

BOURBLES FARM, PREESALL, LANCASHIRE

Geological Information

1. Introduction

A series of boreholes were drilled across the area referenced as Bourbles Farm in two phases in 2021 and 2023. Bulk samples of the sand and gravel collected during the drilling were logged and representative samples for despatch for testing at a UKAS accredited laboratory. This testing mainly comprised particle size distribution (gradings), together a range of physical tests to determine the general properties of the gravel fraction.

A summary table of the borehole results with the recorded overburden and mineral thicknesses is given at the back of this document. The drilling confirms that the sand and gravel deposit is present in a relatively narrow zone trending north-west to south-east across the district (mapped as a storm beach deposit) where the mineral has a maximum thickness of around 6m, ranging from around 1m on the margins of the deposit. The drilling also confirms that there is very little overburden covering the mineral, only soils.

The borehole drilling confirms that the deposit is formed mainly of dark grey to black igneous sub-rounded to angular pebbles, with a range of purple and reddish brown rounded vein quartz and quartzite pebbles with occasional oversize cobbles present. The sand is mainly quartz grains. A typical bulk borehole sample is shown below.



2. Particle Size Distribution- Representative Borehole Samples

A total of 24 bulk borehole samples were laboratory tested and the overall mean grading for the sand and gravel deposit is given below.

LABORATORY TEST REPORT

TEST REQUIREMENTS: To determine the Ten Per Cent Fines Value (TFV) of aggregate sample 10mm and greater in accordance with BS 812: Part 111: 1990.

SAMPLE DETAILS:

Certificate of sampling received:	No
Laboratory Ref. No:	S95446
Client Ref. No:	21-18728 - 169269
Date and Time of Sampling:	Unknown
Date of Receipt at Lab:	04/06/2021
Date of Start of Test:	02/07/2021
Sampling Location:	Unknown
Name of Source:	Bourbles Farm
Method of Sampling:	Unknown
Sampled By:	Client (Test results apply to sample as received)
Tested By:	OW
Material Description:	10/20mm Gravel
Target Specification:	N/A

RESULTS:

Ten per cent fines value (SOAKED) = 300 kN

4. Assessment of Aggregate Properties

It is considered that the sand and gravel proved on the Bourbles Farm site can be processed and screened to create a range of concreting aggregates comprising sharp sand and both 10mm and 20mm gravel products. In addition, a 40mm material could also be produced (if required) for use in piling, drainage and other construction end-uses.

The initial laboratory testing of the borehole samples indicates that the gravel is suitable for use as a high-quality construction and concreting aggregate, following washing and screening to produce the required graded aggregate fractions. The coarse aggregate fraction (gravel) is considered to have the required strength and durability for use in a full range of concrete mixes. However, the final aggregate end-uses will be determined following further testing and field trials of the material.

It is considered that all saleable materials will be produced using "the markets most technologically advanced wet processing plant, resulting in consistent high specification aggregate products", as stated by the proposed plant supplier (CDE Ltd).



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Land at Bourbles Farm, Borehole Summary Table

Borehole ID	Easting	Northing	Surface Level (m AOD)	Overburden Thickness (m)	Base of Overburden (mAOD)	Mineral Thickness (m)	Base of Mineral (mAOD)
BF23-1	337922	447601	5.91	0.3	5.6	2.1	3.5
BF23-2	338003	447616	6.29	0.6	5.7	2.8	2.9
BF23-3	338084	447607	5.74	0.3	5.4	1.8	3.6
BF23-4	338199	447599	5.70	0.3	5.4	0.9	4.5
BF23-5	337953	447514	5.33	0.0	5.3	0.0	5.3
BF23-6	338102	447533	5.66	0.5	5.2	2.0	3.2
BF23-7	338150	447524	5.86	0.3	5.6	2.3	3.3
BF23-8	338205	447513	5.77	0.4	5.4	1.6	3.8
BF23-9	338119	447489	5.89	0.4	5.5	1.5	4.0
BF23-10	338197	447463	5.58	0.4	5.2	1.5	3.7
BF23-11	338069	447477	5.69	0.4	5.3	1.3	4.0
BF23-12	338145	447440	5.44	0.4	5.0	1.2	3.8
BF23-13	338118	447415	5.81	0.3	5.5	2.3	3.2
BF23-14	338185	447417	5.35	0.3	5.1	2.2	2.9
BF23-15	338071	447499	5.40	0.6	4.8	1.6	3.2
BF23-18	337989	447510	5.96	0.3	5.7	1.9	3.8
BF23-16	337708	447537	5.07	0.3	4.8	2.1	2.7
BF23-17	337710	447502	5.01	0.3	4.7	0.6	4.1
BF23-19	337740	447509	4.98	0.4	4.6	0.3	4.3
BF23-20	337675	447520	4.94	0.9	4.0	1.6	2.4
BFPW23-21	337113	447886	6.20	0.5	5.7	5.4	0.3
BFP 21-01	337616	447835	5.53	0.5	5.0	0.8	4.2
BFP 21-02	337693	447810	6.00	0.4	5.6	1.5	4.1
BFPW 21-03	337798	447755	6.32	0.9	5.4	1.7	3.7
BFP 21-04	337819	447628	6.29	0.9	5.4	2.9	2.3
BFP 21-05	337814	447690	6.65	0.4	6.3	3.6	2.8
BFP 21-06	337733	447607	6.18	0.9	5.3	3.3	2.0
BFP 21-07	337649	447688	6.47	0.4	6.1	3.6	2.5
BFP 21-08	337508	447531	4.95	0.4	4.6	BARREN	BARREN
BFP 21-09	337600	447535	5.34	0.7	4.6	1.1	3.5
BFP 21-10	337632	447482	5.56	0.4	5.2	2.4	2.8
BFP 21-11	337712	447512	5.07	2.5	2.6	1.0	1.6
BFP 21-12	337655	447595	5.02	2.3	2.7	1.4	1.3
BFPW 21-13	337590	447696	5.64	0.9	4.7	2.0	2.7
BFPW 21-14	337870	447613	6.18	0.4	5.8	3.2	2.3
BFP 21-15	337966	447622	6.33	0.5	5.8	2.6	3.2
BFPW 21-16	338046	447642	6.08	0.7	5.4	1.9	3.5
BFP 21-17	338167	447608	5.70	0.8	4.9	1.9	3.0
BFP 21-18	337462	447778	6.36	0.6	5.8	BARREN	BARREN
BFP 21-19	337295	447855	6.60	0.3	6.3	5.1	1.2
BFP 21-20	337265	447797	5.94	0.4	5.5	4.6	0.9
BFP 21-21	337154	447822	6.10	0.3	5.8	5.9	-0.1
BFP 21-22	337171	447868	6.71	0.3	6.4	5.6	0.8
BFP 21-23	337094	447872	5.73	3.1	2.6	2.1	0.5
BFP 21-24	338013	447696	5.91	0.5	5.4	1.7	3.7
BFP 21-25	338116	447677	5.81	0.3	5.5	1.5	4.0
BFP 21-26	338181	447649	4.90	1.6	3.3	BARREN	BARREN