APPENDIX C: CONCEPT DESIGN
proposed plan

scale: 1:200 @ A3, 1:100 @ A1
APPENDIX D: FOUL AND SURFACE WATER DRAINAGE STRATEGIES
DRAINAGE PROPOSALS ARE ILLUSTRATIVE ONLY AND THEREFORE SUBJECT TO DETAILED DESIGN.
APPENDIX E: SITE INVESTIGATION
11. CONCLUSIONS AND RECOMMENDATIONS

11.1 General Conclusions

11.1.1 Site Details, History and Development Proposals

The site covers approximately 1.55 hectares and is currently occupied by Northgate School. Prior to the site's use as a school it was open agricultural land, used as Allotment Gardens from 1938 up until the development of the school.

The currently proposed development is understood to facilitate the design of foundations for the proposed new extension to the existing school building.

11.1.2 Geology, Hydrogeology and Hydrology

The published geological map of the area indicates that there are no Drift deposits beneath the site; and the site is directly underlain by the Northampton Sand, which in turn is underlain by the Upper Lias, comprising mainly of mudstone of the Whitby Mudstone Formation.

The nearest controlled surface water receptor is the Brampton Branch of the River Nene, located approximately 350m to the west of the site. The Northampton Sand is classified as a Minor Aquifer, whilst the Whitby Mudstone is likely to be a Non-Aquifer. Groundwater was not encountered within the Northampton Sands, but some minor flow within the strata may occur during prolonged rainfall events and therefore some linkage between contamination at the site and the River Nene maybe present. Groundwater is thought to flow in a westerly direction towards the River Nene.

Groundwater is also likely to be present as a confined aquifer within sand layers present within the Whitby Mudstone at depth, however low permeability deposits likely to be present in the upper layers of the Whitby Mudstone will inhibit vertical groundwater migration and therefore no linkage between the site and the deeper confined aquifer is considered to be present.

The site has not been shown to be present within a groundwater SPZ.

The CSM indicated that the main receptors at the site included a school user (i.e. children aged 11 to 16 years old and adults aged 17 to 65 years old) in regards to the human health; and River Nene in regards to controlled water receptors.

11.1.3 Scope of Works Undertaken

The exploratory investigation was undertaken to provide geotechnical parameters, aid confirmation of the ground conditions and potential pollutant linkages identified within the CSM. The site work was carried out on the 6th January 2010 and included the advancement of 3 window sample boreholes to depths of between 3 to 3.8m, gas and groundwater monitoring installations within 2 selected boreholes and 4 number return gas monitoring visits.

11.1.4 Encountered Ground Conditions

The exploratory holes advanced during the site investigation indicate that the geology generally comprises a variable thickness of Made Ground over the Northampton Sand Formation.

The Made Ground was found to vary in depth from 0.1m bgl to 0.82m bgl. The Made Ground generally consisted of dark brown very gravelly Sand.

The Northampton Sand was encountered beneath the Made Ground to a depth of at least 3.8m bgl. The Northampton Sand was generally consisted of brown very gravelly Sand.

No groundwater was encountered during the investigation or any of the subsequent monitoring events.

No hydrocarbon contamination or other visual id of contamination was indentified within any of the boreholes.

11.2 Geoenvironmental Conclusions

A programme of chemical testing was undertaken on selected samples obtained from the intrusive investigation in order to assess the levels of contamination within the Made Ground and natural soils on the site with regard to the identified receptors.

The Conceptual Site Model (CSM) has identified there to be no evidence of ground contamination on site in respect to human health, controlled waters, building structures and services, and flora and fauna.

Monitoring of ground gases has detected no elevated levels of carbon dioxide or methane at the site. An assessment of the risk to buildings from ground gases has been undertaken (assuming buildings of a commercial nature may be present in the proposed development) in accordance with the guidance provided in CIRIA C665. The results indicate that the site is characterised as Characteristic Situation 1 under Situation A (all development except low rise housing) for which no gas protection measures are required.

It is noted however that the site is located within a Radon Affected Area, as defined by the Health Protection Agency (HPA), as between 10 and 30% of properties are above the Action Level. The site is therefore located within an area where full radon protective measures are required for new properties or extensions to existing properties as described in publication BR211 by the Building Research Establishment.

A preliminary waste classification at the soils at the site indicated that the majority of the soils at the site can be disposed of as non-hazardous. In addition it is likely that soils could be removed from the site as inert, however in order to classify the soils as inert WAC testing would be required.

11.3 Geotechnical Conclusions

It is anticipated that the proposed buildings can be constructed upon shallow spread foundations with a width of 0.6m, taken through the Made Ground and founded upon the Northampton Sand Formation at a minimum depth of at least 1m.bgl. An allowable bearing capacity of 150kN/m² would be available on the Northampton Sand.

Ground bearing floor slabs may be appropriate if less than 600mm of Made Ground is to remain on site in the area of the proposed buildings, and a CBR of 2% is recommended for design purposes.

These results indicate that, in accordance with BRE Special Digest 1: 2005 Concrete in aggressive ground, the Aggressive Chemical Environment for Concrete (ACEC) Classification is AC-1 with a Design Sulphate Class for the site of DS-1.

The ground conditions appear to be suitable from a geotechnical viewpoint for the use of pit soakaways to discharge surface run-off water, however testing is likely to be required to confirm this.

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