

**GROUND INVESTIGATION REPORT
OF THE SITE AT
MEADOWLANDS JUNIOR AND INFANTS SCHOOL
PORTSMOUTH
FOR
HAMPSHIRE COUNTY COUNCIL**

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V3	Dec 08	ZSUZSA BELLA Geo-environmental Engineer	JON VENN Associate Director
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0.0 EXECUTIVE SUMMARY

Clients Instruction	Instructions to proceed with the investigation were contained in a HCC Project Works Order, dated 9 th September 2008.
Clients Brief	The investigation was undertaken in order to obtain shallow geotechnical data to be used in the design of new builds, likely to be in the southeast of the site.
Site Description	At the time of the investigation the site comprised Meadowlands Junior and Infant School and associated playing fields.
Published Data Geology	The geology of the site is covered by the British Geological Survey of England and Wales 1:50,000 Sheet 316 "Fareham" and is indicated to comprise variable Head Deposits overlaying the Reading Formation of the Lambeth Group.
Hydrogeology	The Environment Agency (EA) groundwater vulnerability map of Southern Hants (Sheet 52) indicates that the site is underlain by a Minor Aquifer associated with unconsolidated deposits.
Hydrology	The nearest surface waterbody is an unnamed river which flows approximately 1km to the south of Lovedean.
Summary of Scope of Investigation	Ground Investigation works comprised the following scope: • 9no. window samples • Limited geotechnical testing
Encountered Ground Conditions	In summary ground conditions comprised Topsoil (up to 0.2m thick) overlying Head Deposits (up to 2m thick) in turn overlying the Reading Formation to the full depth of the investigation. The surface of the Reading Formation occurred at depths of 0.7 to 2.1mbgl.
Ground Engineering Issues	No details of the proposed development have been made available at the time of reporting. The high volume change potential of the Head Deposits and Reading Formation requires that spread foundations should be constructed at a minimum depth of 1.00mbgl. The presence of mature trees on site may require the localised deepening of foundation in accordance with NHBC Standards Net allowable bearing pressures in the order 40kN/m² and 65kN/m² at 1.0 and 1.5mbgl are considered appropriate. Higher allowable bearing pressures are likely to be achievable if foundations are taken to greater depth. Adoption of the above values should ensure that settlements are less than 25mm provided the ground condition encountered are representative of all areas of the site. If the degree of deepening required by the NHBC Standards is considered to be too costly or the above allowable bearing pressures be considered unsuitable for the proposed development consideration should be given to a piled foundation solution. However, ground conditions deeper than those currently assessed would need to be investigated. Based on encountered ground conditions a suspended ground floor slab is considered appropriate for this development. An ACEC classification of AC-1s is considered appropriate for concrete for the proposed development in line with BRE SD1. All excavations should be inspected for stability prior to man-entry whilst excavation deeper than 1.2mbgl should be shored. Alternatively excavations should be battered back to a safe angle, It is suggested that an angle of 30 degrees from horizontal is not exceeded. For the construction phase of the project it is recommended, in line with industry good practice, that all ground workers on site should be issued with protective clothing and this clothing should not be removed from site. Necessary welfare facilities should also be provided. Any removal and disposal of sub-soil arisings and / or groundwater from the site, should be undertaken in a controlled manner to a licensed facility, with due regard to Duty of Care responsibilities.

1.0 INTRODUCTION

1.1 Instruction

The Engineering Consultancy Geotechnics Section of Hampshire County Council (HCC) instructed WYG Environment (WYG) to carry out a site investigation at Meadowlands Junior and Infants School, Woodcroft Lane, Lovedean, Portsmouth, Hampshire. Instructions to proceed with the investigation were contained in HCC's Project Works Order dated 09 September 2008.

1.2 Clients Brief

The investigation was undertaken in order to obtain information on subsurface ground conditions to assist in the design of foundations for a proposed development on the existing school playing fields.

The ground investigation, scoped by HCC, was to consist of nine window sample boreholes with *in situ* testing to investigate shallow ground conditions. Representative samples were to be taken throughout window sampling for geotechnical laboratory analysis.

1.3 Information Provided by the Client

WYG have been provided with the following information by HCC:-

- Site Location plan (see Figure SK01);
- Site Layout plan (see Figure SK02);
- Extracts of the BGS Digital Mapping Services for GIS both Superficial; Geology and Bedrock geology (see Appendix E).
- Arial Photographs

1.4 Limitations

This report presents a full factual record of site work carried out on 6th and 7th October 2008, and includes a record of the window sample boreholes including *in situ* and laboratory test values. In addition, a limited study of the history of the site development and the underlying geology has been undertaken and is included within the report.

The opinions expressed in this report are based on the strata observed in the window sample locations, together with the results of the laboratory tests. WYG take no responsibility for conditions which have not been revealed by the investigation locations or which occur between them. Whilst every effort has been made to interpret the conditions around the locations, such information is only indicative and liability cannot be accepted for its accuracy.

The information contained in this report is intended for the use of HCC and their Consultant Partners. WYG can take no responsibility for the use of this information by any third party for uses other than that described in this report.

It should be noted that in particular the levels of groundwater are likely to vary with time. The results obtained may therefore only be representative of the conditions at the time of the investigation. Where we consider such conditions may apply we have indicated such reservations in the text.

This report has been prepared in line with the WYG proposal QS0354 and the HCC Term Tender 2006 – 2009 and the associated Terms and Conditions of Engagement. It is subject to the report conditions contained within Appendix A.

2.0 SITE DESCRIPTION

2.1 Situation and Key Features

2.1.1 Location

Meadowlands Junior and Infant School is located on Woodcroft Lane, Lovedean, Hampshire; approximately 3.0.km north of Waterlooville. The site is centred at approximate Landranger Grid Reference of SU687121.

2.1.2 Current Site Usage

At the time of the investigation the site comprised Meadowlands Infant School to the east and Meadowlands Junior School to the west..

2.1.3 Site Layout and Key Features

The site is approximately 60m x 40m and consists of single storey brick buildings and grassed, paved or asphalt recreation areas. The site is predominantly level; however, the southeast of the site gently slopes by approximately 1m towards the recreational grassed area. There are several semi mature, mature trees and saplings at the perimeter of the site and in the centre of the recreational area.

No significant water features were identified in the immediate vicinity of the site.

No obvious signs of distress to the buildings were observed.

2.1.4 Underground Services

Limited underground service plans were available at the time of the investigation. As such, care was taken when excavating each investigation location to ensure existing services were avoided. Each location was scanned using a Cable Avoidance Tool (CAT) prior to excavation and service inspection covers within the vicinity were lifted in order to observe potential service run directions.

It is recommended that full service searches are undertaken prior to the construction phase.

2.2 Site History

An examination of old plans and Ordnance Survey maps dating back to 1843, and a recent site layout plan, provided by HCC, was undertaken in order to determine the history of the site development. Copies of the maps examined are presented in Appendix D and a description of the principal features provided below:

Epoch Map 1 (1843- 1893):	The site and the immediate surrounding area comprise undeveloped agricultural land. A residential property is shown adjacent to the southeast of the site. An old chalk pit is identified approximately 150m to the northeast of the site with a further two unnamed pits slightly further south.
Epoch Map 2 (1891-1912):	No major identifiable changes are evident between this and the Epoch 1 map.
Epoch Map 3 (1904-1939):	No major identifiable changes are evident between this and the Epoch 1 map.
Epoch Map 4 (1919-1943):	No major identifiable changes are evident between this and the Epoch 1 map.
Current Development:	The site and surrounding areas have now all been developed. The school buildings are shown on the map as well as the associated recreational areas. The surrounding area comprises primarily residential properties.

2.3 Geology

The geology of the site is covered by the British Geological Survey of England and Wales 1:50,000 Sheet 316 "Fareham" and is indicated to be underlain by undifferentiated Head Deposits over the mottled sandy clays of the Reading Formation, part of the Lambeth Group. This geological sequence is confirmed by extracts from the BGS Digital Mapping Service for GIS, provided by HCC (refer to Appendix E).

2.4 Hydrogeology

The Environment Agency (EA) groundwater vulnerability map of Southern Hampshire (Sheet 52) indicates that the site is underlain by a Minor Aquifer associated with formations of variable permeability including unconsolidated deposits.

2.5 Hydrology

The hydrology of the site is shown in the Ordnance Survey Landranger Map of Solent and Isle of Wight, Sheet 196, (scale 1:50 000). The nearest major watercourse is over 1km from the site and is an unnamed river to the south of Lovedean.

3.0 FIELDWORK

3.1 WYG Ground Investigation

Site investigation works were undertaken by WYG on the 6th and 7th October 2008. The rationale for the investigation is presented below in Table 3.1.

Location	Rationale	Depth (mbgl)
WS1 to WS9	To obtain data relating to general ground conditions and obtain representative samples for laboratory analysis	3.0 - 4.0 mbgl

Table 3.1 Rationale for the Ground Investigation

The layout of the exploratory positions, as presented in Figure SK02, was based on the investigation locations agreed between HCC and the WYG engineer following an initial site reconnaissance visit.

3.1.1 Site Investigation Standards

Methods employed during the investigation were undertaken in accordance with BS5930, 'Code of practice for site investigations', 1999.

3.1.2 Site Investigation Methods

To keep disruption to a minimum the 'window sampler' method was employed.

The advantage of the window sampler is that exploratory holes can be formed in areas where access is limited or where disturbance to the working area must be minimised. The window sampler technique is capable of obtaining a continuous sample of soil for inspection and recovery of small disturbed samples for subsequent laboratory testing.

A Terrier-type window sample rig was adopted which is capable of obtaining *in situ* data which could later be used to assess soil consistencies and relative densities.

Full details of the investigative methods employed during this site investigation are presented in Appendix F.

4.0 GROUND CONDITIONS ENCOUNTERED

4.1 Soil Conditions

Ground conditions encountered during the recent investigation were broadly consistent with those identified in the published literature. In summary ground conditions comprised Topsoil overlying gravelly clay / silt of the Head Deposits in turn overlying mottled clay / silt of the Reading Formation. Details of each encountered stratum are summarised below (Table 4.1).

Location	Topsoil		Head Deposits		Reading Formation	
	From (mbgl)	Thickness (m)	From (mbgl)	Thickness (m)	From (mbgl)	Thickness (m)
WS1	GL	0.15	0.15	1.85	2.00	>2.00
WS2	GL	0.10	0.10	0.90	1.00	>3.00
WS3	GL	0.10	0.10	2.00*	2.10*	>0.90
WS4	GL	0.20	0.20	>1.80	N/P	N/P
WS5	GL	0.10	0.10	0.85	1.00	>2.00
WS6	GL	0.20	0.20	0.80	1.00	>2.00
WS7	GL	0.60	0.60	0.60	1.20	>2.80
WS8	GL	0.10	0.10	>1.90	N/P	N/P
WS9	GL	0.15	0.15	0.55	0.70	>3.30

WS = Window sample, GL= Ground Level, N/P = Not proven, * = Possible Head or Reading Formation

Table 4.1 Summary of Encountered Ground Conditions

Topsoil was encountered in all exploratory holes and attained a maximum thickness of 0.60m. The material was uniform in composition and consisted of soft to very soft gravelly clay and sandy gravelly clay.

Head Deposits were encountered in all investigation locations and varied in thickness between 0.6 and 2.00m (WS3). The full thickness of this stratum was not proven in WS4 or WS8 due to loss of sample recovery at the base of the hole. The stratum was relatively uniform in composition, comprising very soft to firm light orange and grey occasionally mottled orange and red slightly sandy clay / silt with rare to occasional fine angular to sub-angular flint gravel.

Reading Formation was encountered beneath the Head Deposits in most exploratory holes other than WS4 and WS8. The stratum was uniform in composition and typically consisted of firm, becoming stiff and very stiff grey or orange mottled yellow or red clay / silt.

4.2 Groundwater Conditions

No groundwater was encountered at the time of the investigation.

4.3 Visual Evidence of Potential Contamination

During the ground investigation no evidence of potential soil contamination was observed.

4.4 Underground Obstructions / Existing Foundations

No underground obstructions were encountered during the investigation.

5.0 LABORATORY TESTING

5.1 Geotechnical Testing

A programme of laboratory testing, scheduled by WYG and approved by HCC, was carried out on representative samples taken from the Reading Formation. The results of the tests are presented in Appendix C.

The test procedures used were generally in accordance with the methods described in BS1377:1990 (Methods of test for soils for civil engineering purposes). Details of the specific tests used in each case are presented in Table 5.1.

Type of Test	Standard	No.
Classification		
Moisture Content	BS1377 : Part 2 : Clause 3.2 : 1990	16
Liquid and Plastic Limits of soil 1 point cone penetrometer method	BS1377 : Part 2 : Clauses 4.3, 5.3 & 5.4 1990	13
Chemical Testing		
Sulfate and pH	BS1377:Part3:1990, Clause 5.0 and Clause 9.0	3

Table 5.1 Schedule of Laboratory Geotechnical Testing

6.0 DISCUSSION

6.1 Geology and Geotechnical Parameters

As stated in Section 4.1, encountered ground conditions were broadly consistent with those identified and described in the published literature. Details of the soil encountered are presented in Section 4.1 and in summary comprised Topsoil overlying gravelly clay / silt of the Head Deposits in turn overlying mottled clay / silt of the Reading Formation to the full depth of the investigation.

This section discusses the key geotechnical characteristics of each encountered stratum as determined from field observations and field and laboratory geotechnical testing.

Topsoil

Topsoil was encountered at all exploratory hole locations and attained thicknesses of between 0.1 and 0.6m.

No geotechnical testing was undertaken on the Topsoil.

Head Deposits

The Head Deposits primarily comprised fine grained soils with variable proportions of flint gravel.

Standard Penetration tests (SPT) were carried out throughout the stratum and gave N values between 4 and 7 (Figure 3). Using the recognised empirical relationship $SPT\ N \times 4.5 = \text{undrained shear strength } c_u$ values in the range 18kN/m^2 to 31.5kN/m^2 are considered appropriate for this material (very soft to soft).

Atterberg limits tests were carried out on seven representative samples obtained from the Head Deposits. The presence of mature hedgerow and trees on the site was noted prior to the investigation. One consequence of this is the potential desiccation of the underlying clay stratum. A crude assessment of desiccation can be made using the criterion $w < 0.4w_L$. The results of this and the Atterberg limits test are presented in Table 6.1.1.

Borehole no.	Depth (mbgl)	Moisture content (W) (%)	Liquid Limit (W_L) (%)	Plastic Limit (%)	Plasticity Index (I_P) (%)	% passing 0.425	Corrected Plasticity Index (%)	w/ w_L
WS1	1.00	39	73	28	45	100	45	0.53
WS2	0.80	41	70	30	40	96	38	0.59
WS4	0.70	29	74	26	48	100	48	0.39
WS4	1.20	24	63	22	41	100	41	0.38
WS5	0.30	37	78	33	45	93	42	0.47
WS5	0.70	35						
WS7	0.80	26	67	26	41	96	39	0.39
WS8	1.80	26	69	24	45	100	45	0.38

Table 6.1.1 Results of the Atterberg limits analyses – Head Deposits

The results indicate that liquid limits (w_L) vary between 63 and 74%, plastic limits (w_P) between 22 and 30% and plasticity indices (I_P) between 40 and 48%. After correction to account for the $>425\mu\text{m}$ content the I_{Pcor} values are representative of high to very high plasticity clay which is generally consistent with a high volume change material.

The crude evaluation of potential desiccation indicates that some of the Head Deposit samples may be showing a degree of desiccation, albeit minor.

Chemical tests carried out on three representative samples from this stratum indicated no chloride aqueous extract was present, magnesium aqueous extract concentrations and nitrate aqueous extract concentrations were all less than 10mg/l; whilst water soluble sulfate concentrations (2:1 extract as SO_4) were between 10 and 20mg/l, total sulphur (as S) concentrations of between 0.02 and 0.03% with corresponding pH values of between 7.16 and 7.33 also being determined.

Reading Formation

Reading Formation was encountered immediately beneath the Head Deposits in most locations and primarily comprised fine grained soils.

In WS4, WS5, WS6 and WS8 no recovery was achieved below 2.0mbgl. Although no direct evidence is available as to the cause of this it is likely to be due to a change in ground conditions.

Standard Penetration tests (SPT) were carried out throughout the stratum and gave N values between 4 and 41. On review of variations of SPT data with depth there appears to be a broad increase in SPT N value with depth, albeit with a large amount of scatter (Figure 3). Using the recognised empirical relationship $\text{SPT N} \times 4.5 = \text{undrained shear strength } c_u$ values in the range 18kN/m^2 to 184.5kN/m^2 are considered appropriate for this material (very soft to very stiff, predominantly firm to stiff).

Atterberg limits tests were carried out on six representative samples obtained from the Reading Formation. The presence of mature hedgerow and trees on the site was noted prior to the investigation. One consequence of this is the potential desiccation of the underlying clay stratum. A crude estimate of desiccation has been undertaken using the field moisture content (w) and liquid limit (w_L) such that at the onset of desiccation $w < 0.4w_L$.

The results of this and the Atterberg limits tests are presented in Table 6.1.2.

Borehole no.	Depth (mbgl)	Moisture content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	% passing 0.425	Corrected Plasticity Index (%)	w/w _L
WS1	3.70	16	47	18	29	100	29	0.34
WS2	1.80	47	72	32	40	96	38	0.65
WS2	2.70	26	58	22	36	100	36	0.45
WS5	1.20	33						
WS5	1.80	30						
WS7	1.60	35	75	30	45	100	45	0.47
WS7	2.70	19	58	19	39	100	39	0.33
WS7	3.80	21	55	19	36	100	36	0.38

Table 6.1.2 Results of the Atterberg limits analyses – Reading Formation

The results indicate that liquid limits (w_L) vary between 47 and 75%, plastic limits (w_P) between 18 and 32% and plasticity indices (I_P) between 29 and 45%. After correction to account for the $>425\mu\text{m}$ content the I_{Pcor} values are representative of high to very high plasticity clay which is generally consistent with a high volume change material.

The crude evaluation of potential desiccation indicates that some of the Reading Formation samples may be showing a degree of desiccation, albeit minor.

6.2 Groundwater

No groundwater was encountered at the time of the investigation.

7.0 ENGINEERING CONSIDERATIONS

7.1 Introduction

No information concerning the proposed development or location within the site has been made available at this time. The following sections provide outline discussion of geotechnical considerations for the development of the site with relatively lightly loaded structures.

7.2 Spread Foundations

Due to the presence of near surface fine grained soils within the Head Deposits and Reading Formation, consideration will need to be given to the minimum founding levels in line with guidance set out in NHBC Chapter 4.2. Determination of the index properties of these fine grained soils indicate that they are of high volume change potential. Guidance set out in NHBC Chapter 4.2 indicates that for such soils, minimum founding levels of 1.00mbgl should be adopted in areas unaffected by existing or proposed future tree growth. In areas where the proposed development impinges on the zone of influence of the various trees present on the site the foundations will require deepening following the recommendations presented in NHBC Standards.

For spread foundations constructed at 1.0mbgl, bearing on to the Head Deposits or Reading Formation, an SPT N value of 4 is considered appropriate (Figure 3).

The recognised empirical relationship $c_u = 4.5 \times \text{SPT } N$ gives an undrained shear strength of 18kN/m^2 consistent with a very soft material. The allowable bearing pressure of the Head Deposits and upper parts of the Reading Formation has been calculated, with a c_u of 18kN/m^2 , using the following relationship:

$$q_{all} = \frac{c_u N_c}{F}$$

where N_c is a bearing capacity factor dependant on the foundation dimensions
 F is a factor of safety = 3

For spread foundations constructed 1.0mbgl a net allowable bearing pressure (q_{netall}) of 40kN/m^2 should be achievable if the ground conditions identified in the investigation are representative of those below the proposed development.

Based on the distribution of SPT N values allowable bearing pressure are liable to increase rapidly with depth with a q_{netall} of 65kN/m^2 considered appropriate at 1.5mbgl.

Adoption of the above net allowable bearing pressures should ensure that settlements are kept to below 25mm.

In line with good working practice for foundations passing through the fine grained soils in close proximity to trees, it is recommended that the inside faces are protected with a compressible material to a depth consistent with minimum founding levels inline with NHBC guidance and that the base of all foundation excavations are inspected and any soft/loose spots replaced with a compacted granular medium and that the sides of all foundations are protected using compressible fill.

7.3 Floor Slabs

Due to the presence of very soft and soft soils within the near surface Head Deposits, it is recommended that floor slabs are suspended. A suspended floor slab option may also be driven by the chosen location of the new building(s) and the minimum founding depths determined for this area of the site. Should minimum founding levels be assessed to be in excess of 1.5m, NHBC Chapter 4.2 recommends suspended floors to avoid the potential damaging effects of soil movements associated with tree related moisture content variations.

7.4 Piled Foundations

If the foundation depths recommended in the NHBC Standards become too deep as to make conventional spread foundations no longer cost-effective, or the above allowable bearing pressures be considered unsuitable for the proposed development or the predicted settlements are unacceptable consideration should be given to a piled foundation solution. No comment has been made on potential soil conditions at greater depths than those encountered during the recent investigation and as a result further investigation using cable percussive techniques should be considered if a piled foundation solution is considered necessary for the proposed development.

7.5 Concrete

Laboratory chemical testing of pH and sulfate concentrations has indicated a worst case Design Sulfate classification of DS-1, in accordance with BRE Special Digest 1 for the Head Deposits. Given natural soil conditions and assumed static groundwater (if present) an ACEC classification of AC-1s is considered appropriate. We would advise that all cements used for sub surface concrete constructions should conform to the advice given within this publication unless otherwise specified or required.

7.6 Temporary Works

It is considered that at this stage any temporary works will comprise foundation excavations and trench excavations for service construction through the Topsoil and into the underlying Head Deposits and Reading Formation

It is recommended that careful inspection of all excavations is undertaken to ensure stability prior man-entry and excavations deeper than 1.2m are shored or battered back to a safe angle. It is suggested that an angle of 30 degrees from horizontal is not exceeded.

No groundwater was encountered during the investigation however, it should be noted that groundwater levels may vary seasonally and groundwater levels may be higher during wetter periods over winter. In the unlikely event that dewatering be required, it should be undertaken in accordance with the guidelines of CIRIA C515 Groundwater control – design and practice, 2000.

7.7 Health and Safety

Due to the very limited thickness of Made Ground as well as no evidence of potentially contaminating practices having been carried out on the site, through examination of the historical plans provided by HCC, it was considered unnecessary to carry out specific contamination testing.

However for the construction phase of the project it is recommended, in line with industry good practice, that all ground workers on site should be issued with appropriate protective clothing (gloves, overalls etc) and this clothing should only be removed from site as waste. Necessary welfare facilities should also be provided.

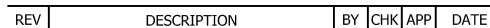
Any removal and disposal of sub-soil arisings and / or groundwater from the site, should be undertaken in a controlled manner to a licensed facility, with due regard to Duty of Care responsibilities.

8.0 REFERENCES

BGS Regional Geology Map 1:50,000 Sheet No. 315, 'Southampton'.
EDWARDS, R. A. and FRESHNEY, E. C. 1987. Geology of the Country
Around Southampton. *Mem. Br. Geol. Surv.* Sheet 315 (England and Wales)
National Rivers Authority Groundwater Vulnerability Map of West Sussex and
Surrey, Sheet 45.
Ordnance Survey Landranger Map of Solent and Isle of Wight, Sheet 196,
(scale 1:50 000)
BS5930: Code of Practice for Site Investigations, 1999
BS1377: Soils for Civil Engineering Purposes, 1990
BRE Special Digest 1: Concrete in Aggressive Ground, 2005

FIGURE SK01

Site Location Plan

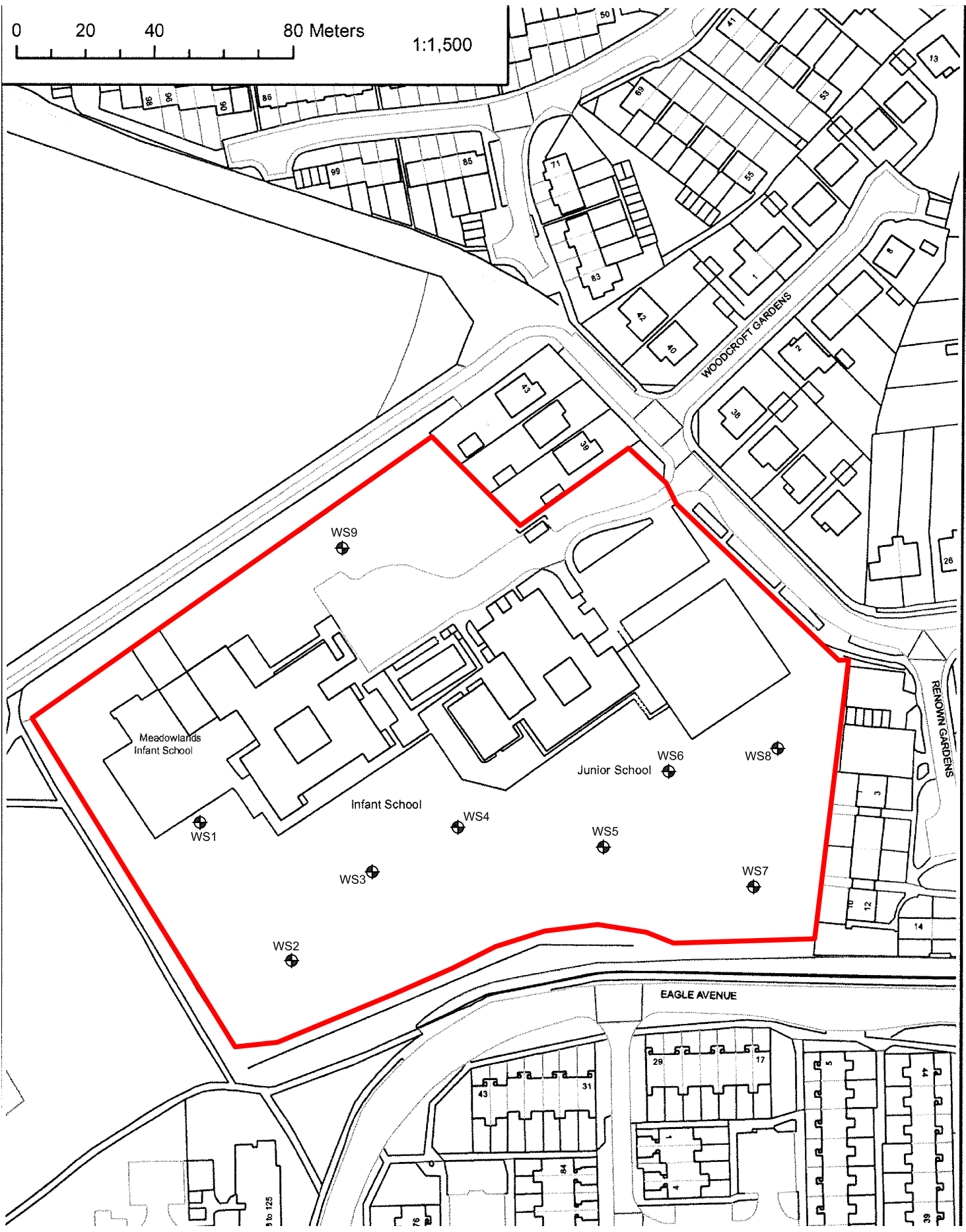


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Project No. A050917	Office 38	Type 04	Drawing No. FIGURE SK01	Revision 0		


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FIGURE SK02

Site Investigation Layout Plan



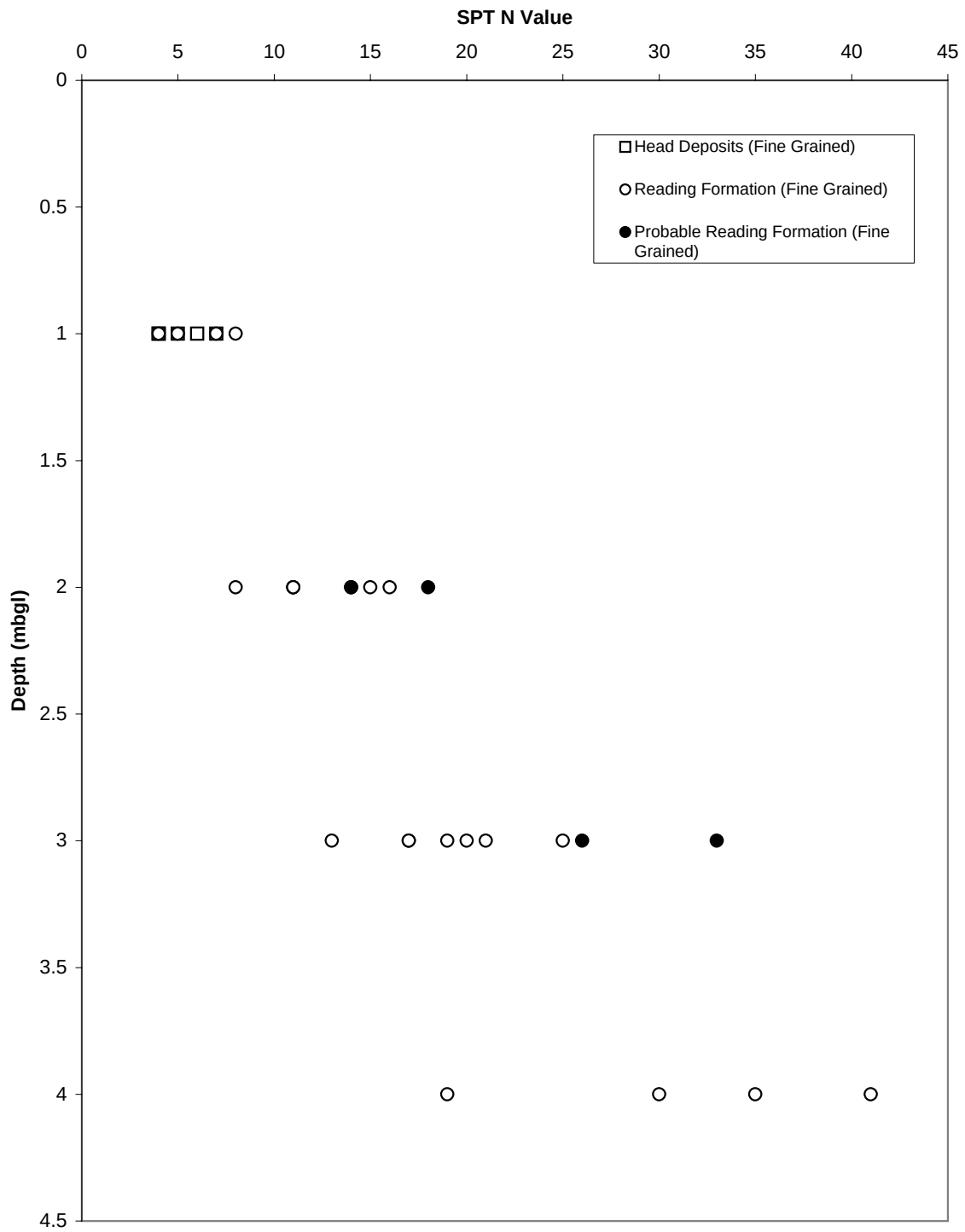
FILENAME: C:\ENVIRONMENTAL PROJECTS\A- AWARDED PROJECTS\A050917.MXD, MEADOWLANDS SCHOOLS - GC0400 SITE INFORMATION\FIGURE 2 - LAYOUT PLANNING
PROJECTED BY: TONY WATKINS | CHECKED BY: J. H. WOODHURST | DATE: 22/02/2024

 EMPRESS HOUSE 12 EMPRESS ROAD LYNDHURST, HAMPSHIRE SO43 7AE TEL: +44 (0)23 8028 3226 FAX: +44 (0)23 8028 2623 e-mail: enviro.lyndhurst@wyg.com	 HAMPSHIRE COUNTY COUNCIL	Project: MEADOWLANDS INFANT AND JUNIOR SCHOOL	Drawing Title: BOREHOLE LOCATION PLAN	REV		DESCRIPTION		BY	CHK	APP	DATE
				Scale @ A4 NTS		Drawn AP	Date NOV 08	Checked RP	Date NOV 08	Approved RP	Date NOV 08
				Project No. A050917		Office 38	Type 04	Drawing No. FIGURE SK02		Revision 0	
											

FIGURE SK03

SPT N v Depth Plot

SPT N Values vs Depth Plot



Project: MEADOWLANDS JUNIOR AND INFANTS SCHOOL
Project No. A050917