

The water-soluble sulphates in the Folkestone Formation were noted to be 3.7 - 19mg/l, with a pH of 6.2 – 8.8, from chemical laboratory testing.

According to BRE Special Digest 1, 2005, 'Concrete in Aggressive Ground' a Sulphate Design Class of DS-1 could be used for sub-surface concrete in contact with the Folkestone Formation. Table C1 of the Digest indicated an ACEC (Aggressive Chemical Environment for Concrete) classification of AC-1. **However, AC-2z was the recommendation based on previous results, therefore that should be adopted.**

6.6. Roads and Hardstanding Design

This section provides information relating to the construction of roads and hardstanding for the Made Ground, Aeolian Deposits and River Terrace Deposits that could be encountered at shallow depth.

6.6.1. Anticipated CBR Values and Frost Susceptibility

Topsoil

Roads and hardstanding should bypass Topsoil given the likely low strength, high compressibility and general variability.

Made Ground

Where roads and hardstanding are to be founded on Made Ground, a CBR value of 1% should be adopted, as a result of the variable nature of Made Ground in terms of consistency, strength and compressibility.

Head Deposits

Roads and hardstanding constructed on the cohesive Head Deposits should be designed based on a CBR value of 4.0%. This is based on reference to Table C1 of TRL1132 and average construction conditions. Based on wet conditions a CBR of 2.5% should be adopted, with dry conditions a CBR of 4.5% being applicable.

These clay-based soils (poorly drained) with plasticity indexes generally less than 20% are likely to be frost susceptible.

Head Deposits

Roads and hardstanding constructed on the granular Head Deposits should be designed based on a CBR value of 40%. This is based on reference to Table C1 of TRL1132 and average construction conditions. Based on wet conditions a CBR of 20% should be adopted, with dry conditions a CBR of 60% being applicable. Given that the soils encountered beneath the site had a clay content of <10% these deposits are likely to be non frost susceptible.

All formation levels for roads and hardstanding should be proof rolled to highlight any soft areas which should then be dug out and replaced with selected granular material compacted in thin layers to a suitable specification.

6.7. Surface Water Disposal

Soakaway testing in accordance with BRE365 was undertaken within TP1 – TP7, with the results tabulated below.

Soakage Testing Results						
Trial Hole	Test Number	Depth (m bgl)	Start Depth (m bgl)	Finish Depth (m bgl)	Time Taken (mins)	Infiltration Rate (m/sec)
TP1	1	1.50	GL	1.45	1153	9.46×10^{-7}
	2	1.50	GL	1.21	980	8.72×10^{-7}
	3	1.50	GL	1.24	1014	1.05×10^{-6}
TP2	1	1.20	GL	1.20*	1035	1.35×10^{-6}
	2	1.20	GL	1.20*	1055	1.18×10^{-6}
	3	1.20	GL	1.20*	1014	1.23×10^{-6}
TP3	1	1.40	GL	1.20	1140	8.11×10^{-7}
	2	1.40	GL	1.26	1100	9.75×10^{-7}
	3	1.40	GL	1.40*	1055	1.05×10^{-6}
TP4	1	2.50	GL	2.00*	1095	8.32×10^{-7}
	2	2.50	GL	1.88	190	4.92×10^{-6}
	3	2.50	GL	2.00*	1020	9.71×10^{-7}
TP5	1	1.20	GL	0.93	110	7.18×10^{-6}
	2	1.20	GL	0.95	120	7.42×10^{-6}
	3	1.20	GL	0.98	120	7.77×10^{-6}
TP6	1	2.00	GL	1.52	1035	8.17×10^{-7}
	2	2.00	GL	1.89	1045	1.02×10^{-6}
	3	2.00	GL	1.59	1050	1.02×10^{-6}
TP7	1	1.00	GL	1.45	1050	1.18×10^{-6}
	2	1.00	GL	1.15	210	1.26×10^{-6}
	3	1.00	GL	1.50*	1035	1.26×10^{-6}

*The trial pit had drained dry over night, hence the calculated infiltration rate may be quicker than the calculated rate

On the 5th February 2025, TP1 and TP3 – TP7 were re-excavated and had their depths extended by ~0.50m bgl to enable a repeat of the BRE 365 infiltration tests without the granular infill and the results are tabulated below. It should be noted that in most cases the base of the pit has collapsed within the sand below the waterline and this reduced the overall depth of the trial pit.

Soakage Testing Results						
Trial Hole/ Starting Depth	Test Number	Depth (m bgl)	Start Depth (m bgl)	Finish Depth (m bgl)	Time Taken (mins)	Infiltration Rate (m/sec)
TP1/1.95m bgl	1	1.75	1.05	1.73	180	1.47×10^{-5}
	2	1.60	1.20	1.62	130	2.04×10^{-5}
	3	1.60	1.20	1.60	150	1.92×10^{-5}
TP3/1.70m bgl	1*	1.70	0.90	1.09	292	2.52×10^{-6}
	2		-	-	-	-
	3		-	-	-	-
TP4/2.35m bgl	1	2.20	1.40	2.15	105	2.84×10^{-5}
	2	2.05	1.38	2.20	120	3.27×10^{-5}
	3	2.05	1.10	1.96	120	3.76×10^{-5}
TP5/1.60m bgl	1	1.45	1.00	1.35	165	1.32×10^{-5}
	2*	1.22	0.95	1.16	145	8.33×10^{-6}
	3		-	-	-	-
TP6/2.45m bgl	1	2.30	1.82	2.30	95	3.31×10^{-5}
	2	2.20	1.67	2.09	120	2.20×10^{-5}
	3	2.20	1.80	2.10	120	2.02×10^{-5}
TP7/1.90m bgl	1	1.70	1.45	1.70	65	3.14×10^{-5}
	2	1.63	1.40	1.62	105	2.22×10^{-5}

	3	1.50	1.08	1.40	100	1.98×10^{-5}
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*The test failed to reach the 75% water level and was therefore not BRE365 compliant.

Based upon the results of the infiltration tests, it was considered that the soils of the Head Deposits and underlying Folkestone Formation encountered in the trial pits to a maximum depth of 2.50m bgl would provide a suitable medium for soakaway installation.

The submission of a Sustainable Urban Drainage Scheme (SUDS) is likely to be required for this site due to the proposed development increasing the amounts of hardstanding.

Consultation with the Environment Agency must be sought regarding any use that may have an impact on groundwater resources, abstractions and surface water features/watercourses.
