Appendix E

Environment Agency Response

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County Offices
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Lincoln
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Our ref: CCN/2014/37645
Date: 24 September 2014

Dear Michael,

Basic Flood Risk Assessment Data Request for Monkhouse Primary School, Pennygate, Spalding PE11 1LG National Grid reference TF 23205 22436.

Thank you for your request of 28 August 2014 to use Environment Agency data, Product 3, in the development of the Flood Risk Assessment (FRA) for the above site. The information is attached.

If you have requested this information to help inform a development proposal, then you should note the detail in the attached advisory text on the use of Environment Agency Information for Flood Risk Assessments / Flood Consequence Assessments.

Flood Map
The attached Basic FRA Map includes the current Flood Map for your area. The Flood Map indicates the area at risk of flooding, **assuming no flood defences exist**, for a flood event with a 1% chance of occurring in any year for fluvial (river) flooding. It also shows the extent of the Extreme Flood Outline which represents the extent of a flood event with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater.

The Flood Map only indicates the extent and likelihood of flooding from rivers or the sea. It should also be remembered that flooding may occur from other sources such as surface water sewers, road drainage, etc.

Fluvial Flood Levels
The fluvial flood levels for the model nodes shown on the attached Basic FRA Map are set out in the table below. They are measured in metres above Ordnance Datum Newlyn (mODN).

Contd…/

			Annual Exceedance Probability - Maximum Water Levels (mODN)				
Node Label	Easting	Northing	4% (1 in 25)	1% (1 in 100)	1% (1 in 100) inc Climate Change	0.1% (1 in 1000)	0.1% (1 in 1000) inc Climate Change
SPALDING CHANNEL 2617	524654	321991	4.33	4.43	4.67	4.45	4.68
SPALDING CHANNEL 2844	524577	321779	4.33	4.43	4.67	4.45	4.68
WELLAND 14761	524442	321590	4.33	4.39	4.68	4.40	4.68
WELLAND 14979	524340	321398	4.36	4.42	4.67	4.43	4.68

These levels are taken from the Welland Catchment FMI Model (August 2007)) and are the most up-to-date currently available. We aim to review our models on a regular basis, so if you are using these levels more than twelve months from the date of this letter, please contact us again to check that they are still valid.

Please note that these levels are "in-channel" levels and therefore may not represent the flood level on the floodplain, particularly where the channel is embanked or has raised defences.

Fluvial Defence Information

There are no formal defences protecting the site from the River Welland through Spalding downstream from the beginning of the Coronation Channel, but this section of the channel of the Welland provides a nominal protection against a flood event with a 1% (1 in 100) chance of occurring in any year. We inspect the channel regularly to ensure that any potential defects are identified early.

Upstream of Spalding, the Crowland and Cowbitt Washes (flood storage reservoir) reduce flood risk to Spalding and the surrounding area in extreme events.

History of Flooding

With regards to the history of flooding I can advise that we do not have any records of flooding in this area. It is possible that other flooding may have occurred that we do not have records for, and other organisations, such as the Local Authority or Internal Drainage Boards, may have records.

Land Drainage

The information provided is limited to flood risk from the sea and rivers with catchment areas greater than $3km^2$. The property is in an area of extensive land drainage which may pose an additional risk of flooding. Further information should be sought from the Welland and Deepings Internal Drainage Board (tel: 01775 725861, email: info@wellandidb.org.uk).

Climate Change

Climate change will increase flood risk due to overtopping of defences. Please contact our Welland and Nene Partnership and Strategic Overview Team to discuss how this risk should be considered within your Flood Risk Assessment.

Other Information
South Holland Strategic Flood Risk Assessment (SFRA) (Update 2010) is available at: http://www.sholland.gov.uk/environment/plandev/localplan/background/lfraupdatefinal2010.htm. You may wish to review the hazard mapping during the development of your Flood Risk Assessment.

This information is provided subject to the enclosed notice, which you should read.

If you have any queries or would like to discuss the content of this letter further please contact the PSO Welland & Nene Team using the telephone/email details below. Please quote our CCN reference number in all correspondence where data is referenced, including the Flood Risk Assessment.

Yours sincerely

Andrew Waugh

FOR Ben Thornely
Partnership and Strategic Overview Team Leader
Lincolnshire & Northamptonshire Area

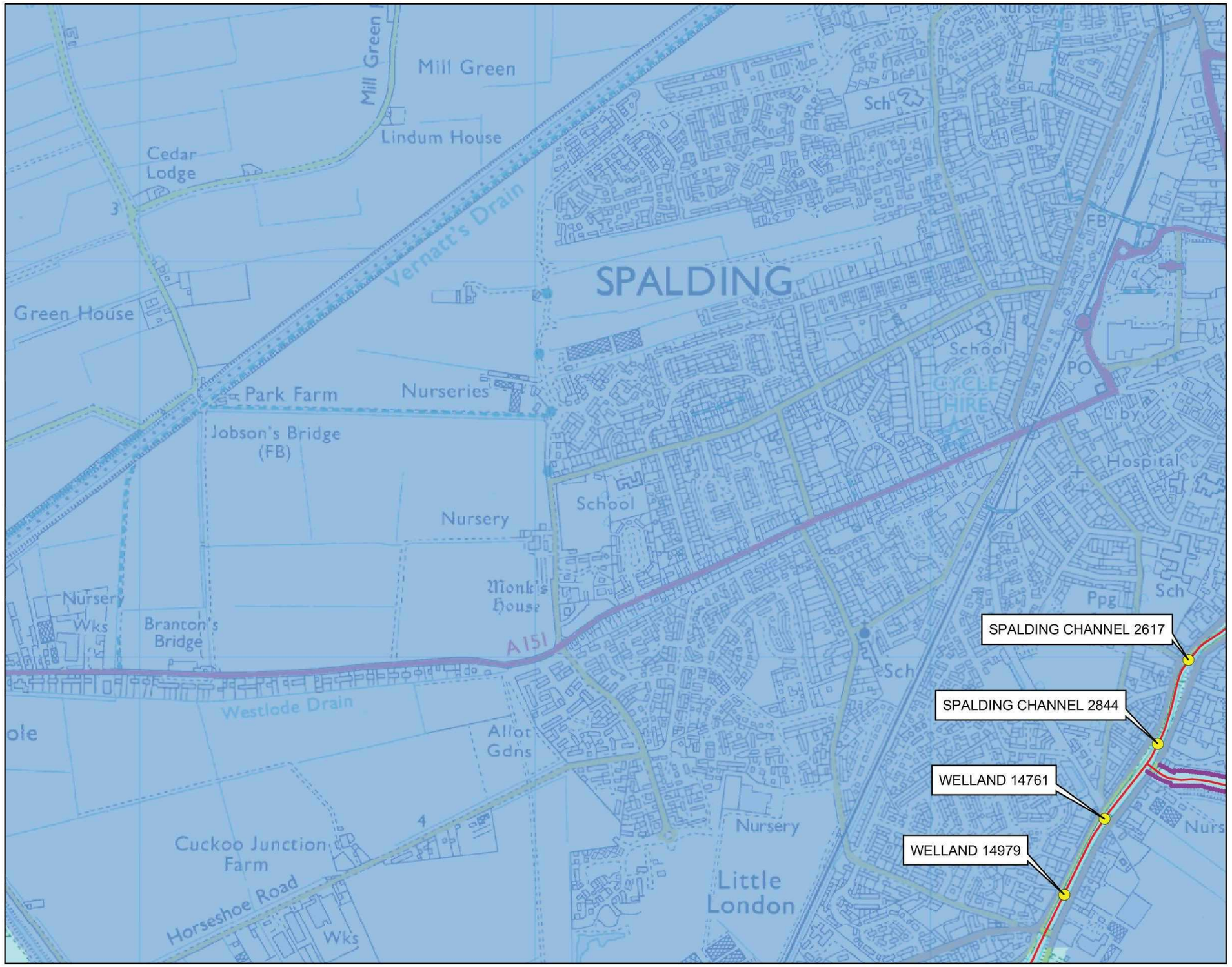
Direct dial 01536 385251
e-mail psown@environment-agency.gov.uk

CUSTOMER SERVICE EXCELLENCE CSE

Awarded to Lincolnshire & Northamptonshire Area

Enc.
FRA Advisory Text
Basic FRA Map
Standard Notice

Basic FRA Map
Map centred on TF 23205 22436 - created September 2014 [Ref: CCN-2014-37645]



Environment Agency

Scale 1:10,000

N
W E
S

- Model Node Point
- Main River
- Raised Defences
- Area at Risk of Flooding from Rivers or The Sea
- Extreme Flood Outline

Dark blue shows the area that could be affected by flooding, either from rivers or the sea, if there were no flood defences. This area could be flooded:

- from the sea by a flood that has a 0.5% (1 in 200) or greater chance of happening each year.

- or from a river by a flood that has a 1% (1 in 100) or greater chance of happening each year.

Light blue shows the extent of the Extreme Flood Outline, which represents the extent of a flood event with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater.

These two colours show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements. Sites outside the two extents, but behind raised defences, may be affected by flooding if the defences are overtopped or fail.

Created by the Partnerships & Strategic Overview Team, Kettering

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Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Use of Environment Agency Information for Flood Risk / Flood Consequence Assessments

Important
If you have requested this information to help inform a development proposal, then we recommend that you undertake a formal pre-application enquiry using the form available from our website:-

http://www.environment-agency.gov.uk/research/planning/33580.aspx

Depending on the enquiry, we may also provide advice on other issues related to our responsibilities including flooding, waste, land contamination, water quality, biodiversity, navigation, pollution, water resources, foul drainage or Environmental Impact Assessment.

In **England**, you should refer to the Environment Agency's Flood Risk Standing Advice, the technical guidance to the National Planning Policy Framework and the existing PPS25 Practice Guide for information about what flood risk assessment is needed for new development in the different Flood Zones. These documents can be accessed via:

http://www.environment-agency.gov.uk/research/planning/82587.aspx

http://www.communities.gov.uk/publications/planningandbuilding/nppftechnicalguidance

http://www.communities.gov.uk/publications/planningandbuilding/pps25guideupdate

You should also consult the Strategic Flood Risk Assessment produced by your local planning authority.

In **Wales,** you should refer to TAN15 for information about what flood consequence assessment is needed for new development in the different flood zones
http://new.wales.gov.uk/splash;jsessionid=8yIGTfGZthmB0t2vhp6hS1GcB1LXvZzB3Ylczf20Xn7LK3zK0nMk!981825250?orig=/topics/planning/policy/tans/tan15/

You should also consult the Strategic Flood Consequence Assessment if one has been produced by your local planning authority.

In both **England and Wales** you should note that:

1. Information supplied by the Environment Agency may be used to assist in producing a Flood Risk / Consequence Assessment (FRA / FCA) where one is required, but does not constitute such an assessment on its own.

2. This information covers flood risk from main rivers and the sea, and you will need to consider other potential sources of flooding, such as groundwater or overland runoff. The information produced by the local planning authority referred to above may assist here.

3. Where a planning application requires a FRA / FCA and this is not submitted or deficient, the Environment Agency may well raise an objection.

4. For more significant proposals in higher flood risk areas, we would be pleased to discuss details with you ahead of making any planning application, and you should also discuss the matter with your local planning authority.

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Appendix F

Nicholls Colton Geotechnical Report

NICHOLLS COLTON
GEOTECHNICAL

INTERPRETATIVE REPORT

on

A GROUND INVESTIGATION

for

MONKHOUSE SCHOOL, SPALDING



On Behalf Of
WALDECK
4 Henley Way,
Doddington Road,
Lincoln,
LN6 3QR

REPORT NO: G14223 **October 2014**

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GROUND INVESTIGATION FOR A PROPOSED BUILDING EXTENSION AT MONKHOUSE SCHOOL, SPALDING, LINCOLNSHIRE.

Factual Information

1. Introduction

1.1 This report has been prepared on instructions given by Waldeck, 4 Henley Way, Doddington Road, Lincoln, LN6 3QR (order no. 4800047843 dated 10th September 2014), on behalf of Lincolnshire County Council.

1.2 It is understood the proposed development involves a single storey classroom extension to the western face of the main school building.

1.3 The purpose of this investigation is to provide data regarding the ground conditions and existing building foundations at the site, so that suitable methods of design and construction may be adopted for the proposed works. As part of this work, a preliminary assessment of soil contamination has been carried out.

1.4 This investigation has been undertaken on the specific instructions of Waldeck on behalf of Lincolnshire County Council and no reliance should be made by third parties as to its adequacy or completeness in relation to future development requirements of the area under consideration. Similarly, Nicholls Colton Geotechnical and Nicholls Colton Group will accept no liability in relation to the use of data contained in this report by third parties.

2. Site Description

2.1 The site lies within the grounds of Monkhouse Primary School and is located 1.45km southwest of Spalding town centre (national grid reference 523227, 322447), as shown on the appended site location plan (Nicholls Colton Geotechnical drawing no. G14223-IR/01).

2.2 The site consists of a small paved area of playground with benches for seating located under an existing canopy adjoined to the western side of the current far western school building. The sites northern, eastern and southern boundaries are formed by the exterior walls of the current school building.

2.3 There is no significant change of gradient at the site and no obvious areas of contamination were identified upon the site walkover.

3. Site Work

3.1 Two 100mm diameter window sampler boreholes (WS1 and WS2) were drilled at the site to a depth of 5.00m bgl to allow inspection and in situ testing of the soils. Supplementary investigation was carried out by two hand excavated foundation inspection pits (TH1 and TH2) which were formed to a maximum depth of 1.20m bgl to allow inspection of the existing foundation construction.

3.2 The borehole logs and foundation pit cross sections are included in Appendices A and B respectively.

3.3 Fragmentary disturbed samples were recovered from all materials revealed within the exploratory boreholes. Geo-environmental samples were obtained specifically for contamination testing.

3.4 The positions of the window sample boreholes were determined and set out by Nicholls Colton Geotechnical. The locations of the foundation pits were determined by Waldeck and set out by Nicholls Colton Geotechnical. The final positions of the boreholes and trial pits are shown on the appended exploratory hole location plan (Nicholls Colton Geotechnical drawing no. G14223-IR/02).

3.5 The samples were taken to Nicholls Colton Analytical's laboratory for further examination and testing.

3.6 No gas or groundwater monitoring has been undertaken as part of this investigation.

3.7 The fieldwork was carried out on 18th September 2014.

3.8 Fieldwork was generally carried out in accordance with BS5930 (1999) "Code of Practice for Site Investigations", logged in accordance with BS EN ISO 14688-1:2004 and BS EN ISO 14688-2: 2004 and the work overseen by an experienced Geotechnical Engineer.

4. In Situ Testing

4.1 Standard Penetration Tests (SPT's) were carried out using the split spoon (S) attachment within the boreholes (WS1 and WS2). The tests were carried out in accordance with BS 1377: Part 9: 1990 and BS EN ISO 22476-3:2005 utilising calibrated equipment and a copy of the certificate is included within Appendix A.

5. Laboratory Testing

5.1 The laboratory testing schedules were prepared by Nicholls Colton Geotechnical.

5.2 Included in this report is information taken from the results of tests undertaken in Nicholls Colton Analytical's laboratory at 7-11 Harding Street, Leicester. This is UKAS accredited testing laboratory No. 0320. The results of the laboratory tests in this report do not include all data required by the documented test procedure. However, all such data has been recorded and will be stored for six years from the date of test. This data will be issued on the client's instructions.

The following accredited test procedures were carried out:

- Natural Moisture Content
- Liquid Limit
- Plastic Limit
- Plasticity limit
- Particle Size Distribution – Sieve Method

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

5.3 The geotechnical laboratory tests were carried out in the period 22nd to 30th September 2014.

5.4 The geotechnical laboratory testing has been carried out in accordance with BS 1377: 1990 using calibrated equipment specified within the British Standard.

5.5 The geotechnical laboratory test results are included in this report as Appendix C.

5.6 In addition to the laboratory testing outlined above four soil samples were tested for the presence of contaminants as listed below. The MCERTS accredited testing was undertaken by Nicholls Colton Analytical (NCA's) (UKAS Laboratory No. 0320).

(all values 'total' unless otherwise stated)

- Arsenic
- Cadmium
- Chromium
- Copper
- Lead
- Mercury
- Nickel
- Zinc
- pH value
- Phenols
- Polyaromatic Hydrocarbons (speciated)

5.7 A number of soil samples have also been tested at NCA's Laboratory for a sulphate suite (in accordance with BRE Special Digest 1, 2005) as listed below.

- Sulphate (Water & Acid Soluble)
- Sulphur (Total)
- pH Value

5.8 The contamination testing outlined above was carried out during the period 22nd to 30th September 2014.

5.9 The suite of contaminants was selected by Nicholls Colton Geotechnical.

5.10 The contamination test results are included in this report as Appendix D.

5.11 In addition to the laboratory testing outlined above one soil sample was tested against the Waste Acceptance Criteria (WAC) suite of contaminants for classification for potential off site disposal. The WAC testing was undertaken between 22nd and 30th September 2014 by Nicholls Colton Analytical (UKAS Laboratory No. 0320).

5.12 The Waste Acceptance Criteria (WAC) results are included in this report in Appendix E.

6. General Geology and Revealed Strata

6.1 Geological sources (including the Geological Survey of Great Britain (England and Wales) indicate the area of the site to be underlain by Tidal Flat Deposits comprising clay and silt of Recent age which overlie the solid geology of the Oxford Clay Formation of Jurassic age.

6.2 Given the existing use of the site as a school the presence of a significant quantity of made ground is not anticipated.

6.3 The exploratory boreholes revealed a general downward strata succession of:

MADE GROUND	- Concrete slab - Weak sand cement mix with sand and gravel sub-base - Reworked clay with brick fragments
SUPERFICIAL DEPOSITS	- Firm brown slightly sandy CLAY - Orange brown SAND

7. Groundwater

7.1 Both window sample boreholes encountered water during drilling operations.

7.2 A groundwater seepage was encountered within borehole WS1 at a depth of 1.00m. No level was formed on completion of drilling operations.

7.3 Borehole WS2 encountered a groundwater seepage at a depth of 1.00m. A water level of 1.90m was recorded upon the completion of drilling operations.

7.4 No long term monitoring of groundwater levels has been undertaken as part of this investigation.

7.5 It should be noted that groundwater levels may differ at times from those reported due to seasonal variations or other effects.

8. Gas

8.1 No gas monitoring has been undertaken as part of this investigation.

Assessment and Recommendations

9. Proposed Works

9.1 It is understood the proposed development involves a single storey classroom extension to the western face of the main school building.

9.2 The purpose of this report was to obtain preliminary data regarding the ground conditions at the site, so that methods of design and construction could be considered for the development.

10. Soil Profile

10.1 Made Ground

10.1.1 All of the exploratory holes recorded a surfacing of made ground covering the site comprising concrete slab (0.05m in thickness) bedded onto a weak cement mix overlying sand and gravel based sub-base materials. The hardstanding construction was encountered to a maximum depth of 0.50m (foundation pit TH2).

10.1.2 The foundation pits encountered clay based made ground materials underlying the concrete slab and sub base surfacing comprising brown clay with fragments of brick or reworked clay within foundation pits TH1 and TH2 to maximum depths of 0.70m and 0.80m respectively.

10.1.3 No made ground materials were encountered underlying the surface construction within boreholes WS1 and WS2.

10.1.4 No olfactory evidence of contamination was noted within any of the made ground materials encountered at the site.

10.1.5 The existing foundations appear to comprise traditional strip footings bearing on the natural granular soils below the site at depths of 0.90m (TH1) to 0.95m (TH2). Details are included on the section and photographs included in Appendix B.

10.2 Superficial Deposits – Tidal Flat Deposits

10.2.1 Both window sample boreholes and hand excavated pits have fully penetrated the made ground materials to reveal the underlying superficial deposits. These typically comprise of firm to stiff brown slightly silty or sandy clay encountered at shallow depths (typically less than 0.85m) overlying loose to medium dense brown or grey fine sand with shell fragments. These natural soils are considered representative of the Tidal Flat Deposits anticipated within the locality and they have been recorded to a maximum depth of 5.00m within boreholes WS1 and WS2. The shallower foundation pits have only penetrated marginally into these deposits.

10.2.2 In situ Standard Penetration Tests (SPTs) undertaken within the boreholes confirm the loose to medium dense condition of the granular soils with SPT 'N' values ranging from N=5 to N=14. The testing was undertaking utilising calibrated equipment with a copy of the SPT Hammer Energy certificate included in Appendix A.

10.2.3 A plasticity index test has been undertaken in the laboratory on a disturbed sample of the cohesive soils within WS2 (depth 0.60-0.70m) and the results indicate compliance with the definition of CI soils (i.e. soils of an intermediate plasticity) after the classification system of BS 5930:1999. These deposits are considered to be of medium volume change potential in accordance with NHBC Standards Chapter 4.2: 2014, based on the amended plasticity indices.

10.2.4 Particle size distribution testing undertaken on a sample of the granular soils obtained from borehole WS2 (1.20 to 2.00m) confirm the field description of the silty fine sands typically encountered within the exploratory holes.

10.2.5 The solid geology of the Oxford Clay Formation was not encountered within any of the exploratory holes.

11. Excavations

11.1 Based on the ground conditions revealed during the fieldwork it is anticipated that excavations for proposed foundations and drainage systems should generally be readily achieved adopting standard excavation plant.

11.2 Random falls should be anticipated from the faces of near vertically sided unsupported excavations carried out at the site. Such falls will be prevalent within any made ground materials and natural granular soils and will be aggravated by groundwater entries, if encountered. It is recommended that where personnel are required to enter excavations in such materials, continuous support should be provided to the full depth of the excavation.

11.3 Groundwater entries were encountered during drilling operations within both window sample boreholes at a depth of 1.00m. Should groundwater be encountered, initially traditional sump and pump methods of dewatering should be used, if required. However, factors such as the length of time excavations are left open and the depth of excavation will affect the efficiency / viability of such a dewatering technique.

12. Foundations

12.1 It is understood the proposed development involves a single storey classroom extension to the western face of the main school building.

12.2 It is anticipated that the underlying natural granular soils of the Superficial Deposits will provide a suitable founding stratum for the proposed development.

12.3 As a guide, for 0.60 metre wide strip/trench fill footings, bearing on the natural granular sand at a minimum depth of 0.75mbgl (ensuring all made ground is fully penetrated), an allowable net bearing pressure of at least approximately 75kN/m2 is considered appropriate (equivalent to 45kN/m run). These values incorporate a factor of safety of three and total settlements are not expected to exceed approximately 20mm, thereby keeping differential settlements within acceptable limits.

12.4 Given the presence of the loose natural granular soils and the potential for both cohesive and granular soils to be present within the foundation excavations, it is recommended that mesh reinforcement is incorporated into all foundations in order to protect against differential settlement.

12.5 It is recommended that close liaison occurs between the geotechnical engineer, the structural engineer and the site ground workers with respect to the above to ensure that the design loads for the proposed extension does not exceed the bearing capacity of the proposed formation.

12.6 The trial pits have indicated foundation depths of the existing building to be between 0.90m and 0.95m and it is recommended that the foundations of any proposed extension are set at the same level as the existing building.

13. Ground Floor Slab

13.1 Following removal of all made ground from below the proposed footprint it should prove suitable to adopt a cast in situ ground bearing floor slab, although it is recommended that the depth of any imported granular material required to build up levels to formation should not exceed 600mm, in accordance with NHBC Standards (considered to be an appropriate guide in this respect) and that the formation is proof rolled prior to stone import.

14. Concrete Classification

14.1 The results of water soluble sulphate, total sulphate and pH testing carried out on selected soil samples taken during the investigation have been compared with the recommendations outlined in BRE Special Digest 1:2005 in order to provide guidance on the classification for below ground concrete. For the purposes of this assessment the site is considered a 'Brownfield' location with 'mobile ground water conditions'.

14.2 The results of the water soluble sulphate tests on the soil samples have recorded values in the range 12mg/l to 130mg/l as SO_4. The pH values of the soil samples lie within the range 7.0 to 8.4.

14.3 On the basis of the test results obtained it is considered appropriate to adopt a Basic Sulphate Class of DS-1, together with an Aggressive Chemical Environment of Concrete (ACEC) of AC-1.

14.4 Mobile groundwater conditions have been assumed for this determination.

14.5 Consideration should be given to the properties of any imported soils and further testing to confirm this concrete classification may be prudent.

15. Preliminary Soil Contamination

15.1 No desk study has been undertaken as part of this investigation (it is outside the scope of this report).

15.2 Three samples of the near surface natural soils obtained from the exploratory holes during this investigation have been tested to determine the presence, if any, of various potential contaminants. The results are appended to this report (Appendix D).

15.3 This investigation has been carried out to provide an initial indication of the degree and range of contamination present. The following sections describe the results obtained.

15.4 In the absence of any desk study information indicating previous site usage, but considering the long established nature of the school site, a screening suite of potential contaminants has been adopted to provide a preliminary assessment of soil contamination.

15.5 Guidance published by the Department of Environment Food and Rural Affairs (DEFRA) and the Environment Agency has been utilised to review the results of the soil contamination analyses. In particular, the Contaminated Land Exposure Assessment (CLEA) Model has been considered.

15.6 DEFRA has published a series of Soil Guideline Value (SGV) reports for a number of contaminants. The current set of SGV's was published by DEFRA during the period March to July 2009. The SGV reports contain the background toxicological and physico-chemical data utilised by DEFRA to calculate the individual SGV's.

15.7 DEFRA have calculated the current SGV's using the CLEA v.1.04 and v.1.06 software (the software was subject to minor changes during 2009).

At present, DEFRA have published SGV's for the following –

- Arsenic
- Cadmium
- Mercury (elemental, organic and methyl)
- Nickel
- Selenium
- Benzene
- Ethylbenzene
- Phenol
- Toluene
- Xylene (o-, m-, and p-).
- Dioxins and dioxin-like PCB's

15.8 Given the relatively small size of the published data supplied by DEFRA, additional authoritative advice has been provided to industry and regulators by Land Quality Management (LQM) and the Chartered Institute of Environmental Health (CIEH). For a large set of contaminants not covered by the SGV's, LQM / CIEH have published Generic Assessment Criteria (GAC's).

15.9 The 2nd Edition LQM / CIEH GAC's were published in July 2009. The GAC's have been calculated using the CLEA v.1.04 software (the CLEA software was the subject of minor up-dates during the latter half of 2009).

15.10 The 2nd Edition of the LQM /CIEH document contains the following GAC's –

- Beryllium
- Boron
- Cadmium (note – this was simultaneously published as an SGV by DEFRA).
- Chromium (III and VI)
- Copper
- Vanadium
- Zinc
- Petroleum Hydrocarbon Fractions (16 Fractions)
- Polyaromatic Hydrocarbons (US EPA 16)
- Chloroalkanes and Alkenes (8 No.)

- Explosives (2 No.)
- Pesticides (5 No.)
- Chlorobenzenes (6 No.)
- Phenol and Chlorophenols (3 no.)
- Other (2 No.)

15.11 Additional GAC's have also been published by the Environmental Industries Commission (EIC) and the Association of Geotechnical Specialists (AGS), under the aegis of CL:AIRE, in January 2010. These GAC include antimony, barium, molybdenum and a large group of hydrocarbons, halogenated organics, phenols, phthalates and other organics.

15.12 DEFRA has recently published a new series of assessment criteria values (Category 4 Screening Levels (C4SL's)) and it is noteworthy that the value for lead is significantly lower than the former Soil Guideline Value (450 mg/kg) and in house GAC (373mg/kg). The C4SL value of 200mg/kg has therefore been adopted for lead.

15.13 Exceedance of a DEFRA SGV implies that an unacceptable human health risk *may* be present, and therefore either further site specific risk assessment is required, or intervention (remedial) works are necessary.

15.14 Similarly, exceedance of an LQM / CIEH (or EIC / AGS) GAC implies that an unacceptable human health risk *may* be present, and therefore either further site specific risk assessment is required, or intervention (remedial) works are necessary.

15.15 SGVs and GACs are set according to the proposed end use of the land. For the purpose of this report the results of the contamination test results were compared against 'residential without plant uptake' land use figures. Given the proposed end use of the site this is considered to be a conservative approach.

15.16 The concentration of the individual contaminants has been compared to the published SGVs, GACs or C4SL's as an initial screen, to determine the degree if any of contamination present.

15.17 Where no SGV or LQM/CIEH (or EIC / AGS) GACs are available the CLEA v.1.06 software has been utilised to derive generic values in-house by Nicholls Colton Geotechnical.

15.18 The individual contaminants were recorded at concentrations below the relevant SGVs, GACs or C4SL's for a residential without plant uptake land use.

15.19 On this basis, it is considered that no specific remedial measures will be required with respect to the protection of future occupiers or ground workers from soil contamination.

15.20 It is recommended that the results of the testing and this assessment be submitted to the local Environmental Health Department to ensure any specific guidelines or requirements which they may have are fully satisfied.

16. Summary and Conclusions

16.1 The exploratory holes have confirmed the absence of significant horizons of made ground across the site; typically a surfacing (hardstanding construction) overlies natural clays and sands. These natural deposits should provide a suitable formation for new low-rise construction on this site utilising traditional strip/trench fill foundations.

16.2 On the basis of the soil contamination assessment it is considered that specific remedial measures will not be necessary with respect to protection of future occupiers.

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