

soils being of high leaching potential. The site is also shown to be at risk from flooding of the River Cam.

The Sensitive Land Uses map shows the site to fall within a nitrate vulnerable zone.

### 2.3 Preliminary Risk Assessment

On the basis of the desk study findings it is considered that the site does not have a contaminative history and no particular concerns have been highlighted.

## 3.0 EXPLORATORY WORK

In order to meet the objectives described in Section 1.2 a series of eight open-drive sampler boreholes was drilled to a maximum depth of 5 m; the work was completed on a single day using two rigs, with each rig under the supervision of a geotechnical engineer from GEA. Standard Penetration Tests (SPTs) were carried out at regular intervals within the boreholes and disturbed samples were collected for subsequent laboratory geotechnical tests.

### 3.1 Sampling Strategy

The exploratory holes were located in accessible external areas, to provide suitable coverage of the site whilst avoiding underground services. The borehole records and results of the laboratory analyses are appended, together with a site plan indicating the exploratory positions.

The analytical suite of contamination testing was selected to identify a range of typical industrial contaminants for the purposes of general coverage. For this investigation the analytical suite included a range of metals, total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAH), total cyanide and monohydric phenols.

## 4.0 GROUND CONDITIONS

The investigation has confirmed the expected ground conditions in that, beneath a layer of topsoil over a generally moderate thickness of made ground, River Terrace Gravel was encountered and was underlain by Gault Clay.

### 4.1 Made Ground

Beneath a covering of topsoil or a surfacing of tarmac, made ground was encountered to depths of between 0.25 m and 2.4 m. This stratum comprised brown silty sand with gravel with brick and charcoal fragments or blackish brown sandy gravel with abundant charcoal to a depth of around 0.3 m, which was subsequently underlain by dark brown sandy or gravelly clay with charcoal and brick fragments, occasional gravel and small roots, and was found to extend to greatest depths in the north area of the site.

No visual or olfactory evidence of contamination was recorded in the made ground, however, a number of samples were submitted for contamination tests and the results are discussed in Section 4.6.

#### 4.2 River Terrace Gravel

This stratum was generally found to comprise firm brown mottled pale brown slightly sandy gravelly clay and clayey gravel with shell fragments, or medium dense pale brown or orange-brown clayey silty gravelly sand, to depths of between 1.4 m and 4.5 m. At one location in Borehole No 5 stiff pale bluish grey silt was encountered and proved to a depth of 4.5 m; this material possibly represents the underlying Gault Clay. SPTs indicated the granular soils to be in a medium dense condition. Laboratory index testing indicates that the clay soils are of high shrinkability.

#### 4.3 Gault Clay

The Gault Clay was found to extend to the full depth of each borehole and thus to depths of between 3 m and 5 m. The material was generally found to comprise firm becoming stiff grey mottled brown slightly silty fissured clay and was proved to a maximum depth of 5 m; in Borehole No 4 rootlets were found to extend to the full depth of the borehole of 5 m..

#### 4.4 Ground Water

Ground water was recorded to be standing in Borehole No 1 at 1.55 m five hours after drilling was completed and was encountered as a seepage in Borehole No 6 at a depth of 2.0 m. Groundwater was not encountered in any of the other exploratory positions.

#### 4.5 Soil Contamination

Part IIA of the Environmental Protection Act 1990, which was inserted into that Act by Section 57 of the Environment Act 1995, provides a new regulatory regime for the identification and remediation of contaminated land. The determination of contaminated sites is based on a "suitable for use" approach which involves managing the risks posed by contaminated land by making risk-based decisions. This risk assessment is carried out on the basis of a source-pathway-receptor approach. The results of contamination tests on five samples of made ground and three samples of natural soil are shown in the table below.

Determinant	Maximum concentration recorded (mg/kg)	Minimum concentration recorded (mg/kg)	Number of samples below detection limit	Normalised upper bound US <sub>100</sub>
Arsenic	25	<10	4	15.9
Caesium	<0.5	<0.5	8	0.5
Chromium	23	13	0	19.6
Lead	150	15	0	119
Mercury	<0.3	<0.3	8	0.3
Selenium	<0.5	<0.5	8	0.5
Copper	88	14	0	50.8
Nickel	23	18	0	25
Zinc	130	43	0	93.5
Boron	4.2	<1	1	3.2
Total Cyanide	<2	<2	8	2
Total Organic Content	2.0	0.08	0	1.5