

Site Groundwater Characteristics

The Sirius ground investigation carried out in 2010 recorded the groundwater details given in Table 1 below.

Table 1. Sirius Ground Investigation Groundwater Information

Exploratory Hole	Groundwater Strike/Rise During Drilling	Monitoring Installation Response Zone Depth	Monitoring Results (mbgl)		
			21/04/10	05/05/10	25/05/10
BH1	23.60 / 23.60	1.00 – 10.00mbgl	1.96	9.46	1.41
BH2	4.40 / 4.35	0.50 – 10.00mbgl	4.40	9.00	5.12
BH3	5.00 / 4.85 22.50 / 22.50	9.00 – 24.00mbgl	9.70	20.18	6.07
WS1	DRY	1.00 – 1.80mbgl	DRY	2.05	1.37
WS2	DRY	1.00 – 1.50mbgl	DRY	1.57	1.50
WS3	DRY	0.50 – 1.10mbgl	DRY	1.60	DRY
WS4	DRY	0.50 – 2.40mbgl	DRY	2.54	2.22
WS5	DRY	<i>No monitoring installation</i>			

Groundwater was recorded in the Made Ground at the site in boreholes BH2 and BH3. In both boreholes it was encountered above an obstruction; at 5.50mbgl in BH2 and at 6.50mbgl in borehole BH3. The obstruction in borehole BH3 was assumed to be a former concrete basement floor. Groundwater was not encountered in any of the 5no. window sample boreholes during drilling.

Four window sample boreholes (WS1 – WS4) were completed with monitoring installations, the response zones of which were within the Made Ground. The monitoring installation in borehole BH2 straddles the Made Ground and underlying London Clay. It is noted that the base of the window sample standpipe installations were recorded below the base of the response zones in each hole. Where present the water levels recorded were frequently just above the base of the installation. In borehole BH2 the base of the standpipe was recorded at 9.10mbgl indicating that the standpipe was almost dry during the second monitoring visit and the groundwater level at or below the level of the water encountered during drilling during the other monitoring visits.

The Made Ground is of variable composition with granular layers indicated to overlie cohesive layers and overall the site is underlain by the London Clay Formation. Backfilled basements are also indicated to be present. The site is predominantly covered with hardstanding and retaining walls are present to the north and south with the ground beyond at a lower level. The groundwater monitoring is considered to be indicative of perched water within the Made Ground and not a consistent water level across the site. The proposed contiguous piled basement construction will permit seepage of any perched water in the Made Ground through the wall and the development will remain predominantly impervious preserving the current scenario.

Groundwater was recorded in the London Clay in borehole BH3 at 22.5mbgl during drilling and fluctuated between 6.07m and 20.18mbgl during subsequent monitoring with the maximum depth to groundwater recorded during the second round of monitoring. Whilst the London Clay is generally described as slightly sandy and slightly gravelly no lenses or bands of sand are identified in the exploratory hole logs and it would be anticipated that the groundwater table would be present within the London Clay. The two higher groundwater levels monitored would indicate artesian conditions which, in the absence of identified permeable and water bearing layers and surrounding ground levels, are not considered realistic. Perched water was noted in the Made Ground during the drilling of borehole BH3 and the high water levels could be associated with seepage into the standpipe from a higher level. A groundwater level of 15mbgl (19mAOD), some 5m higher than the reliably monitored level in the London Clay, is therefore considered in the analysis.

If a higher groundwater level is considered in the London Clay e.g. at 23.5mAOD, to account for any long term rise in level, the impact on the performance of the wall is negligible as indicated in Figure 1 below.

Figure 2. Comparison of Wall Deflection for Different Groundwater Levels

