

Appendix C BGS Recorded Borehole Logs

DUNELM DRILLING CO.

BOREHOLE RECORD

Contract No. C7100

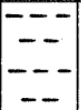
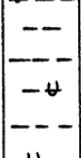
Client: WHITE YOUNG CONSULTING ENGINEER

Ground Level.

Location.....CATERAIRE MANCHESTER AIRPORT.....

Date 4/1/94

BOREHOLE No. BH6 + BH7

Depth	Thick- ness	Legend	Description of Strata	Type of Sample	C kN/m ²	M %	Ø	Density Kg/m ³	N
<u>BH6</u>									
0.60	0.60		SOFT MOIST MEDIUM BROWN CLAY WITH STONES AND BROKEN TARMAC - <u>MADE GROUND</u>	U100 0.75	45.4	27.4	-	1820	
1.50	0.90		FIRM MOTTLED BROWN AND GREY <u>CLAY</u>	U100 1.60	31.9	23.5	-	1885	
2.50	1.00		INITIALLY VERY SOFT REDDISH BROWN CLAY SLIGHTLY MARELY WITH OCCASIONAL GREY VEINS	U100 2.75	89.2	21.5	-	2030	
4.00	1.50		BECOMING STIFF WITH DEPTH	U100 4.00	111.1	20.4	-	2040	
<u>DRY</u>									
<u>BH7</u>									
0.60	0.60		LOOSE CONCRETE, BRICKS, STONES, CLAY AND TARMAC	SPT 0.90					12
0.90	0.30		REINFORCED CONCRETE OBSTRUCTION						
1.20	0.30		MED. DENSE HARDCORE <u>FILL</u> (POSSIBLE OLD RUNWAY)	U100 1.50	86.2	19.6	-	2110	
2.30	1.10		FIRM TO STIFF MEDIUM BROWN AND GREY MOTTLED <u>CLAY</u>	U100 2.50	180.0	21.8	-	2060	
4.00	1.70		FIRM TO STIFF TO STIFF DARK REDDISH BROWN SLIGHTLY MARELY <u>CLAY</u>	U100 4.00	108.0	15.9	-	2030	
SLIGHT WATER IN UPPER MADE GROUND - REMAINDER DRY									
Water Struck at <u>AS SHOWN</u> Standing Water Level <u> </u>									

DUNELM DRILLING CO.

BOREHOLE RECORD

Contract No. C7100

Client: WHITE YOUNG CONSULTING ENGINEER

Ground Level.

Location CATERAIR MANCHESTER AIRPORT

Date 4/1/94

BOREHOLE No. BH6 + BH7

Depth	Thick- ness	Legend	Description of Strata	Type of Sample	C kN/m ²	M %	Ø	Density Kg/m ³	N
<u>BH6</u>									
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			REDDISH BROWN CLAY	U100 2.75	89.2	21.5	-	2030	
	2.50		SLIGHTLY MAZLY WITH OCCASIONAL GREY VEINS						
			BECOMING STIFF WITH DEPTH	U100 4.00	111.1	20.4	-	2040	
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1.20	0.30		MED. DENSE HARDLORE <u>FILL</u> (POSSIBLE OLD RUNWAY)	U100 1.50	86.2	19.6	-	2110	
	1.10		FIRM TO STIFF MEDIUM BROWN AND GREY MOTTLED <u>CLAY</u>						
2.30				U100 2.50	180.0	21.8	-	2060	
	1.70		FIRM TO STIFF TO STIFF DARK REDDISH BROWN						
			SLIGHTLY MAZLY <u>CLAY</u>	U100 4.00	108.0	15.9	-	2030	
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SLIGHT WATER IN UPPER MADE GROUND - REMAINDER DRY									
Water Struck at <u>AS SHOWN</u> Standing Water Level <u> </u>									

DUNELM DRILLING CO.

BOREHOLE RECORD

Contract No. C7100

Client: WHITE YOUNG CONSULTING ENGINEERS

Ground Level.....

Location **CATERAIR MANCHESTER AIRPORT**

Date 4/1/94

BOREHOLE No. BH8

[illegible]

Water Struck at DRY

Standing Water Level

Appendix D Zetica Online UXO planning

UNEXPLODED BOMB RISK MAP



SITE LOCATION

Map Centre: 380927,384856



LEGEND

- High:** Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.
- Moderate:** Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.
- Low:** Areas indicated as having 15 bombs per 1000acre or less.

- military**
- industry**
- UXO find**
- transport**
- dock**
- Luftwaffe targets**
- utilities**
- Bombing decoy**
- other**

How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment* is necessary.

What do I do if my site is in a moderate or high risk area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites in a moderate or high UXB risk area.

Similarly, if your site is near to a designated Luftwaffe target or bombing decoy then additional detailed research is recommended.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

If I have any questions, who do I contact?

tel: **+44 (0) 1993 886682**

email: **uxo@zetica.com**

web: **www.zeticauxo.com**

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: (<https://zeticauxo.com/downloads-and-resources/risk-maps/>)

Zetica cannot guarantee the accuracy or completeness of the information or data used and cannot accept any liability for any use of the maps. These maps can be used as part of a technical report or similar publication, subject to acknowledgment. The copyright remains with Zetica Ltd.

It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

Appendix E Site Reconnaissance Photo Log

Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 1 Substation 'Z' on northern side of the Building 401



PHOTO No. 2 Electrical housing adjacent to substation 'Z'



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 3 Small substation on northern boundary of site within Building 402 site.



PHOTO No. 4 View west from north east corner of site showing rear of Building 401 and Building 402 on the right of frame.



Site Location: MAG building 401	Compiled Photo Log: Site Reconnaissance for MAG Building 401 (08/09/2021)	Project No. 60663052
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PHOTO No. 5 View north east of site showing slight landscaped rise to Avro Way from site and part brick part corrugated metal construction of Building 401.



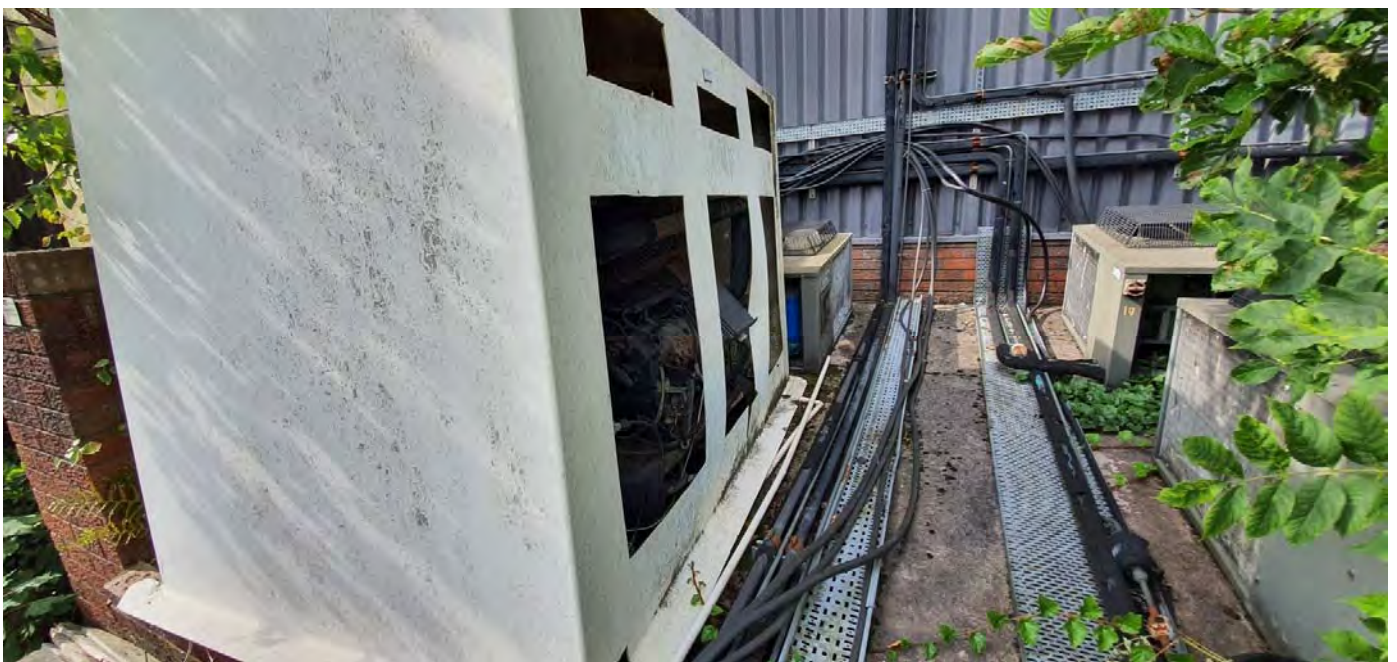
PHOTO No. 6 view north from south east site boundary of Building 401 showing lorry access points and part tiled brick half floor with two story warehouse above with apparent office windows. Also shown MAG busses in various state of repair.



Site Location: MAG building 401	Compiled Photo Log: Site Reconnaissance for MAG Building 401 (08/09/2021)	Project No. 60663052
PHOTO No. 7 South eastern end of site showing customer entrance to Building 401 and hydraulic lift. Including storage area with aircon and refrigeration units and an empty oil tank stored on pallets		



PHOTO No. 8 Closer image of storage area showing partial brick and concrete cover service duct area.



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 9 view south east of site showing DNATA warehouse and chainlink fencing



PHOTO No. 10 View of south east entrance to site from Pinfold Lane



Site Location:
MAG building 401

**Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)**

Project No. 60663052

PHOTO No. 11 Gas housing building on eastern side of main entrance from Pinfold Lane



PHOTO No. 12 View west across main south entrance to site showing bollards and diesel fueling tank



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 13 View of southern diesel tank with internal pump



PHOTO No. 14 view of interceptor for southern diesel tank with some spillage noted



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 15 view in south west corner of site, metal and concrete manholes potentially associated with interceptor.



PHOTO No. 16 Electrical box south western corner of site



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 17 View north west across MAG Bus Depot showing porta-cabin type offices and bus wash on left of image



PHOTO No. 18 View west of bus wash including storage of cleaning chemicals and light pole



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 19 View south towards main entrance from Pinfold Lane



PHOTO No. 20 view south across MAG Bus Depot



Site Location: MAG building 401	Compiled Photo Log: Site Reconnaissance for MAG Building 401 (08/09/2021)	Project No. 60663052
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PHOTO No. 21 View east from western side of site with bus wash on left of frame showing diesel storage, adblue storage and cleaning equipment



PHOTO No. 22 View of cleaning chemical storage at bus wash also showing raised concrete foundations to was house.



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 23 View south showing western side of bus wash and chainlink fence between the depot and wooded area (far west end of site)



PHOTO No. 24 view north into wooded area on north western corner of depot area with bus store on right including skip and trailer storage



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 25 view north of bus storage and potential maintenance building in north western corner of site



PHOTO No. 26 View east through temporary offices showing raised concrete foundation pads



Site Location:
MAG building 401

Compiled Photo Log: Site Reconnaissance for MAG Building 401
(08/09/2021)

Project No. 60663052

PHOTO No. 27 View south along western side of Building 401 showing slight raise in grass embankment



PHOTO No. 28 Main entrance to Building 401 in central south of site showing raised walkway to main doors



Appendix F Geotechnical Risk Register

A Geotechnical Risk Register has been compiled to show the degree of risk attached to various ground related aspects of the proposed scheme. The purpose of the register is to produce an assessment of the risk to the project posed by site specific ground related problems and identify suitable mitigation measures to control the risk to an acceptable level. The risk register should be developed and refined as the geotechnical design and assessment progresses such that the register will allow management of the geotechnical risks.

The degree of risk (R) is determined by combining an assessment of the likelihood (L) of the hazard with an assessment of the severity (S) of the hazard. The scale against which the likelihood and severity are measured, and the resulting degree of risk determined is presented in the risk register for the proposed scheme below.

Table 15-1: Classification of Probability and Impact

Likelihood (L)		Severity (S)	
Very Likely	5	Very High	5
Likely	4	High	4
Probable	3	Medium	3
Unlikely	2	Low	2
Negligible	1	Very Low	1

Table 15-2: Risk Matrix

Likelihood	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
		Severity				

Table 15-3: Classification of Risk Rating

Risk rating	Response
Intolerable	Unacceptable
Substantial	Early Attention
Tolerable	Regular Attention
Trivial	Monitor

Geotechnical Risk Register

Identified Geotechnical Hazard	Location	Cause	Risk before Control			Consequence	Possible Mitigation Measures
			L	S	RR (LxS)		
Aggressive Ground Chemistry	Scheme Wide	Made Ground, Glacial Till and Bollin Mudstone Member are potentially sulphide/sulphate bearing stratum.	4	3	12	Deleterious effects on buried concrete/piles;	Analyse BRE test results and design concrete mix during detailed design in accordance with BRE guidance.
Frost susceptible soils	Scheme Wide	Construction of pavement. Silt-rich soils .	2	3	6	Surface Damage or alternative design. Frost heave.	Ground Investigation to identify underlying ground conditions and assess risk. Increase pavement thickness to incorporate risk.
Shrinkable Clay Soils	Scheme Wide	Artificial and or Superficial deposits.	2	3	6	Damage to structures due to seasonal subsidence and heave of clay soils, and near trees	Check Atterberg limits of cohesive soil and specify foundations according to relevant guidance. E.g. NHBC
Challenges re-using site won material for earthworks.	Scheme Wide	Potential Cobbles and boulders in Glacial Till	3	3	9	Potential difficulty compacting Glacial Till as an engineered fill due to potential presence of coarse granular material. Increased costs from importing suitable material.	Import suitable engineering fill or remove coarse material from existing site won material. Carry out testing to classify material.
Variable thickness and composition of superficial deposits and Made Ground/Variable hard ground	Scheme Wide	The inherent variability of glacial tills and Made Ground or variable rock head level and variable properties of rock	3	3	9	Unsuitable method of construction. Potential presence of boulders/buried concrete structures may obstruct piling/drilling. Obstruction or difficult to excavate or drill through. Additional cost	Ground investigation for the proposed site extents and any likely structure locations to reduce risk of potential obstructions or difficult ground.
The presence of weak and compressible soils	Scheme Wide	Presence of soft cohesive and loose granular Glacial deposits. Glacial tills are typically highly variable in composition. Compressible materials may be present. Made Ground is expected in many areas across the site.	3	4	12	Differential settlement as a result of differing foundation material. Failure of structures or earthworks.	Carry out suitable ground investigation and specify appropriate foundations. .
Weak pavement formation	Scheme Wide	Site soils including Made Ground may be variable or possess low Cu/CBR/Stiffness values. This may result in weak	3	2	6	Increased cost such as resurfacing access roads and car park may be required.	Investigation including Compaction and California Bearing Ratio testing to inform pavement design and potentially the reuse of site materials . Undertake remediation for instance implementation of mechanical compaction, thicker capping

		pavement formation and differential settlement					material, ground improvement (lime improvement/soil stabilisation) or excavation and replace.
Coal mining	Scheme Wide	Unidentified/identified voids associated with recorded or unrecorded mine workings and abandoned shafts have severe implications for surface stability; especially under increased loading from structures or earthworks.	4	5	20	Severe damage to structures, potential for injuries or fatalities in event of a complete collapse.	A thorough ground investigation is carried out follow by a Coal Mining Risk Assessment (CMRA) for the scheme and in areas where proposed buildings, or structures that are at risk of mining related subsidence. Undertake a mining risk assessment with recommendations for remediation measures.
Historic development of site.	Scheme Wide	Known and unknown/unrecorded buried structures.	2	3	6	Costs due to damage to plant and delays removing obstructions. Potential settlement issue in areas between proposed and existing foundations of previous structures.	Ground investigation for the proposed site extents and any likely structure locations to reduce risk of potential obstructions. Proposed work to be located away from existing foundations.
Re-grading of site	Scheme Wide	Slope stability and long-term settlement of raised earthwork.	3	3	9	Failure of earthworks slopes and serviceability issues with excessive total and differential settlement, if this is a concern to the area of the scheme	Carry out a ground investigation and design earthworks appropriately.
UXO	Scheme Wide	Potential UXO related to historical military activity as a result of being part of the Airport during WWII)	3	5	15	H&S Impact during excavations, ground investigation, piling and construction.	Commission of a specialist UXO desk study to further clarify the risk at the site and specify appropriate mitigation for ground investigation and construction.

