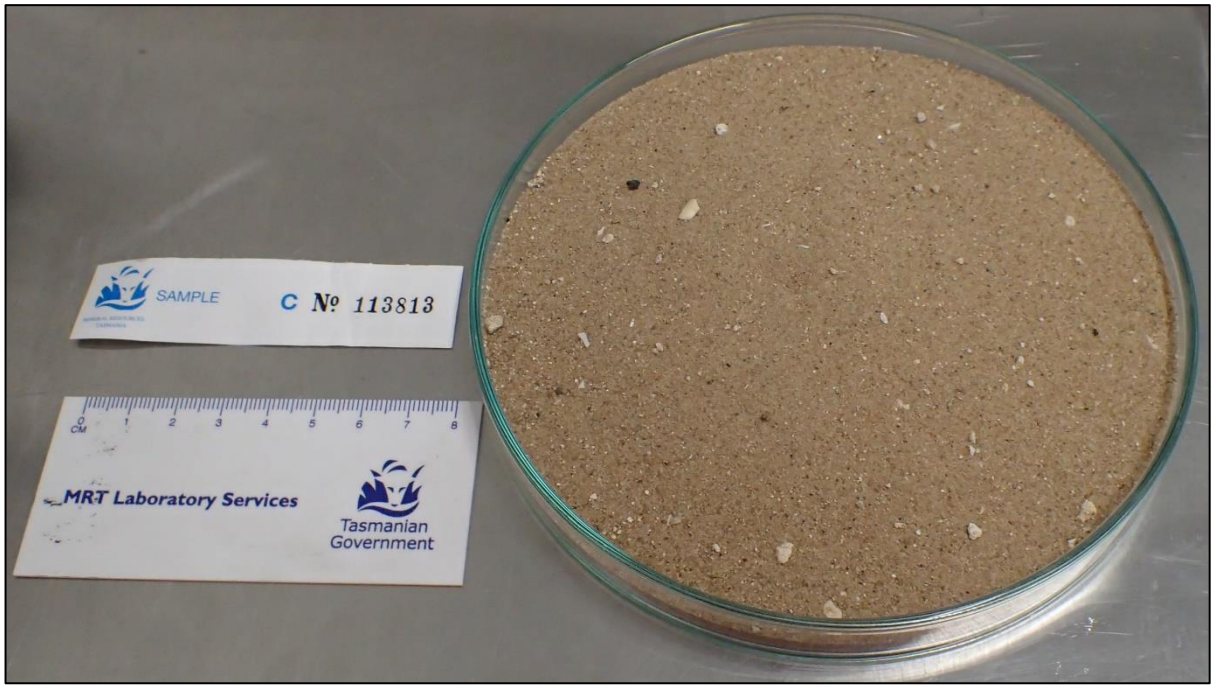

Figure 3. *C113813. Angular to subangular, fine to medium grained, brown quartz rich sand.*

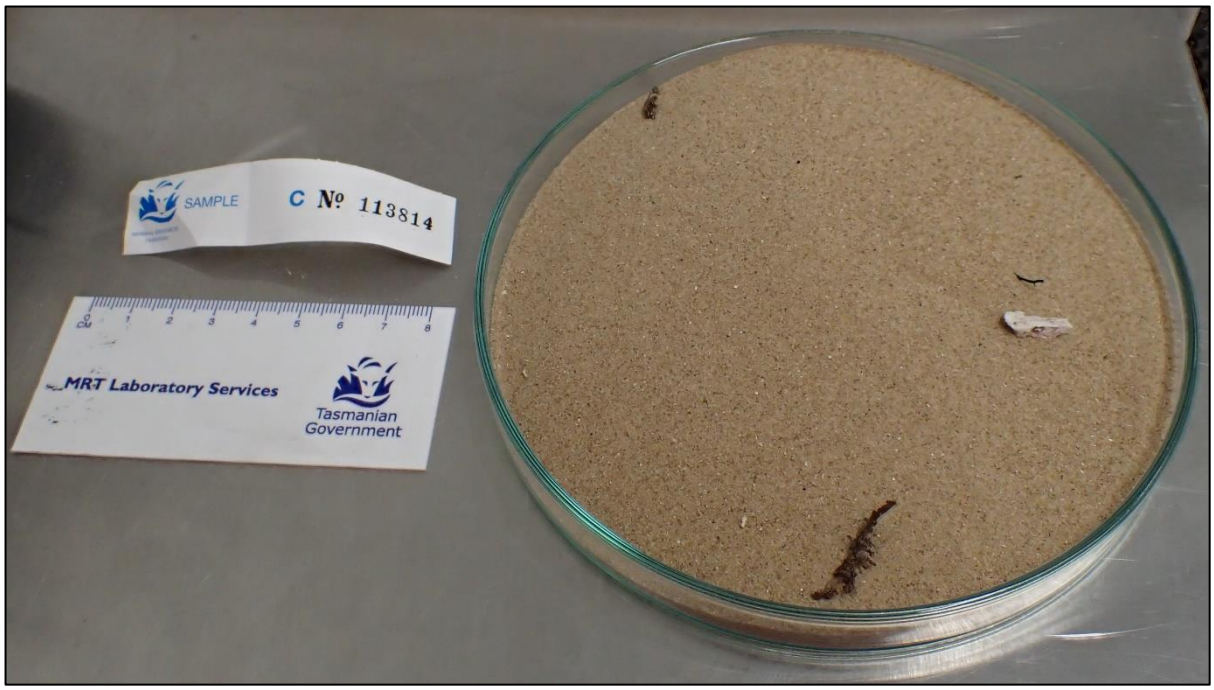

Figure 4. *C113814. Very fine to fine grained, light brown, polylithic, quartz rich, subangular to subrounded sand.*

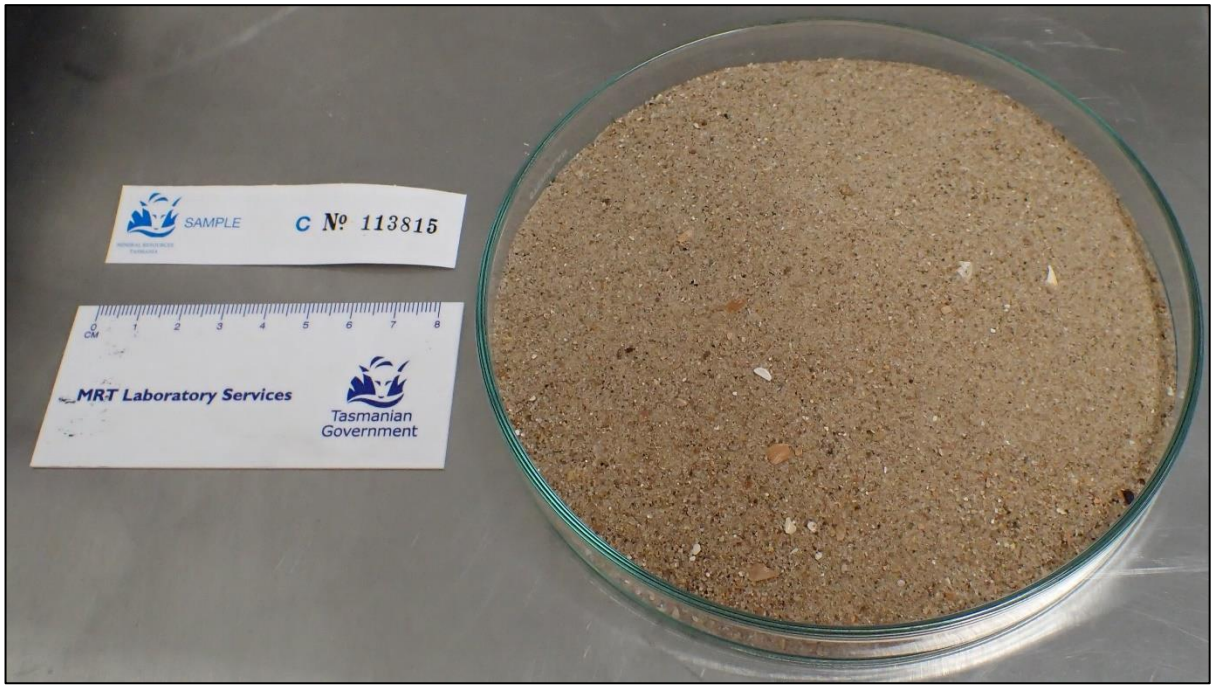

Figure 5. *C113815. Fine grained, light brown, polylithic, quartz rich, subangular to subrounded, well-sorted "sharps" sand with trace broken shell impurities.*

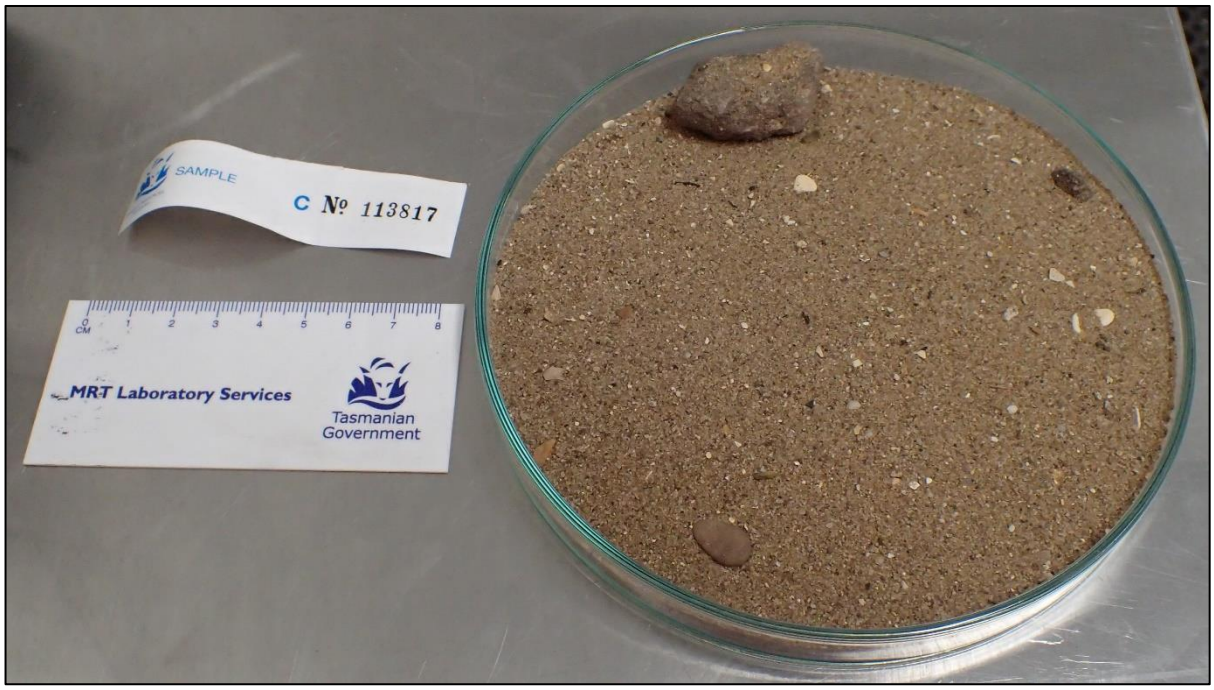

Figure 6. *C113817. Males "dune sand". Medium to coarse grained, light brown, polylithic, quartz rich, subangular to subrounded sand with shell fragments and occasional pebbles.*

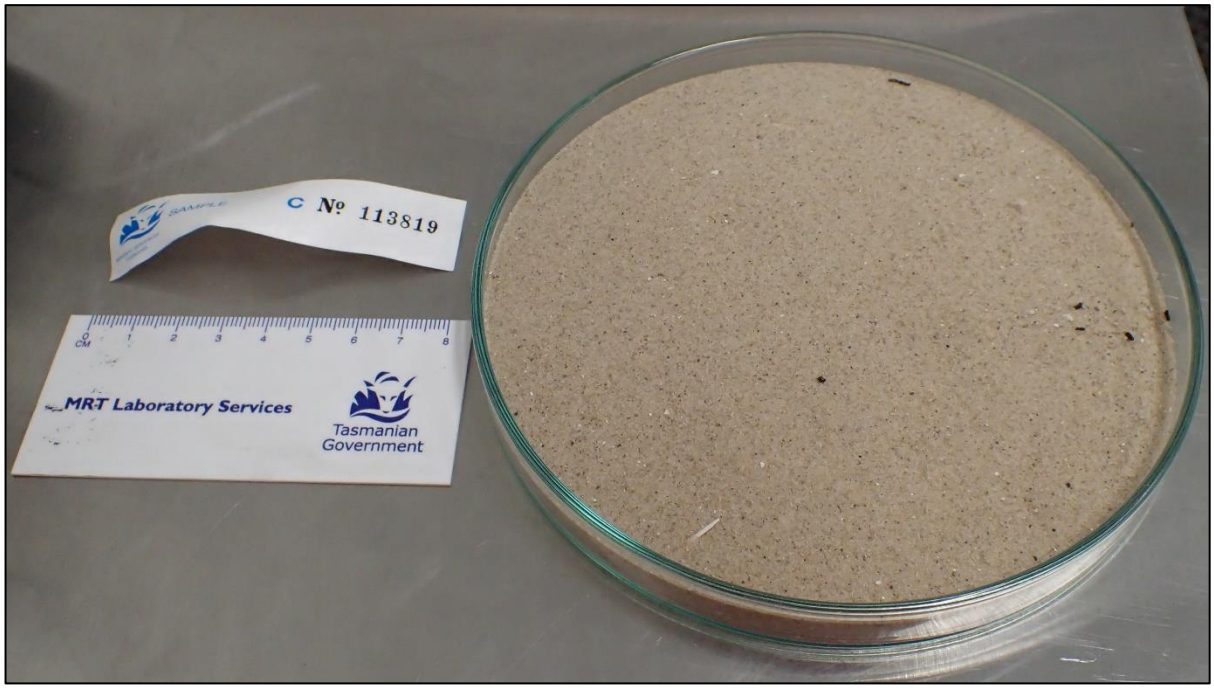

Figure 7. *C113819. RNB Trading Sieved Stockpile. Tan, quartz-rich, subangular to subrounded, well-sorted, 0.1-0.2mm dune sand.*

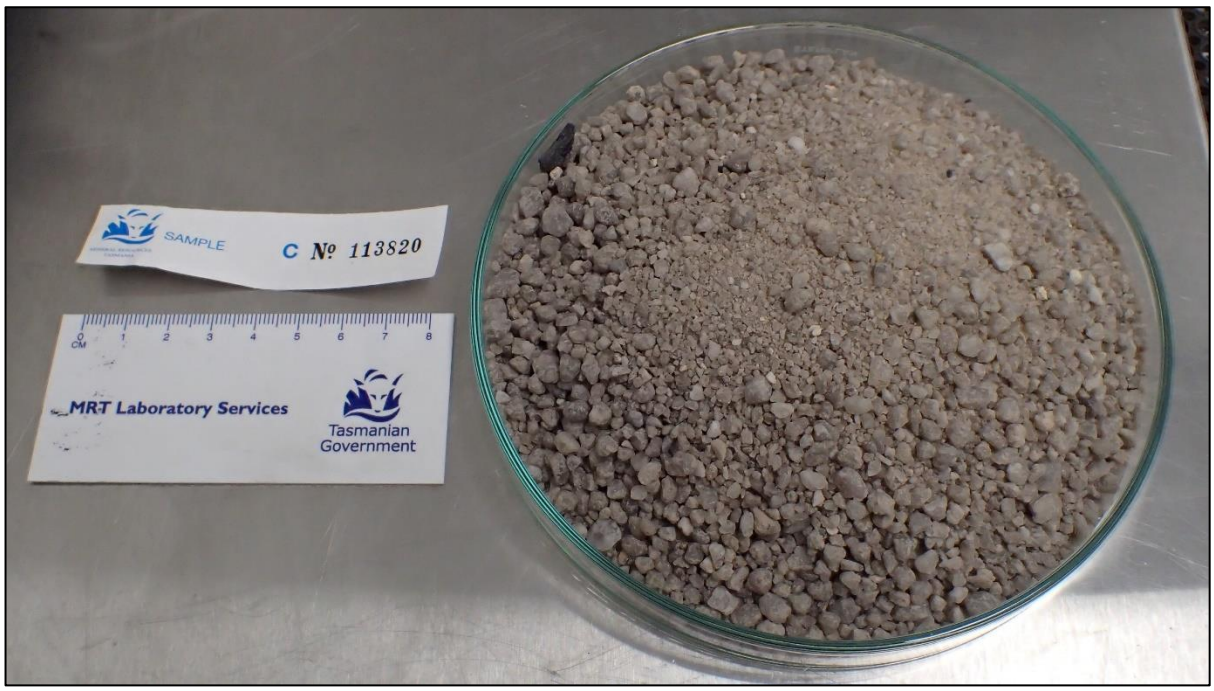

Figure 8. *C113820. Sieved Tailings Stockpile. 0.1-0.5mm, tan, subangular quartz sand. Stockpiled product, mined from Pioneer mine tailings pile, transported to Llanherne Spit Mine for blending with Seven Mile Beach sand for concrete mix.*

Figure 9. *C113821. Clay rich, dark brown, fat sand. Mostly fine grained (0.1-0.3mm) with frequent 30-50mm cobbles, dark brown, hard packed sandy clay.*

Figure 10. *C113822. Dark brown, sandy clay clumping into dried, hard packed, friable cobbles.*

Figure 11. *C113823. Well-sorted, fine grained, quartz rich, cream to tan, subangular to subrounded sand with bracken root fragments. Auger sample from 1.5-2.0m depth. Hand auger sampled at base of old pit.*

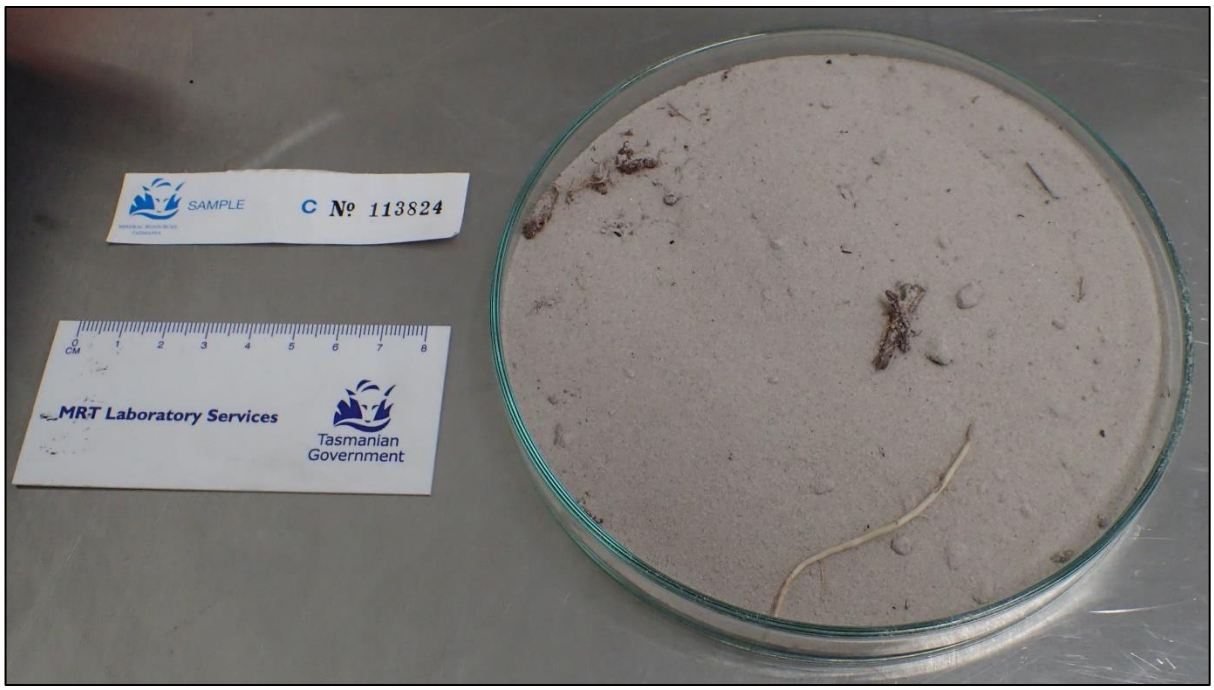

Figure 12. *C113824. Well-sorted, fine grained, quartz rich, cream to white, subangular to subrounded sand with bracken root fragments. Auger sample from base of pit at 1.0-1.5m dept.*

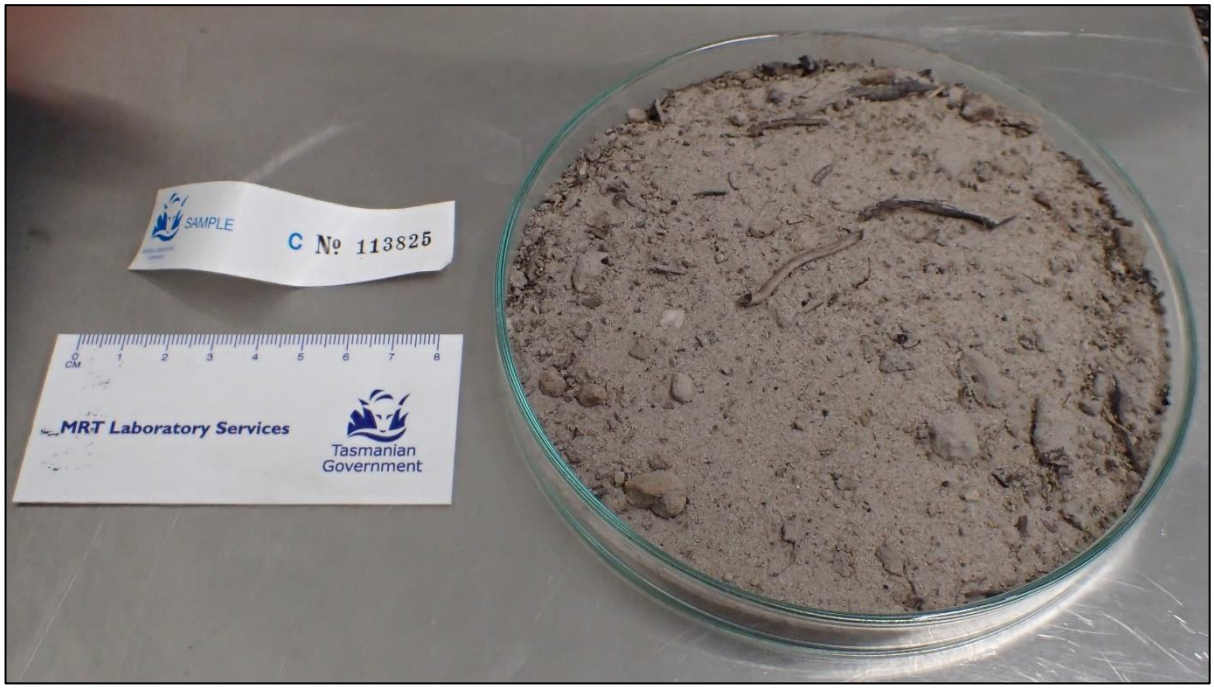

Figure 13. *C113825. Well-sorted, fine grained, quartz rich, cream to white, subangular to subrounded sand with bracken root fragments. Auger sample from base of pit at 1.5-2.0m depth.*

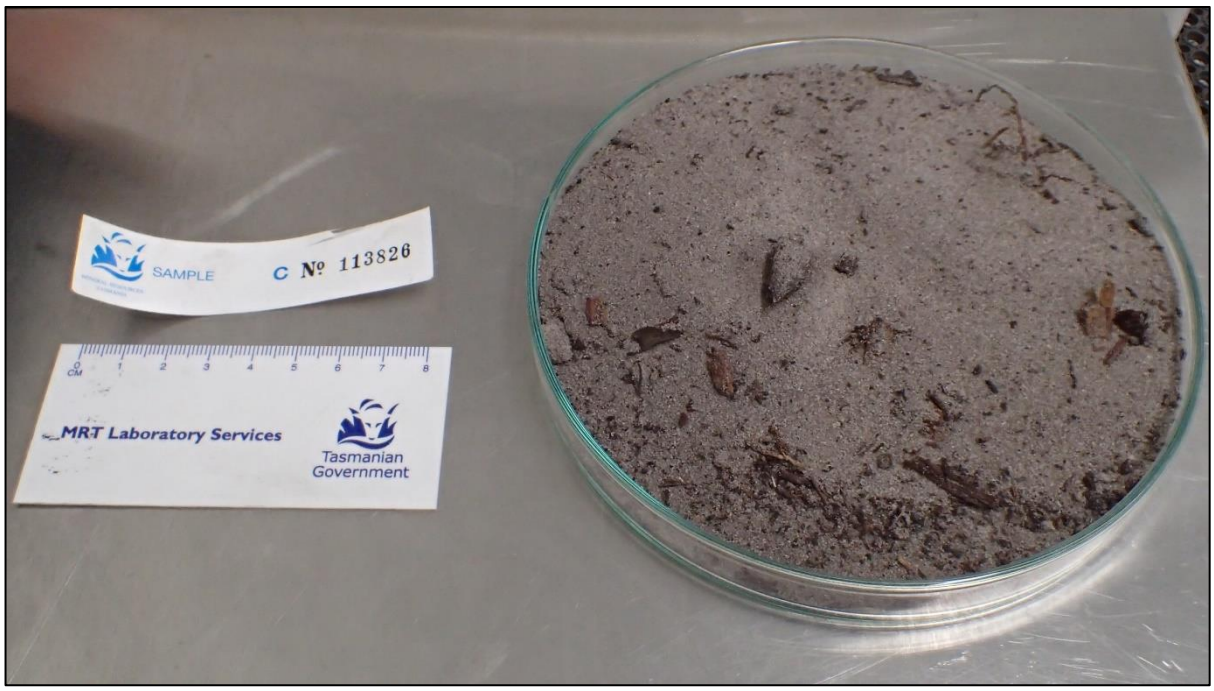

Figure 14. *C113826. Well-sorted, fine grained, quartz rich, cream to white, subangular to subrounded sand with bracken root fragments. Auger sample at 0.5-0.7m depth.*

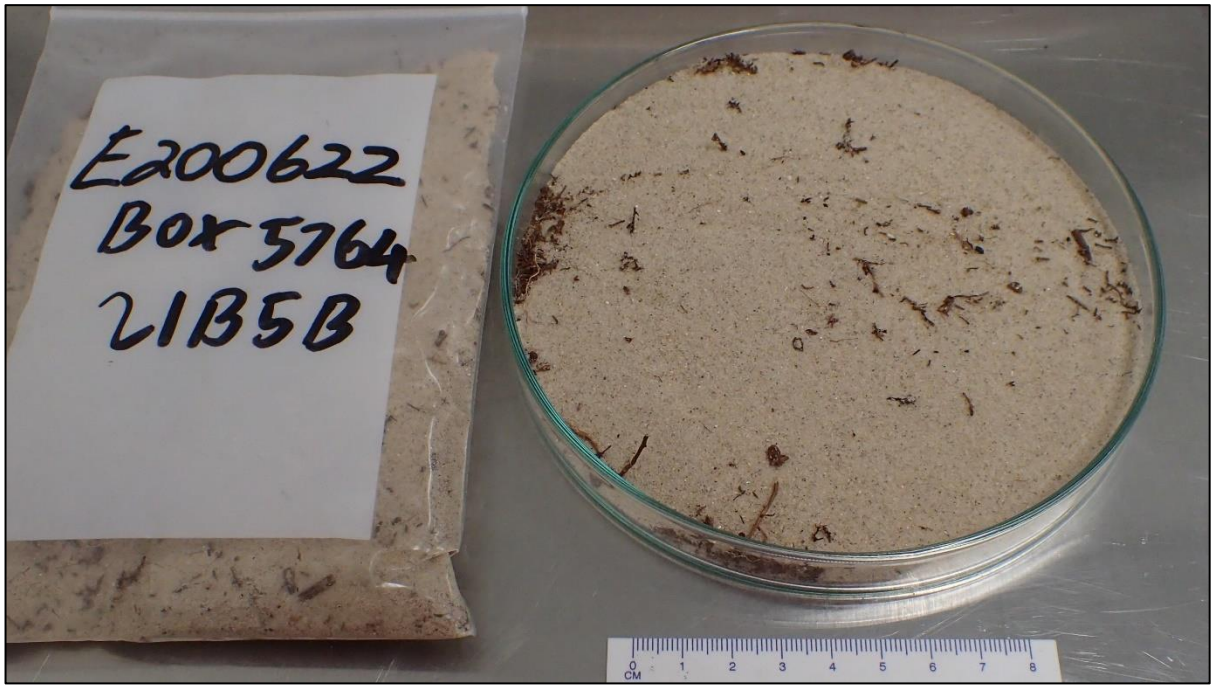

Figure 15. *E200622. Fine grained sand.*

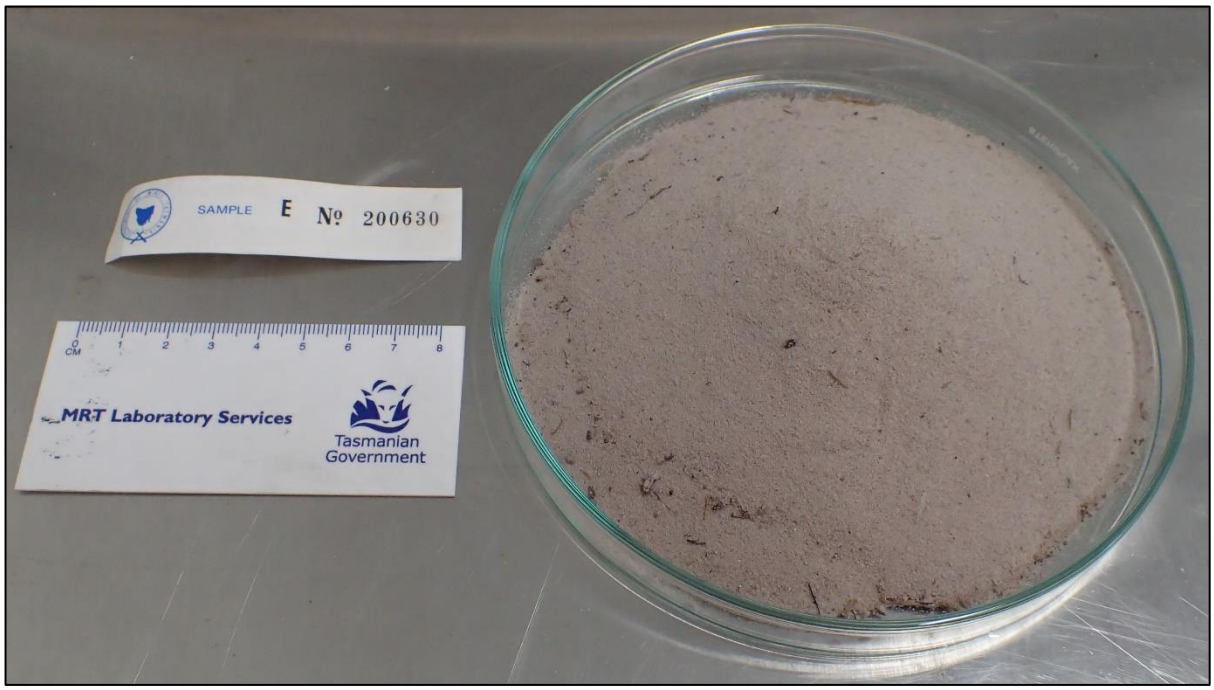

Figure 16. *E200630. Light brown sand.*

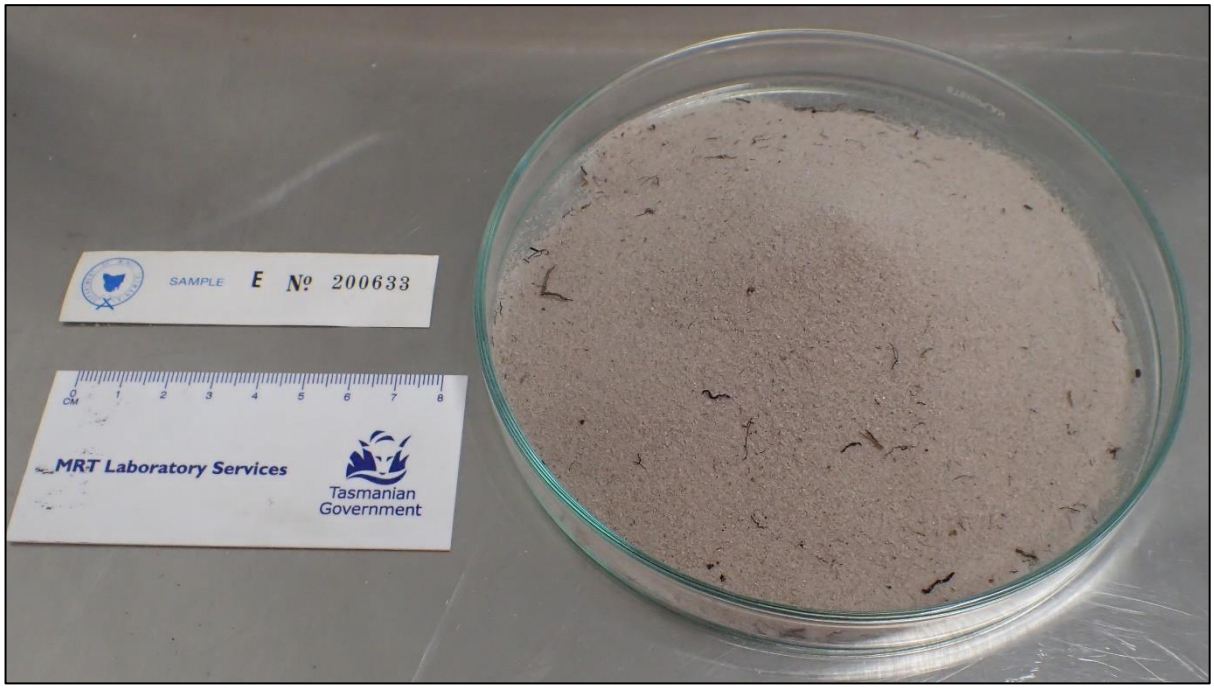

Figure 17. *E200633. White sand (pink?).*

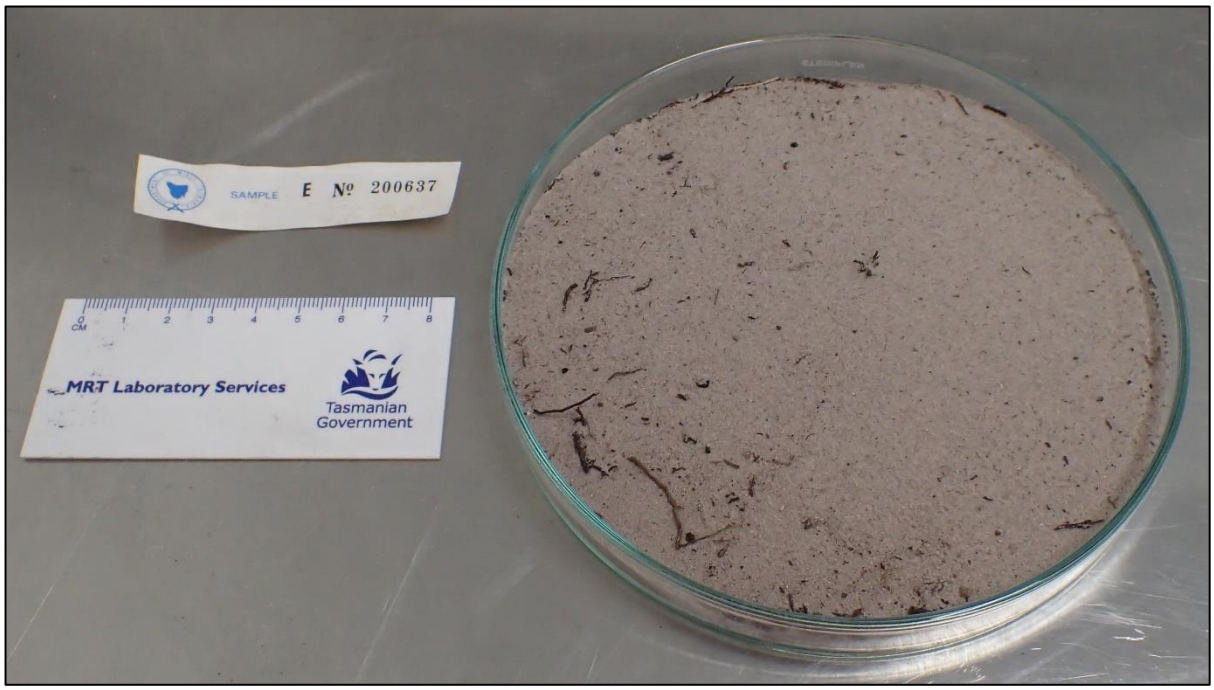

Figure 18. *E200637. Light tan sand.*

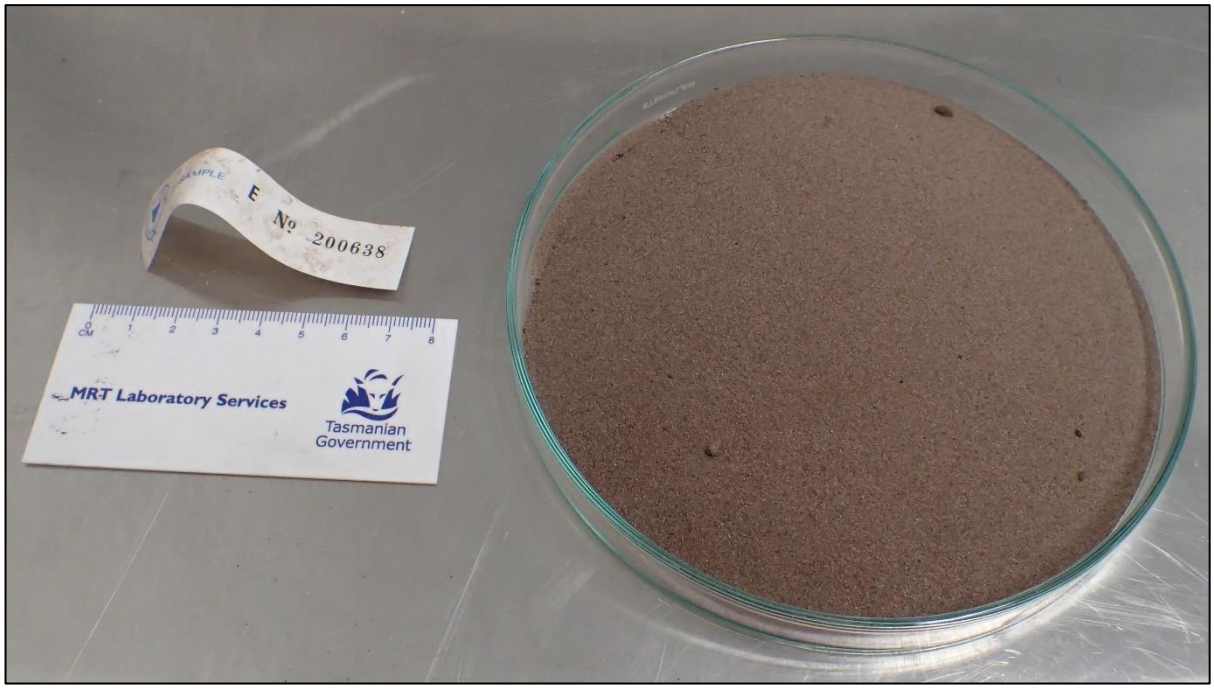

Figure 19. *E200638. Brown sand.*

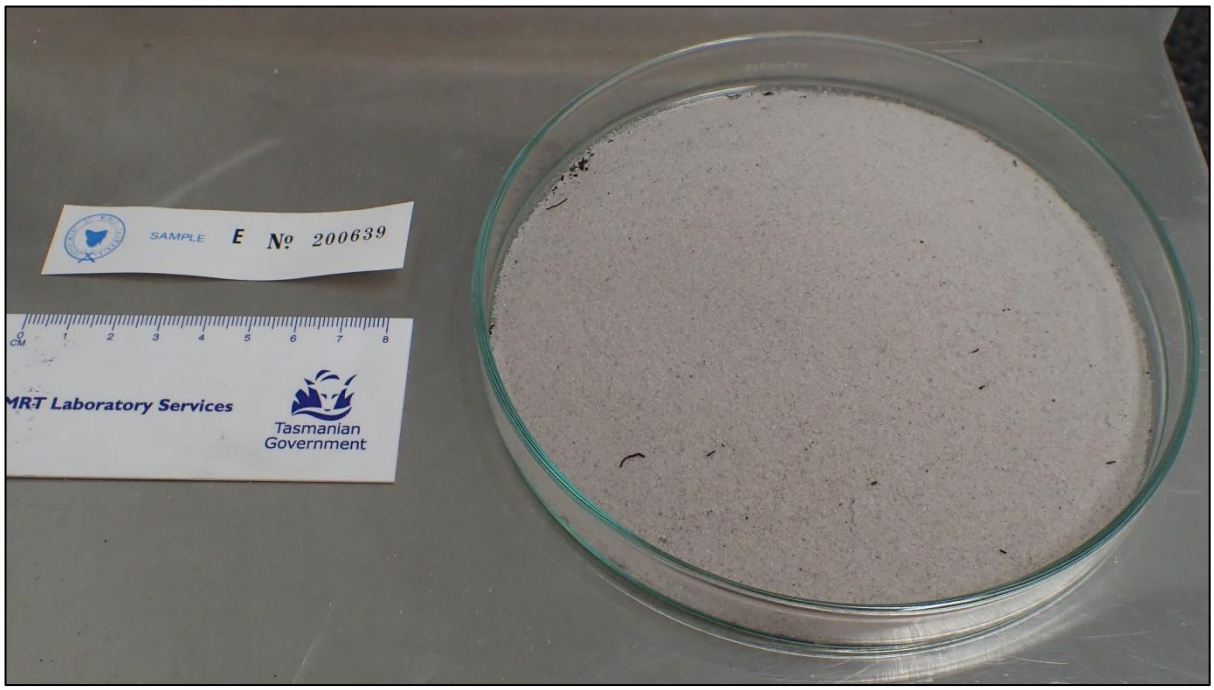

Figure 20. *E200639. White sand.*

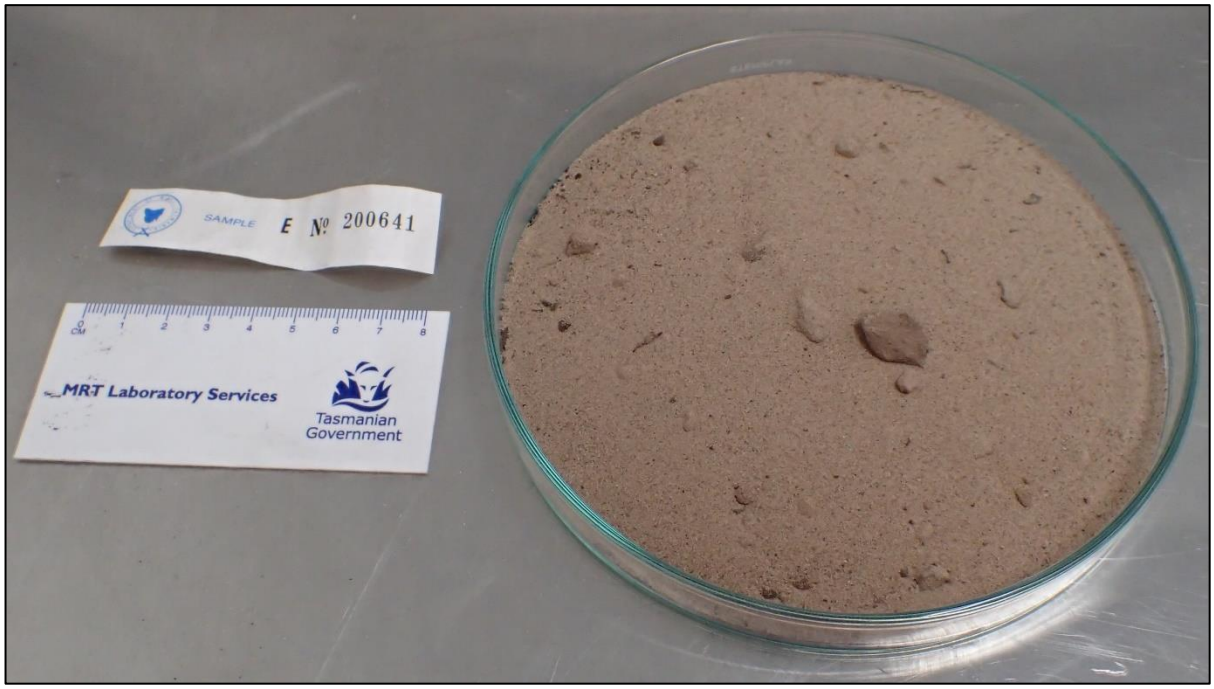

Figure 21. *E200641. Tan sand.*

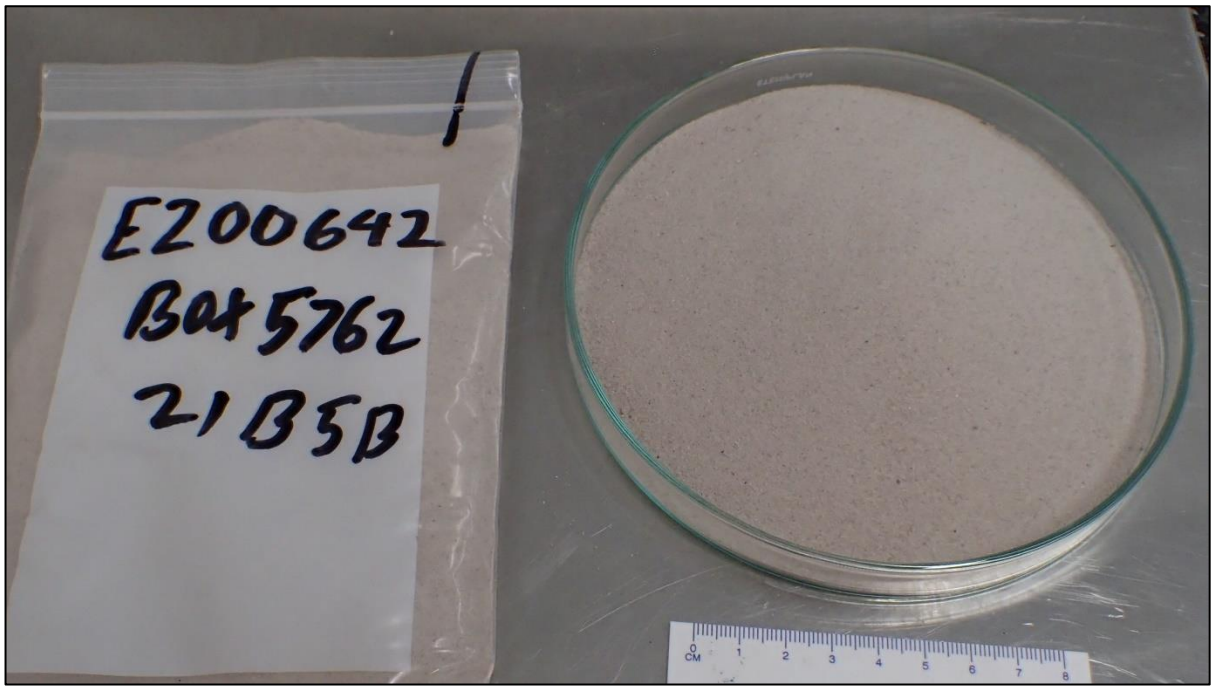

Figure 22. *E200642. White sand becoming brown at depth.*

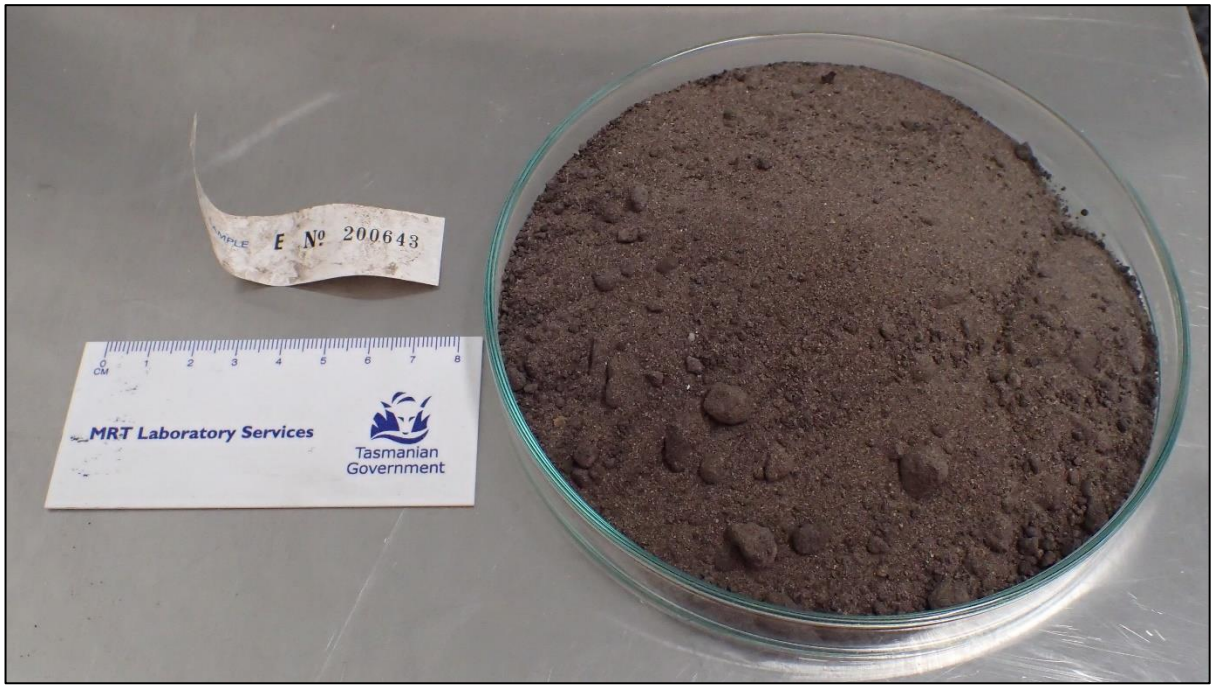

Figure 23. *E200643. Dark brown sand.*

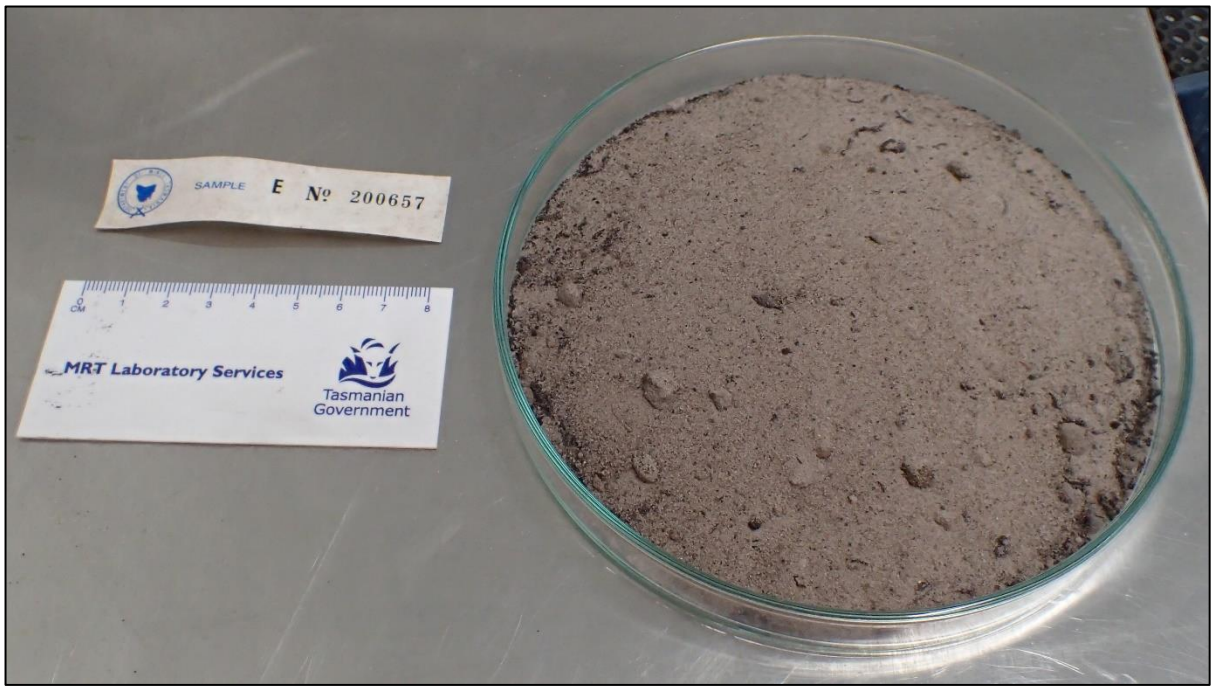

Figure 24. *E200657. Light brown sand.*

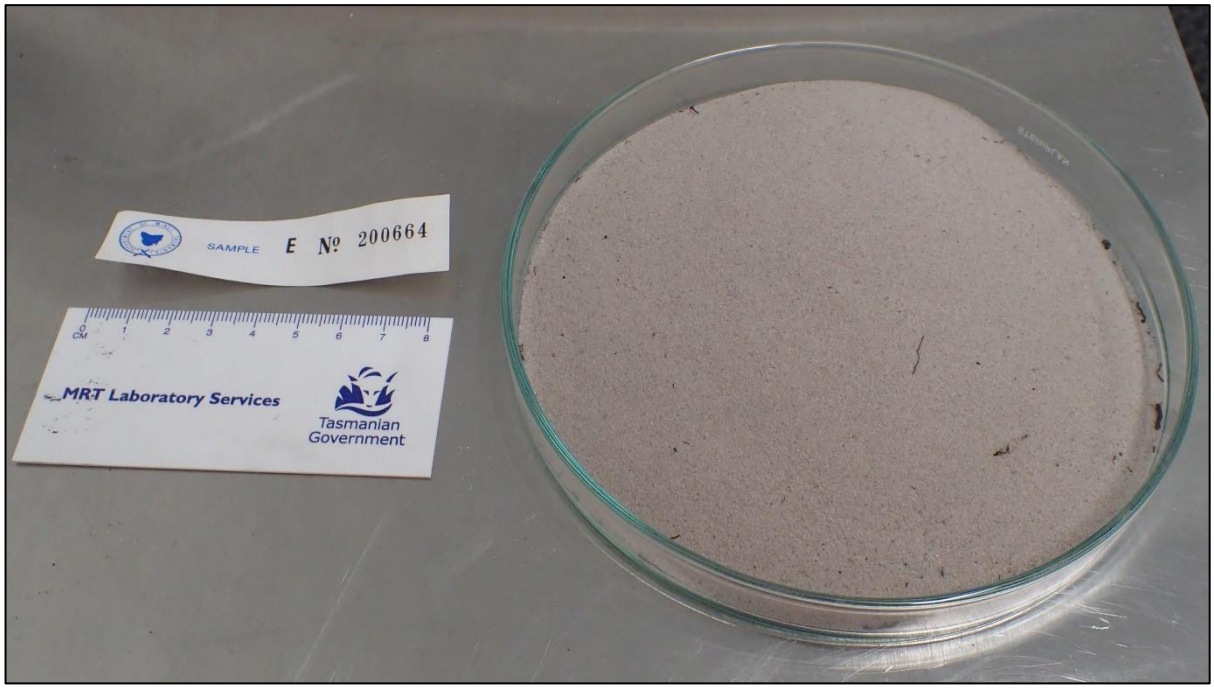

Figure 25. *E200664. Light grey sand.*

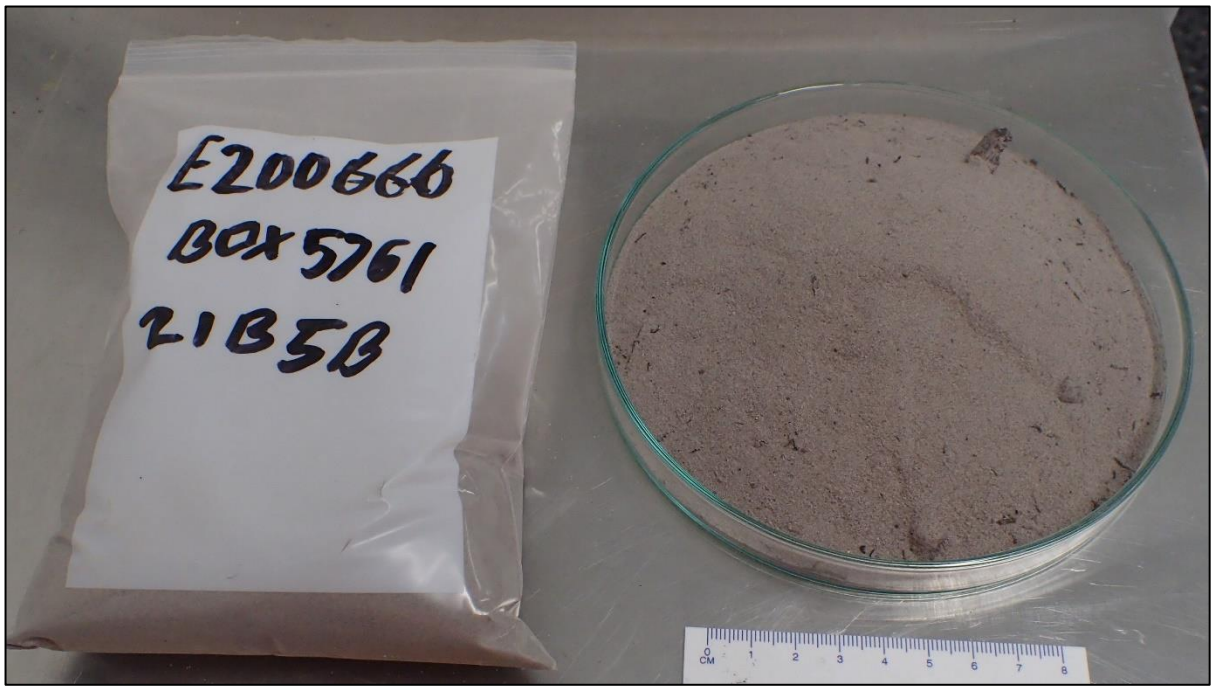

Figure 26. *E200666. Light grey sand.*

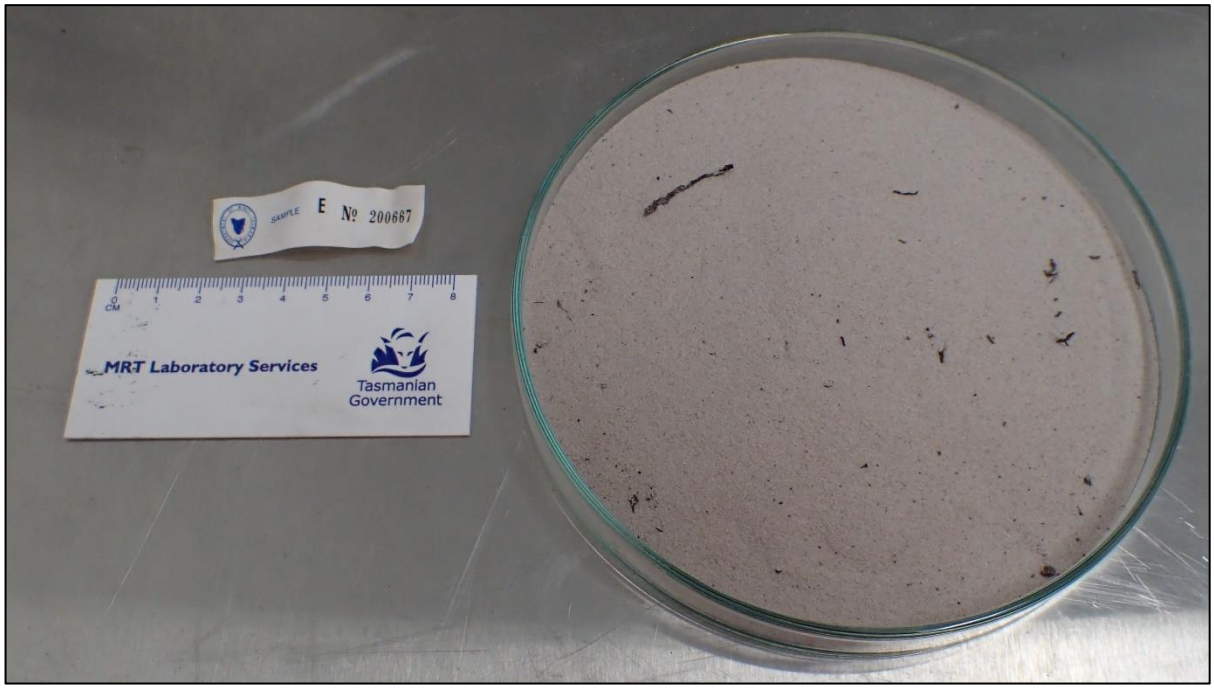

Figure 27. *E200667. Light grey sand.*

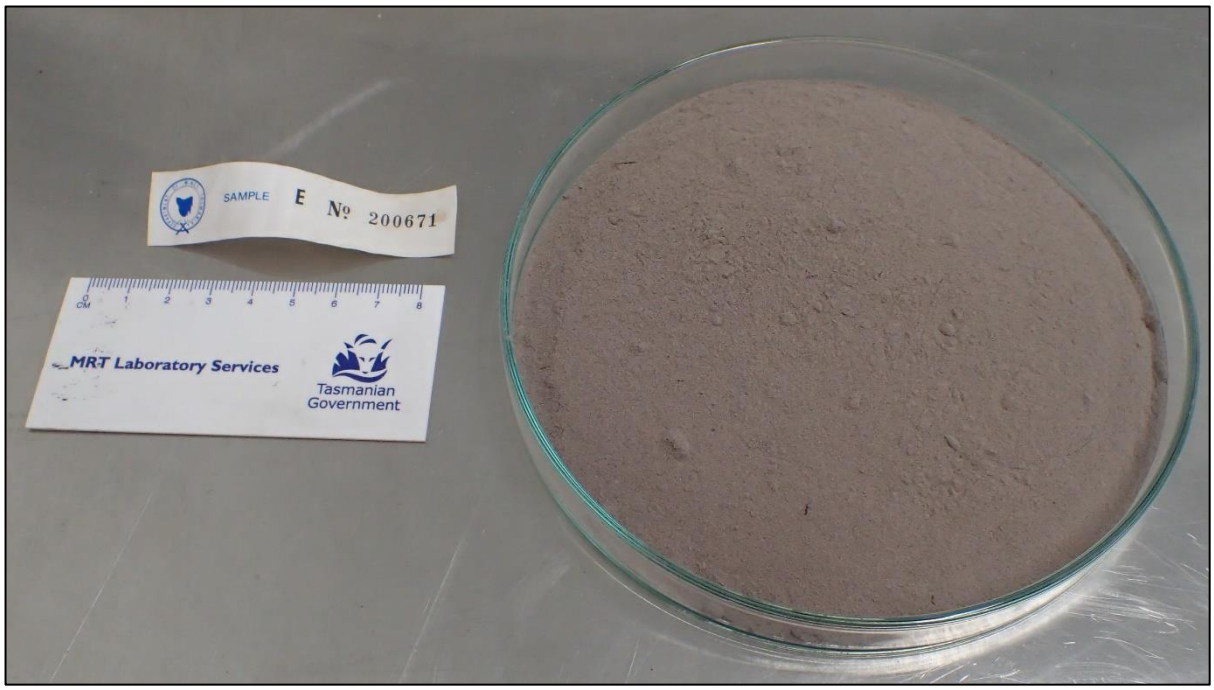

Figure 28. *E200671. Tan grey sand.*

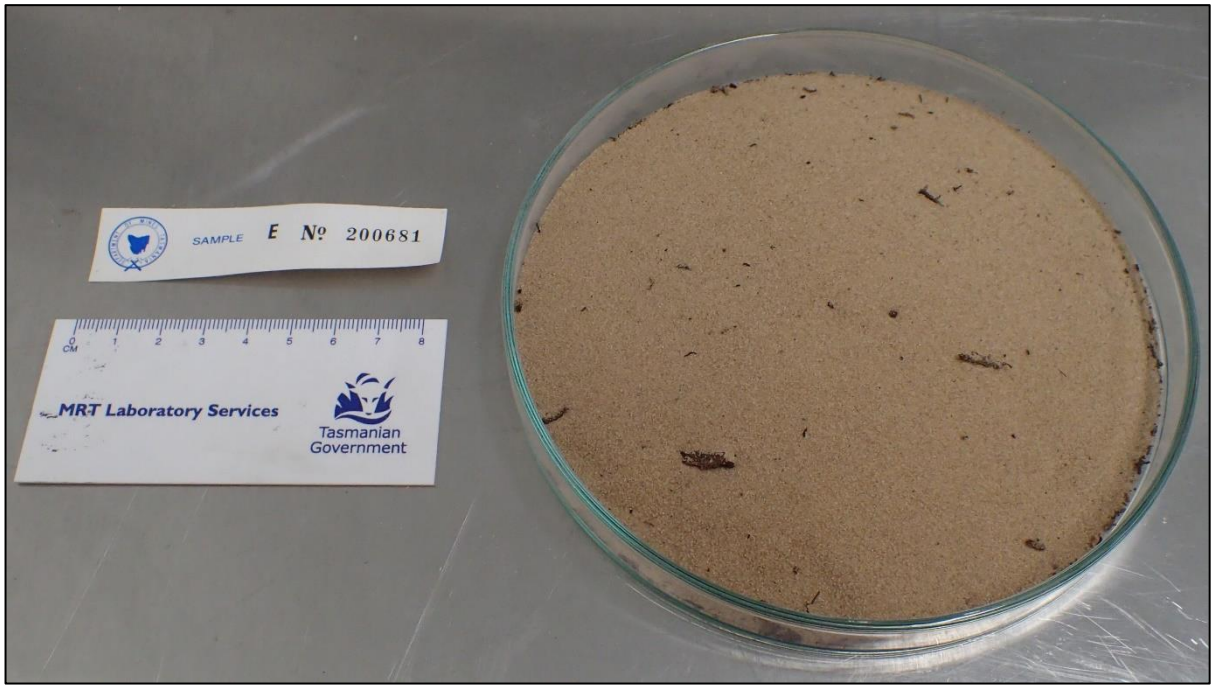

Figure 29. *E200681. Tan sand.*

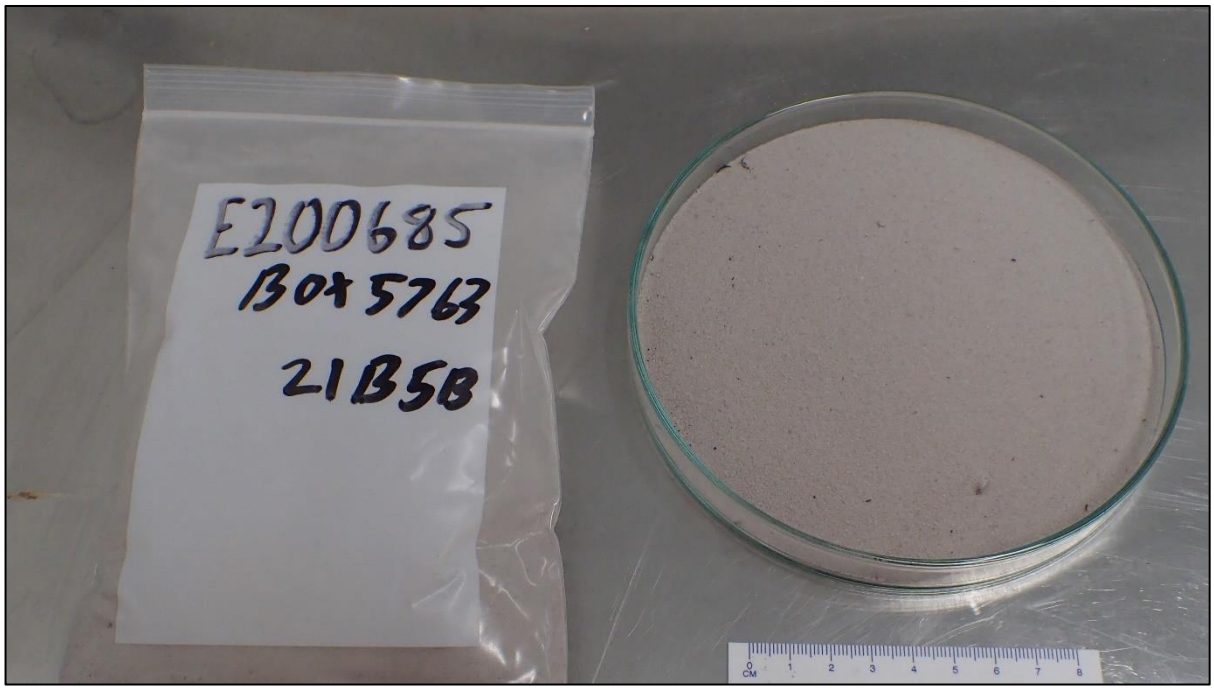

Figure 30. *E200685. Fine grained, grey sand.*

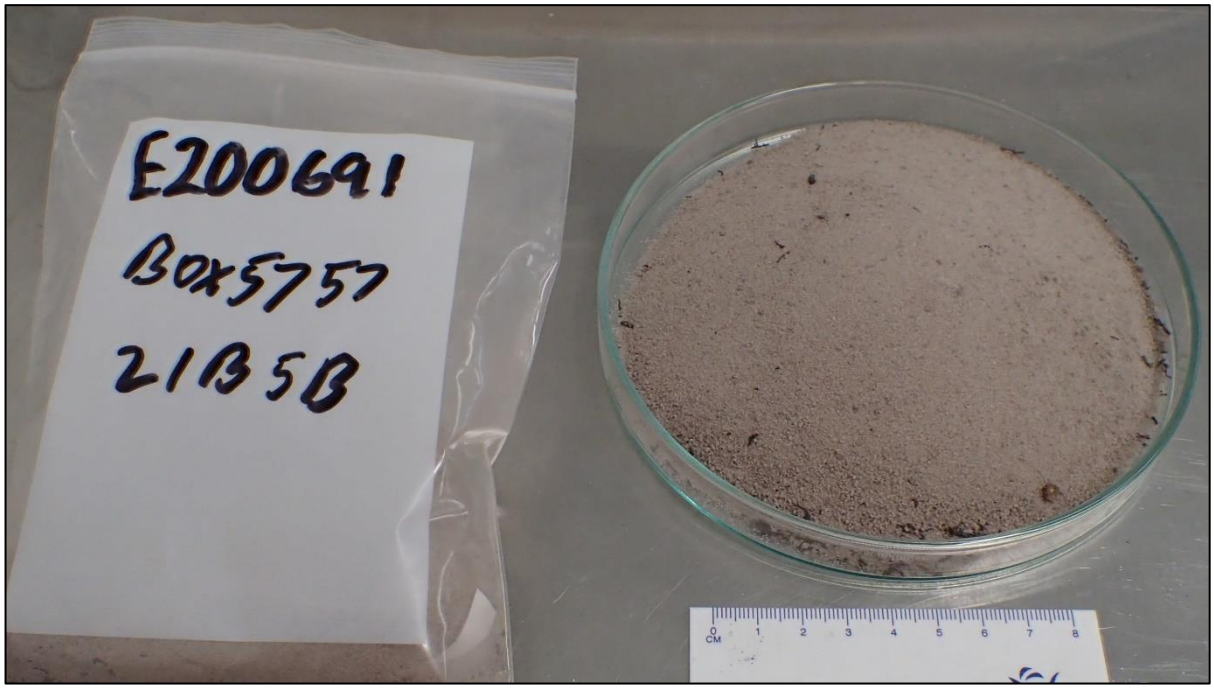

Figure 31. *E200691. Fine grained, brown-grey sand.*

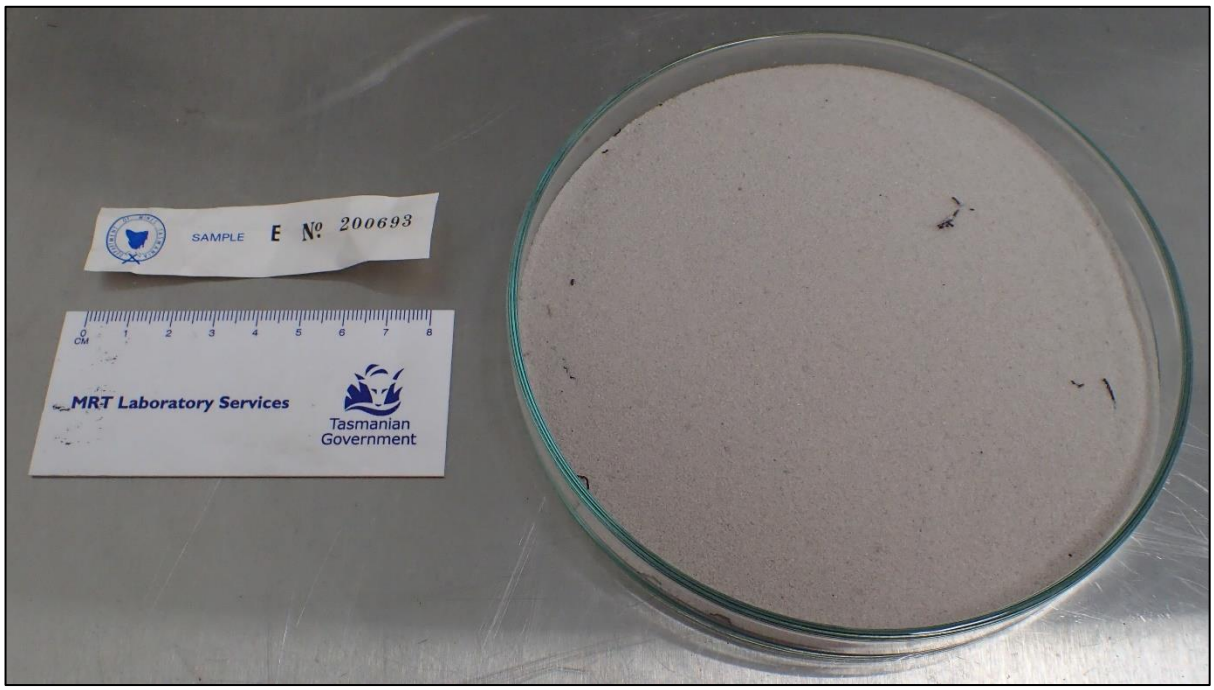

Figure 32. *E200693. Fine sand to white-grey clayey sand.*

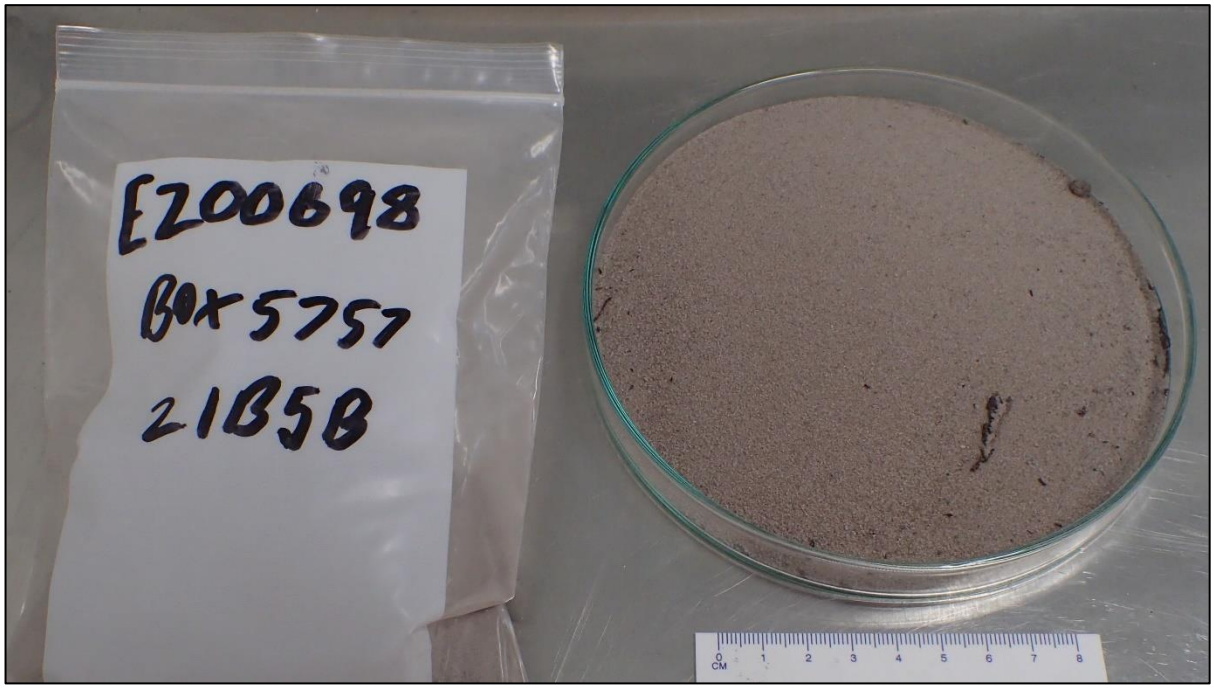

Figure 33. *E200698. Fine grained, light brown sand.*

Figure 34. *E200779. Fine grained, grey-tan sand.*

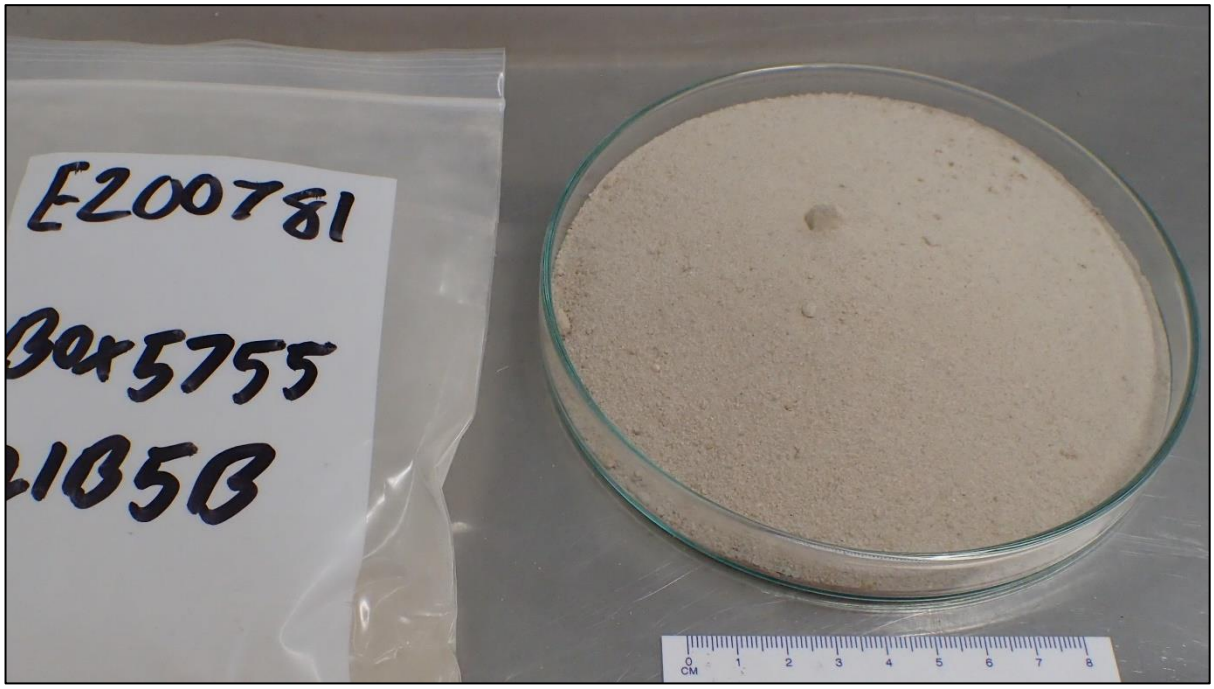

Figure 35. *E200781. White sand.*

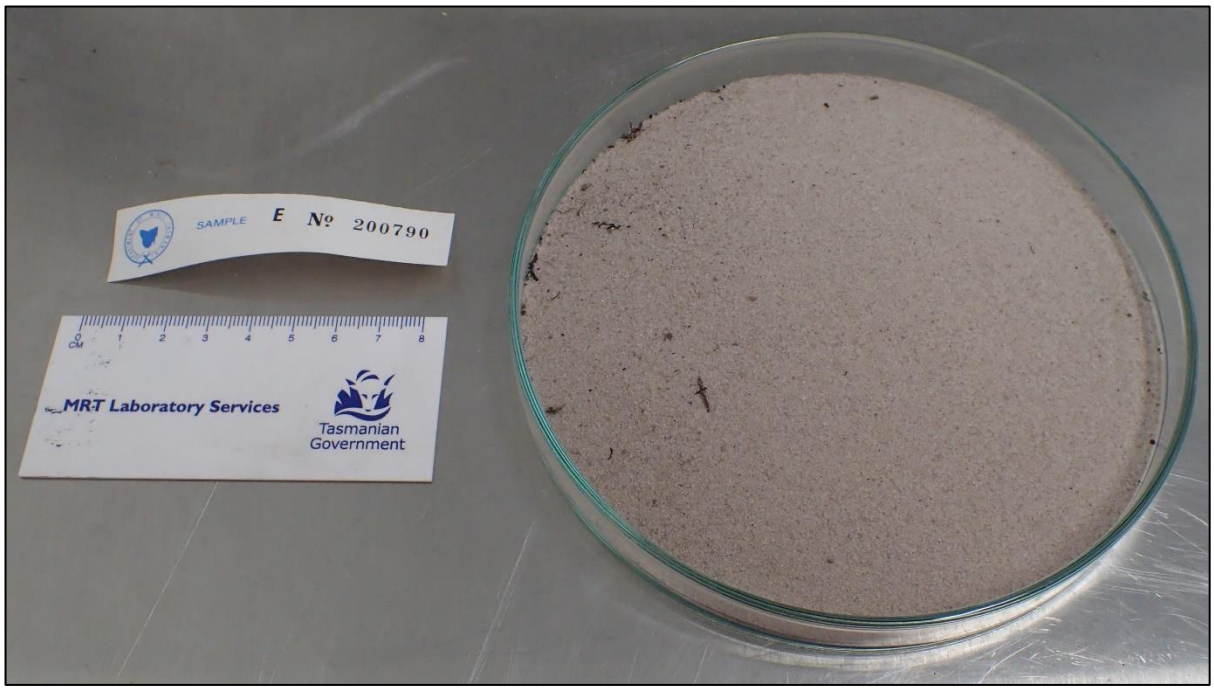

Figure 36. *E200790. Fine grained, grey sand.*

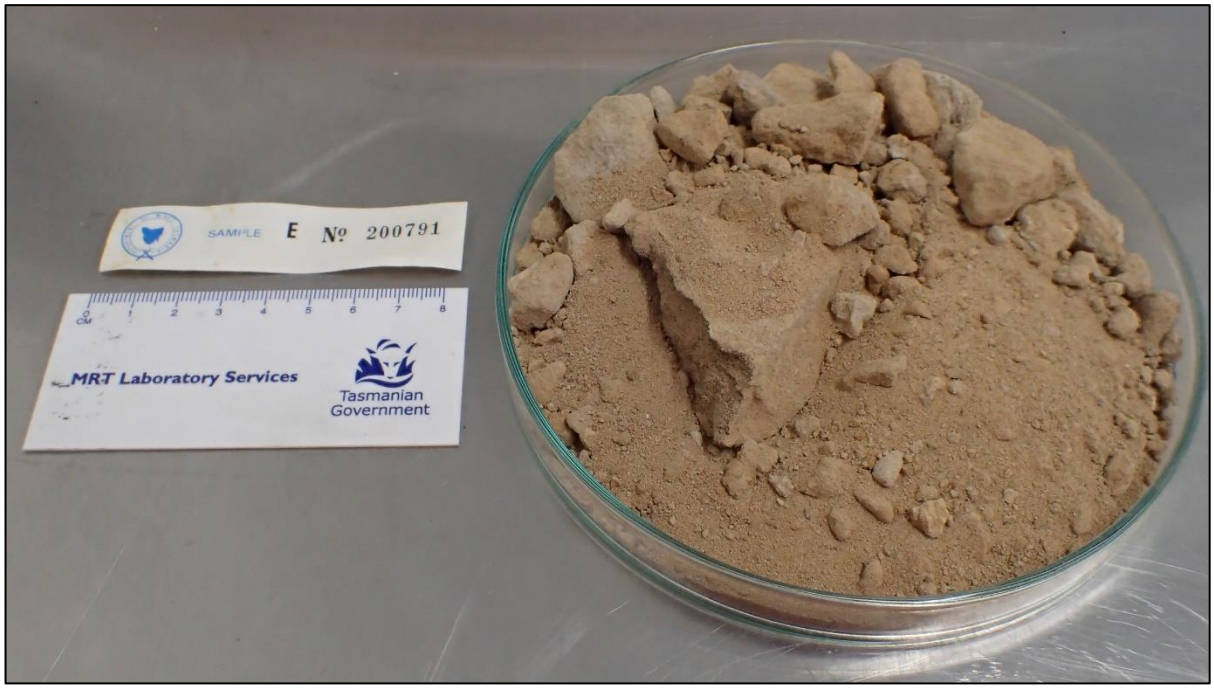

Figure 37. *E200791. Reddy brown clayey sand.*

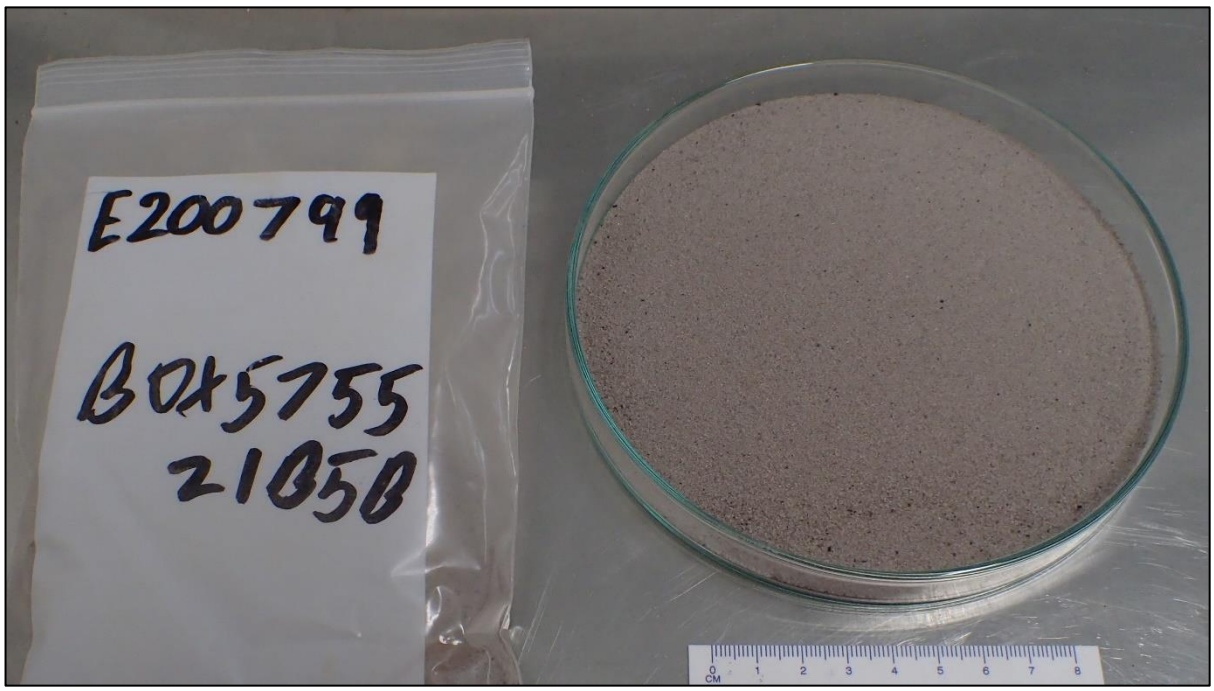

Figure 38. *E200799. Fine grained, grey-tan sand.*

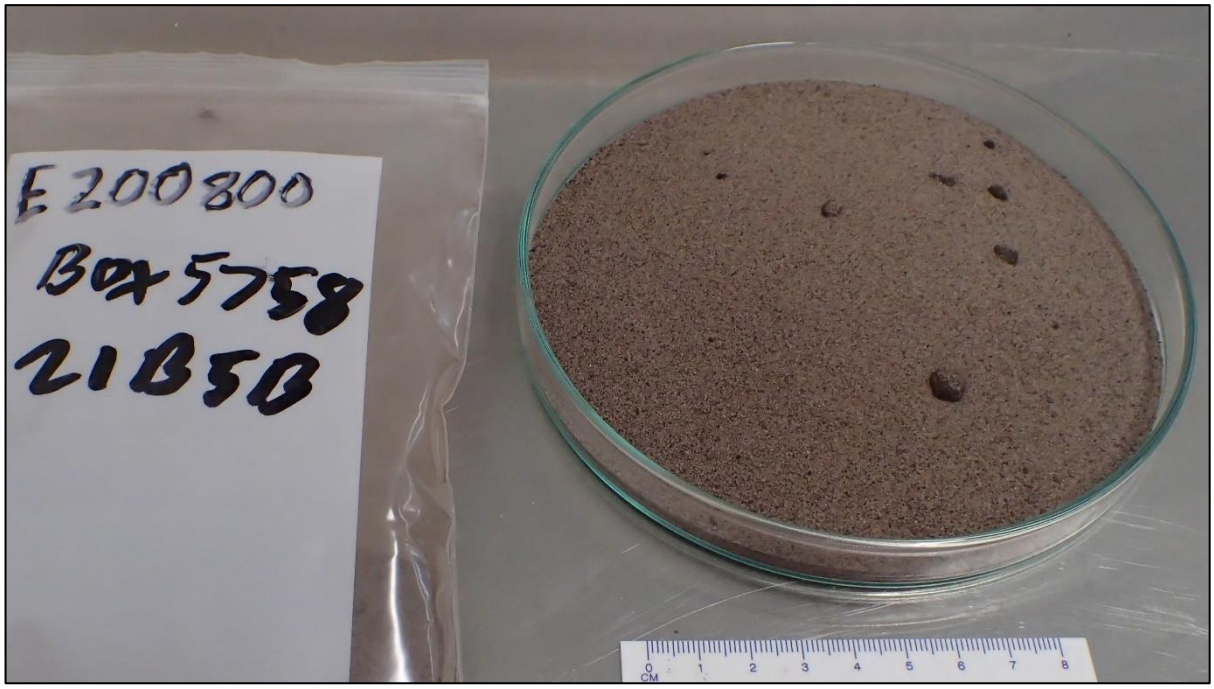

Figure 39. *E200800. Fine grained, grey-tan sand.*

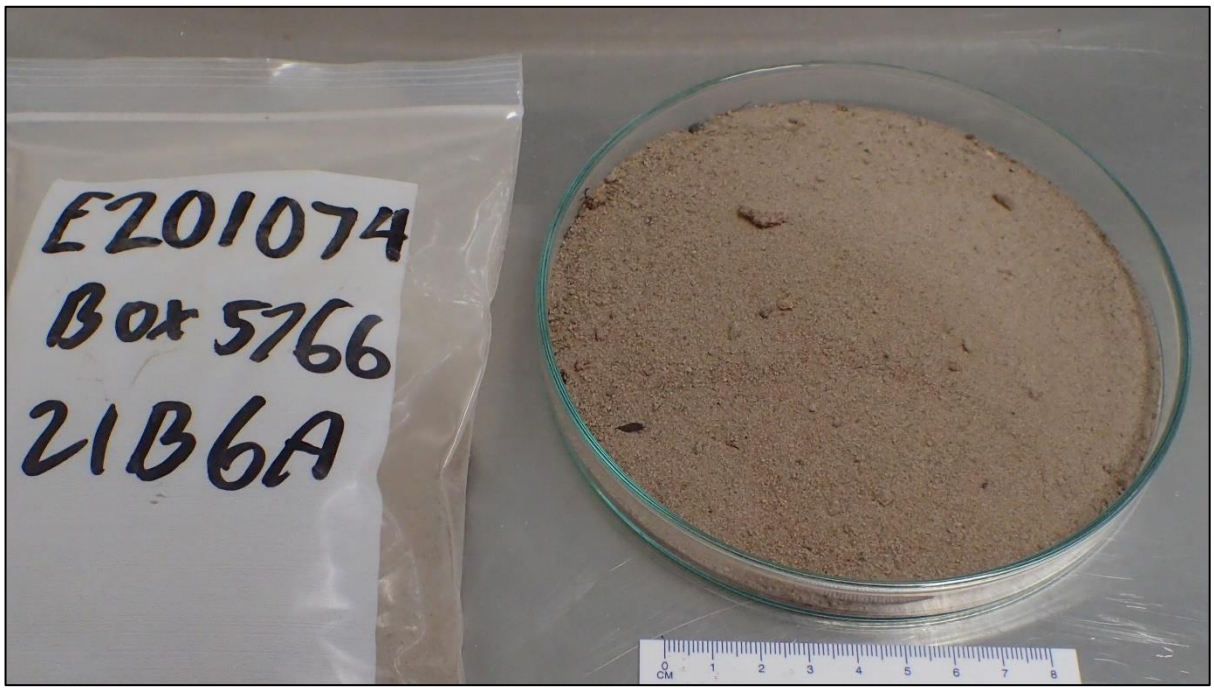

Figure 40. *E201074. Mottled grey to red-brown sand.*

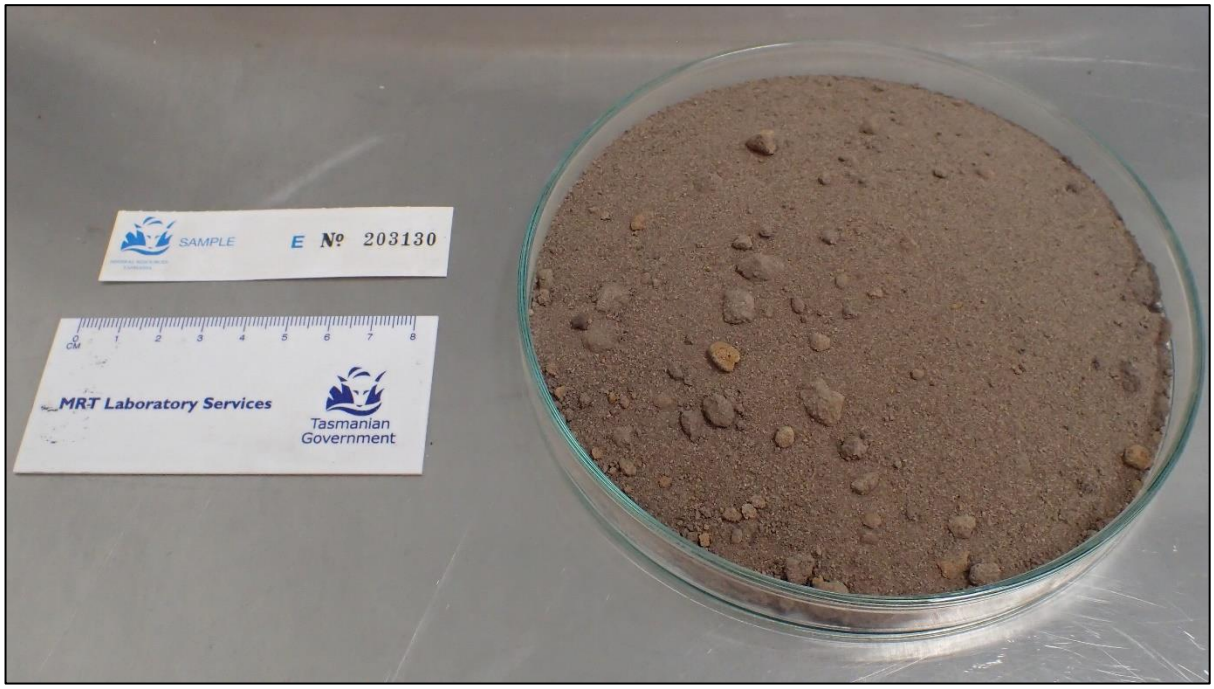

Figure 41. *E203130. Sand.*

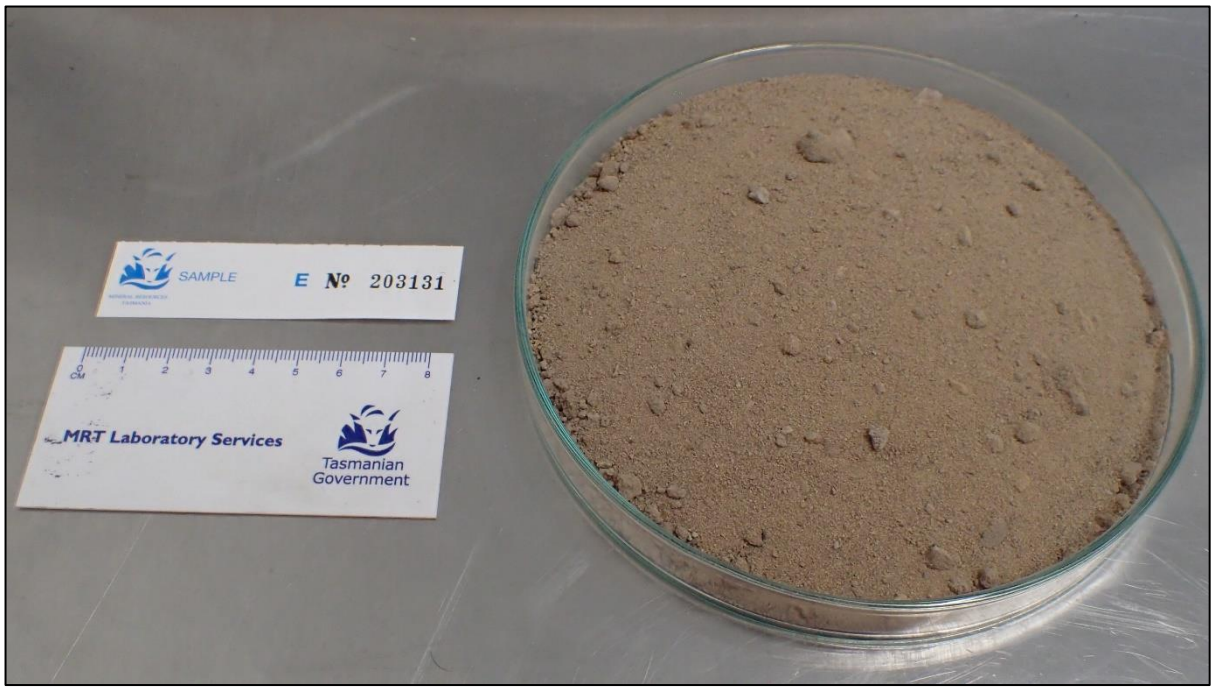

Figure 42. *E203131. Sand.*

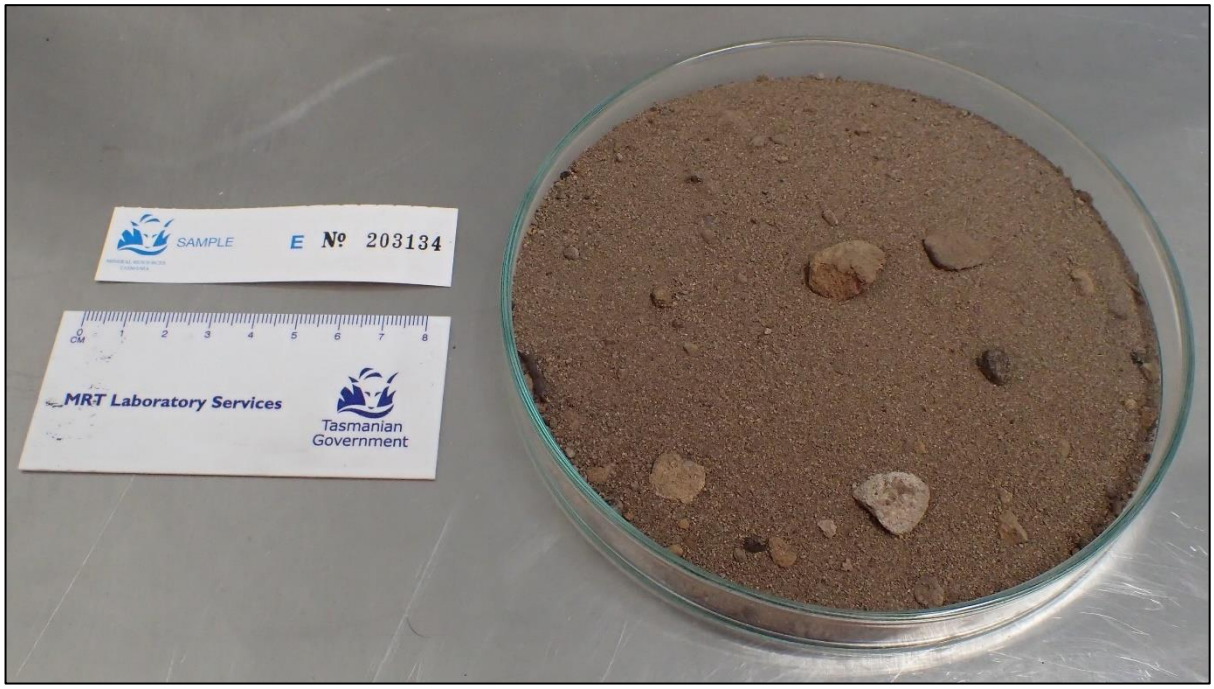

Figure 43. *E203134. Fine grained, tan sand, red-brown mottled sand, becoming grey clayey sand at base.*

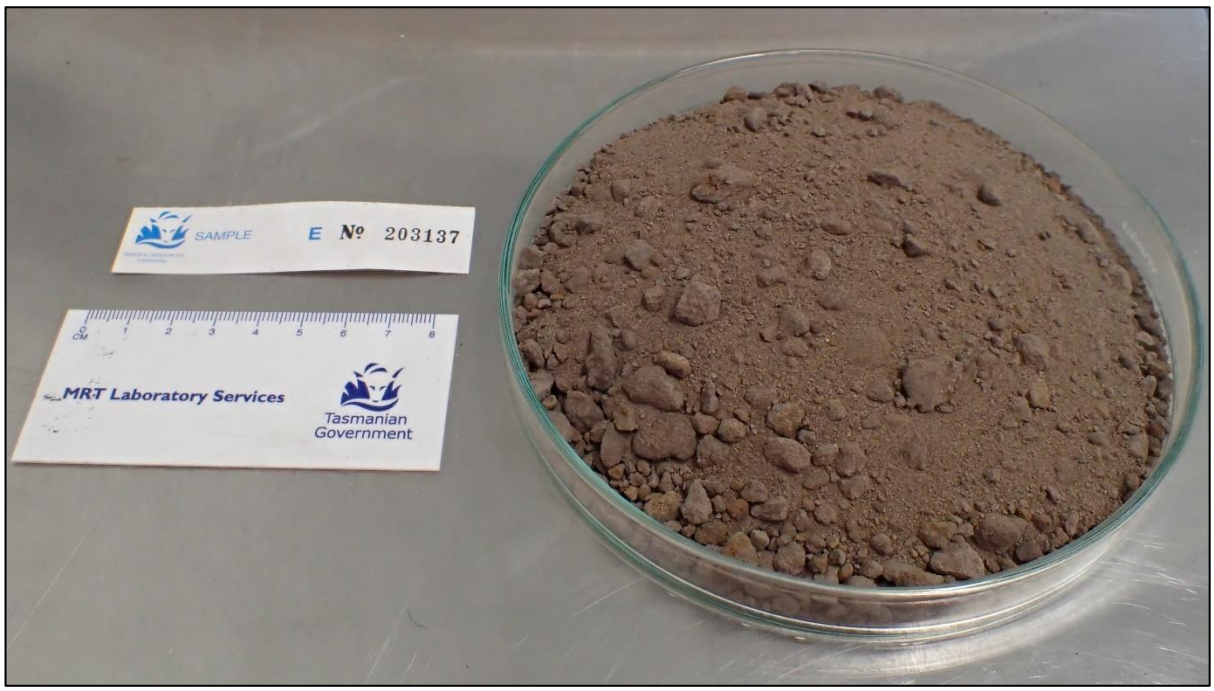

Figure 44. *E203137. Clayey sand.*

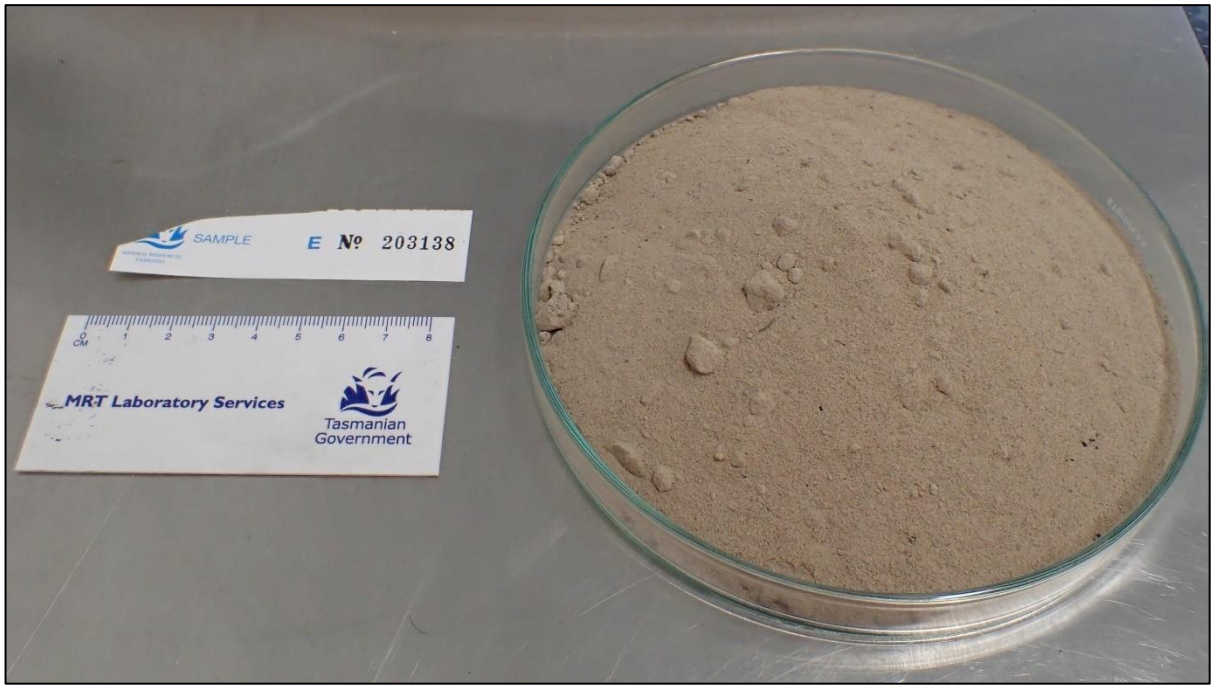

Figure 45. *E203138. Brown sand, loose.*

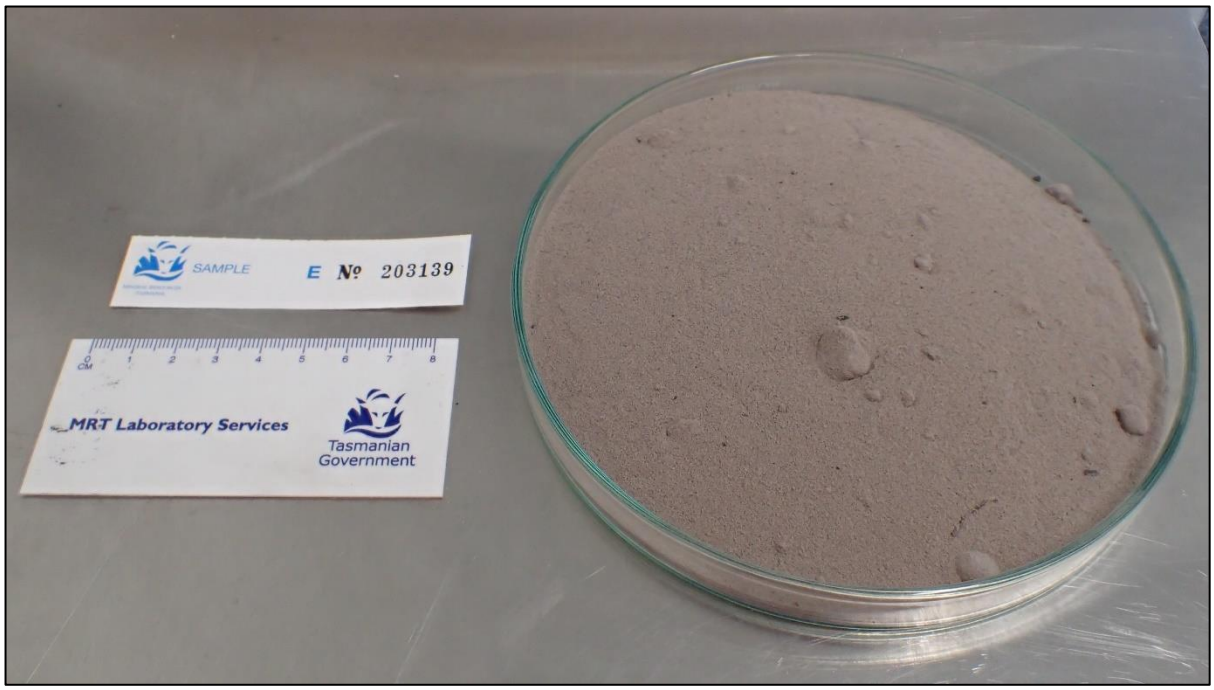

Figure 46. *E203139. Loose quartz sand.*

Figure 47. *E203141. Brown and grey, sandy clay. Clay layer at 3.9m.*

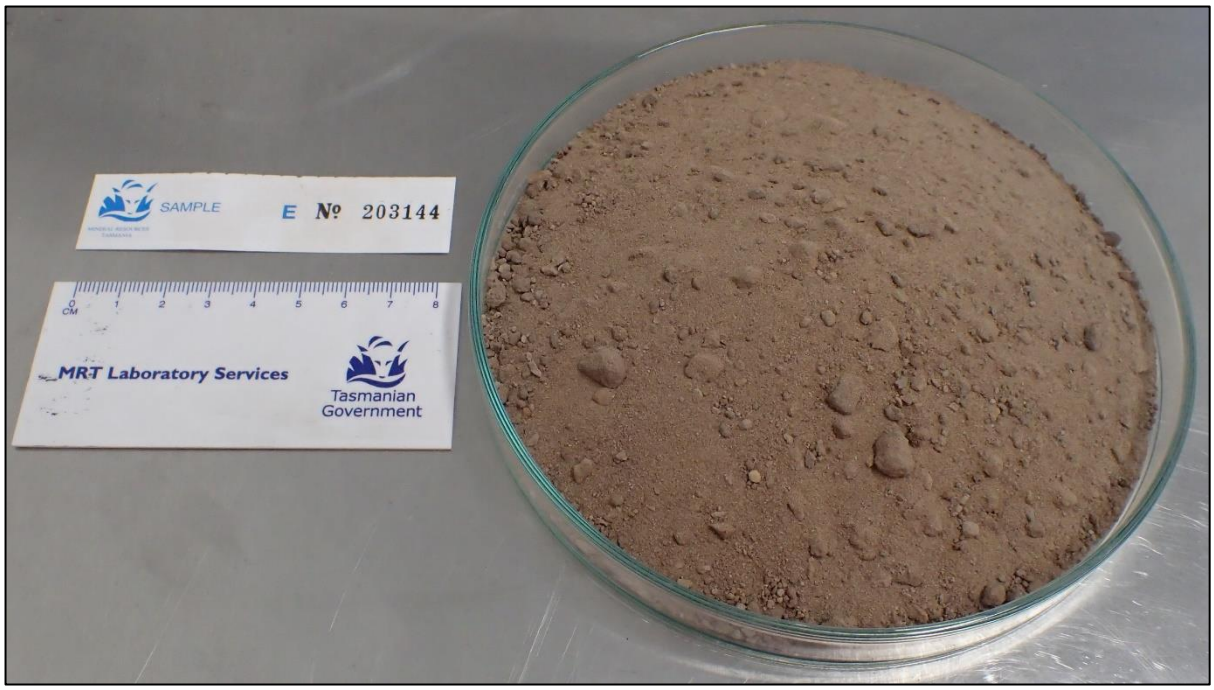

Figure 48. *E203144. Clay and sandy clay.*

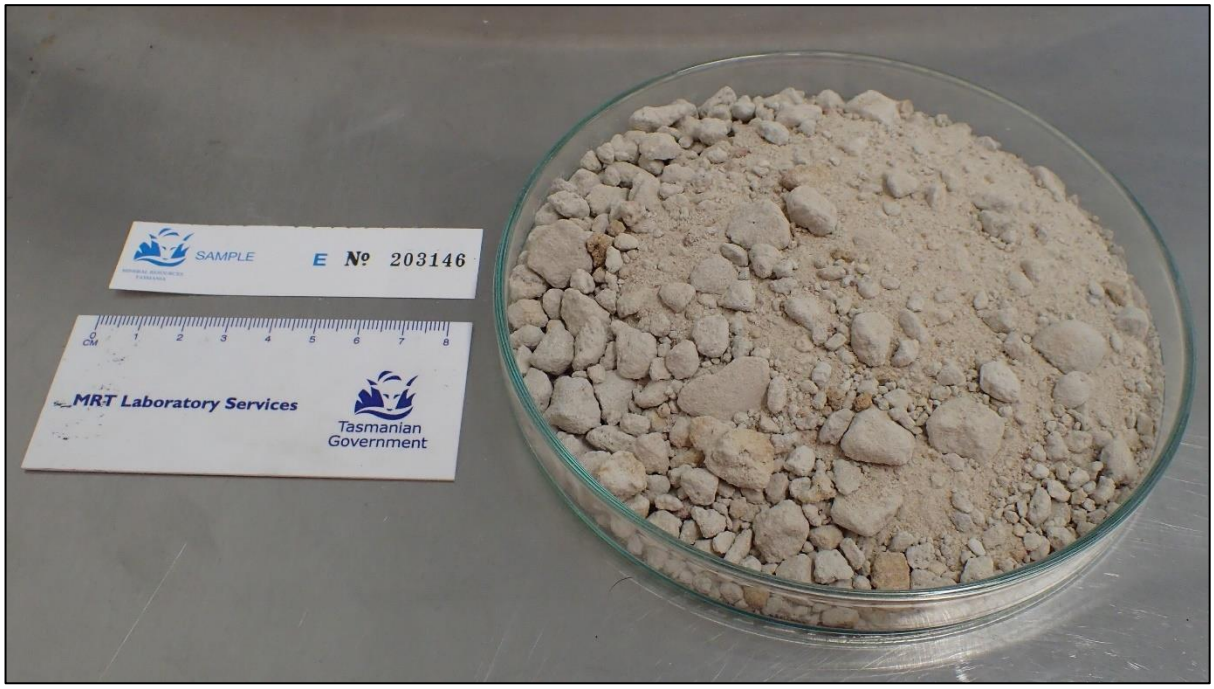

Figure 49. *E203146. Light coloured, almost white gravel and sand (boulders of sandstone rounded up to 100mm across).*

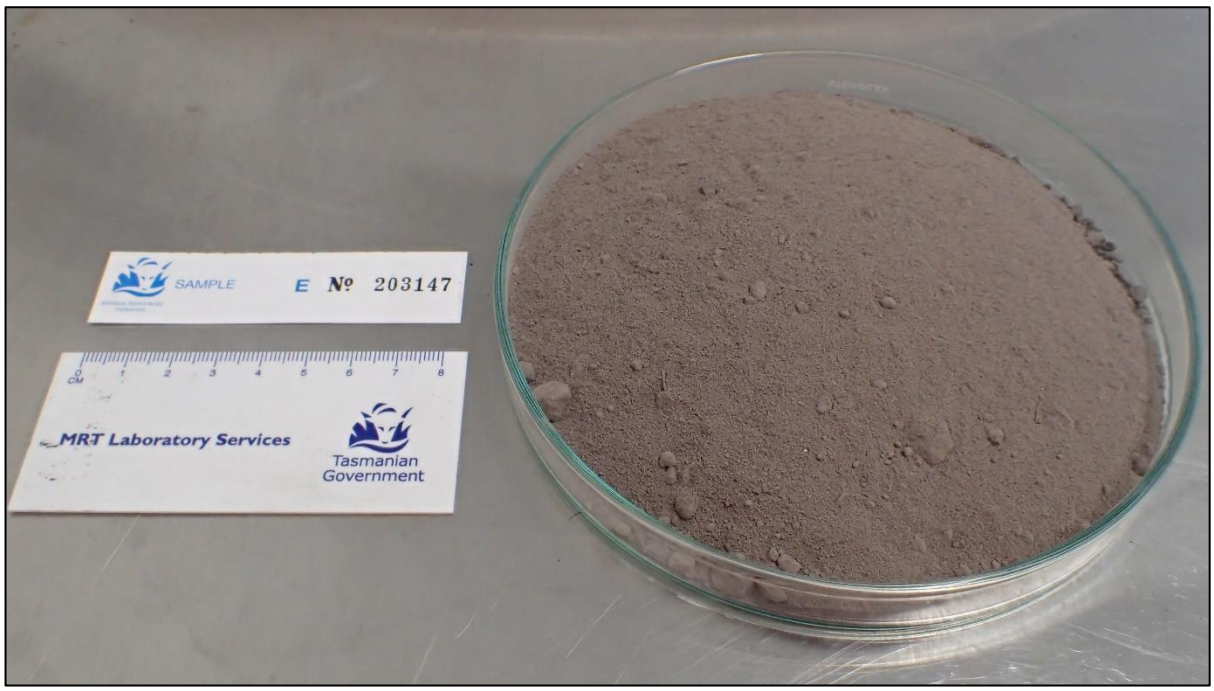

Figure 50. *E203147. Grey sand.*

Figure 51. *E203149. Grey and brown mottled clay.*

Figure 52. *E203152. Loose, brown sand, some roots, then brown clayey sand with blocky fracture, then clayey sand layer at 3.8-4.1m.*

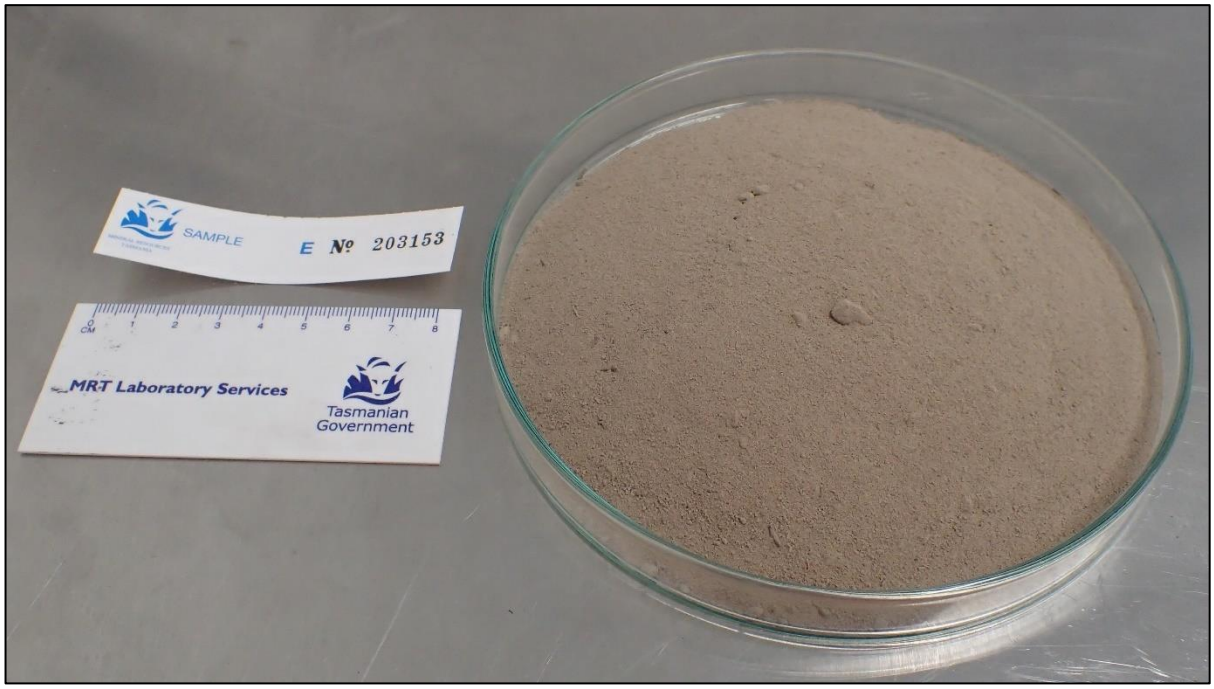

Figure 53. *E203153. Loose, brown sand.*

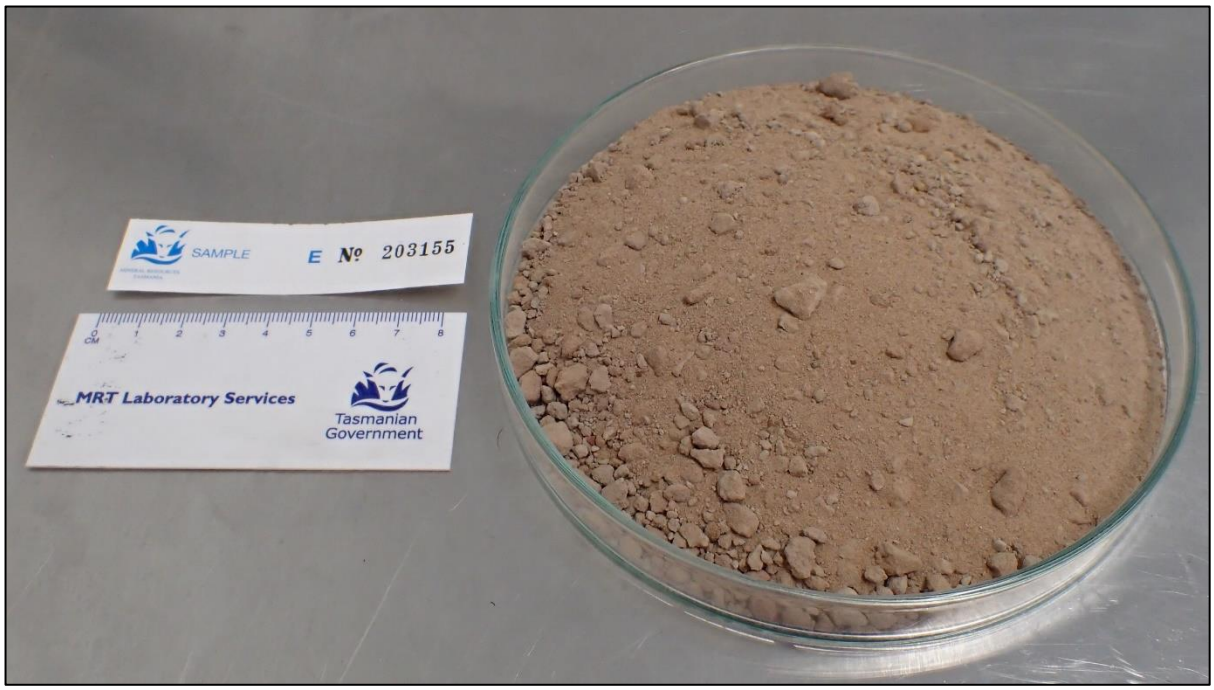

Figure 54. *E203155. Light brown and grey sand, slightly consolidated.*

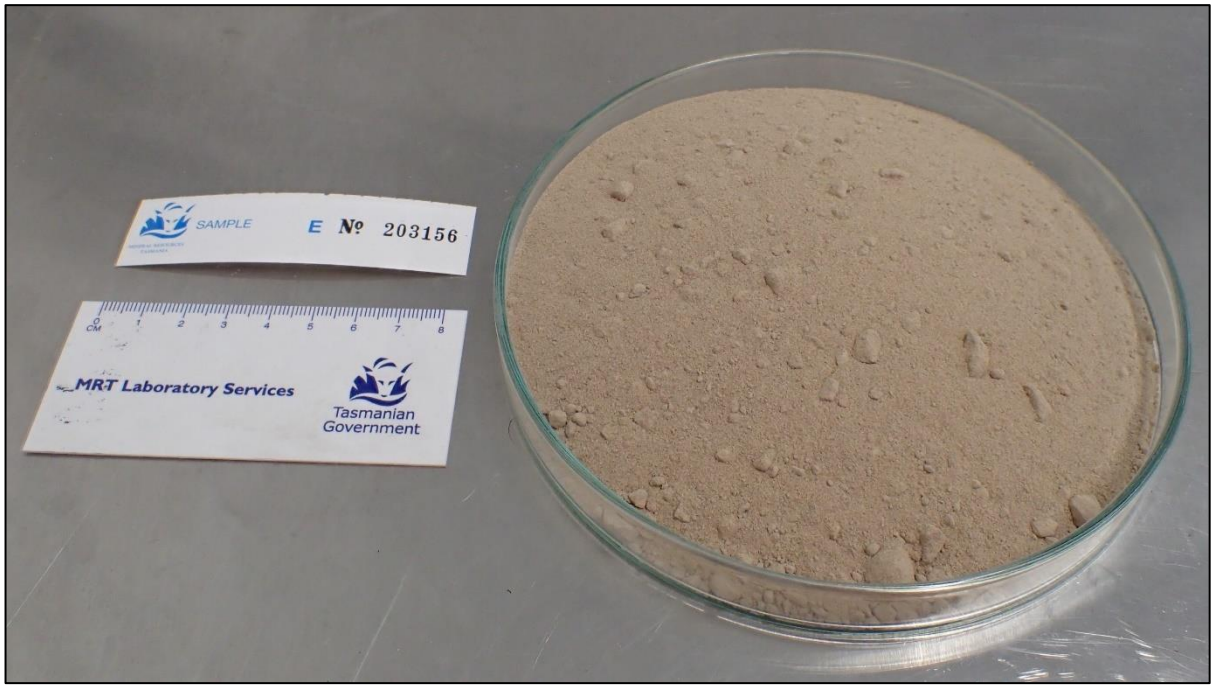

Figure 55. *E203156. Brown and grey sand.*

Figure 56. *E203157. Very light brown, fine sand.*

Figure 57. *E203160. Loose, light brown sand.*

4. DRY SIEVING RESULTS

The samples were riffle-split down to manageable, representative sub-sample sizes and dry sieving was undertaken by N. L. Delany in accordance with AS 1289.3.6.1, with any overloaded sieves re-sieved in portions. To reduce sieve overloading, weights of sample used were based on estimating average sample PSD and minimum mass of sub-sample required as per the AS 1289.1.1.

The majority of sands sampled were medium to fine-grained, silica rich sands with minimal organic content and gravel to cobble-sized clasts present. Clay/silt fractions determined by PSD were less than 10% for the majority of samples. The 13 samples that had a higher clay/silt fraction were samples C113821, C113822, E200666, E200667, E200671, E203138, E203139, E203147, E203149, E203153, E203155, E203156 and E203157. See Appendix 1 for cumulative histograms and weights retained on sieves.

5. CLAY & FINE SILT SETTLING ANALYSIS

Clay and fine silt settling analysis was undertaken in accordance with AS 1141.33:2015 with results summarised below. The standard specifies where the separation of sediments is unclear, results should be specified “indeterminate”, however, where possible, estimated C (Ratio by volume of Clay & Fine silt to Sand) has been indicated.

As per the standard, there is no consistent relationship between the test result and the silt and clay fraction obtained by sieving. In general, however, the magnitude of the result of this test will be greater than the result passing the 75 µm sieve. This was true for two of the three samples for which both dry sieving and clay and fine silt settling analyses were conducted (C113811 and C113821); however, the silt and clay fraction obtained by sieving was higher for sample C113822.

Table 2. *Sand and Fine Silt & Clay Settling Data*

Sample Registration Number	Sand Volume - S (mL)	Clay & Fine Silt Volume - F (mL)	Ratio by volume of Clay & Fine silt to Sand - C (%)	Comments
C113811	98	~1*	1*	*Indeterminate*
C113821	72	9	13	
C113822	80	10	13	
C113823	82	4	5	
C113824	102	2*	2*	*Indeterminate*
C113825	72	16	22	
C113826	88	4	5	

* Estimated clay and fine silt volumes, and ratios of clay and fine silt to sand

6. DISCUSSION AND CONCLUSIONS

The sands tested were found to be predominantly medium to fine grained, cream-yellow to brown sands, with 3 samples having a higher proportion of coarse sand to cobbles.

All excluding 13 samples (C113821, C113822, E200666, E200667, E200671, E203138, E203139, E203147, E203149, E203153, E203155, E203156 and E203157) have <10% silt and clay content as determined by particle size distribution by dry sieving.

The AS 1141.33 testing returned results reasonably consistent with previous testing. This was true for two of the three samples for which both dry sieving and clay and fine silt settling analyses were conducted (C113811 and C113821); however, the silt and clay fraction obtained by sieving was higher for sample C113822.

M.R. Giddings
SENIOR LABORATORY TECHNICIAN

N. L. Delany
TECHNICAL OFFICER

R.S. Bottrill
MINERALOGIST/PETROLOGIST

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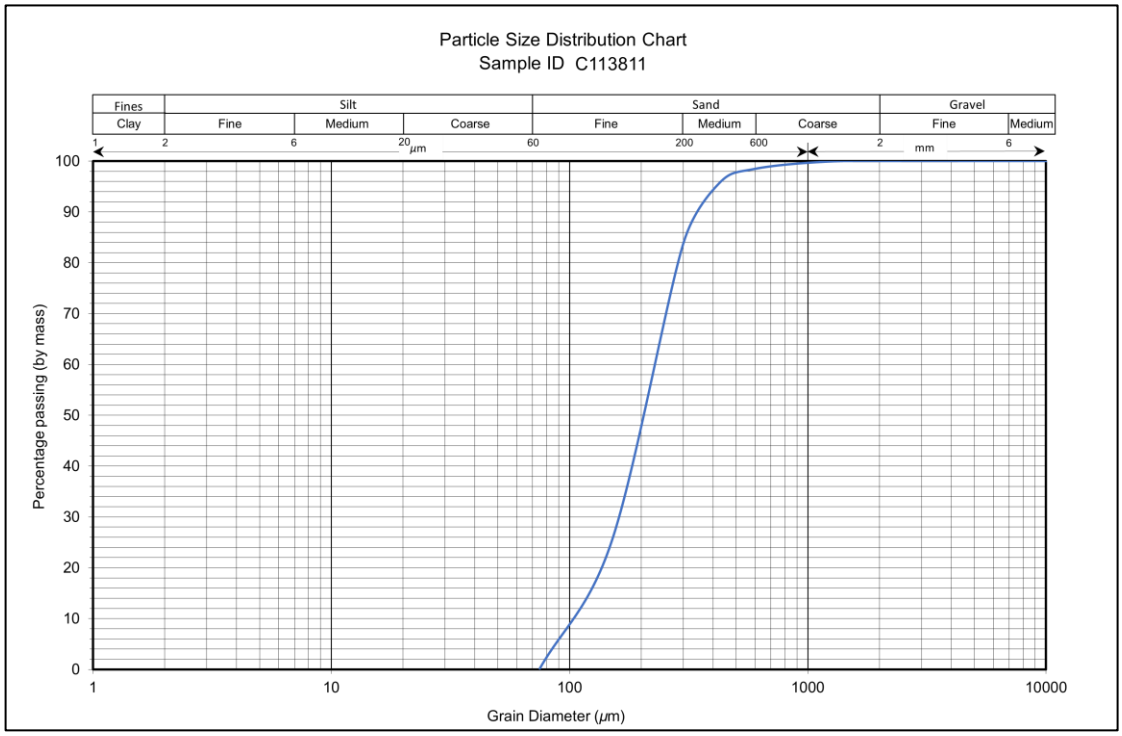
LABORATORY DETAILS

MRT operates a laboratory facility at Mornington, Tasmania. In the interests of full disclosure, these laboratories do not have NATA accreditation. However, all tests are performed according to relevant Australian Standards cited in the report and subject to internal peer review processes. The analytical facilities at MRT are periodically compared against other similar laboratories in other jurisdictions with favourable results.

APPENDIX 1: PARTICLE SIZE DISTRIBUTION DATA

C113811 Cumulative Histogram & PSD Data

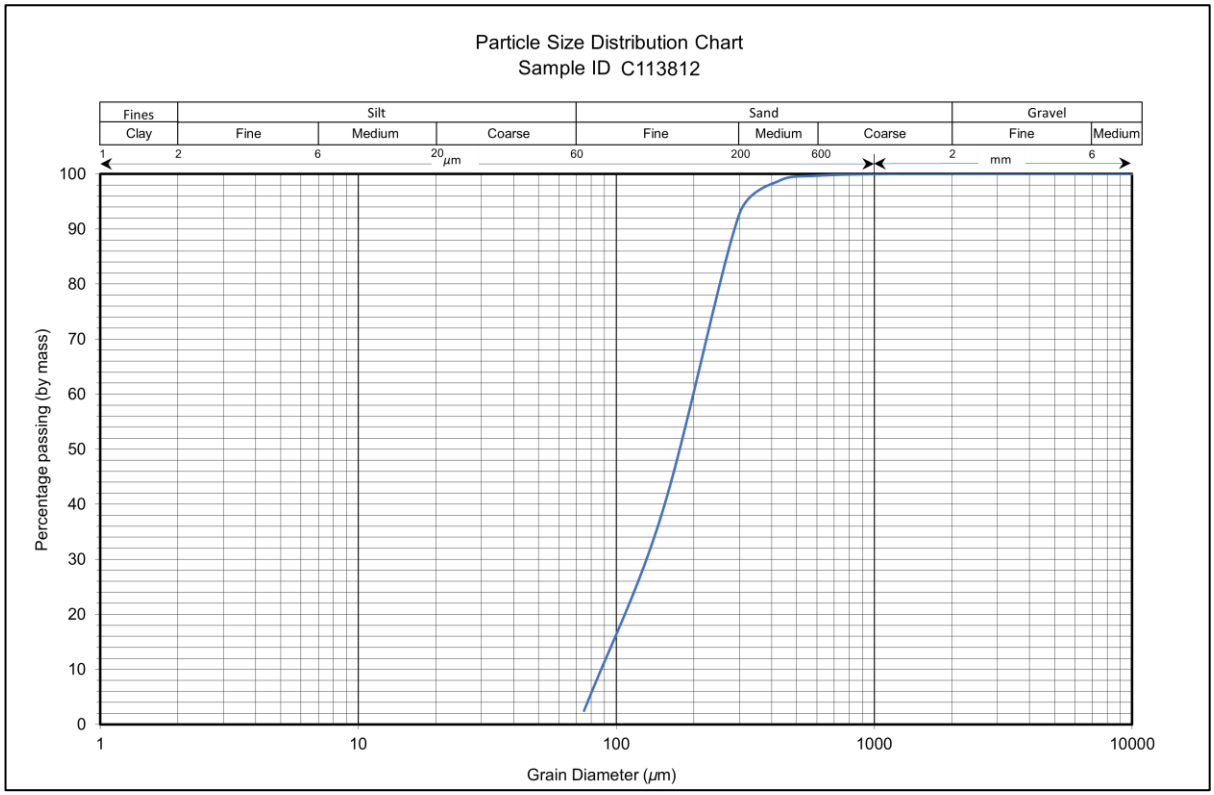


Sample ID:	C113811
Date:	3/05/2024

Weight of sample used (g)	71.9

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.10	0.14	100.00	2360
1180-600	1.00	1.40	99.86	1180
600-425	2.00	2.80	98.46	600
425-300	8.50	11.90	95.66	425
300-150	41.90	58.68	83.75	300
150-75	17.80	24.93	25.07	150
<75	0.10	0.14	0.14	75
Total	71.40	100.00		0

C113812 Cumulative Histogram & PSD Data

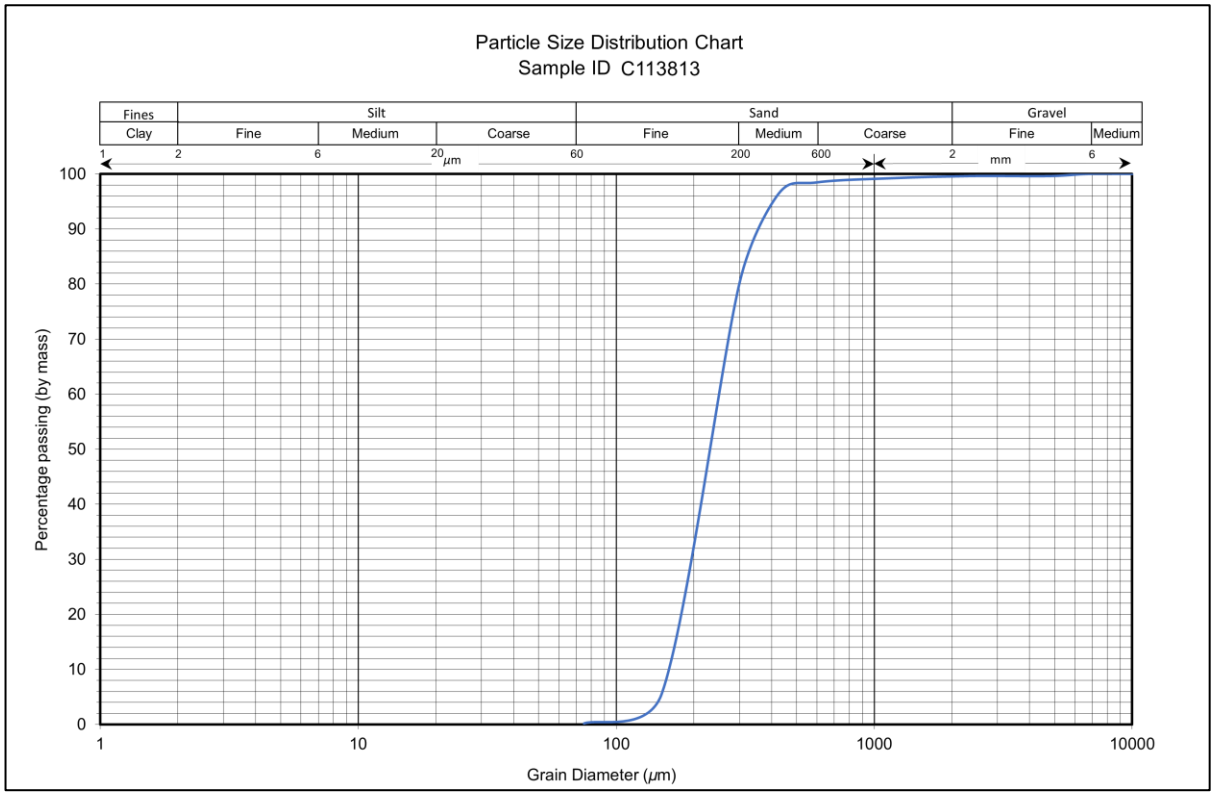


Sample ID:	C113812
Date:	3/05/2024

Weight of sample used (g)	60.9

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.20	0.33	100.00	1180
600-425	0.60	0.99	99.67	600
425-300	3.60	5.95	98.68	425
300-150	33.00	54.55	92.73	300
150-75	21.60	35.70	38.18	150
<75	1.50	2.48	2.48	75
Total	60.50	100.00		0

C113813 Cumulative Histogram & PSD Data

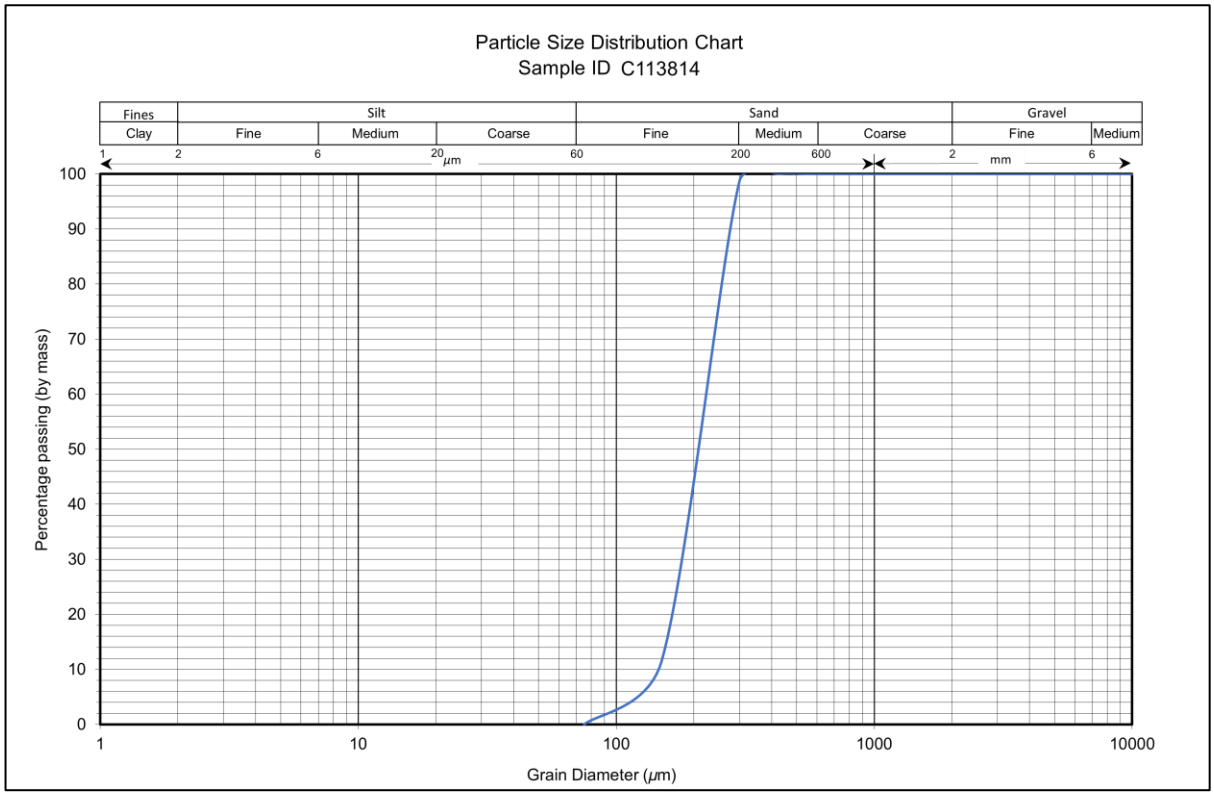


Sample ID:	C113813
Date:	3/05/2024

Weight of sample used (g)	52.6

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.20	0.38	100.00	6700
4750-2360	0.00	0.00	99.62	4750
2360-1180	0.20	0.38	99.62	2360
1180-600	0.40	0.77	99.23	1180
600-425	1.10	2.11	98.47	600
425-300	8.50	16.28	96.36	425
300-150	38.90	74.52	80.08	300
150-75	2.80	5.36	5.56	150
<75	0.10	0.19	0.19	75
Total	52.20	100.00		0

C113814 Cumulative Histogram & PSD Data

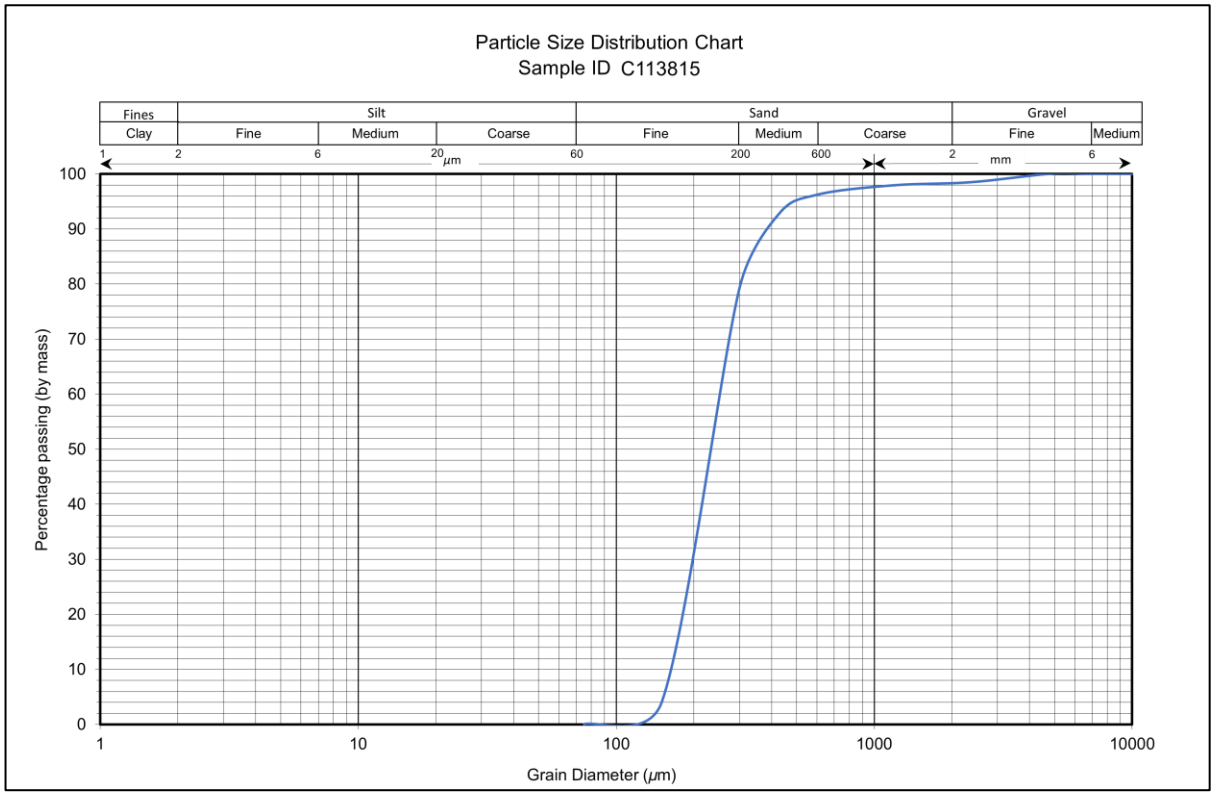


Sample ID:	C113814
Date:	3/05/2024

Weight of sample used (g)	52.2

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.00	0.00	100.00	1180
600-425	0.00	0.00	100.00	600
425-300	0.70	1.35	100.00	425
300-150	45.20	87.09	98.65	300
150-75	6.00	11.56	11.56	150
<75	0.00	0.00	0.00	75
Total	51.90	100.00		0

C113815 Cumulative Histogram & PSD Data

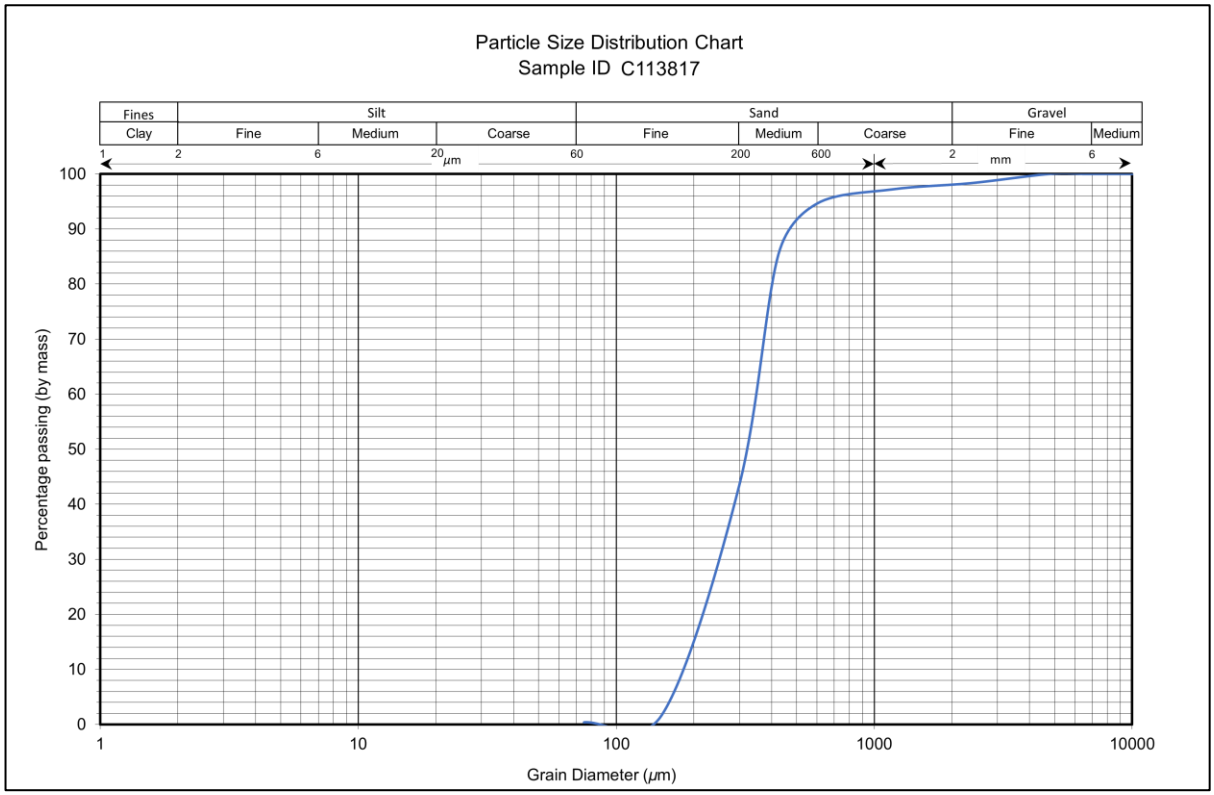


Sample ID:	C113815
Date:	3/05/2024

Weight of sample used (g)	52.8

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.80	1.52	100.00	4750
2360-1180	0.30	0.57	98.48	2360
1180-600	0.90	1.70	97.92	1180
600-425	1.90	3.60	96.21	600
425-300	7.10	13.45	92.61	425
300-150	39.70	75.19	79.17	300
150-75	2.10	3.98	3.98	150
<75	0.00	0.00	0.00	75
Total	52.80	100.00		0

C113817 Cumulative Histogram & PSD Data

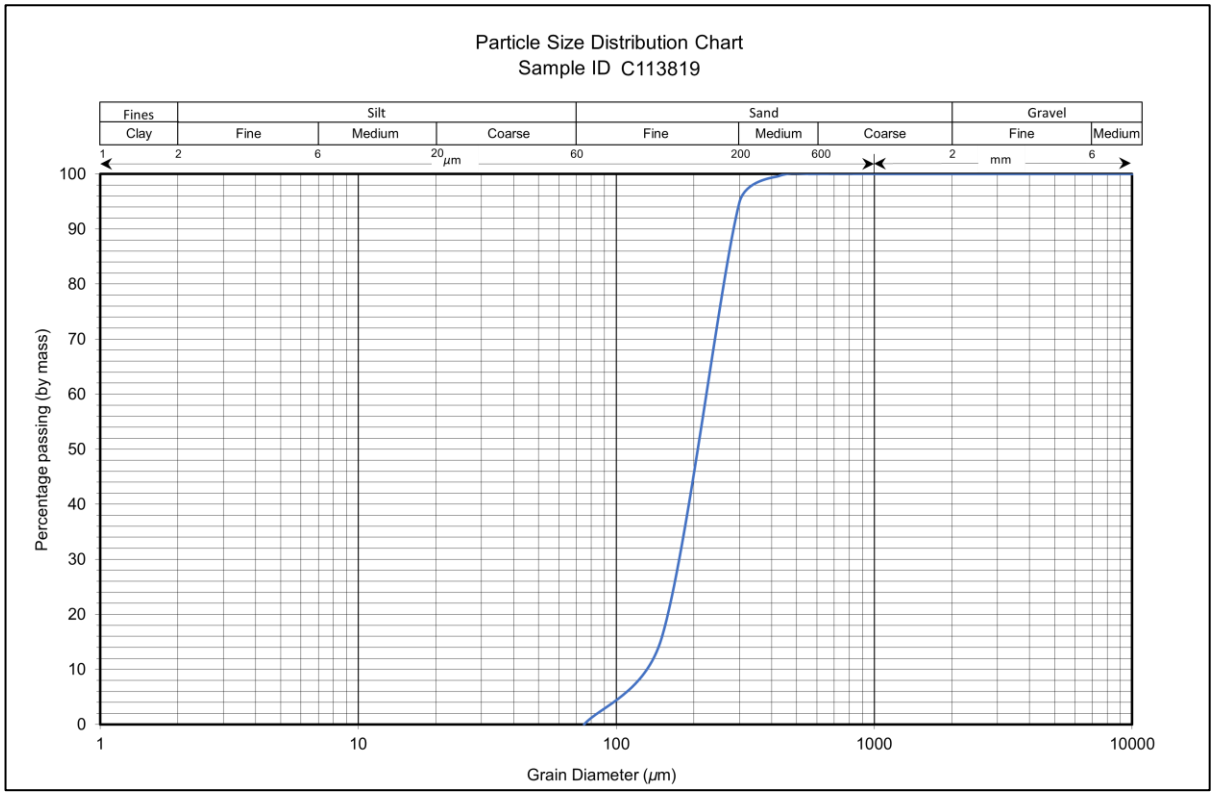


Sample ID:	C113817
Date:	3/05/2024

Weight of sample used (g)	53.7

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.90	1.67	100.00	4750
2360-1180	0.60	1.11	98.33	2360
1180-600	1.40	2.59	97.22	1180
600-425	5.00	9.26	94.63	600
425-300	22.60	41.85	85.37	425
300-150	22.60	41.85	43.52	300
150-75	0.70	1.30	1.67	150
<75	0.20	0.37	0.37	75
Total	54.00	100.00		0

C113819 Cumulative Histogram & PSD Data

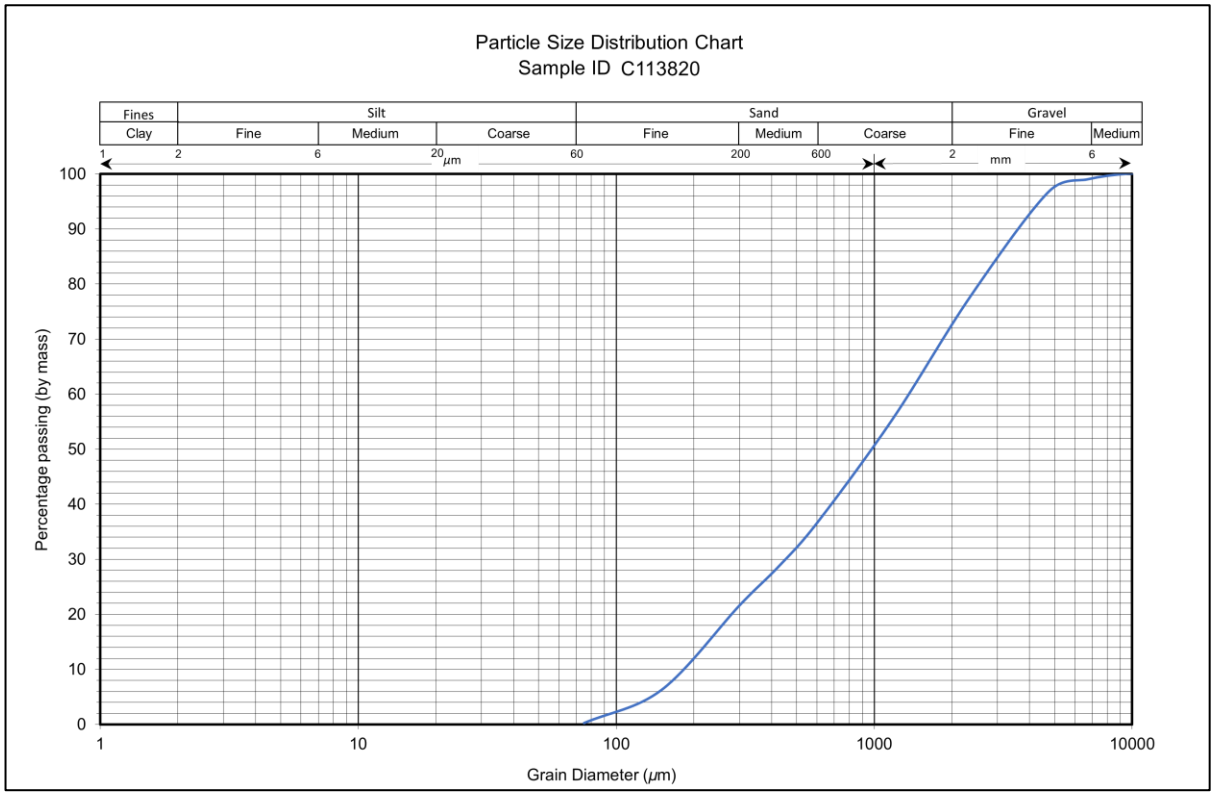


Sample ID:	C113819
Date:	3/05/2024

Weight of sample used (g)	50.2

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.00	0.00	100.00	1180
600-425	0.20	0.40	100.00	600
425-300	2.40	4.78	99.60	425
300-150	39.70	79.08	94.82	300
150-75	7.90	15.74	15.74	150
<75	0.00	0.00	0.00	75
Total	50.20	100.00		0

C113820 Cumulative Histogram & PSD Data

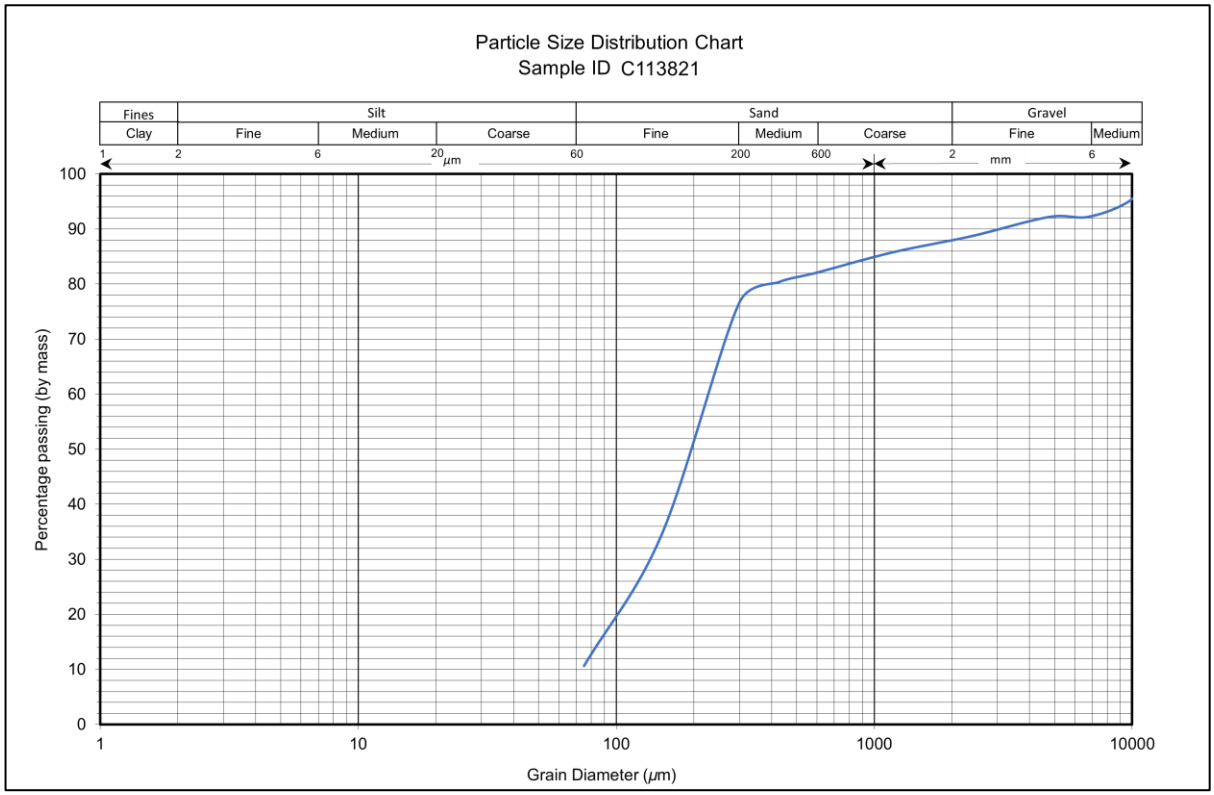


Sample ID:	C113820
Date:	3/05/2024

Weight of sample used (g)	100.2

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	1.00	1.01	100.00	9500
6700-4750	2.20	2.22	98.99	6700
4750-2360	18.90	19.03	96.78	4750
2360-1180	22.10	22.26	77.74	2360
1180-600	18.80	18.93	55.49	1180
600-425	7.90	7.96	36.56	600
425-300	7.00	7.05	28.60	425
300-150	15.20	15.31	21.55	300
150-75	6.00	6.04	6.24	150
<75	0.20	0.20	0.20	75
Total	99.30	100.00		0

C113821 Cumulative Histogram & PSD Data

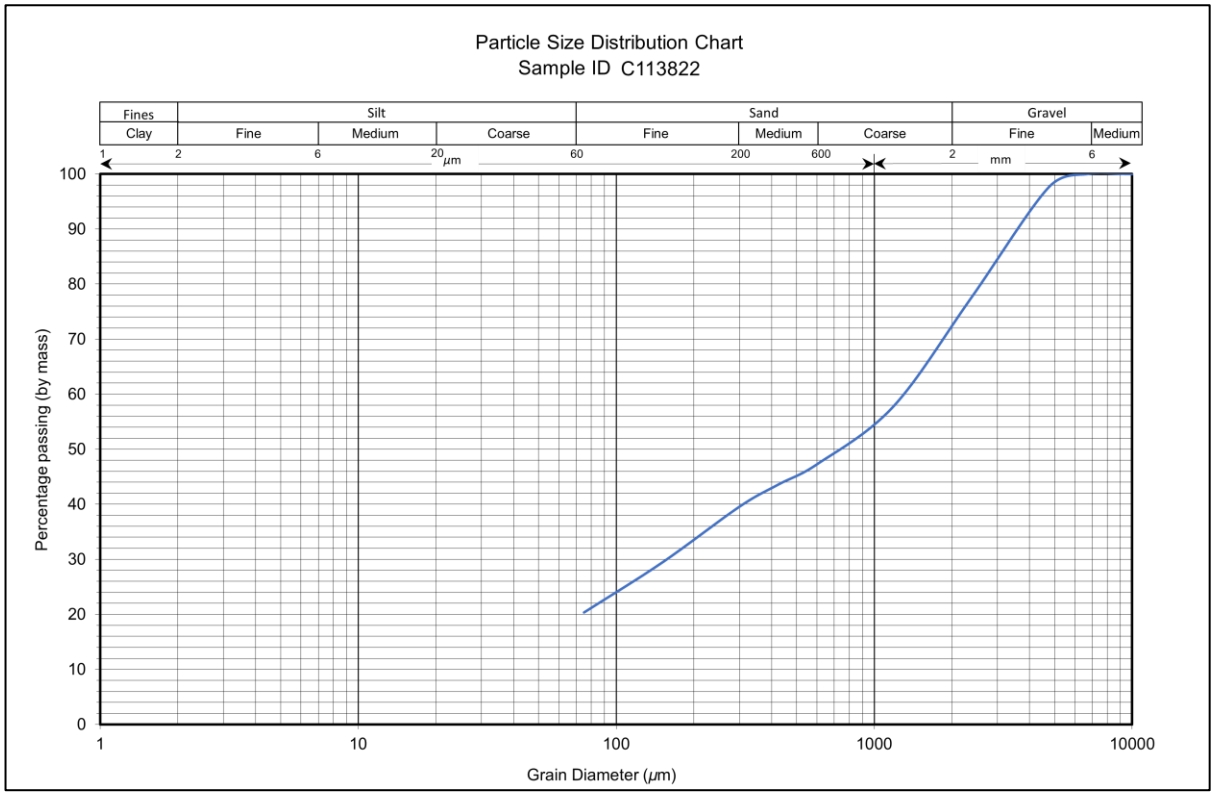


Sample ID:	C113821
Date:	3/05/2024

Weight of sample used (g)	63.8

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	3.30	5.29	100.00	13200
9500-6700	1.60	2.56	94.71	9500
6700-4750	0.00	0.00	92.15	6700
4750-2360	2.20	3.53	92.15	4750
2360-1180	1.80	2.88	88.62	2360
1180-600	2.30	3.69	85.74	1180
600-425	1.10	1.76	82.05	600
425-300	2.30	3.69	80.29	425
300-150	26.30	42.15	76.60	300
150-75	14.90	23.88	34.46	150
<75	6.60	10.58	10.58	75
Total	62.40	100.00		0

C113822 Cumulative Histogram & PSD Data

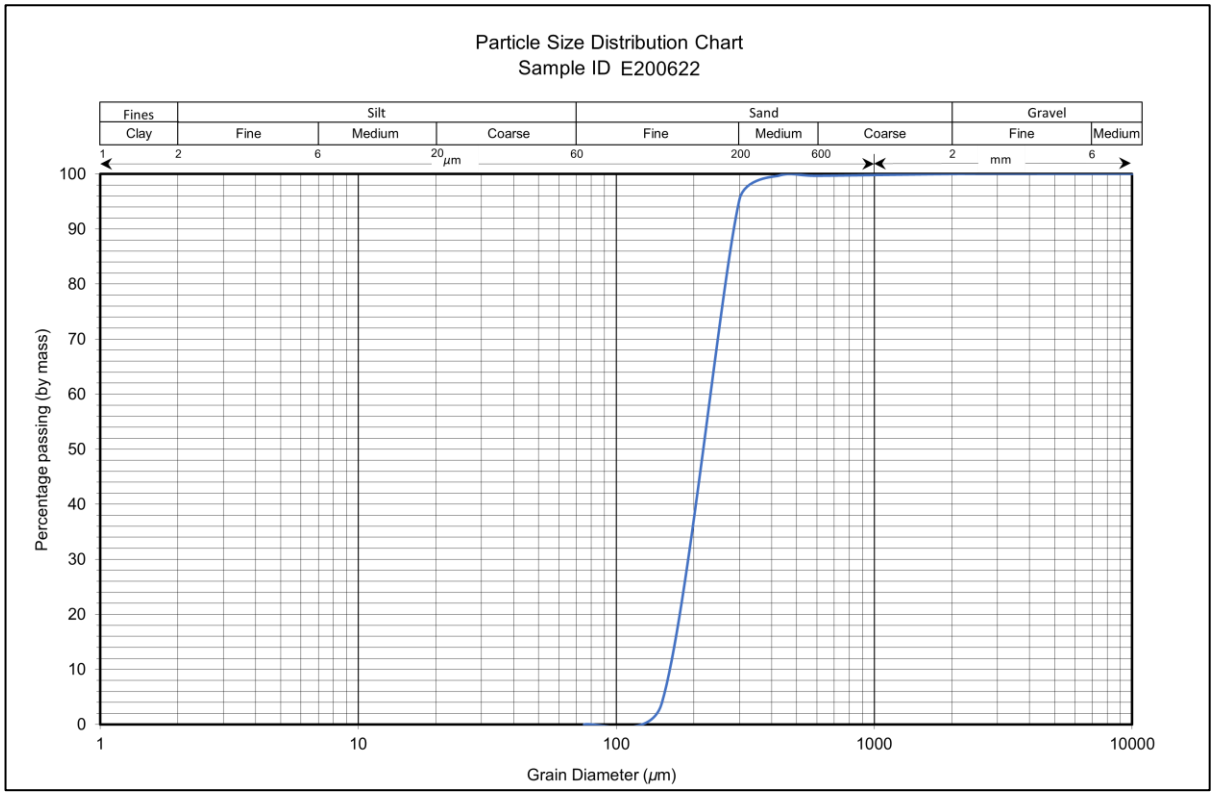


Sample ID:	C113822
Date:	3/05/2024

Weight of sample used (g)	108.9

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	2.60	2.39	100.00	6700
4750-2360	22.10	20.31	97.61	4750
2360-1180	21.40	19.67	77.30	2360
1180-600	11.30	10.39	57.63	1180
600-425	4.00	3.68	47.24	600
425-300	4.40	4.04	43.57	425
300-150	11.10	10.20	39.52	300
150-75	9.80	9.01	29.32	150
<75	22.10	20.31	20.31	75
Total	108.80	100.00		0

E200622 Cumulative Histogram & PSD Data

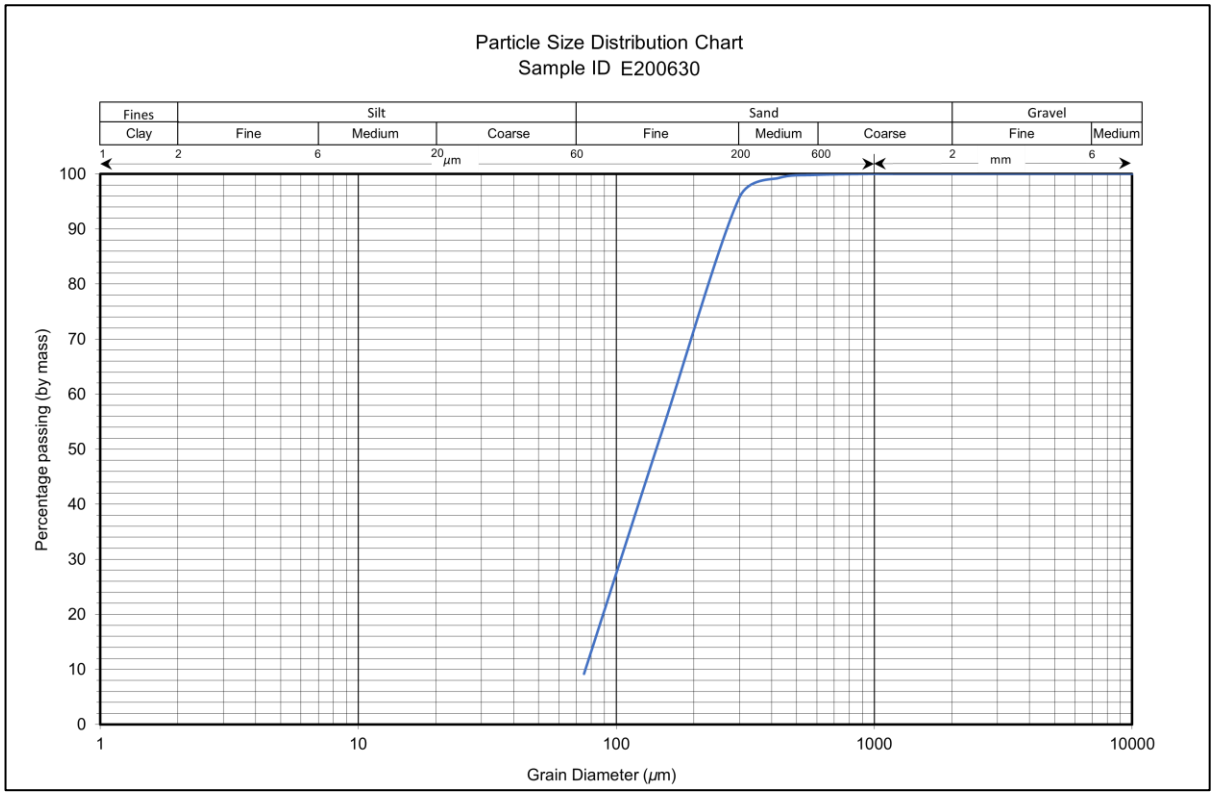


Sample ID:	E200622
Date:	1/06/2024

Weight of sample used (g)	55.2

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.10	0.18	100.00	2360
1180-600	0.10	0.18	99.82	1180
600-425	0.00	0.00	99.64	600
425-300	2.40	4.35	99.64	425
300-150	50.50	91.49	95.29	300
150-75	2.10	3.80	3.80	150
<75	0.00	0.00	0.00	75
Total	55.20	100.00		0

E200630 Cumulative Histogram & PSD Data

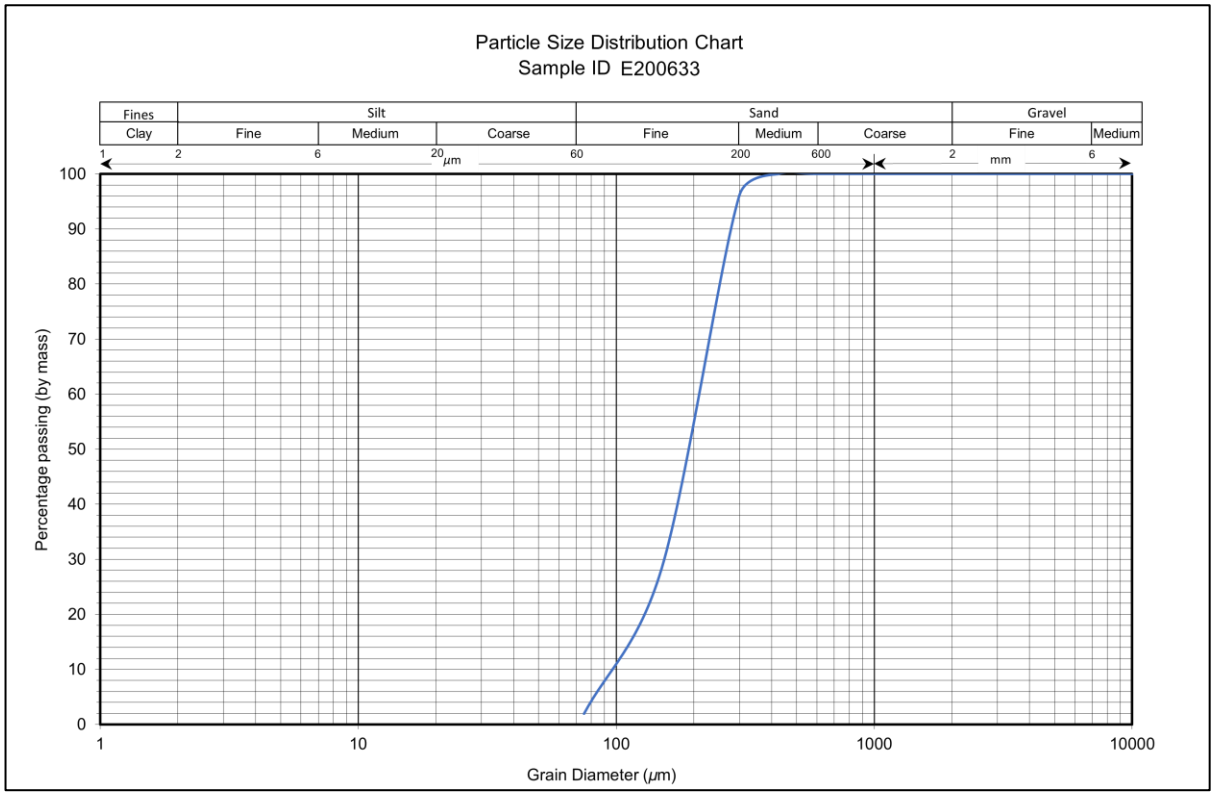


Sample ID:	E200630
Date:	1/06/2024

Weight of sample used (g)	51.2

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.10	0.20	100.00	1180
600-425	0.30	0.59	99.80	600
425-300	1.80	3.52	99.22	425
300-150	21.80	42.66	95.69	300
150-75	22.40	43.84	53.03	150
<75	4.70	9.20	9.20	75
Total	51.10	100.00		0

E200633 Cumulative Histogram & PSD Data

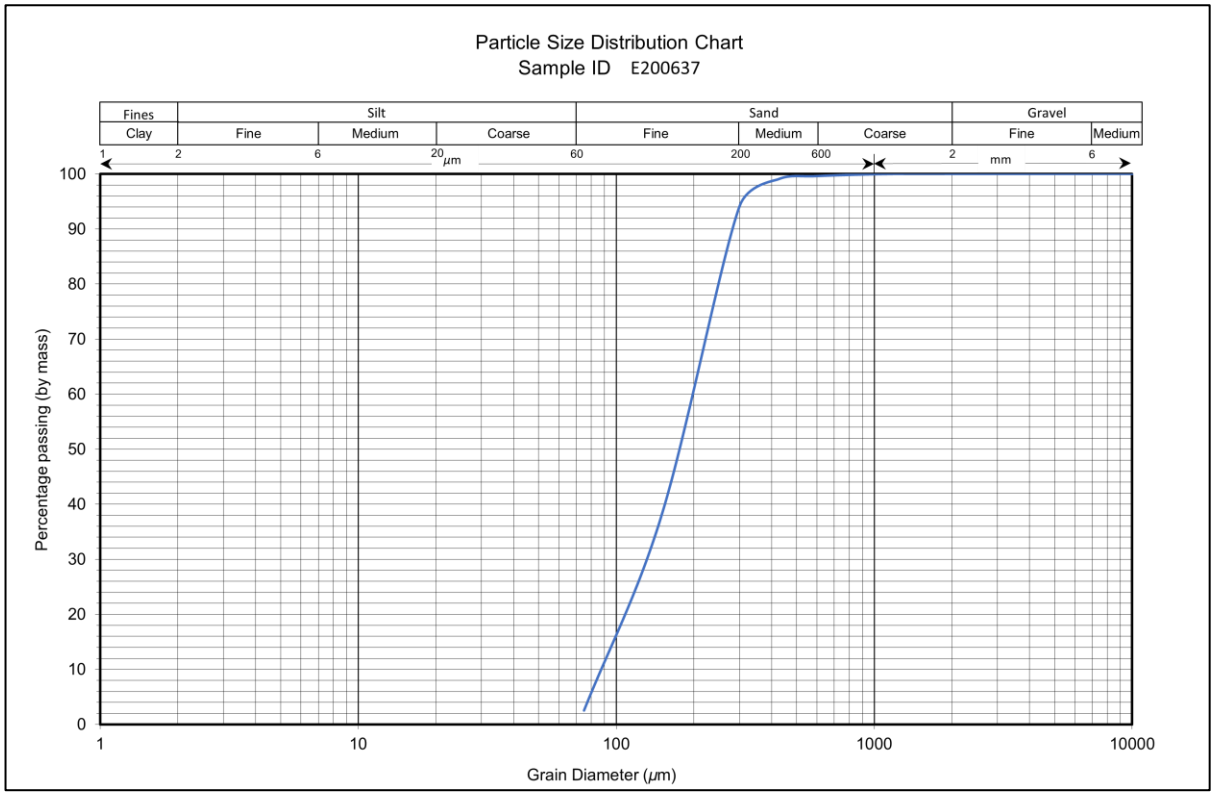


Sample ID:	E200633
Date:	1/06/2024

Weight of sample used (g)	51.7

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.00	0.00	100.00	1180
600-425	0.00	0.00	100.00	600
425-300	2.00	3.88	100.00	425
300-150	34.90	67.77	96.12	300
150-75	13.60	26.41	28.35	150
<75	1.00	1.94	1.94	75
Total	51.50	100.00		0

E200637 Cumulative Histogram & PSD Data

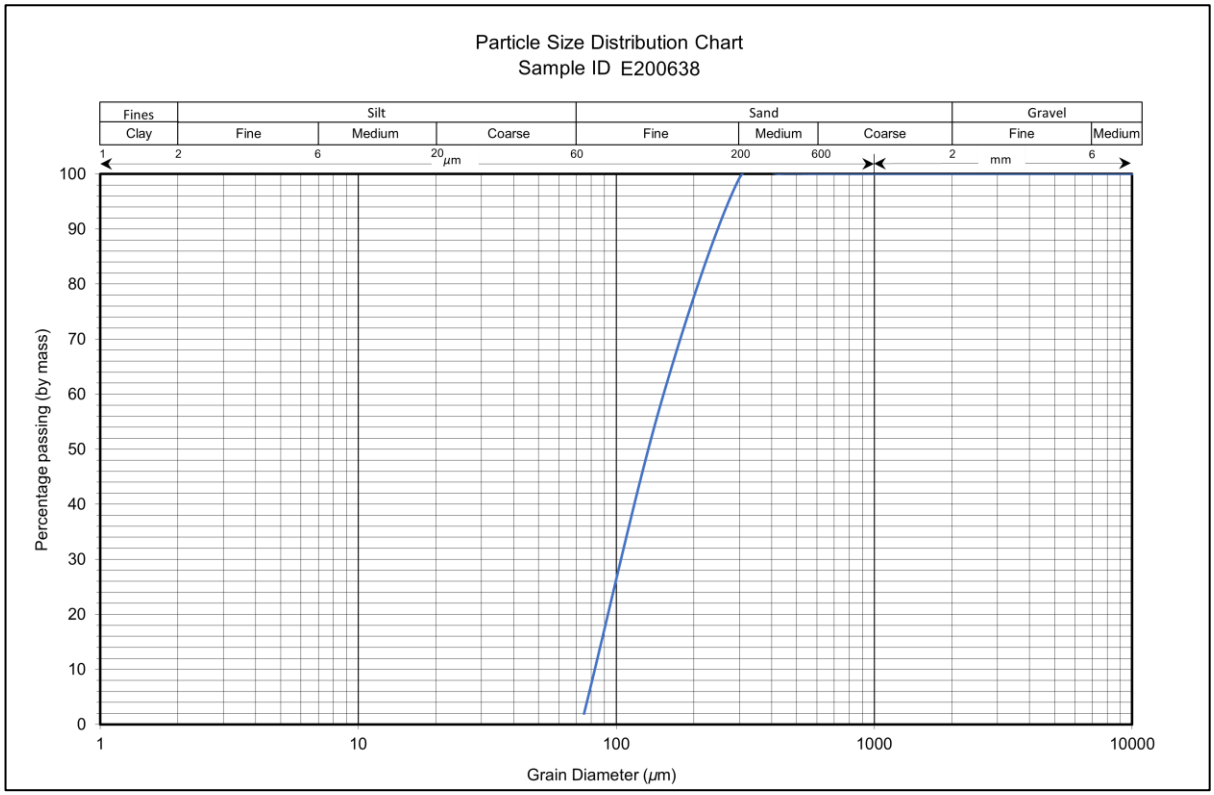


Sample ID:	E200637
Date:	1/06/2024

Weight of sample used (g)	52.5

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.20	0.38	100.00	1180
600-425	0.30	0.58	99.62	600
425-300	2.60	4.99	99.04	425
300-150	29.20	56.05	94.05	300
150-75	18.50	35.51	38.00	150
<75	1.30	2.50	2.50	75
Total	52.10	100.00		0

E200638 Cumulative Histogram & PSD Data

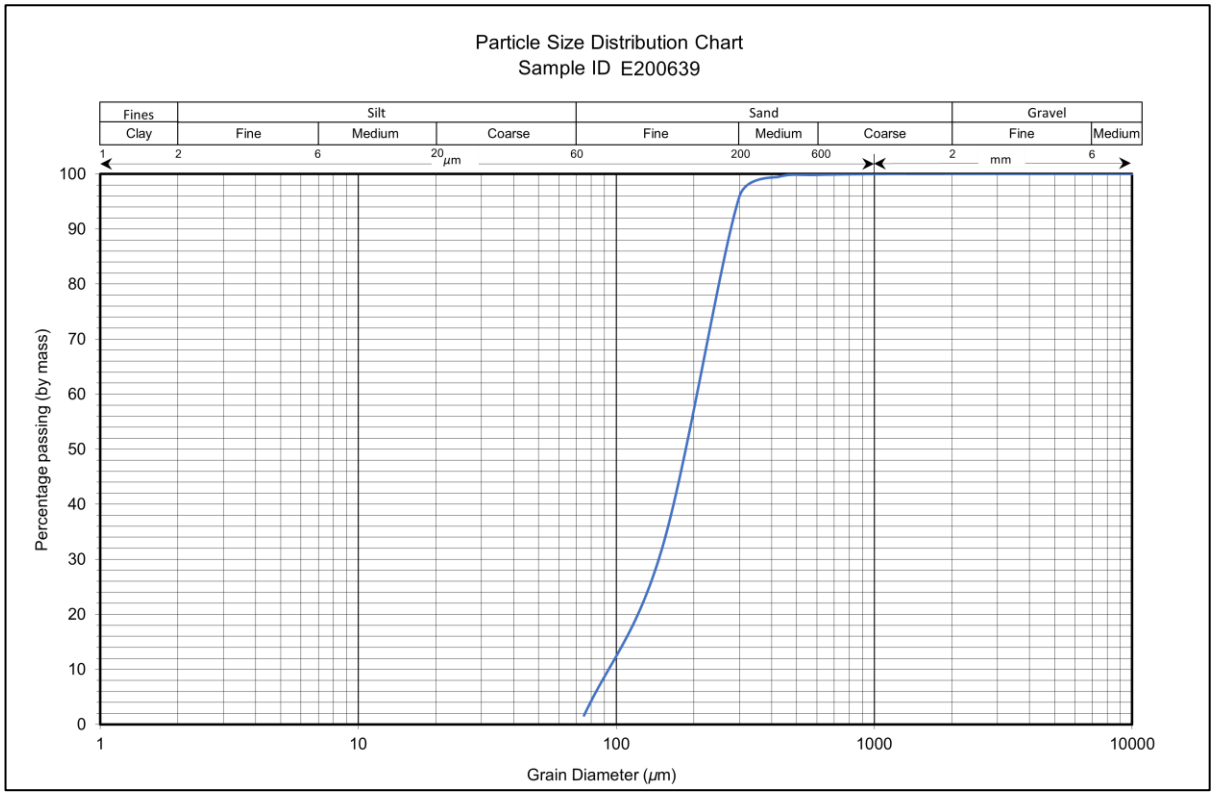


Sample ID:	E200638
Date:	1/06/2024

Weight of sample used (g)	51.3

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.00	0.00	100.00	1180
600-425	0.00	0.00	100.00	600
425-300	0.40	0.78	100.00	425
300-150	20.60	40.39	99.22	300
150-75	29.00	56.86	58.82	150
<75	1.00	1.96	1.96	75
Total	51.00	100.00		0

E200639 Cumulative Histogram & PSD Data

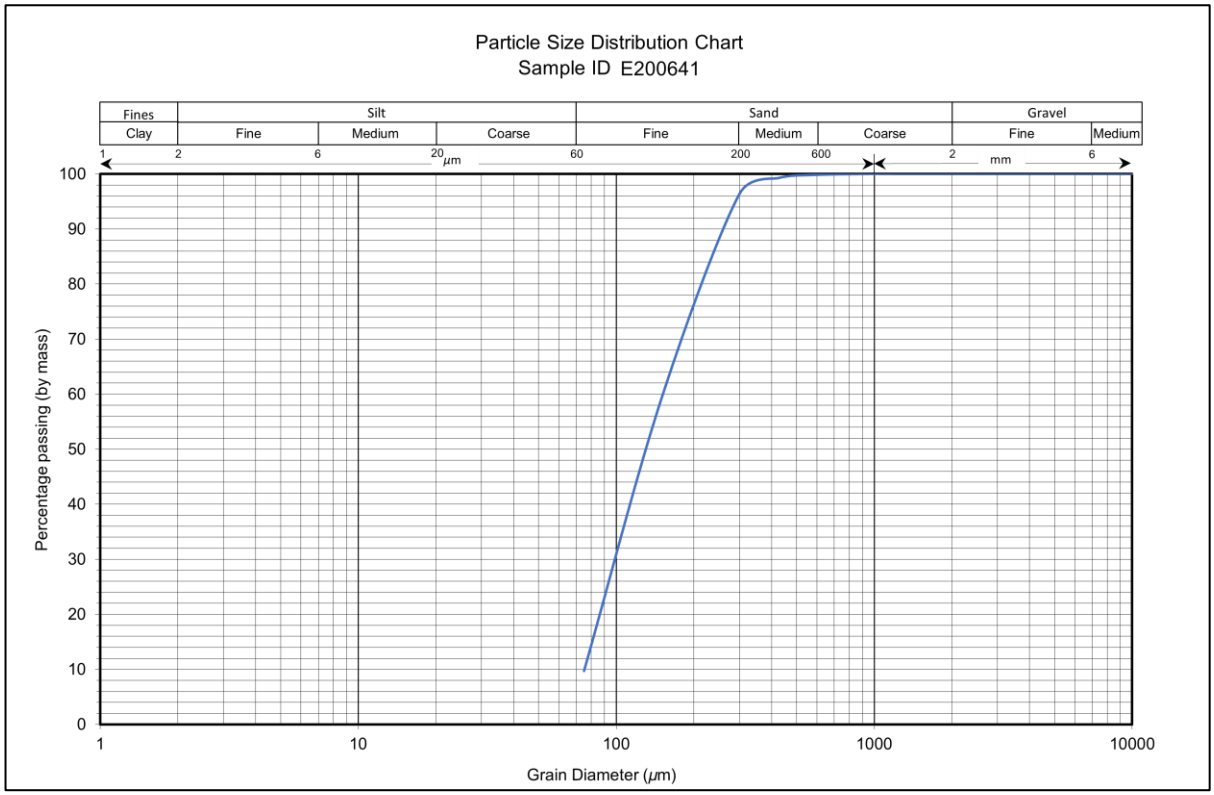


Sample ID:	E200639
Date:	2/06/2024

Weight of sample used (g)	56.1

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.10	0.18	100.00	1180
600-425	0.20	0.36	99.82	600
425-300	2.00	3.58	99.46	425
300-150	35.80	64.16	95.88	300
150-75	16.80	30.11	31.72	150
<75	0.90	1.61	1.61	75
Total	55.80	100.00		0

E200641 Cumulative Histogram & PSD Data

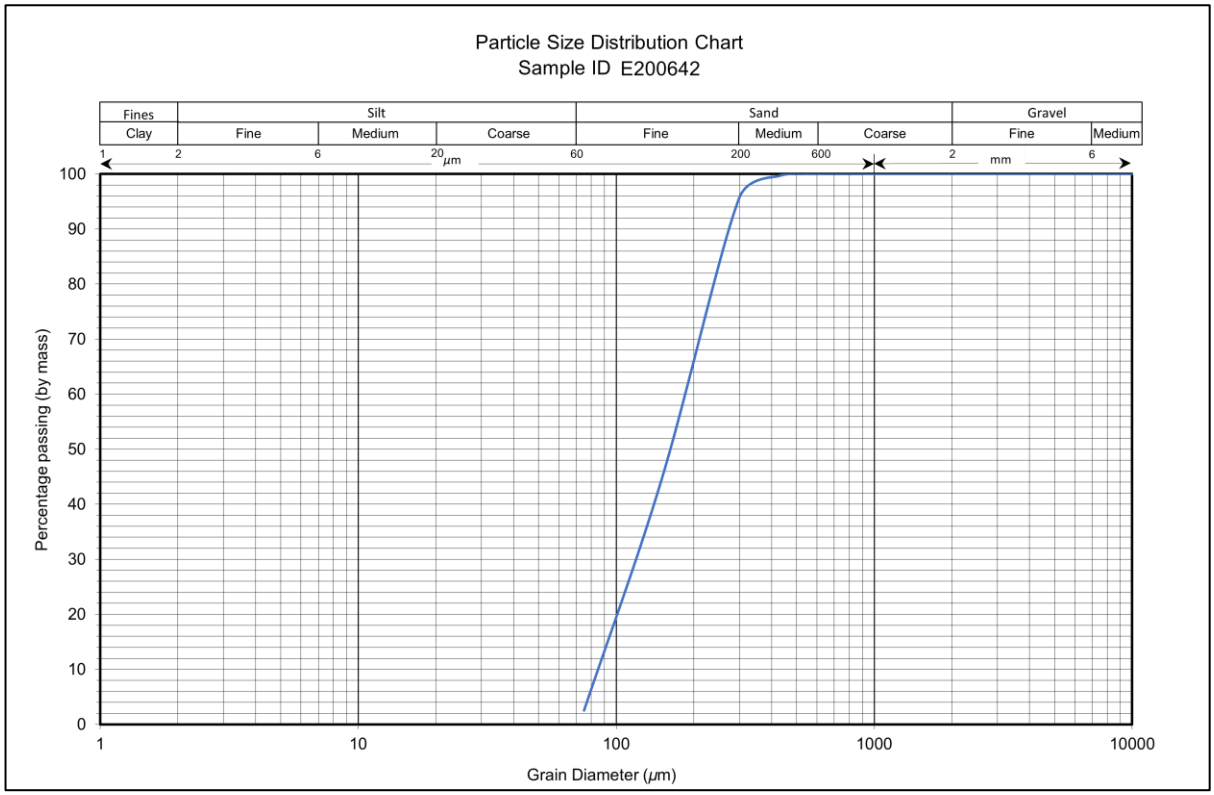


Sample ID:	E200641
Date:	2/06/2024

Weight of sample used (g)	52.1

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.10	0.19	100.00	1180
600-425	0.30	0.58	99.81	600
425-300	1.50	2.91	99.22	425
300-150	19.10	37.02	96.32	300
150-75	25.60	49.61	59.30	150
<75	5.00	9.69	9.69	75
Total	51.60	100.00		0

E200642 Cumulative Histogram & PSD Data

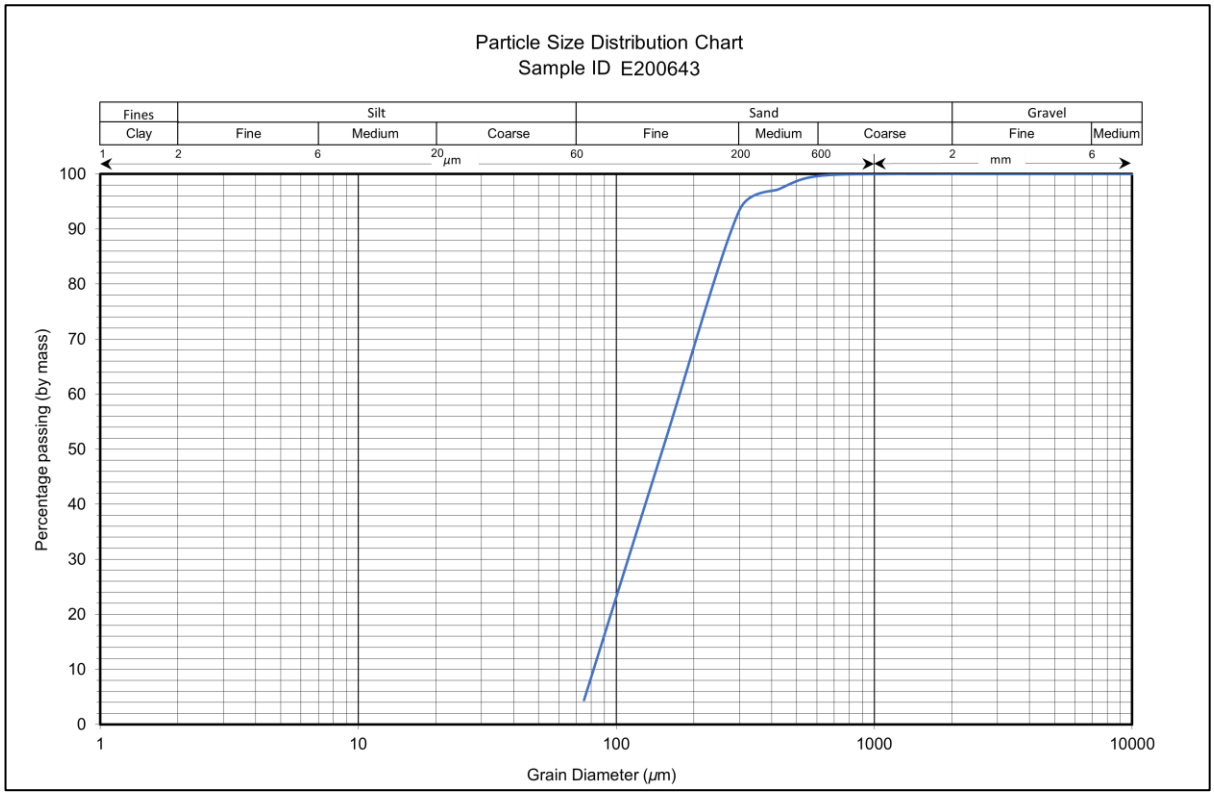


Sample ID:	E200642
Date:	2/06/2024

Weight of sample used (g)	51.7

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.00	0.00	100.00	1180
600-425	0.20	0.39	100.00	600
425-300	2.00	3.91	99.61	425
300-150	26.20	51.17	95.70	300
150-75	21.50	41.99	44.53	150
<75	1.30	2.54	2.54	75
Total	51.20	100.00		0

E200643 Cumulative Histogram & PSD Data

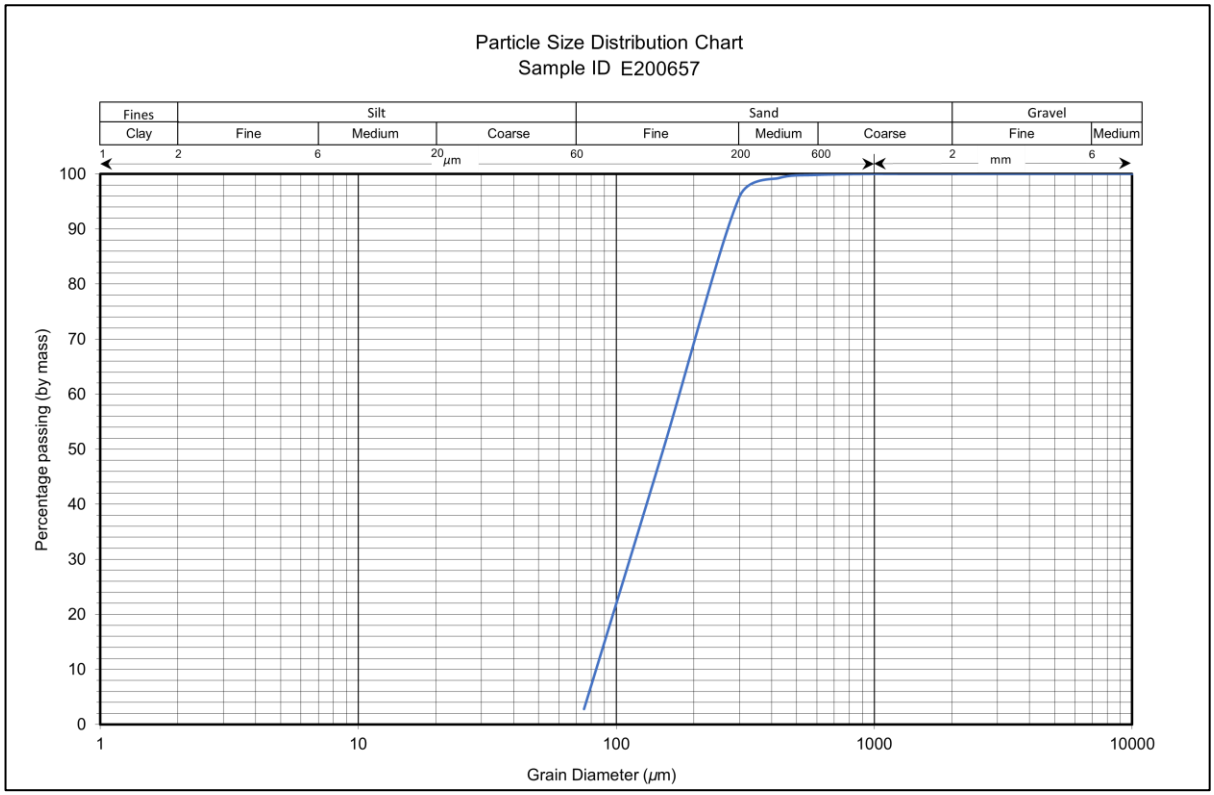


Sample ID:	E200643
Date:	2/06/2024

Weight of sample used (g)	50.0

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.20	0.40	100.00	1180
600-425	1.20	2.40	99.60	600
425-300	1.90	3.80	97.20	425
300-150	22.00	44.00	93.40	300
150-75	22.50	45.00	49.40	150
<75	2.20	4.40	4.40	75
Total	50.00	100.00		0

E200657 Cumulative Histogram & PSD Data

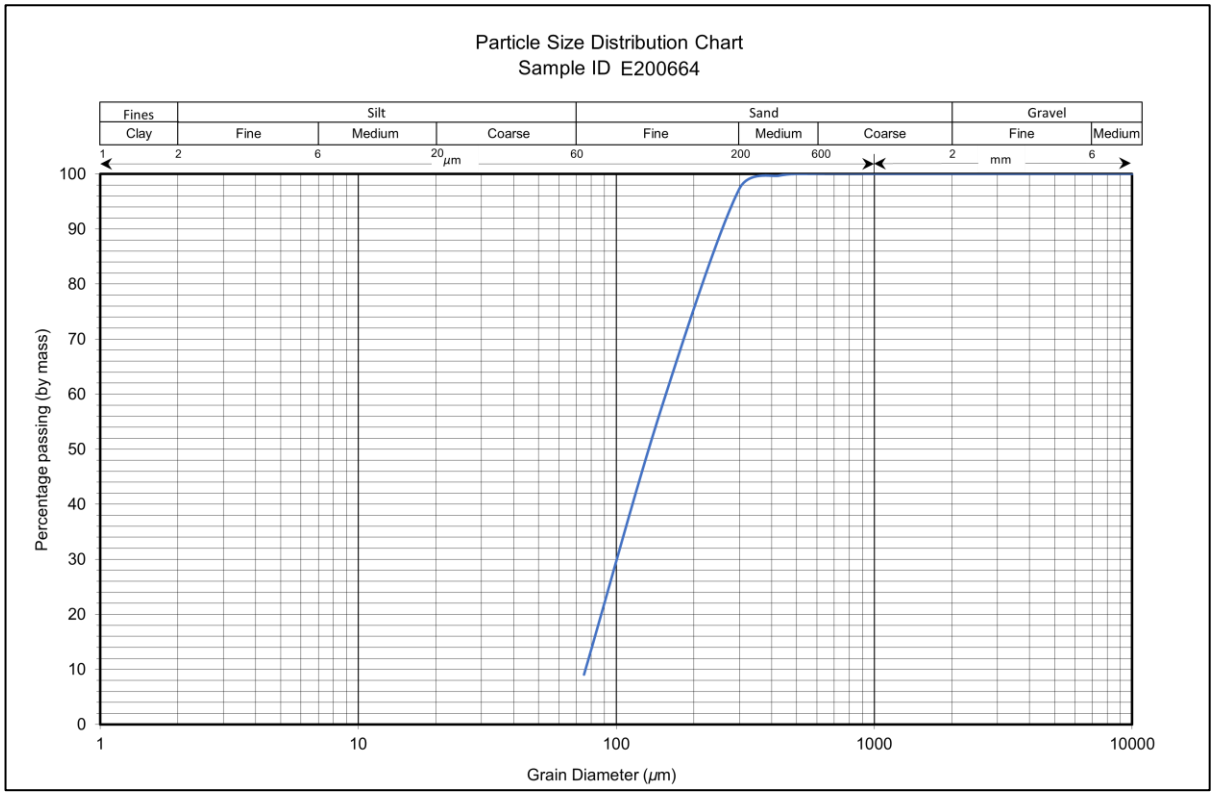


Sample ID:	E200657
Date:	2/06/2024

Weight of sample used (g)	50.6

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.10	0.20	100.00	1180
600-425	0.30	0.60	99.80	600
425-300	1.70	3.40	99.20	425
300-150	23.40	46.80	95.80	300
150-75	23.10	46.20	49.00	150
<75	1.40	2.80	2.80	75
Total	50.00	100.00		0

E200664 Cumulative Histogram & PSD Data

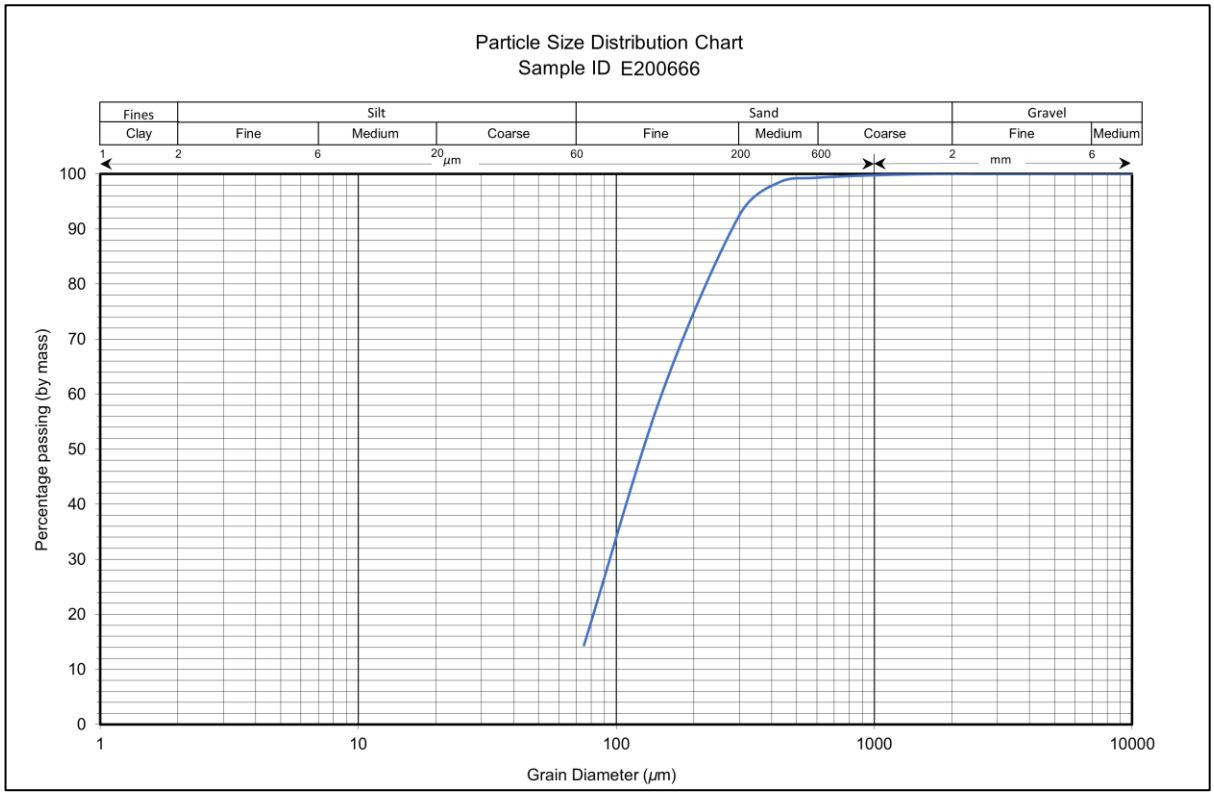


Sample ID:	E200664
Date:	2/06/2024

Weight of sample used (g)	55.4

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.00	0.00	100.00	1180
600-425	0.20	0.36	100.00	600
425-300	1.30	2.36	99.64	425
300-150	21.90	39.67	97.28	300
150-75	26.80	48.55	57.61	150
<75	5.00	9.06	9.06	75
Total	55.20	100.00		0

E200666 Cumulative Histogram & PSD Data

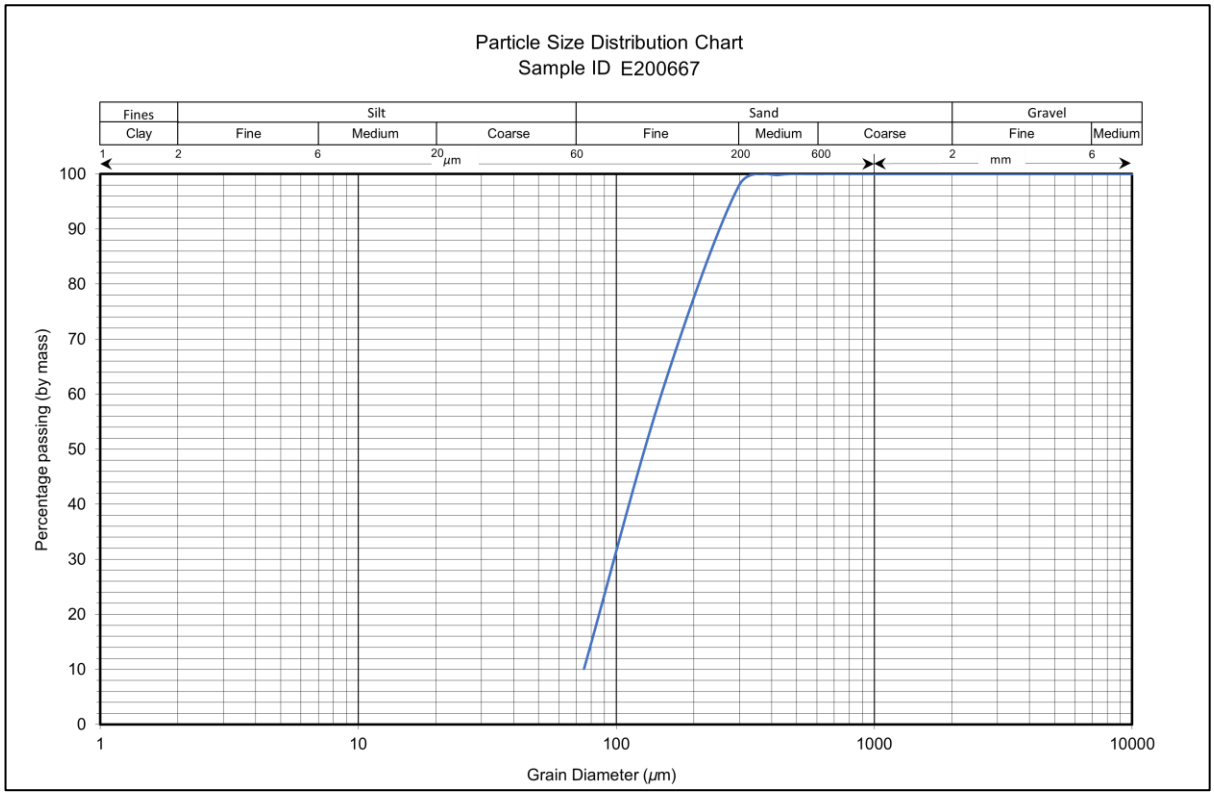


Sample ID:	E200666
Date:	2/06/2024

Weight of sample used (g)	56.0

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.10	0.18	100.00	2360
1180-600	0.30	0.54	99.82	1180
600-425	0.50	0.90	99.28	600
425-300	3.30	5.92	98.38	425
300-150	18.10	32.50	92.46	300
150-75	25.40	45.60	59.96	150
<75	8.00	14.36	14.36	75
Total	55.70	100.00		0

E200667 Cumulative Histogram & PSD Data

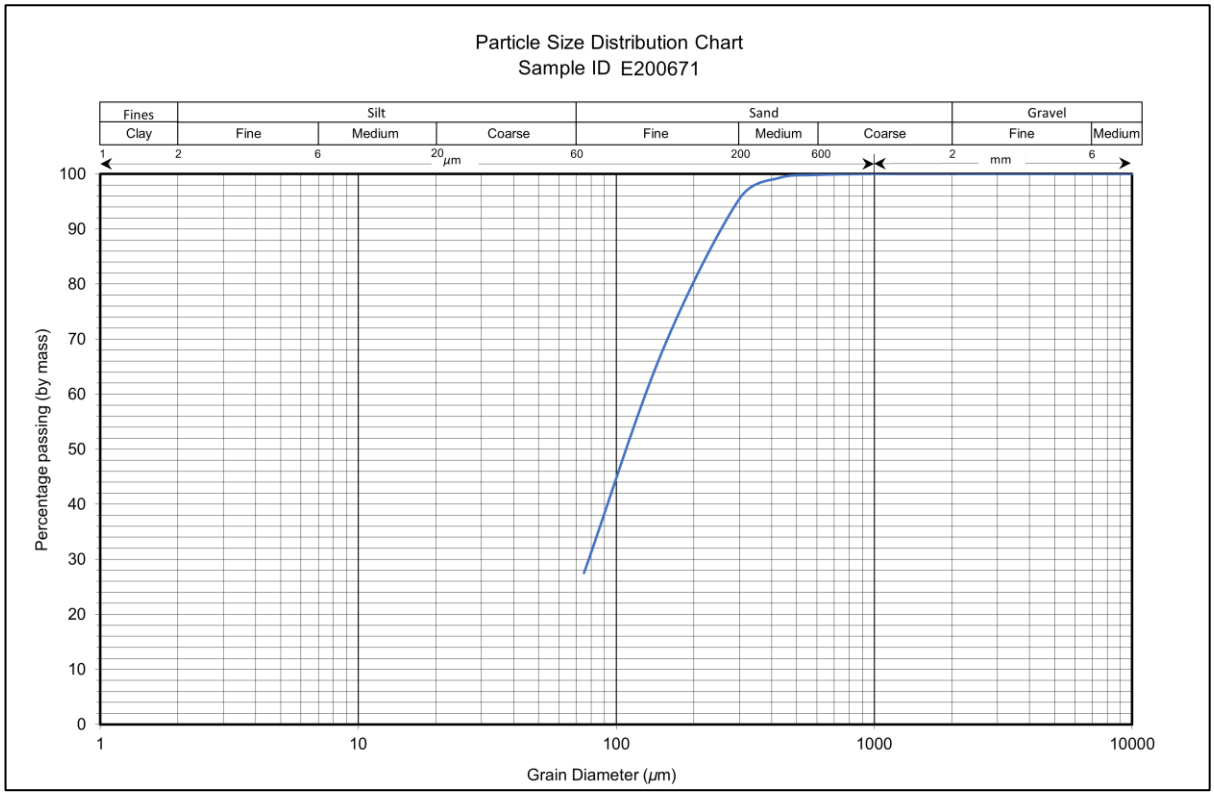


Sample ID:	E200667
Date:	2/06/2024

Weight of sample used (g)	55.8

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.00	0.00	100.00	1180
600-425	0.10	0.18	100.00	600
425-300	1.00	1.80	99.82	425
300-150	21.00	37.84	98.02	300
150-75	27.80	50.09	60.18	150
<75	5.60	10.09	10.09	75
Total	55.50	100.00		0

E200671 Cumulative Histogram & PSD Data

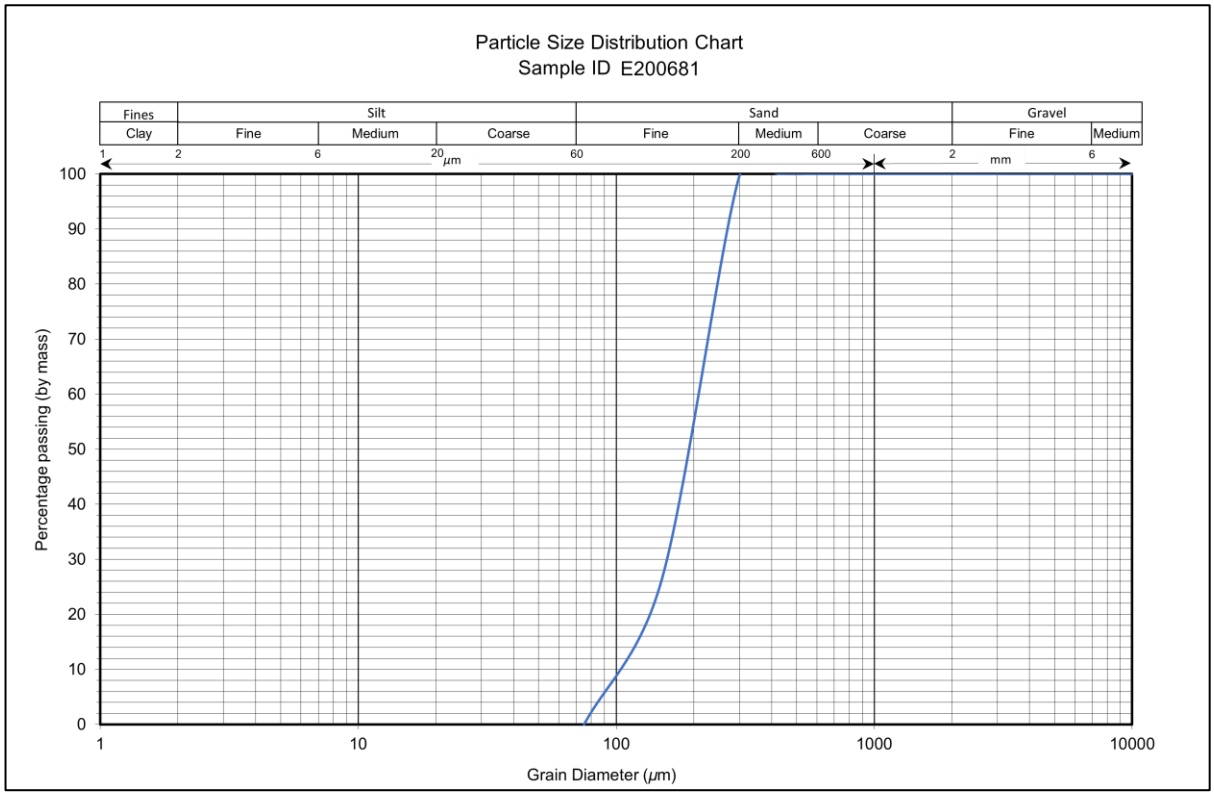


Sample ID:	E200671
Date:	10/06/2024

Weight of sample used (g)	51.2

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.10	0.20	100.00	1180
600-425	0.30	0.59	99.80	600
425-300	1.90	3.76	99.21	425
300-150	14.10	27.92	95.45	300
150-75	20.20	40.00	67.52	150
<75	13.90	27.52	27.52	75
Total	50.50	100.00		0

E200681 Cumulative Histogram & PSD Data

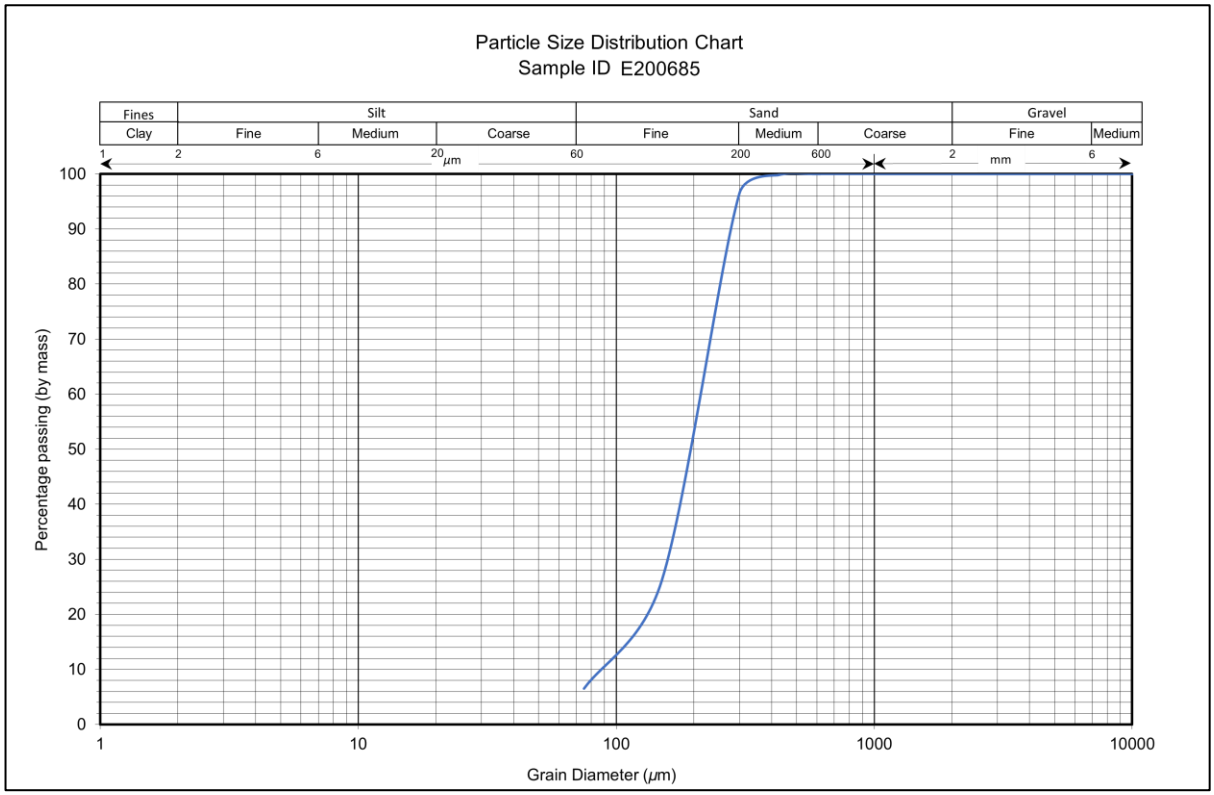


Sample ID:	E200681
Date:	10/06/2024

Weight of sample used (g)	56.3

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.01	0.02	100.00	4750
2360-1180	0.00	0.00	99.98	2360
1180-600	0.00	0.00	99.98	1180
600-425	0.00	0.00	99.98	600
425-300	0.20	0.36	99.98	425
300-150	40.80	73.37	99.62	300
150-75	14.60	26.25	26.25	150
<75	0.00	0.00	0.00	75
Total	55.61	100.00		0

E200685 Cumulative Histogram & PSD Data

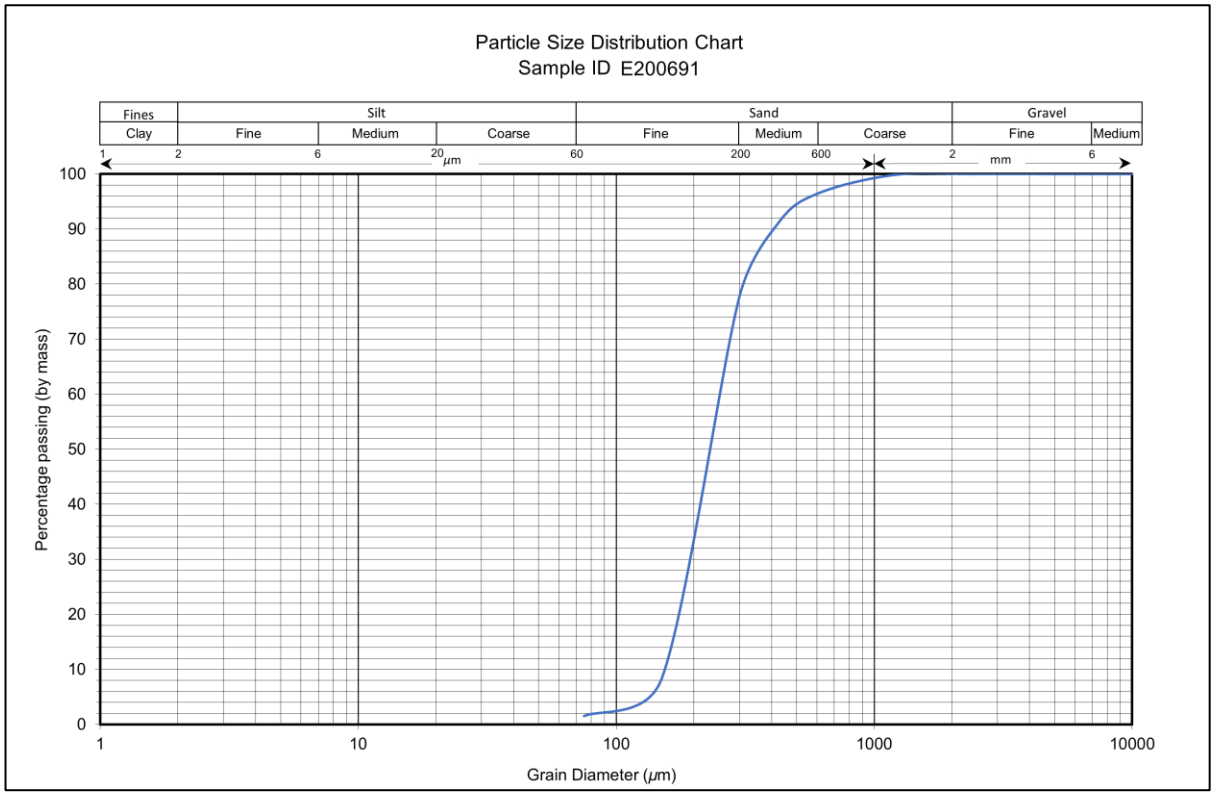


Sample ID:	E200685
Date:	10/06/2024

Weight of sample used (g)	51.2

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.00	0.00	100.00	1180
600-425	0.10	0.20	100.00	600
425-300	1.70	3.36	99.80	425
300-150	35.60	70.36	96.44	300
150-75	9.90	19.57	26.09	150
<75	3.30	6.52	6.52	75
Total	50.60	100.00		0

E200691 Cumulative Histogram & PSD Data

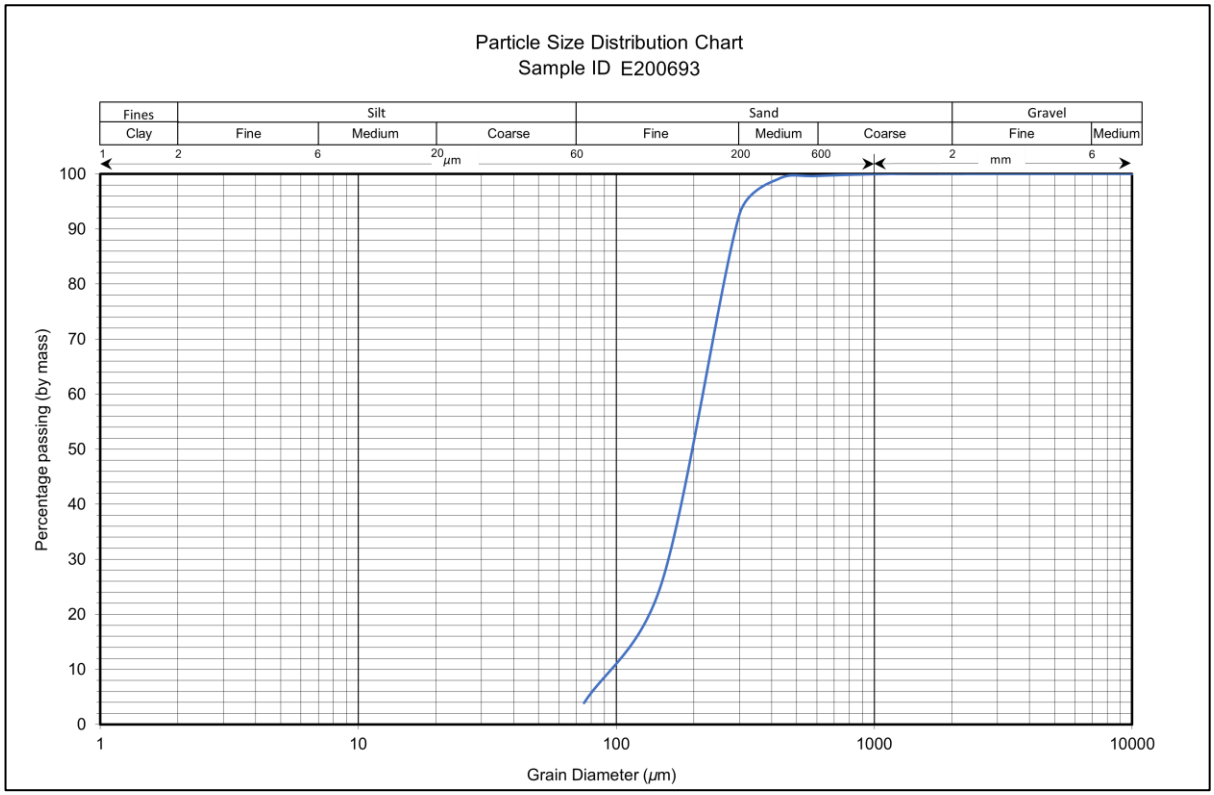


Sample ID:	E200691
Date:	10/06/2024

Weight of sample used (g)	52.9

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.10	0.19	100.00	2360
1180-600	1.80	3.40	99.81	1180
600-425	2.80	5.29	96.41	600
425-300	7.10	13.42	91.12	425
300-150	36.70	69.38	77.69	300
150-75	3.60	6.81	8.32	150
<75	0.80	1.51	1.51	75
Total	52.90	100.00		0

E200693 Cumulative Histogram & PSD Data

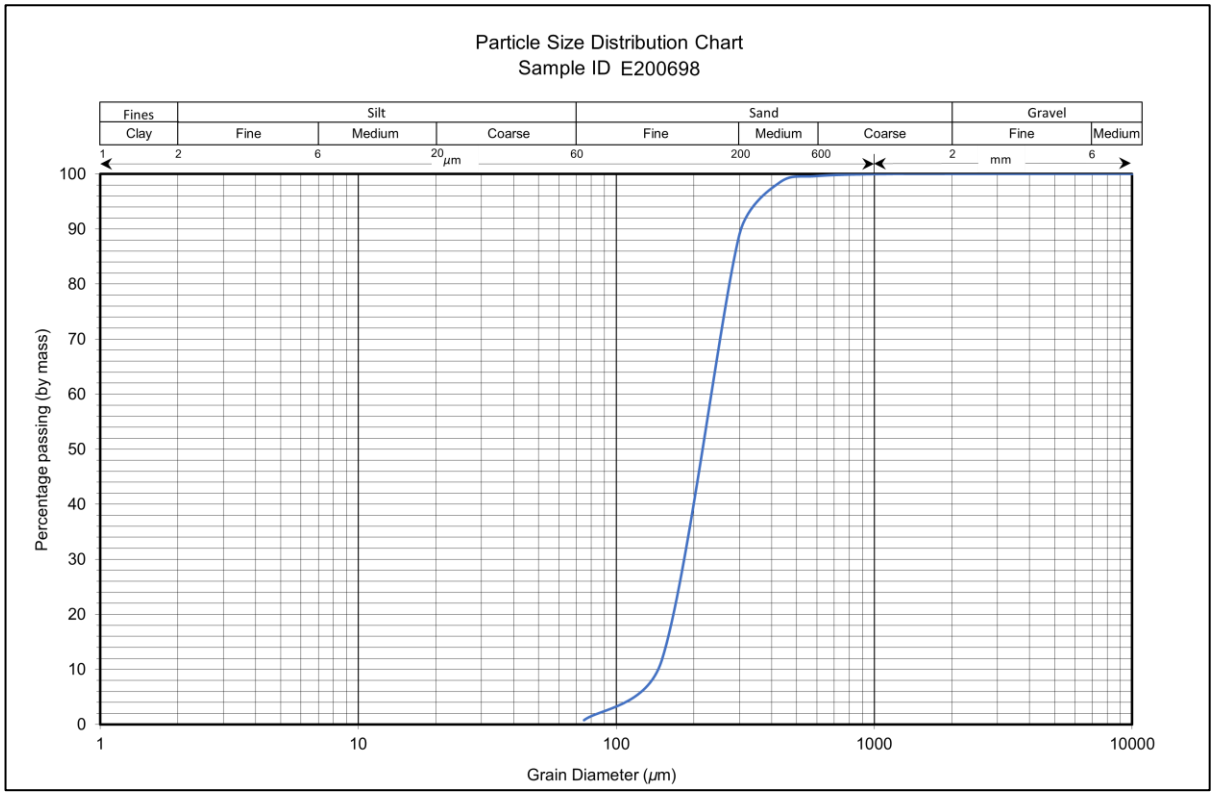


Sample ID:	E200693
Date:	10/06/2024

Weight of sample used (g)	54.4

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.20	0.37	100.00	1180
600-425	0.30	0.55	99.63	600
425-300	3.50	6.47	99.08	425
300-150	36.20	66.91	92.61	300
150-75	11.80	21.81	25.69	150
<75	2.10	3.88	3.88	75
Total	54.10	100.00		0

E200698 Cumulative Histogram & PSD Data

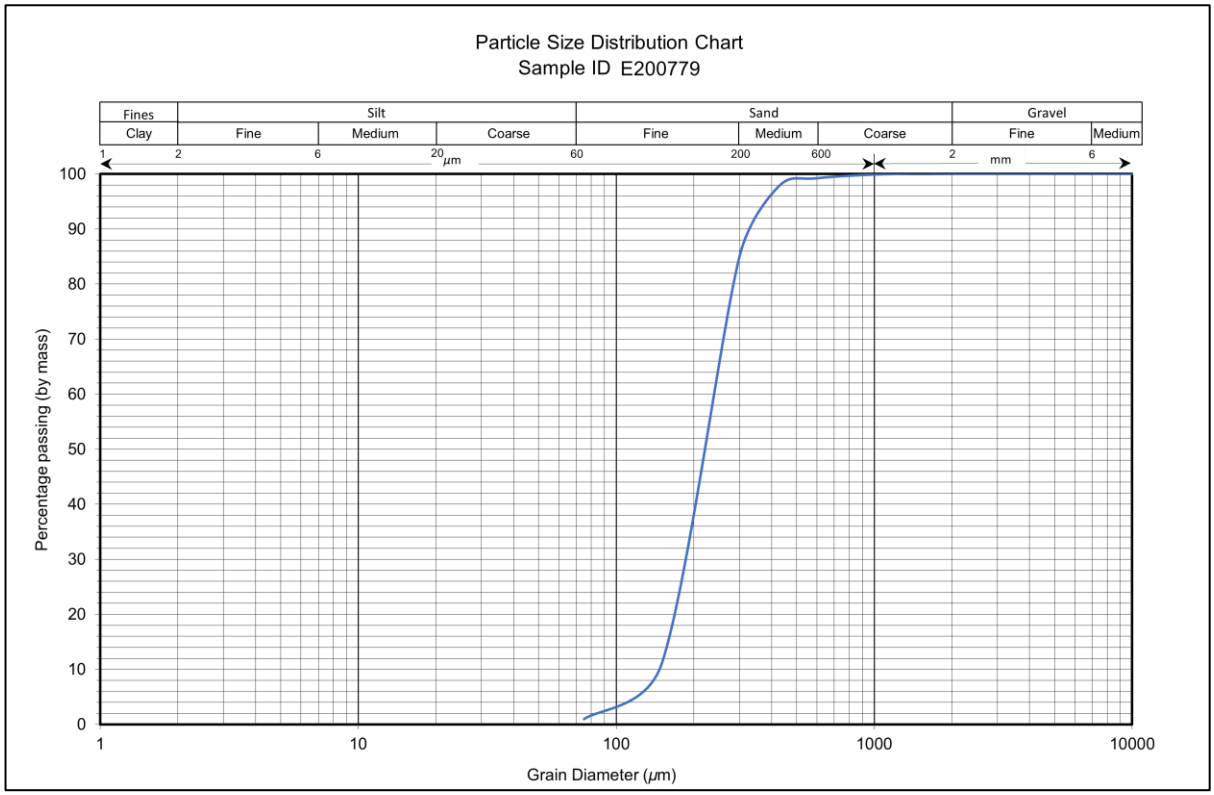


Sample ID:	E200698
Date:	10/06/2024

Weight of sample used (g)	52.9

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.20	0.38	100.00	1180
600-425	0.70	1.33	99.62	600
425-300	4.90	9.32	98.29	425
300-150	40.70	77.38	88.97	300
150-75	5.70	10.84	11.60	150
<75	0.40	0.76	0.76	75
Total	52.60	100.00		0

E200779 Cumulative Histogram & PSD Data

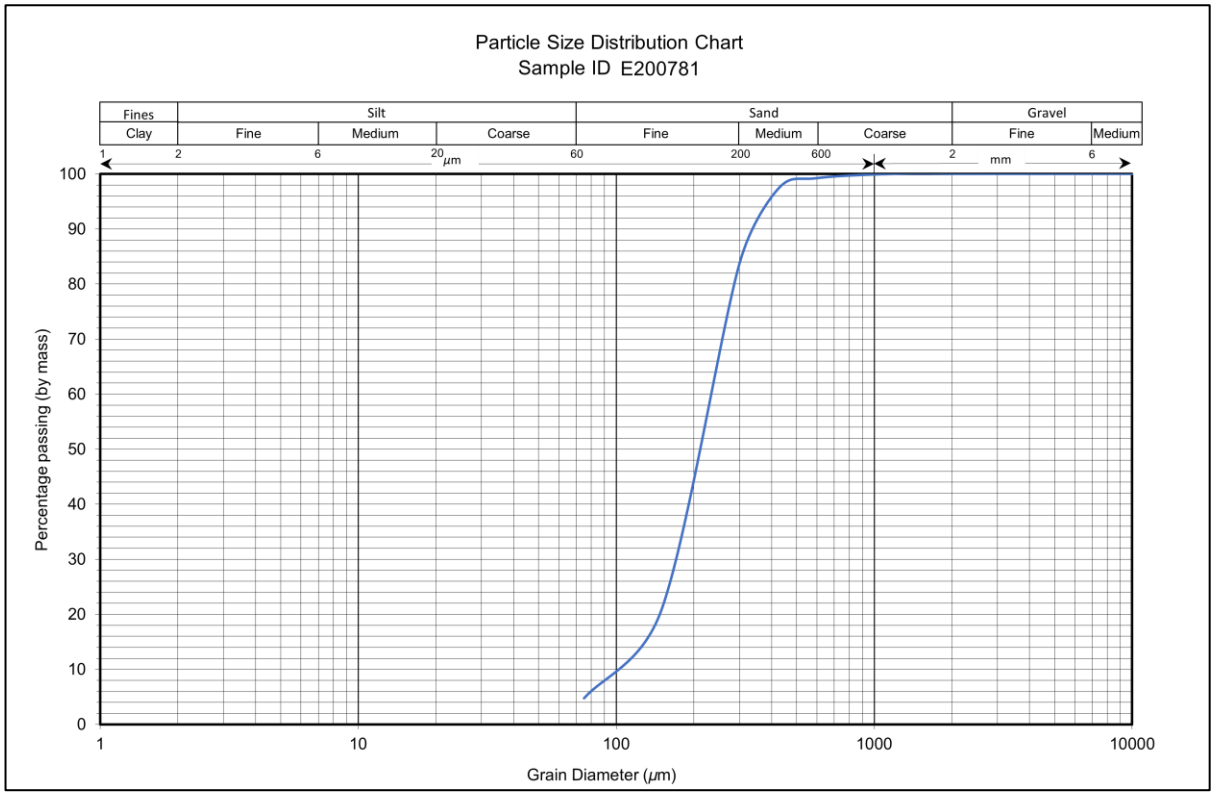


Sample ID:	E200779
Date:	10/06/2024

Weight of sample used (g)	52.1

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.40	0.77	100.00	1180
600-425	0.80	1.55	99.23	600
425-300	6.60	12.77	97.68	425
300-150	38.20	73.89	84.91	300
150-75	5.20	10.06	11.03	150
<75	0.50	0.97	0.97	75
Total	51.70	100.00		0

E200781 Cumulative Histogram & PSD Data

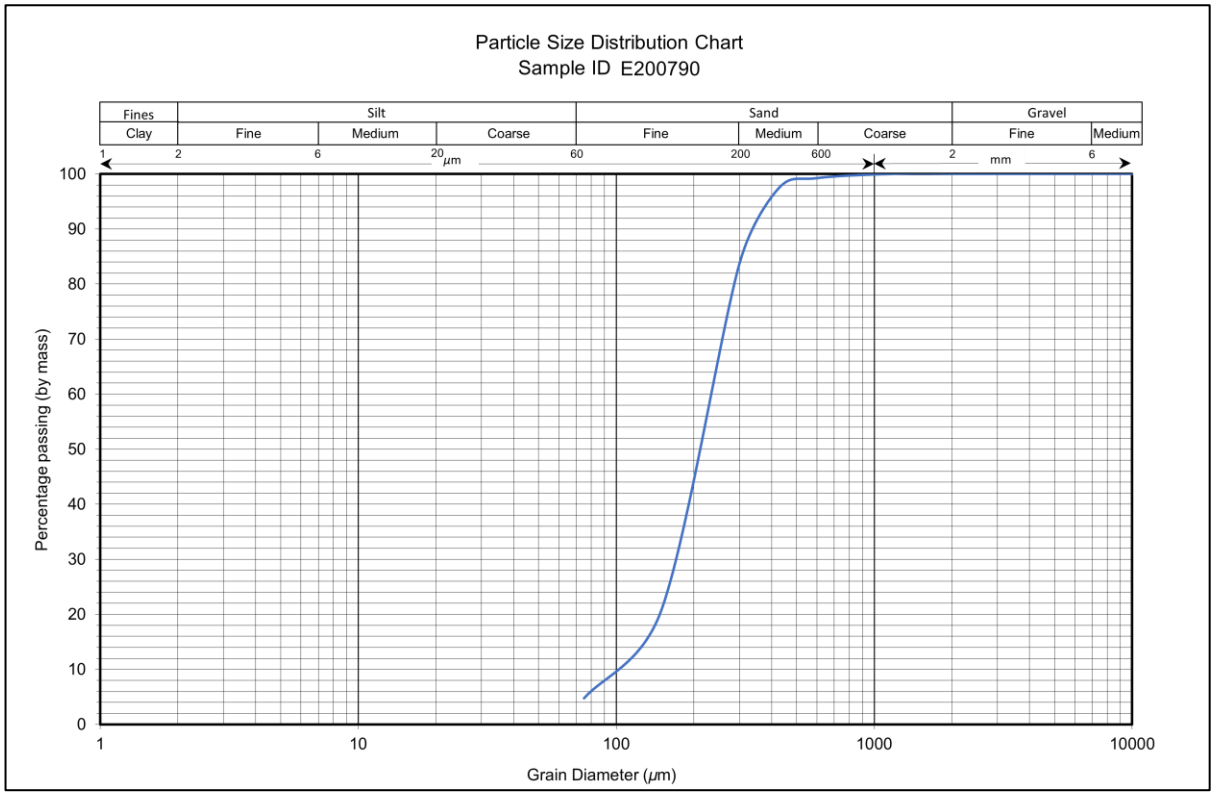


Sample ID:	E200781
Date:	11/06/2024

Weight of sample used (g)	53.2

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.40	0.76	100.00	1180
600-425	1.00	1.90	99.24	600
425-300	7.20	13.69	97.34	425
300-150	33.00	62.74	83.65	300
150-75	8.50	16.16	20.91	150
<75	2.50	4.75	4.75	75
Total	52.60	100.00		0

E200790 Cumulative Histogram & PSD Data

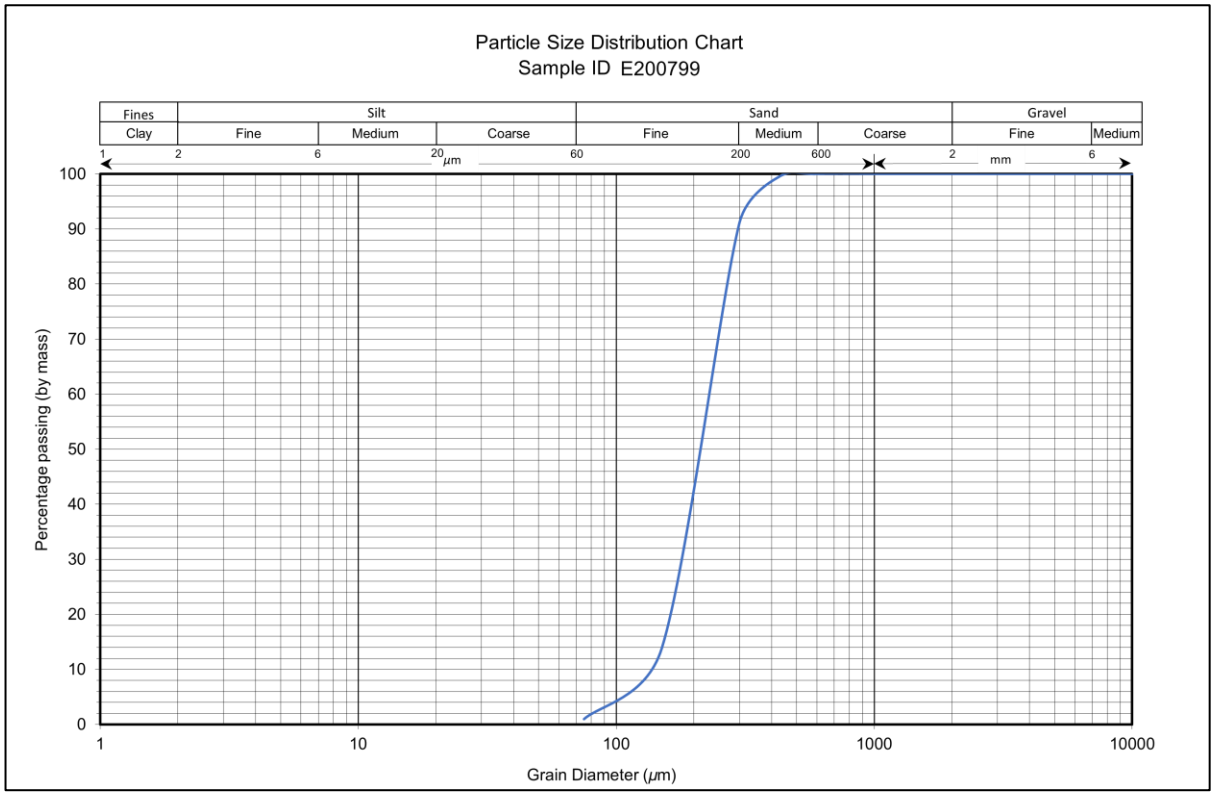


Sample ID:	E200790
Date:	11/06/2024

Weight of sample used (g)	51.1

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.00	0.00	100.00	1180
600-425	0.30	0.59	100.00	600
425-300	3.20	6.30	99.41	425
300-150	40.40	79.53	93.11	300
150-75	6.40	12.60	13.58	150
<75	0.50	0.98	0.98	75
Total	50.80	100.00		0

E200799 Cumulative Histogram & PSD Data

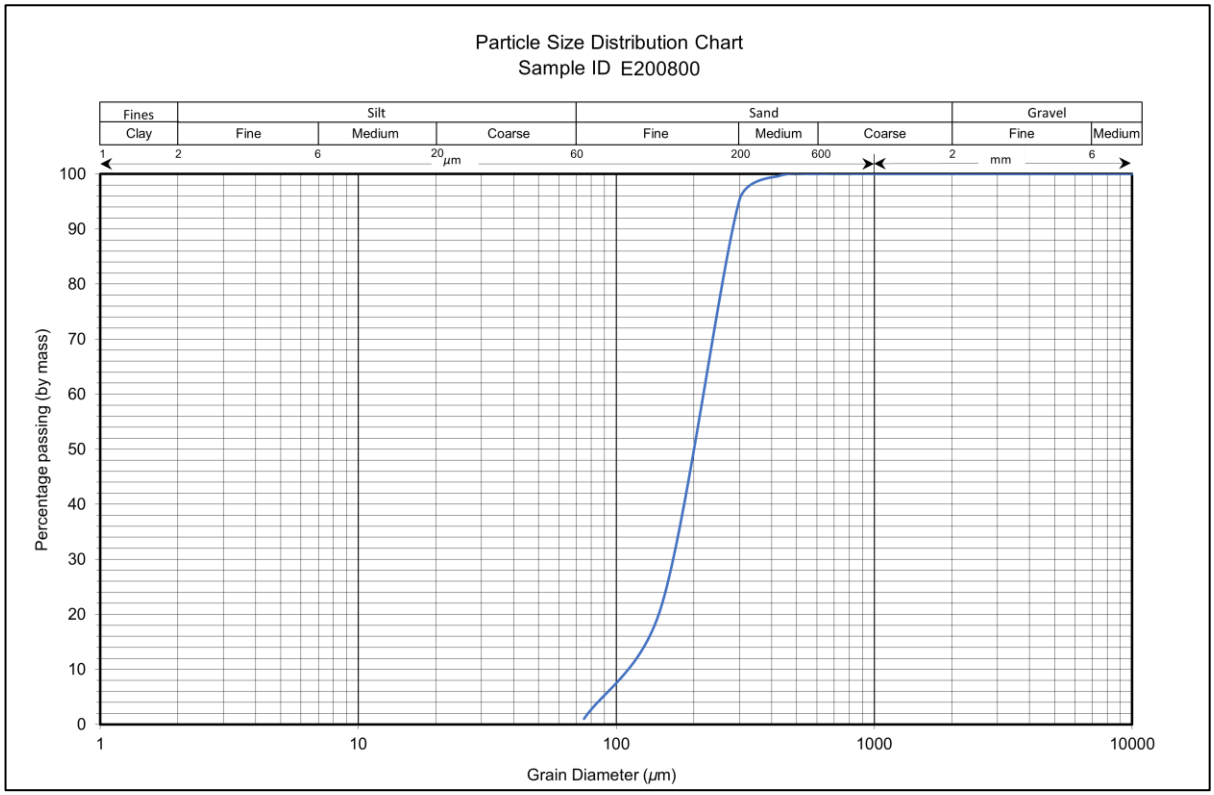


Sample ID:	E200799
Date:	11/06/2024

Weight of sample used (g)	52.0

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.00	0.00	100.00	1180
600-425	0.30	0.58	100.00	600
425-300	4.30	8.35	99.42	425
300-150	39.80	77.28	91.07	300
150-75	6.60	12.82	13.79	150
<75	0.50	0.97	0.97	75
Total	51.50	100.00		0

E200800 Cumulative Histogram & PSD Data

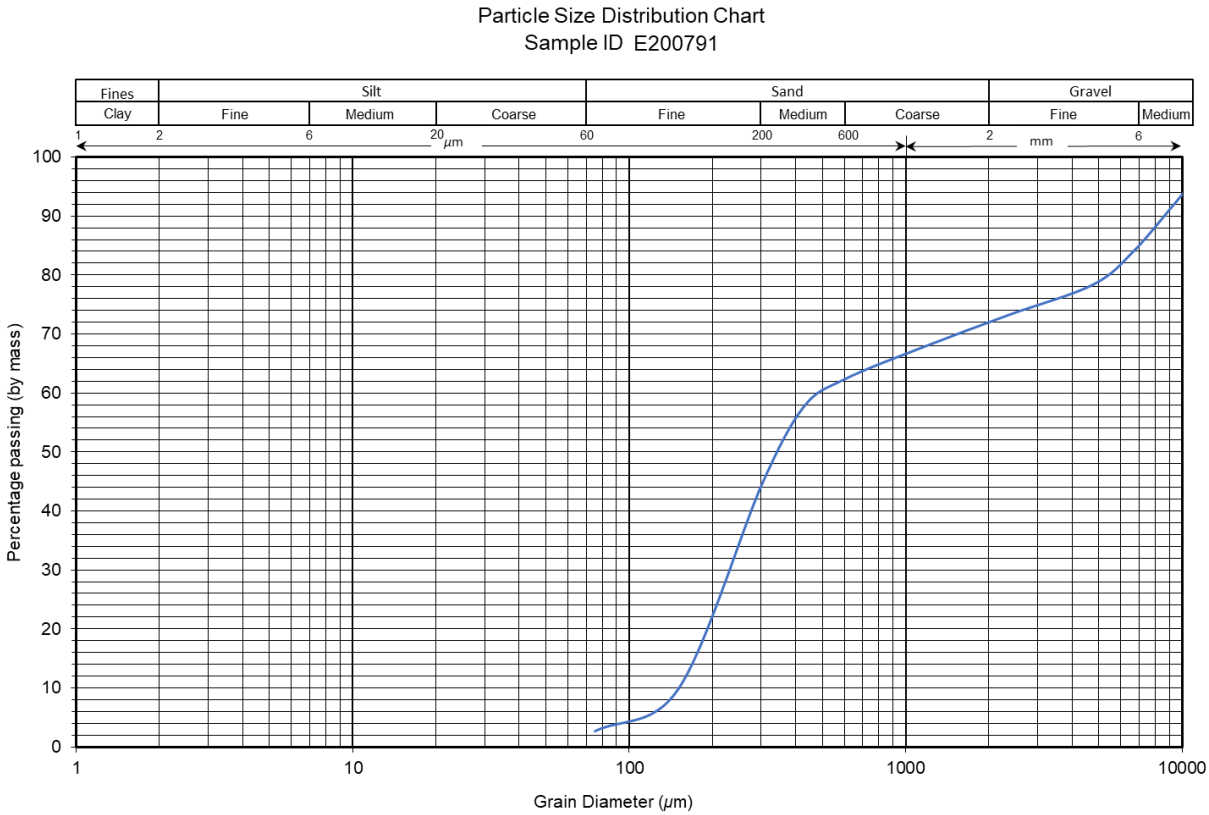


Sample ID:	E200800
Date:	11/06/2024

Weight of sample used (g)	51.0

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.00	0.00	100.00	1180
600-425	0.20	0.40	100.00	600
425-300	2.20	4.37	99.60	425
300-150	37.10	73.61	95.24	300
150-75	10.40	20.63	21.63	150
<75	0.50	0.99	0.99	75
Total	50.40	100.00		0

E200791 Cumulative Histogram & PSD Data

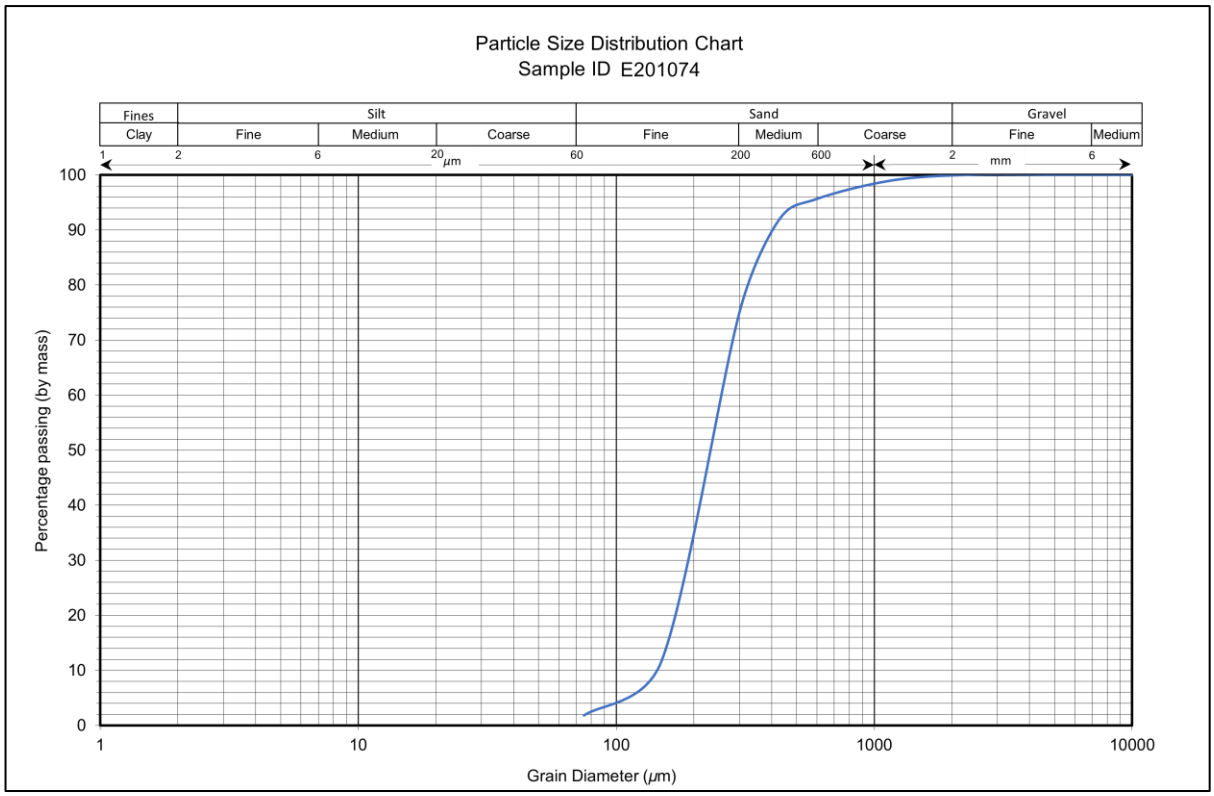


Sample ID:	E200791
Date:	11/06/2024

Weight of sample used (g)	62.3

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	4.60	7.60	100.00	13200
9500-6700	5.00	8.26	92.40	9500
6700-4750	3.50	5.79	84.13	6700
4750-2360	3.10	5.12	78.35	4750
2360-1180	3.20	5.29	73.22	2360
1180-600	3.40	5.62	67.93	1180
600-425	2.90	4.79	62.31	600
425-300	8.00	13.22	57.52	425
300-150	20.90	34.55	44.30	300
150-75	4.30	7.11	9.75	150
<75	1.60	2.64	2.64	75
Total	60.50	100.00		0

E201074 Cumulative Histogram & PSD Data

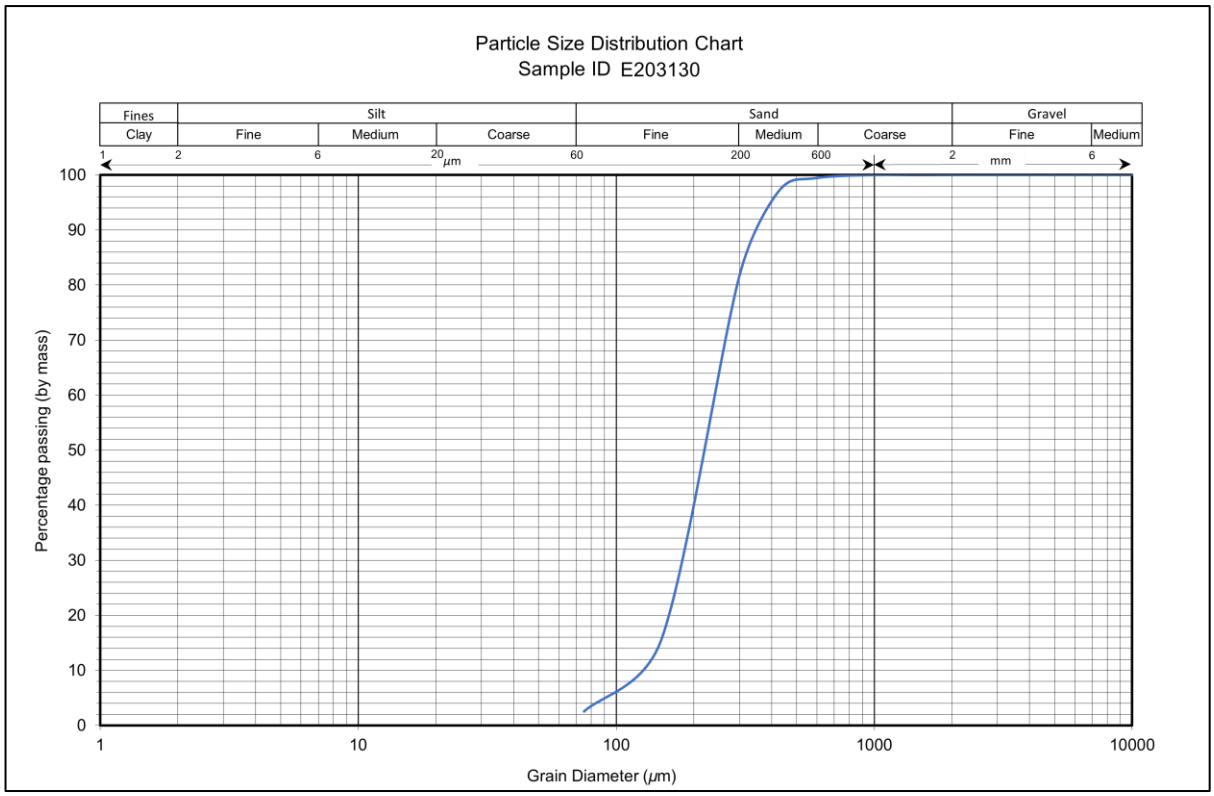


Sample ID:	E201074
Date:	11/06/2024

Weight of sample used (g)	51.3

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.50	0.99	100.00	2360
1180-600	1.70	3.38	99.01	1180
600-425	2.00	3.98	95.63	600
425-300	8.40	16.70	91.65	425
300-150	31.80	63.22	74.95	300
150-75	5.00	9.94	11.73	150
<75	0.90	1.79	1.79	75
Total	50.30	100.00		0

E203130 Cumulative Histogram & PSD Data

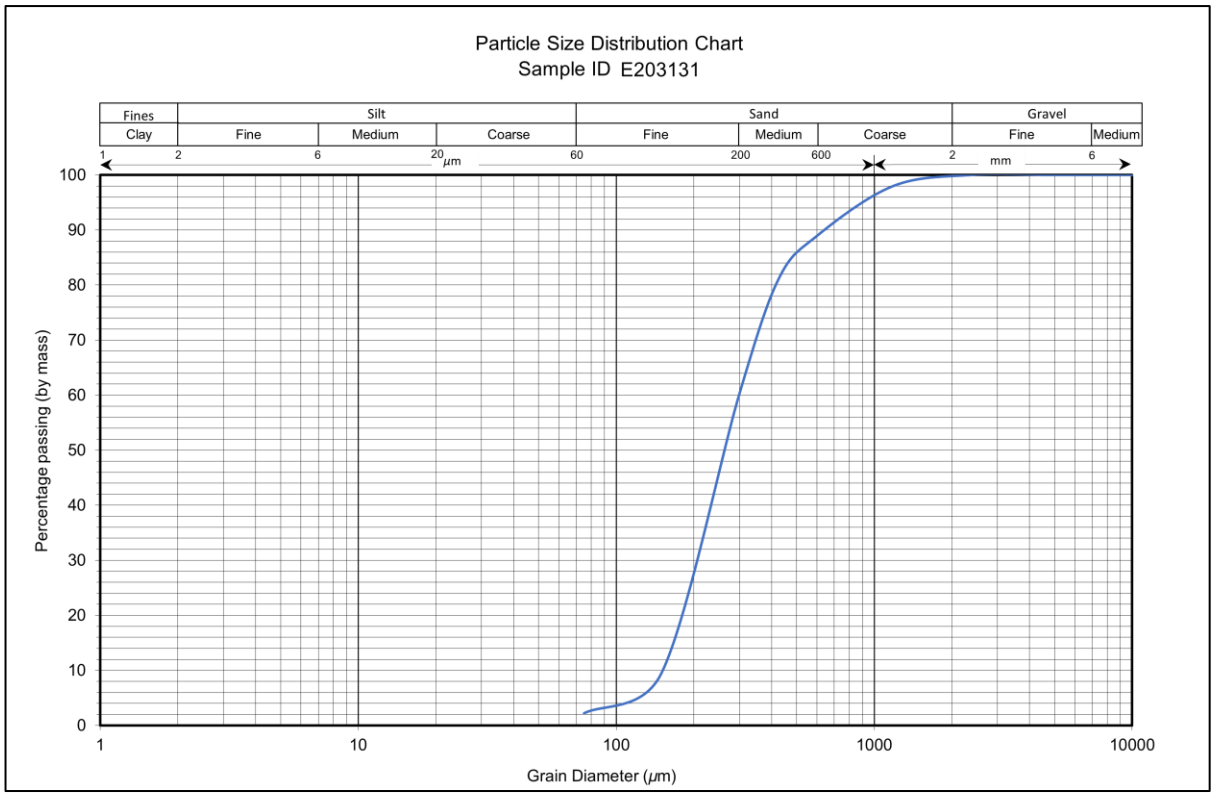


Sample ID:	E203130
Date:	11/06/2024

Weight of sample used (g)	52.7

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.30	0.57	100.00	1180
600-425	1.30	2.49	99.43	600
425-300	8.00	15.33	96.93	425
300-150	34.40	65.90	81.61	300
150-75	6.90	13.22	15.71	150
<75	1.30	2.49	2.49	75
Total	52.20	100.00		0

E203131 Cumulative Histogram & PSD Data

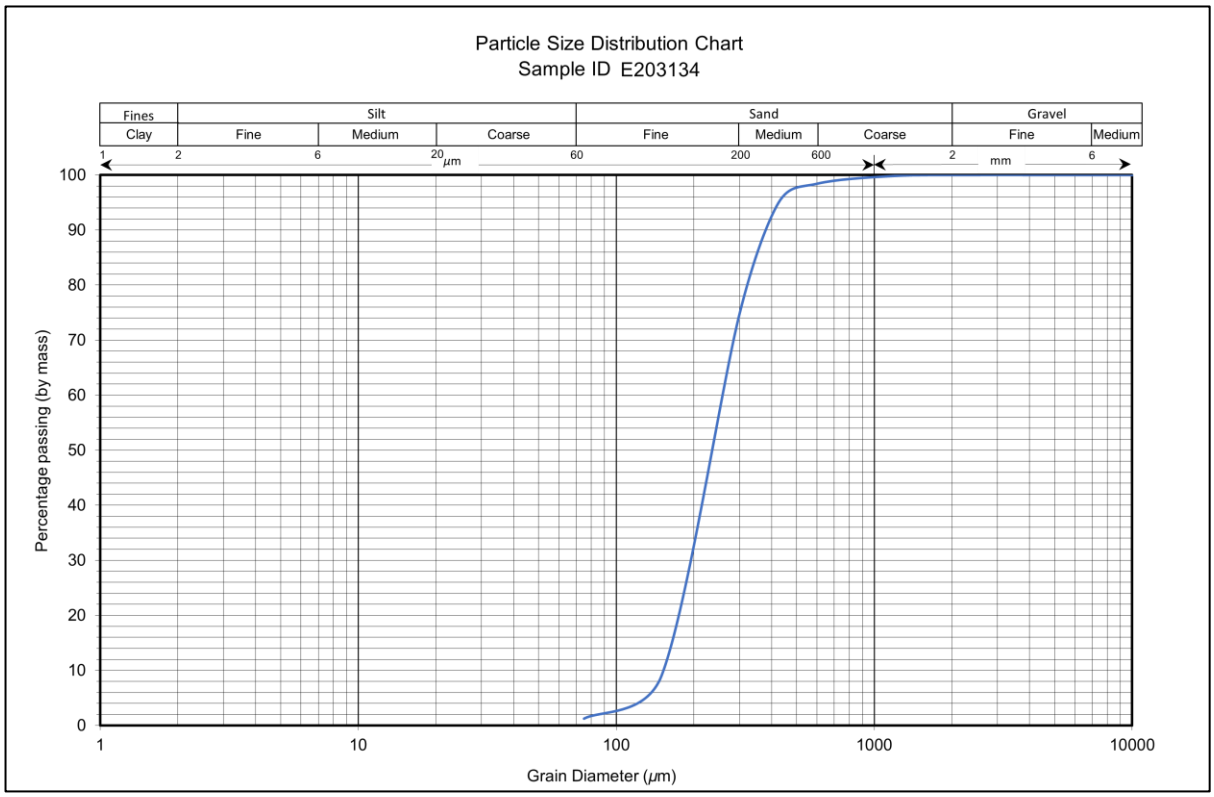


Sample ID:	E203131
Date:	11/06/2024

Weight of sample used (g)	55.1

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	1.10	2.03	100.00	2360
1180-600	4.90	9.02	97.97	1180
600-425	4.30	7.92	88.95	600
425-300	11.30	20.81	81.03	425
300-150	27.50	50.64	60.22	300
150-75	4.00	7.37	9.58	150
<75	1.20	2.21	2.21	75
Total	54.30	100.00		0

E203134 Cumulative Histogram & PSD Data

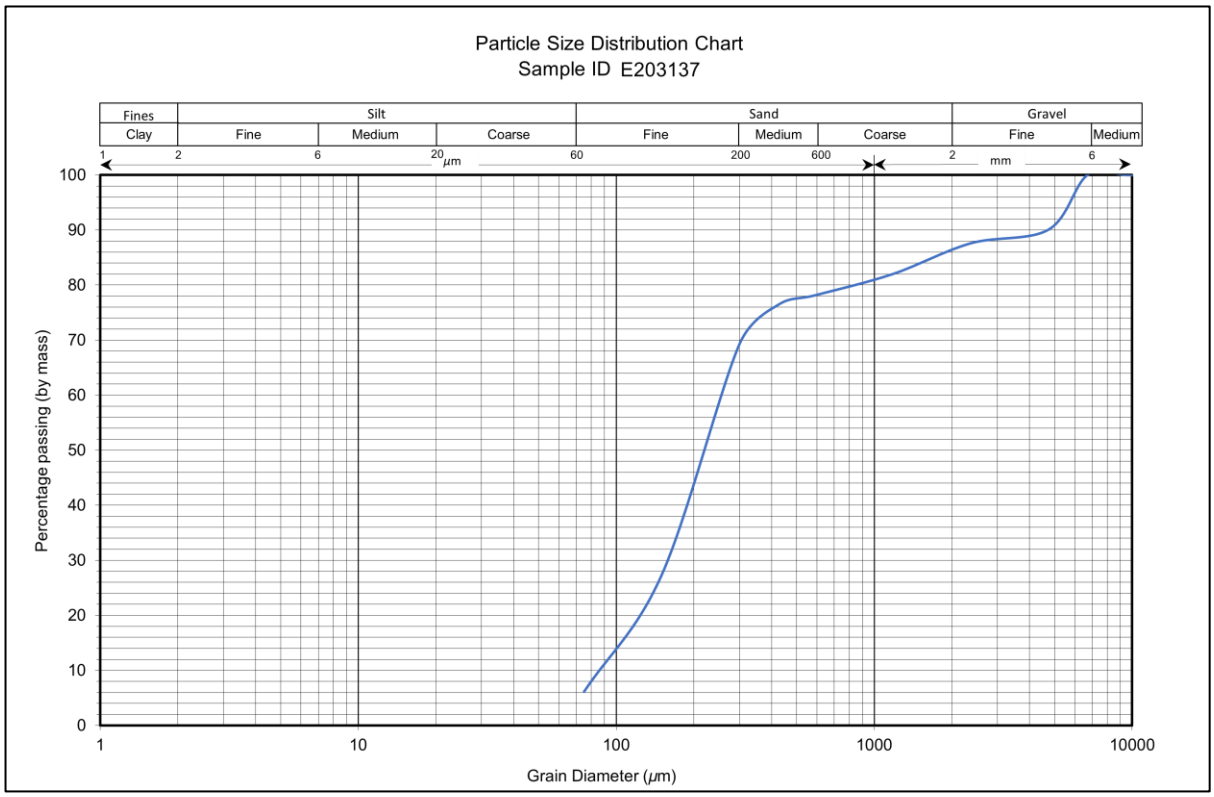


Sample ID:	E203134
Date:	19/06/2024

Weight of sample used (g)	57.7

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.10	0.17	100.00	2360
1180-600	0.80	1.40	99.83	1180
600-425	2.00	3.50	98.43	600
425-300	11.60	20.28	94.93	425
300-150	37.50	65.56	74.65	300
150-75	4.50	7.87	9.09	150
<75	0.70	1.22	1.22	75
Total	57.20	100.00		0

E203137 Cumulative Histogram & PSD Data

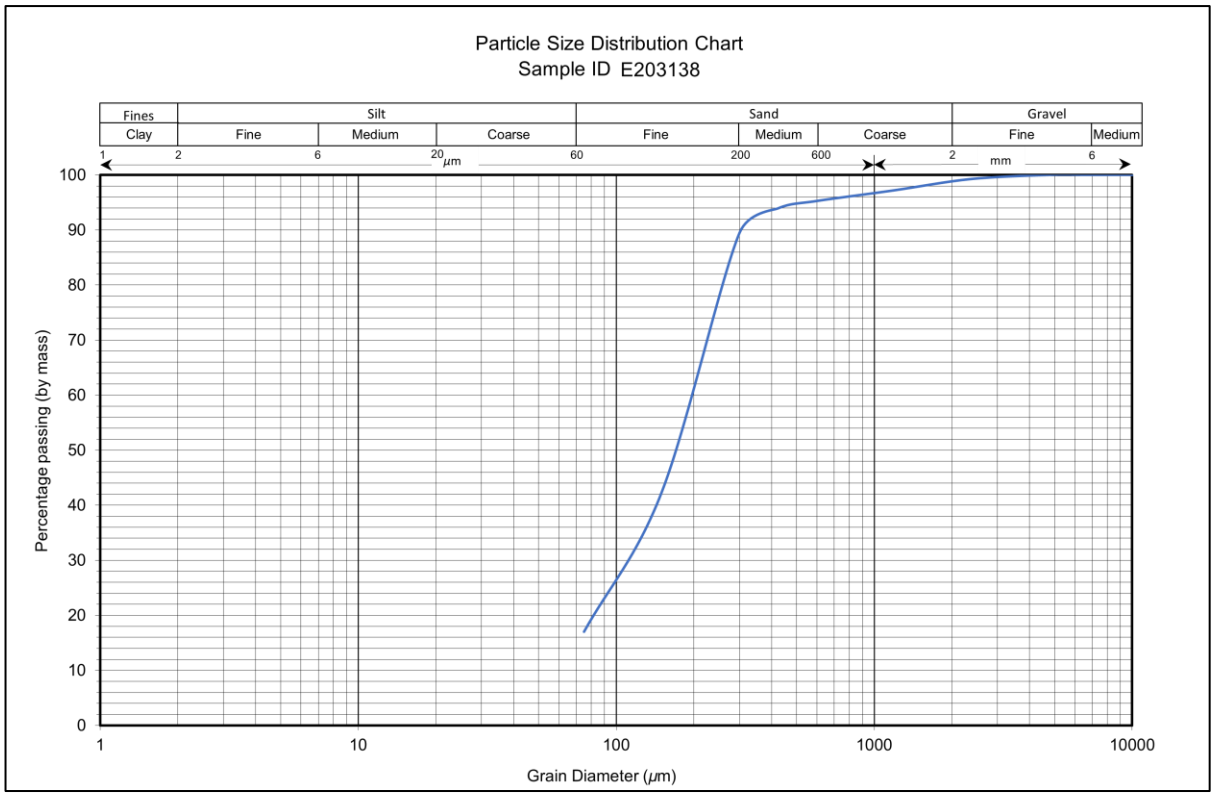


Sample ID:	E203137
Date:	19/06/2024

Weight of sample used (g)	56.6

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	5.50	9.89	100.00	6700
4750-2360	1.40	2.52	90.11	4750
2360-1180	3.10	5.58	87.59	2360
1180-600	2.10	3.78	82.01	1180
600-425	1.00	1.80	78.24	600
425-300	4.00	7.19	76.44	425
300-150	23.30	41.91	69.24	300
150-75	11.80	21.22	27.34	150
<75	3.40	6.12	6.12	75
Total	55.60	100.00		0

E203138 Cumulative Histogram & PSD Data

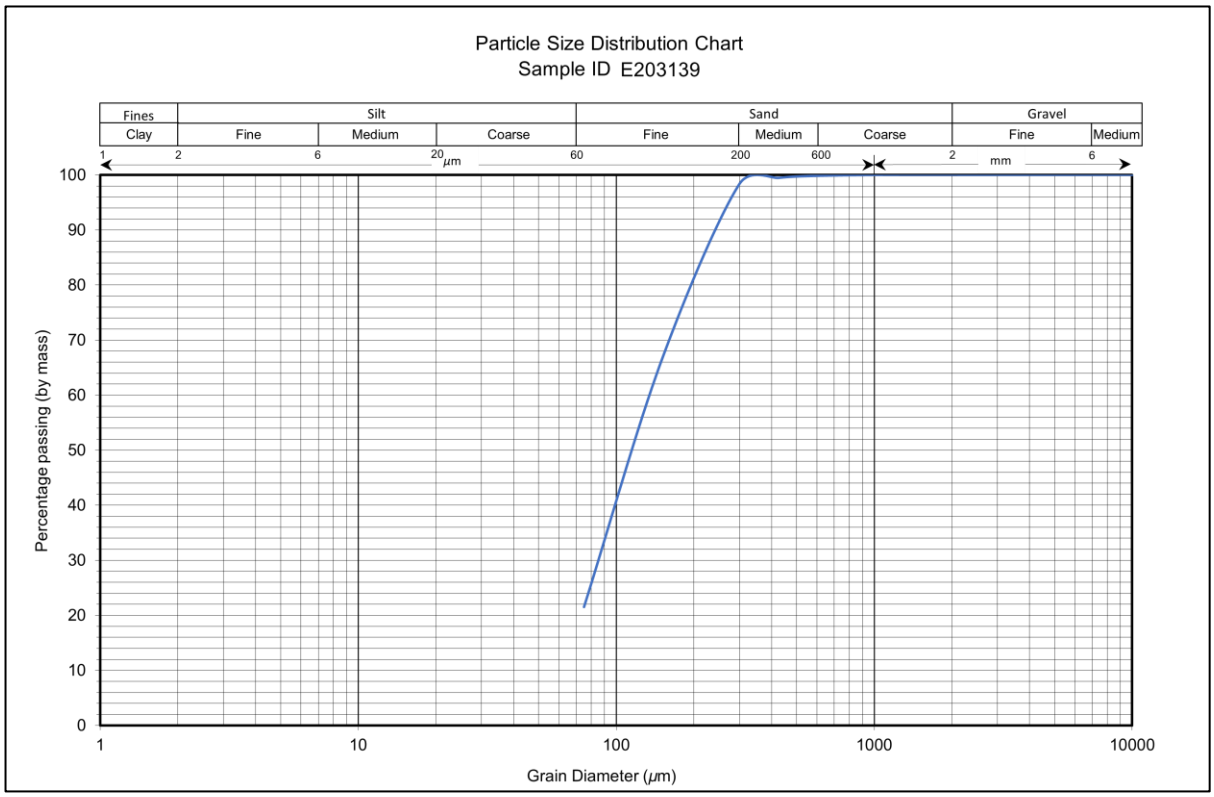


Sample ID:	E203138
Date:	19/06/2024

Weight of sample used (g)	53.4

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.40	0.76	100.00	4750
2360-1180	1.10	2.08	99.24	2360
1180-600	1.00	1.89	97.16	1180
600-425	0.70	1.32	95.27	600
425-300	2.40	4.54	93.95	425
300-150	24.90	47.07	89.41	300
150-75	13.40	25.33	42.34	150
<75	9.00	17.01	17.01	75
Total	52.90	100.00		0

E203139 Cumulative Histogram & PSD Data

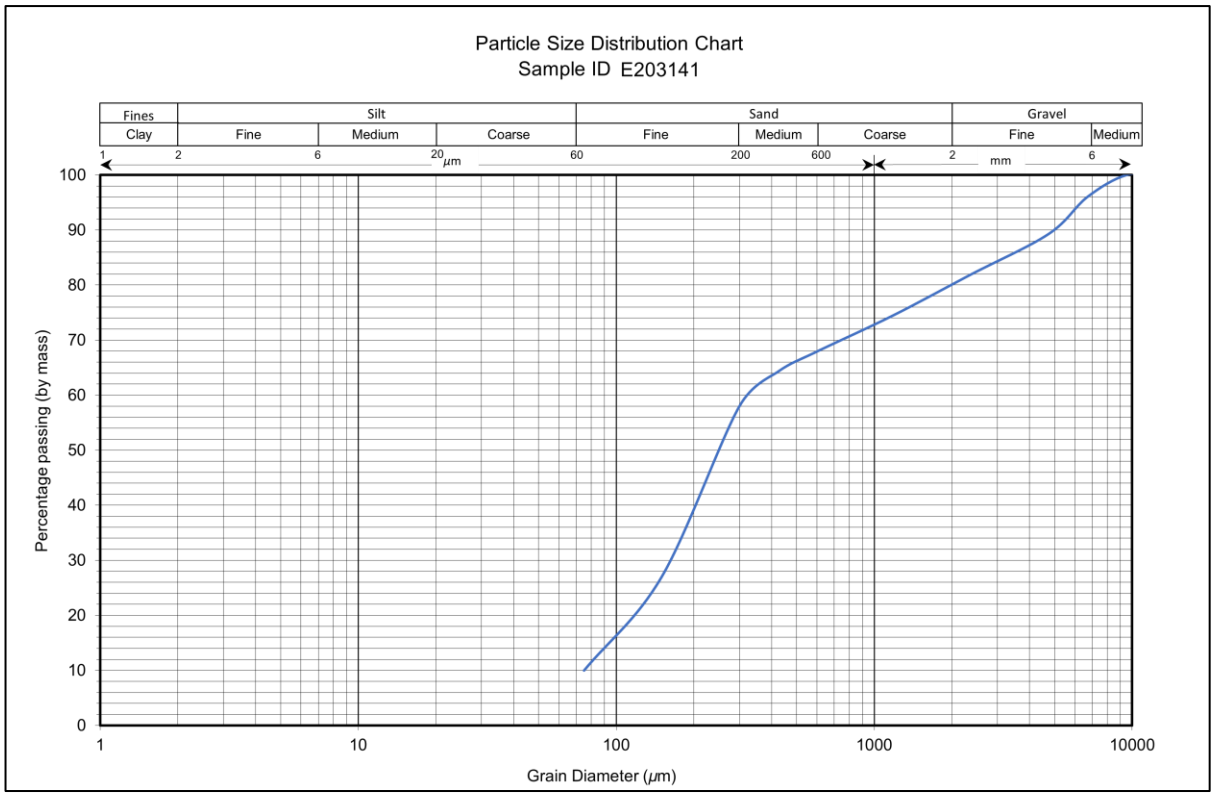


Sample ID:	E203139
Date:	19/06/2024

Weight of sample used (g)	53.7

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.10	0.19	100.00	1180
600-425	0.20	0.37	99.81	600
425-300	0.60	1.12	99.44	425
300-150	17.10	31.96	98.32	300
150-75	24.00	44.86	66.36	150
<75	11.50	21.50	21.50	75
Total	53.50	100.00		0

E203141 Cumulative Histogram & PSD Data

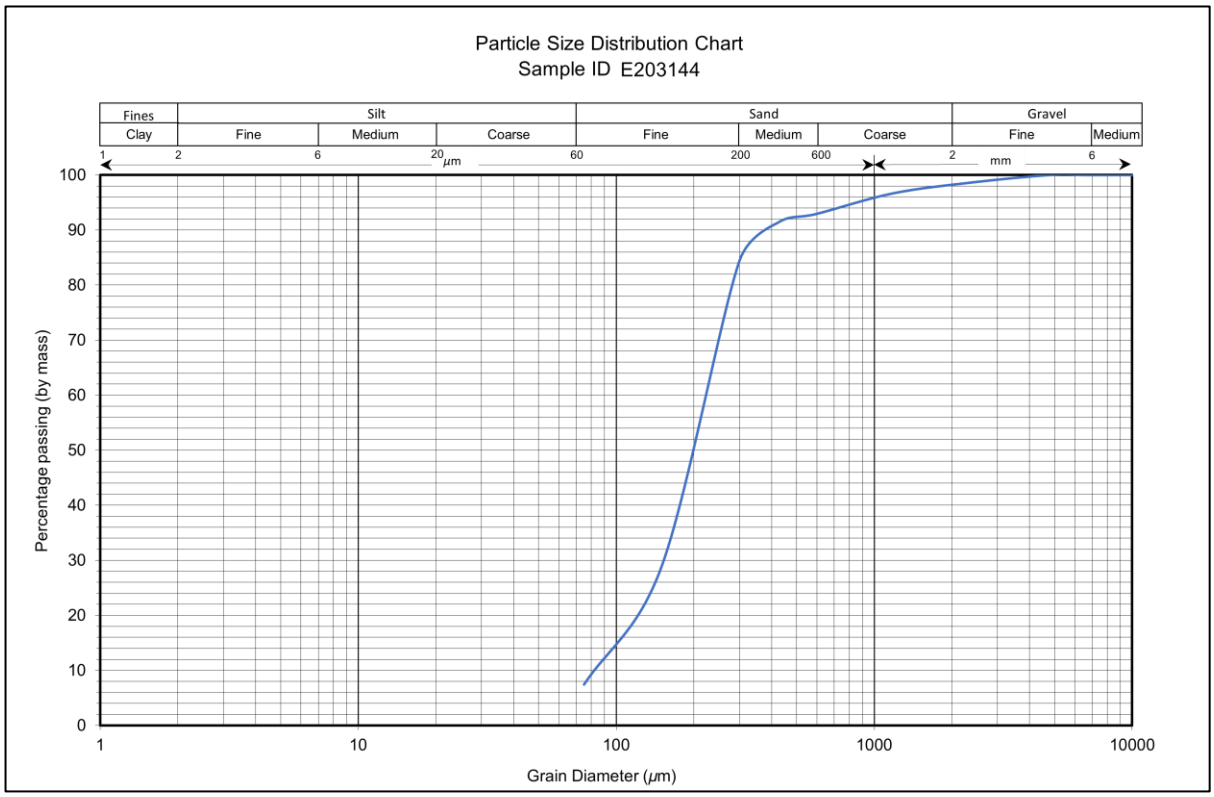


Sample ID:	E203141
Date:	19/06/2024

Weight of sample used (g)	55.7

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	2.20	3.99	100.00	9500
6700-4750	3.70	6.70	96.01	6700
4750-2360	4.10	7.43	89.31	4750
2360-1180	4.10	7.43	81.88	2360
1180-600	3.60	6.52	74.46	1180
600-425	2.00	3.62	67.93	600
425-300	3.50	6.34	64.31	425
300-150	17.10	30.98	57.97	300
150-75	9.40	17.03	26.99	150
<75	5.50	9.96	9.96	75
Total	55.20	100.00		0

E203144 Cumulative Histogram & PSD Data

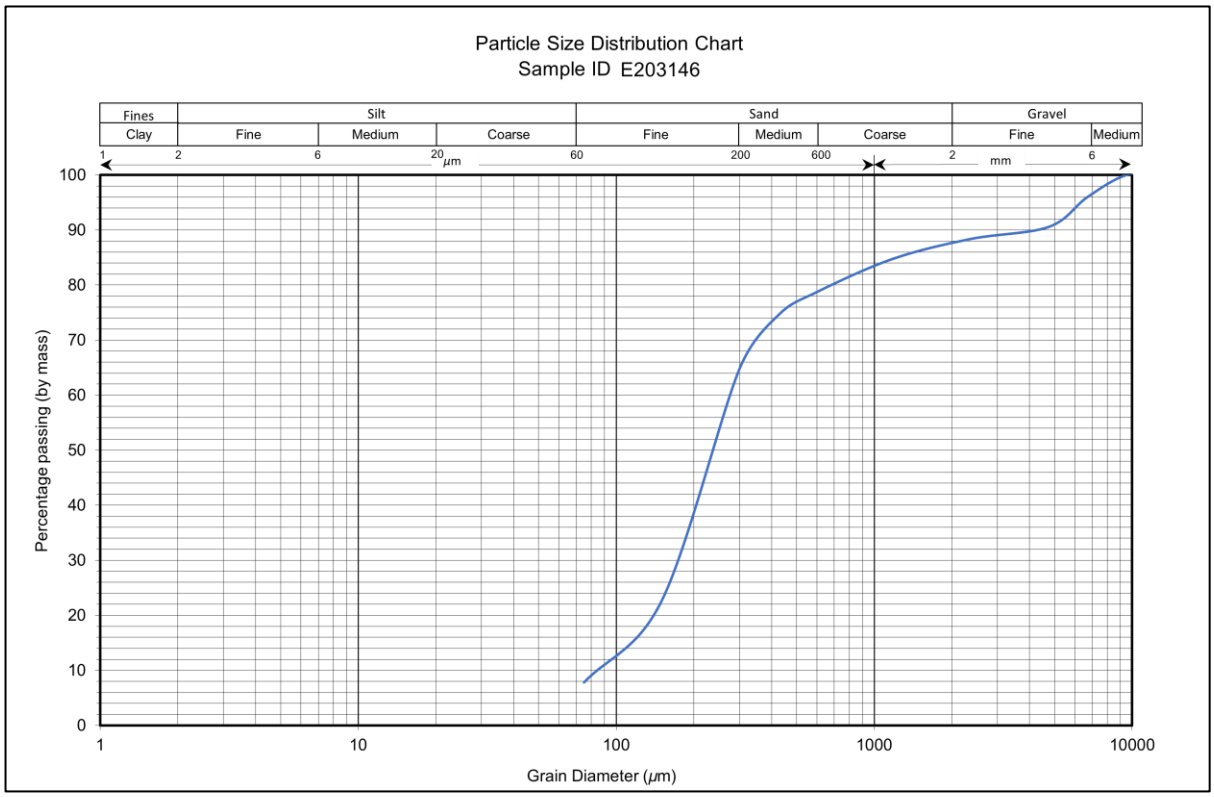


Sample ID:	E203144
Date:	19/06/2024

Weight of sample used (g)	52.1

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.70	1.37	100.00	4750
2360-1180	1.00	1.95	98.63	2360
1180-600	1.90	3.71	96.68	1180
600-425	0.80	1.56	92.97	600
425-300	3.60	7.03	91.41	425
300-150	28.40	55.47	84.38	300
150-75	11.00	21.48	28.91	150
<75	3.80	7.42	7.42	75
Total	51.20	100.00		0

E203146 Cumulative Histogram & PSD Data

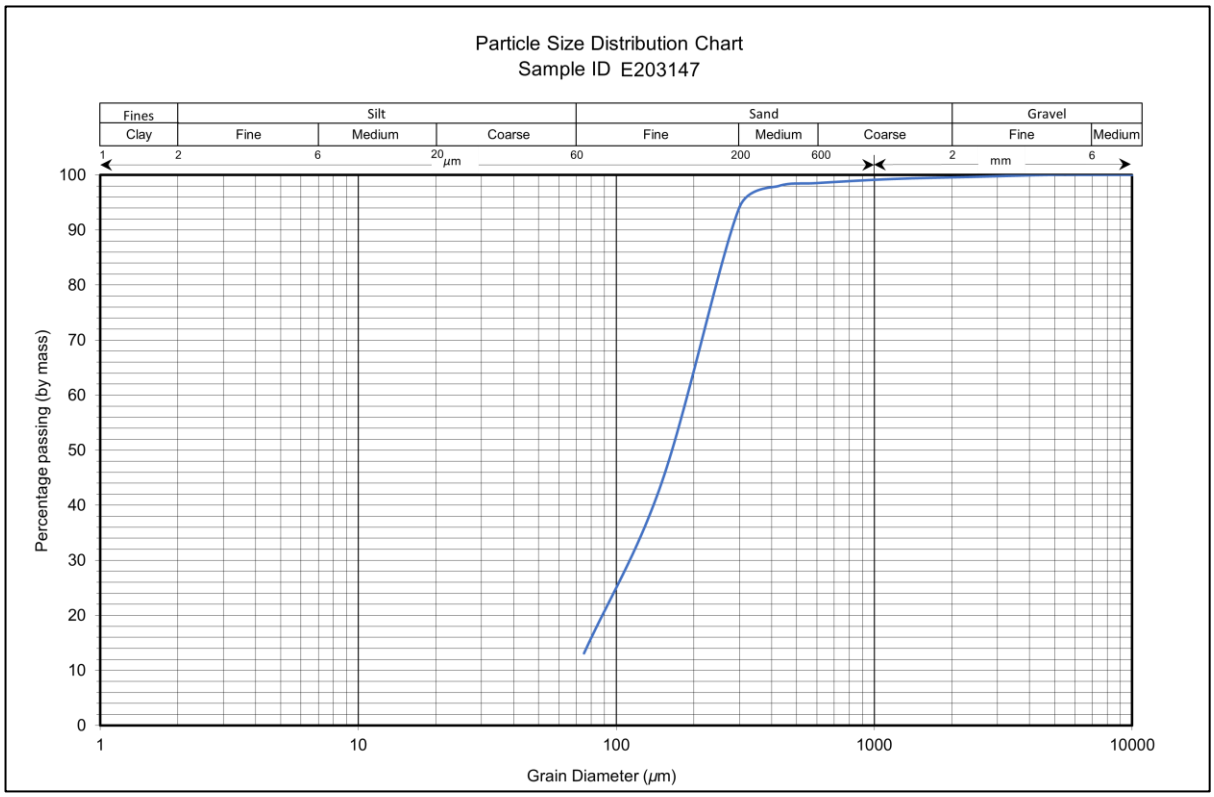


Sample ID:	E203146
Date:	19/06/2024

Weight of sample used (g)	50.7

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	2.00	4.01	100.00	9500
6700-4750	2.70	5.41	95.99	6700
4750-2360	1.10	2.20	90.58	4750
2360-1180	1.80	3.61	88.38	2360
1180-600	3.00	6.01	84.77	1180
600-425	2.10	4.21	78.76	600
425-300	4.90	9.82	74.55	425
300-150	21.00	42.08	64.73	300
150-75	7.40	14.83	22.65	150
<75	3.90	7.82	7.82	75
Total	49.90	100.00		0

E203147 Cumulative Histogram & PSD Data

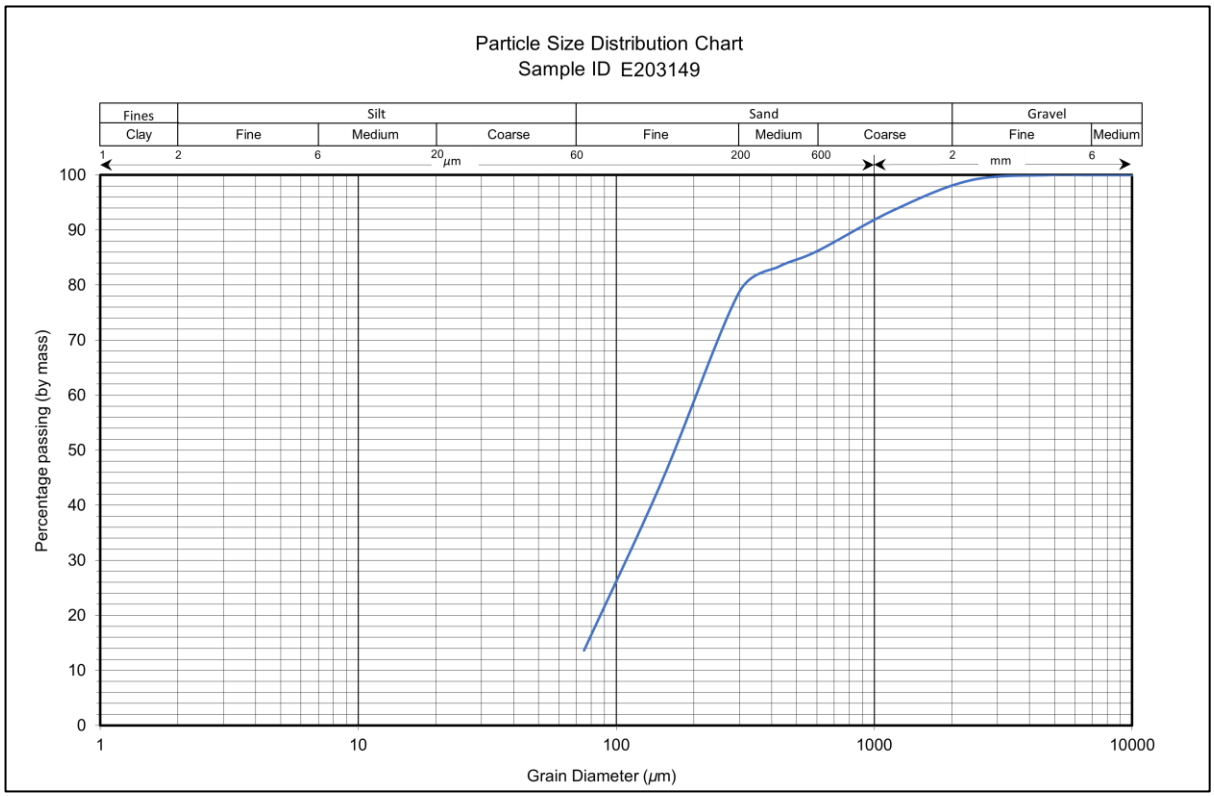


Sample ID:	E203147
Date:	20/06/2024

Weight of sample used (g)	54.9

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.20	0.37	100.00	4750
2360-1180	0.20	0.37	99.63	2360
1180-600	0.40	0.74	99.26	1180
600-425	0.30	0.55	98.52	600
425-300	2.10	3.87	97.97	425
300-150	27.10	50.00	94.10	300
150-75	16.80	31.00	44.10	150
<75	7.10	13.10	13.10	75
Total	54.20	100.00		0

E203149 Cumulative Histogram & PSD Data

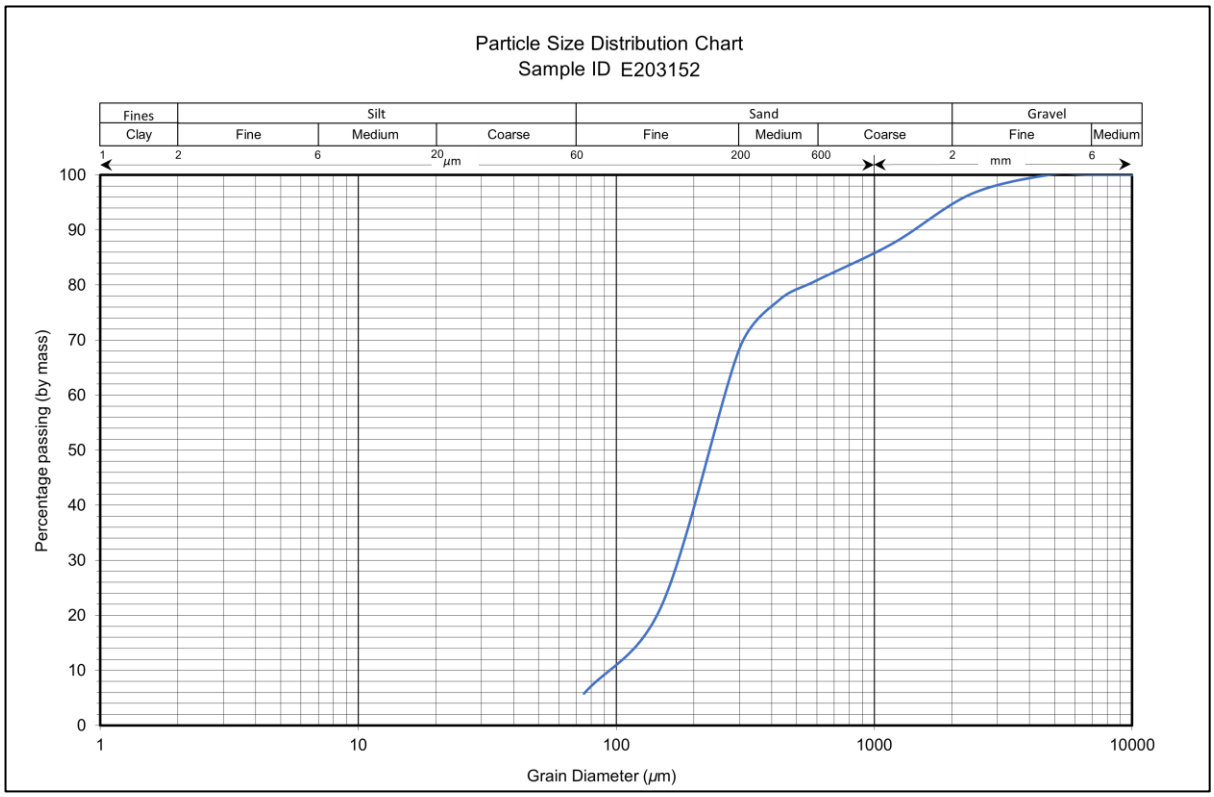


Sample ID:	E203149
Date:	20/06/2024

Weight of sample used (g)	53.1

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.50	0.95	100.00	4750
2360-1180	2.90	5.49	99.05	2360
1180-600	3.90	7.39	93.56	1180
600-425	1.50	2.84	86.17	600
425-300	2.40	4.55	83.33	425
300-150	18.20	34.47	78.79	300
150-75	16.20	30.68	44.32	150
<75	7.20	13.64	13.64	75
Total	52.80	100.00		0

E203152 Cumulative Histogram & PSD Data

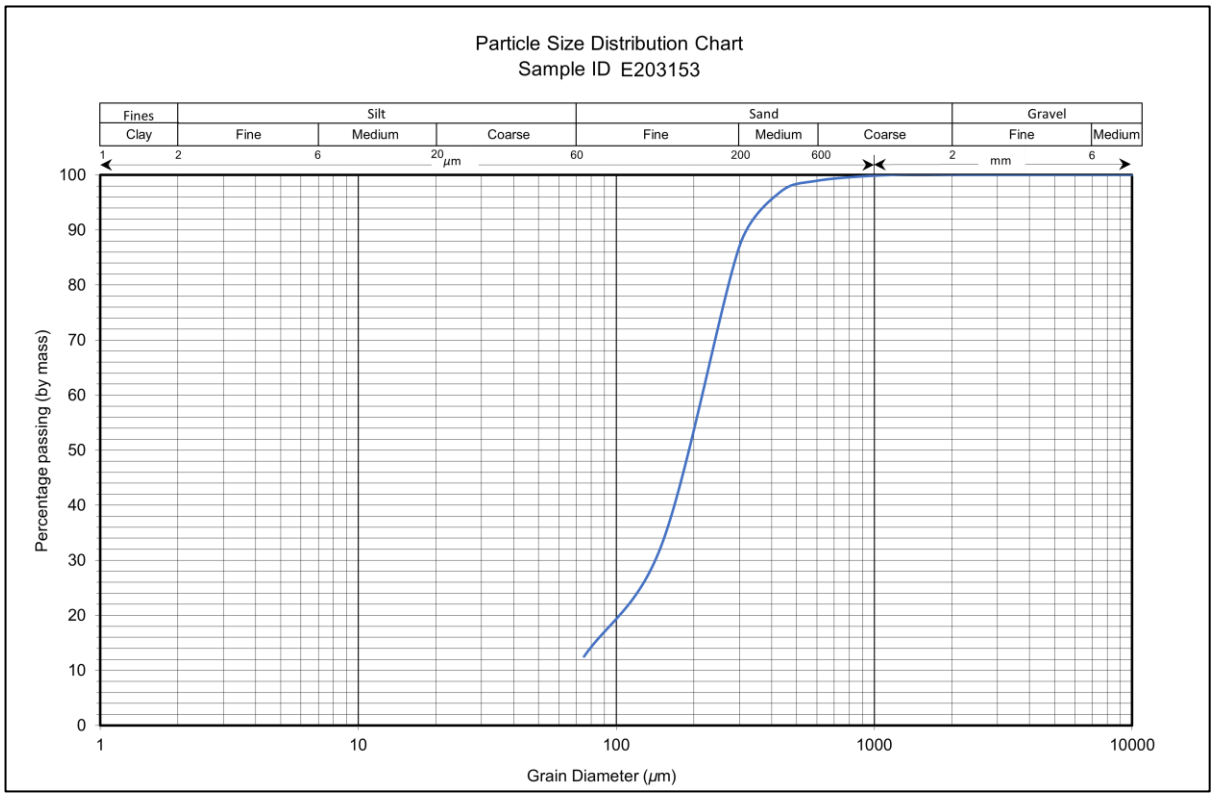


Sample ID:	E203152
Date:	20/06/2024

Weight of sample used (g)	54.0

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	1.90	3.53	100.00	4750
2360-1180	4.80	8.92	96.47	2360
1180-600	3.60	6.69	87.55	1180
600-425	2.00	3.72	80.86	600
425-300	4.70	8.74	77.14	425
300-150	25.10	46.65	68.40	300
150-75	8.60	15.99	21.75	150
<75	3.10	5.76	5.76	75
Total	53.80	100.00		0

E203153 Cumulative Histogram & PSD Data

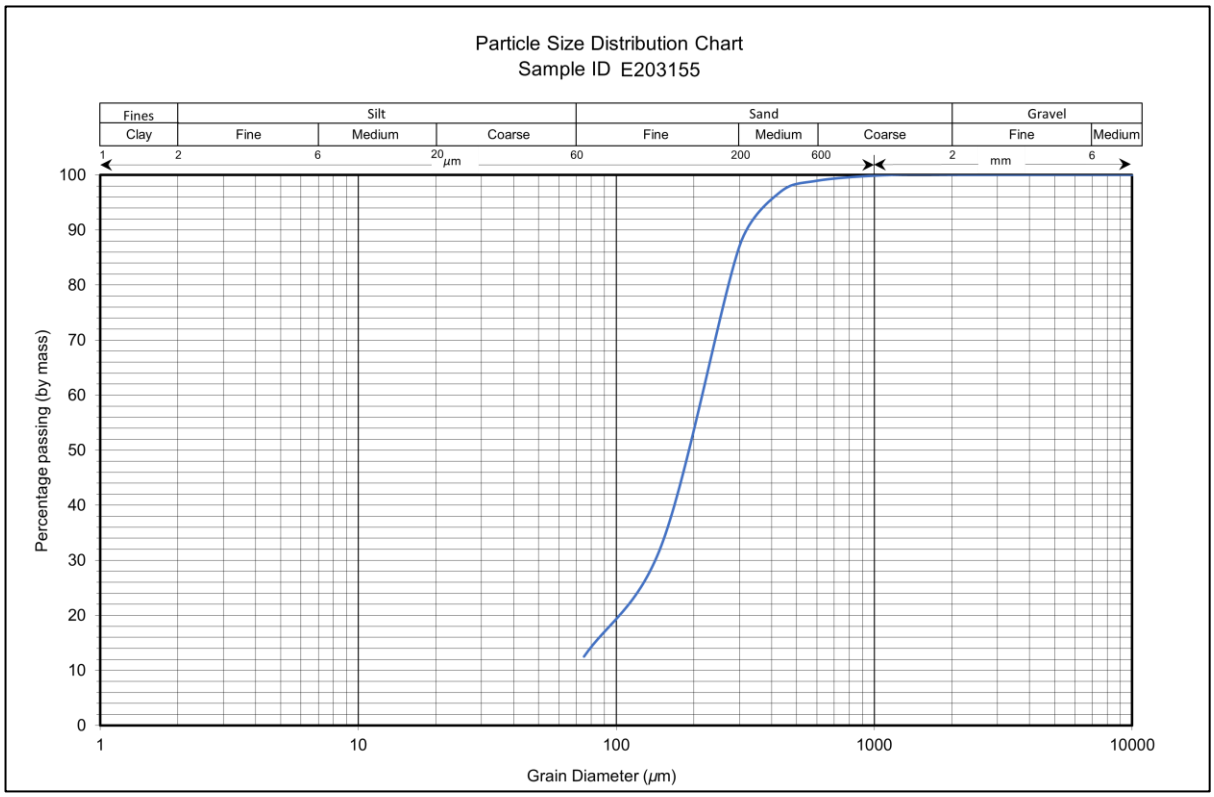


Sample ID:	E203153
Date:	20/06/2024

Weight of sample used (g)	56.9

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.00	0.00	100.00	4750
2360-1180	0.00	0.00	100.00	2360
1180-600	0.60	1.07	100.00	1180
600-425	1.30	2.32	98.93	600
425-300	5.40	9.63	96.61	425
300-150	30.40	54.19	86.99	300
150-75	11.40	20.32	32.80	150
<75	7.00	12.48	12.48	75
Total	56.10	100.00		0

E203155 Cumulative Histogram & PSD Data

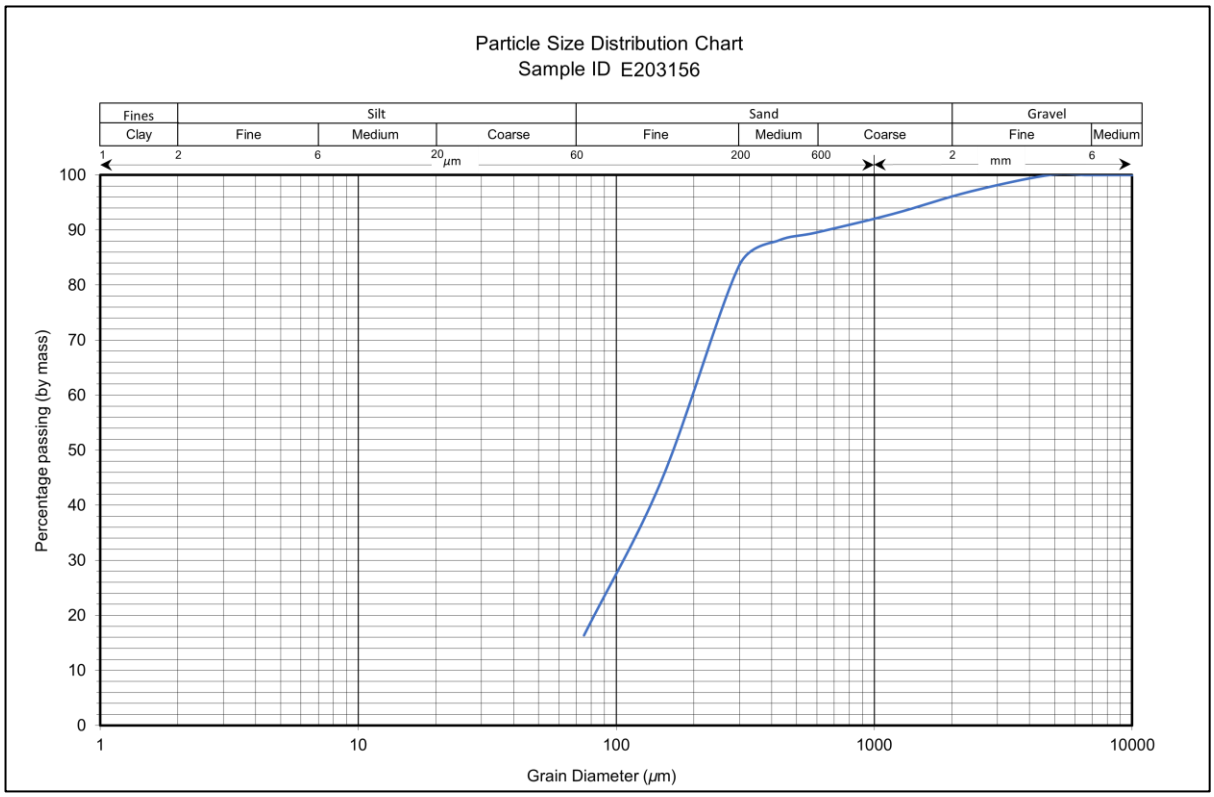


Sample ID:	E203155
Date:	20/06/2024

Weight of sample used (g)	56.7

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	2.40	4.26	100.00	4750
2360-1180	2.80	4.96	95.74	2360
1180-600	2.60	4.61	90.78	1180
600-425	1.90	3.37	86.17	600
425-300	3.70	6.56	82.80	425
300-150	23.70	42.02	76.24	300
150-75	12.80	22.70	34.22	150
<75	6.50	11.52	11.52	75
Total	56.40	100.00		0

E203156 Cumulative Histogram & PSD Data

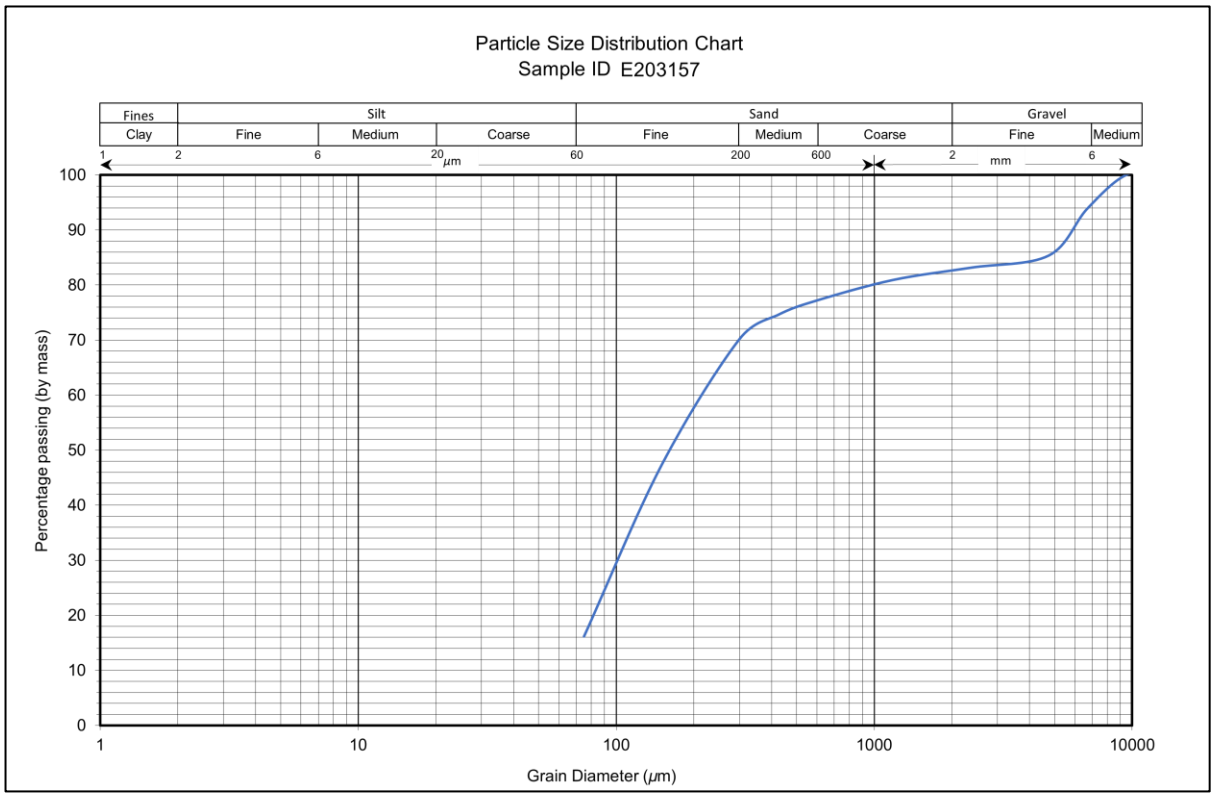


Sample ID:	E203156
Date:	20/06/2024

Weight of sample used (g)	54.3

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	1.60	2.97	100.00	4750
2360-1180	2.20	4.09	97.03	2360
1180-600	1.80	3.35	92.94	1180
600-425	0.80	1.49	89.59	600
425-300	2.40	4.46	88.10	425
300-150	21.00	39.03	83.64	300
150-75	15.20	28.25	44.61	150
<75	8.80	16.36	16.36	75
Total	53.80	100.00		0

E203157 Cumulative Histogram & PSD Data

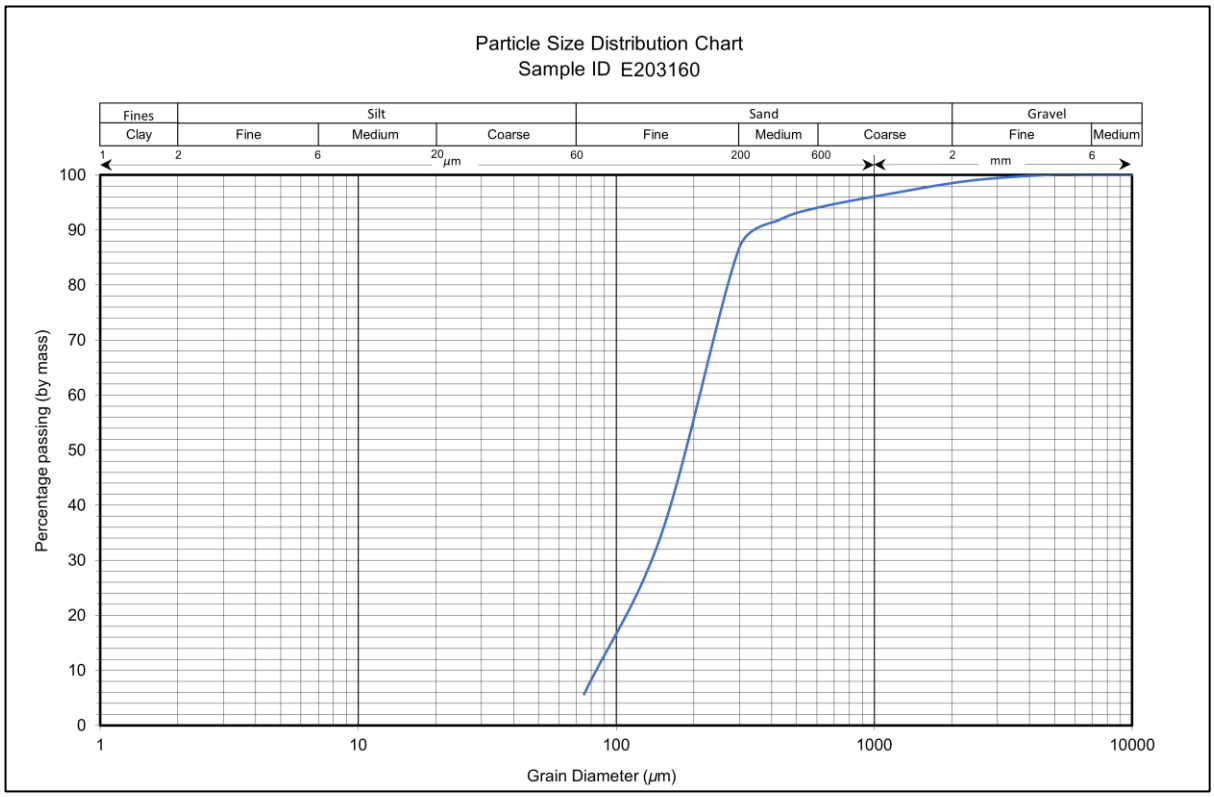


Sample ID:	E203157
Date:	20/06/2024

Weight of sample used (g)	54.4

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	3.30	6.12	100.00	9500
6700-4750	4.60	8.53	93.88	6700
4750-2360	1.20	2.23	85.34	4750
2360-1180	1.20	2.23	83.12	2360
1180-600	2.00	3.71	80.89	1180
600-425	1.40	2.60	77.18	600
425-300	2.40	4.45	74.58	425
300-150	12.30	22.82	70.13	300
150-75	16.80	31.17	47.31	150
<75	8.70	16.14	16.14	75
Total	53.90	100.00		0

E203160 Cumulative Histogram & PSD Data



Sample ID:	E203160
Date:	21/06/2024

Weight of sample used (g)	56.9

Retained on Sieve size (microns)	wt. (g)	wt.%	cum.% passing	Sieve size (microns)
>13200	**0.00**	0.00	100.00	**19000**
13200-9500	0.00	0.00	100.00	13200
9500-6700	0.00	0.00	100.00	9500
6700-4750	0.00	0.00	100.00	6700
4750-2360	0.60	1.06	100.00	4750
2360-1180	1.30	2.29	98.94	2360
1180-600	1.50	2.64	96.65	1180
600-425	1.30	2.29	94.01	600
425-300	2.80	4.93	91.73	425
300-150	29.50	51.94	86.80	300
150-75	16.60	29.23	34.86	150
<75	3.20	5.63	5.63	75
Total	56.80	100.00		0

APPENDIX 2: CLAY AND FINE SILT SETTLING

Clay and fine silt settling analysis was undertaken in accordance with AS 1141.33:2015 with results summarised below. The standard specifies where the separation of sediments is unclear, results should be specified “indeterminate”, however, where possible, estimated C (Ratio by volume of Clay & Fine silt to Sand) has been indicated.

As per the Standard, there is no consistent relationship between the test result and the silt and clay fraction obtained by sieving. In general, however, the magnitude of the result of this test will be greater than the result passing the 75 µm sieve. This was verified with two comparatively sieved samples, however sample C113822 returned a C value lower than the clay silt fraction returned by sieving.

Sample Registration Number	Sand Volume - S (mL)	Clay & Fine Silt Volume - F (mL)	Ratio by volume of Clay & Fine silt to Sand - C (%)	Comments
C113811	98	~1*	1*	*Indeterminate*
C113821	72	9	13	
C113822	80	10	13	
C113823	82	4	5	
C113824	102	2*	2*	*Indeterminate*
C113825	72	16	22	
C113826	88	4	5	

* Estimated clay and fine silt volumes, and ratios of clay and fine silt to sand