

Hatton Mains, Kirknewton
Edinburgh,
Stage 1 Land Contamination
Report

GM CIVIL AND STRUCTURAL CONSULTING ENGINEERS LTD
1ST FLOOR GROVE HOUSE
1 KILMARTIN PLACE, TANNOSIDE BUSINESS PARK
UDDINGSTON, G71 5PH
Tel: 01698 816455
www.gmcivilandstructural.co.uk
(Registered in Scotland Number SC392802)





CONTROL SHEET



CLIENT: Inverdunning Ltd

PROJECT TITLE: Proposed Residential Development
Hatton Mains, Kirknewton, Edinburgh

REPORT TITLE: Stage 1 Land Contamination Report

PROJECT REFERENCE: 7485/2

Issue and Approval Schedule:

ISSUE 1	Name	Signature	Date
Prepared by	Donald Wilson		06/11/17
Reviewed by	Gordon Maxwell		06/11/17



Contents

	Page
Section 1 Introduction	1
Section 2 History Detailed	1
Section 3 Current Site Description	1
Section 4 Geology	1
Section 5 Hydrogeology	2
Section 6 Hydrology	2
Section 7 Phase 1 Reconnaissance	2
Section 8 Phase 1 Conceptual Site Model	3
a. Sources	
b. Pathways	
c. Receptors	
Section 9 Phase 1 Risk Assessment	4
Section 10 Historic Mining	4
Section 11 Conclusions & Recommendations	5
Section 12 Limitations & Constraints	5

Appendices

Appendix A: Site Photos	
Appendix B: Historical Maps	
Appendix C: BGS Geological Maps	
Appendix D: BGS Borehole Location	
Appendix E: BGS Borehole Logs	
Appendix F: Coal Mining Map	
Appendix G: SEPA Interactive Map	



Section 1: Introduction

The intent of this report is to consider the impact of a proposed new residential development, as shown in Appendix A: Site, and to ascertain what environmental risks exist or may be created by such a development.

Section 2: History Detailed

- 2.1** A review of the historical maps was carried out and detailed below. Past usages of a site and its environs can often provide an indication of potential contaminants and accordingly, research and examination of superseded and present Ordnance Survey map editions was undertaken. Appendix B
- 2.2** Following historical and current checks with SEPA and further investigation we have not found any historic or current landfills within 250m of the site boundary. We have also found no recorded pollution incidents.

Section 3: Current Site Description

- 3.1** The site is located at OS Grid 314290, 669534; Post Code EH27 8EB and is currently a series of undeveloped fields as shown in Appendix A.
- 3.2** The proposed residential development is to be constructed on the aforementioned undeveloped fields.
- 3.3** To the North, West and East are located open countryside with scattered residential dwellings. To the South is the Dalmahoy Country Club and Golf Course.

Section 4: Geology

- 4.1** With reference to The British Geological Survey 'Geology of Britain Viewer' scale 1:50,000 for Carlisle shows the bedrock geology of the site to be Calder Member- Sedimentary Rock Cycles, Strathclyde Group Type. The Sedimentary Bedrock was formed approximately 311 to 314 million years ago in the Carboniferous Period. The local environment was previously dominated by swamps, estuaries and deltas. The superficial deposits are shown to be Till, Devensian - Diamicton. The superficial deposits were formed up to 2 million years ago in the Quaternary Period. The local environment was previously dominated by ice age conditions. Appendix C

Section 5: Hydrogeology

- 5.1 The Carboniferous bedrock underlying the site is considered to offer some intergranular storage, but with fissure-flow as the main mechanism for groundwater movement.
- 5.2 With reference to SEPA 'River Basin Management Plan – Interactive Map, the underlying ground water body is 'bedrock and localised sand and gravel aquifers'. The current overall classification of the groundwater is shown as poor.
- 5.3 With reference to the British Geological Survey Report – 'A GIS of Aquifer Productivity in Scotland', Table 1 Page 3 would indicate that the aquifer classification, given the nature of the underlying bedrock, is moderate. However as noted above in paragraph II, the area may have localised sand gravel aquifers. The 'Bedrock Aquifer Productivity' map contained within the British Geological Report also indicates moderate aquifer productivity.
- 5.4 With reference to the Sniffer Report – 'Development of a groundwater vulnerability screening methodology for the Water Framework Directive', Table 3 Page 14 would indicate that, given the nature of the superficial deposits, the permeability class would be moderate/low. The overlying superficial deposits and the moderate/low permeability class would also indicate that the groundwater vulnerability class would be low.

Section 6: Hydrology

- 6.1 With reference to SEPA's Indicative River & Coastal Flood Map the site is situated out with any indicative flood risk. Appendix G

Section 7: Phase 1 Reconnaissance

- 7.1 The site is occupied by an undeveloped field and the old maps indicate the same usage from at least 1894 to the present.
- 7.2 The site itself appears of a level grade and there was no obvious evidence of water ponding on the site.
- 7.4 Photographs of the site can be found in Appendix A.

Section 8: Phase 1 Conceptual Site Model

8.1 A conceptual model shows the possible relationships between contaminants, pathways and receptors and forms the main part of the preliminary risk assessment in accordance with CLR 11. The model will be subsequently revised/refined when more information is obtained, primarily through an intrusive site investigation. At this stage, an initial conceptual model is developed to indicate whether or not potentially unacceptable risks exist.

a) Contamination Sources

- I. There were no obvious signs of deleterious materials within the site and no obvious signs of contamination sources.

b) Pathways

- I. Surface water run-off to existing sewers.
- II. Fissures in underlying bedrock.
- III. Possible utility service routes (no service record plans obtained at this point).
- IV. Potential ground voids due to historic mine workings.
- V. Direct contact with soils.
- VI. Ingestion of soils.
- VII. Inhalation of dust particles and vapours.

c) Receptors

- I. Surface water/surface water drainage systems from run-off from both the site itself and adjacent land.
- II. Ground water from fissures in underlying bedrock.
- III. Humans from direct contact/ingestion/inhalation of soil and dust.
- IV. Plant life from potential soil contaminants/ground gases.
- V. Proposed buildings from the migration of possible ground gases and potentially aggressive soil conditions.
- VI. Proposed utility services from possible soil contaminants/ground gases.

Section 9: Phase 1 Risk Assessment

- I. Risk to human health:
 - The level of the risk to human receptors is dependent on the magnitude and mobility of contaminants, the presence of available pathways and the potential for exposure.
 - At this stage, we would assess the risk to human health as being low to negligible.

- II. Risk to watercourses:
 - The level of the risk to watercourses is dependent on the magnitude and mobility of contaminants, the presence of available pathways and the potential for exposure.
 - At this stage, we would assess the risk as being negligible.

- III. Risk to construction materials:
 - At this stage, we would assess the risk to construction materials as being negligible.

Section 10: Historic Mining

- 10.1** The mining plan in Appendix F notes the site is within a coal mining reporting area.

- 10.2** The existing buildings adjacent to the site show no obvious signs of structural distress or fabric distortion.

- 10.3** There were no BGS boreholes recoded on the site. 1no BGS borehole within the Dalmahoy site shows no obvious coal workings.

Section 11: Conclusions & Recommendations

- 11.1** We have assessed the site as negligible with regards to the presence of ground soil contaminants with no requirements for on-site testing.
- 11.2** We have assessed the site as low risk regards flooding with no requirements for further investigation.
- 11.3** We have assessed the site as low risk regarding shallow mine workings with no requirements for further investigation.

Section 12: Limitations & Constraints

- 12.1** This report is intended for use by the Client, Inverdunning Ltd, and their professional advisors and is not transferable. It is not intended for use by third parties in terms upon which it can be relied.
- 12.2** No part of this Report should be read in isolation from the remainder of the Report and any interpretation requires to be made accordingly.
- 12.3** The Report represents the opinion of the GM Civil & Structural Consulting Engineers Ltd and is without prejudice.
- 12.4** GM Civil & Structural Consulting Engineers Ltd reserve the right to review the Report should further information become available which was unavailable at the time of the collating the Report.

Appendix A Site Photos



AERIAL VIEW



VIEW OF SITE FROM NORTH

Appendix B Historic Maps



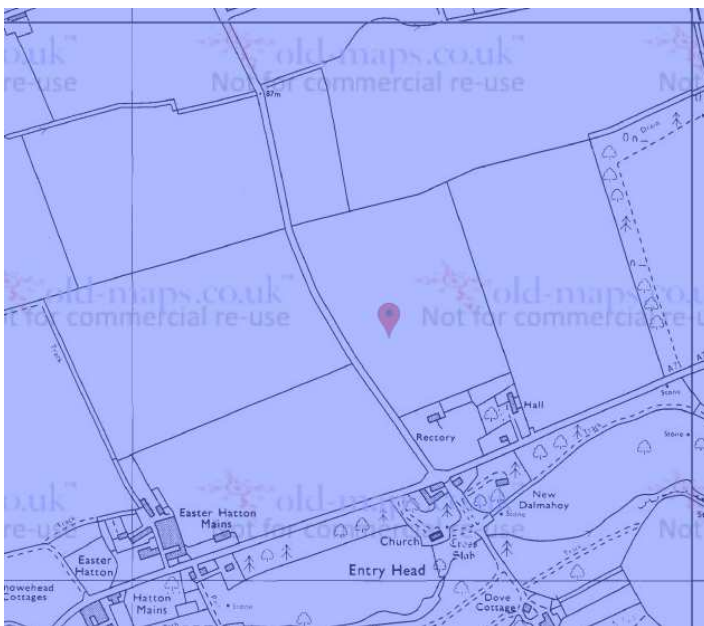
1855



1922

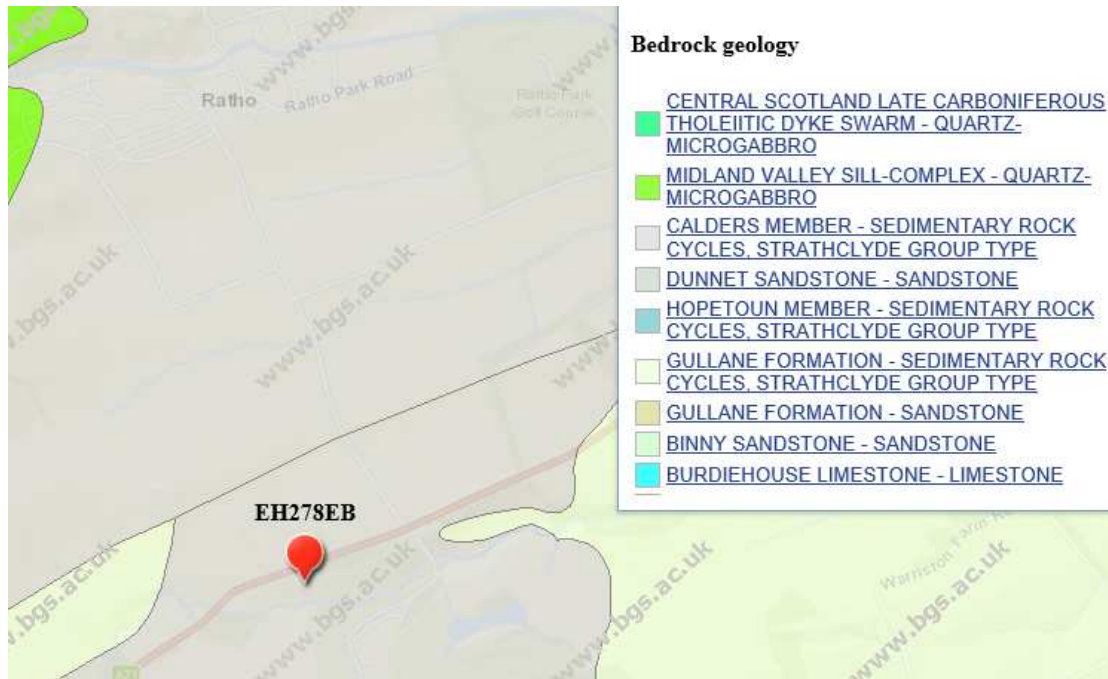


1957

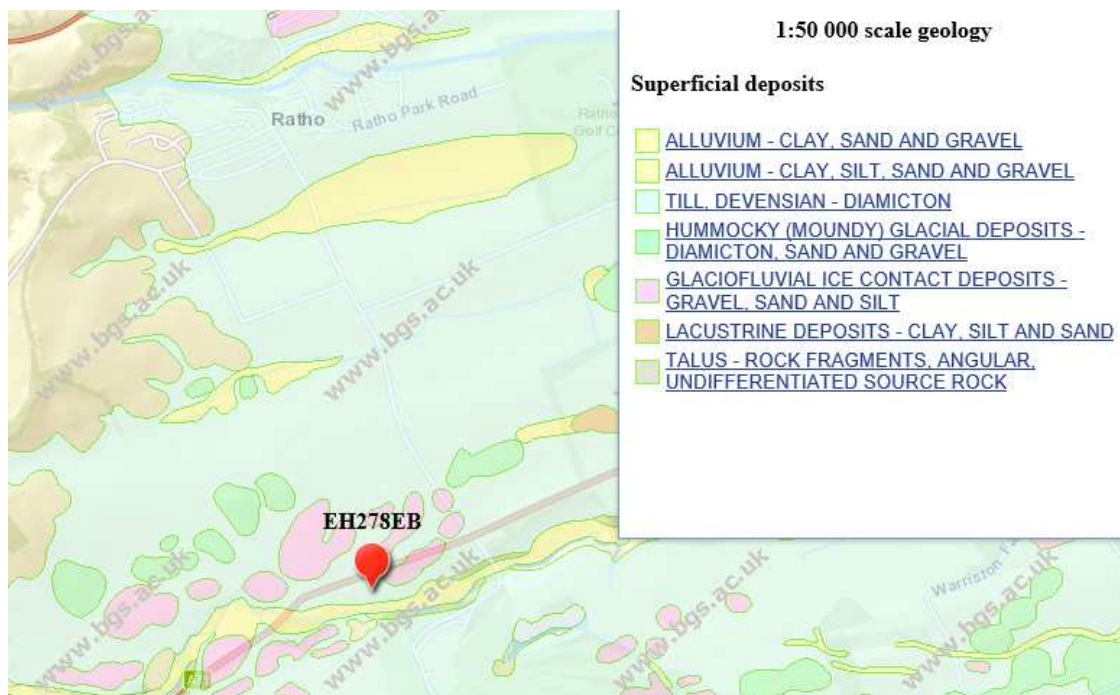


1981

Appendix C: BGS Geological Maps



BEDROCK



SUPERFICIALS

Appendix D: BGS Borehole Location



BH: NT16NE5



Appendix E:

BGS Borehole Logs

Sited 6" E. of (S.W. of) **N716NE/5**

(68/2713) W.L. 12740/47 2000 12/58 M. & S.L. Ltd. 044.

SECTION OF N.o. 8 Bore, Dalmeny Estate
At junction of Burn, below Raiffing Rocks

Surface Level _____ O.D.

Communicated 1960 by Messrs Williamson Miller & Co.

Date of boring or sinking 1877 Borer T. Wilson

One-inch Map 62 Six-inch Map (County and Half-Quarter Sheet) Edin. (N.E. (N.S.))

Thickness. Depth from Surface.
 Fathoms. feet. ins. Fathoms. feet. ins.

This is almost certainly the ~~start~~ to river level

Begin 30' below pavement. (presumably of Dalmeny Estate as the hole is about 30' above the pavement)

	5		
<i>Surf. sand & gravel</i>	1 6	5	1 6
<i>Sh. blaes.</i>	2 10	5	4 4
<i>Coarst. sil</i>	2	5	4 6
<i>Sh. blaes.</i>	10	5	5 4
<i>Blue fho.</i>	4	6	3 4
<i>Sdnt.</i>	1 8	7	4 -
<i>Blue f. d.</i>	3	8	1 -
<i>" fhy " & coarst. sil</i>	1 3 4	9	4 4
<i>" " sdnt.</i>	5 6	10	3 10
<i>" " blaes.</i>	4 6	11	2 4
<i>Blue fho</i>	1 3	12	5 4
<i>Hd. kingle</i>	3	13	2 4
<i>lt grey fho.</i>	2	13	4 4
<i>Sh. blaes.</i>	1	13	5 4
<i>Blue fhy "</i>	4	14	3 4
<i>" " f. d.</i>	2	14	5 4
<i>Sdnt.</i>	5	14	5 9
<i>Blue fho.</i>	1	15	- 9
<i>Kingle rib</i>	3	15	1 -
<i>Blue fhy f. d.</i>	1 1	16	2 -
<i>Sdnt.</i>	4 6	17	- 6
	<u>17 6</u>		

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

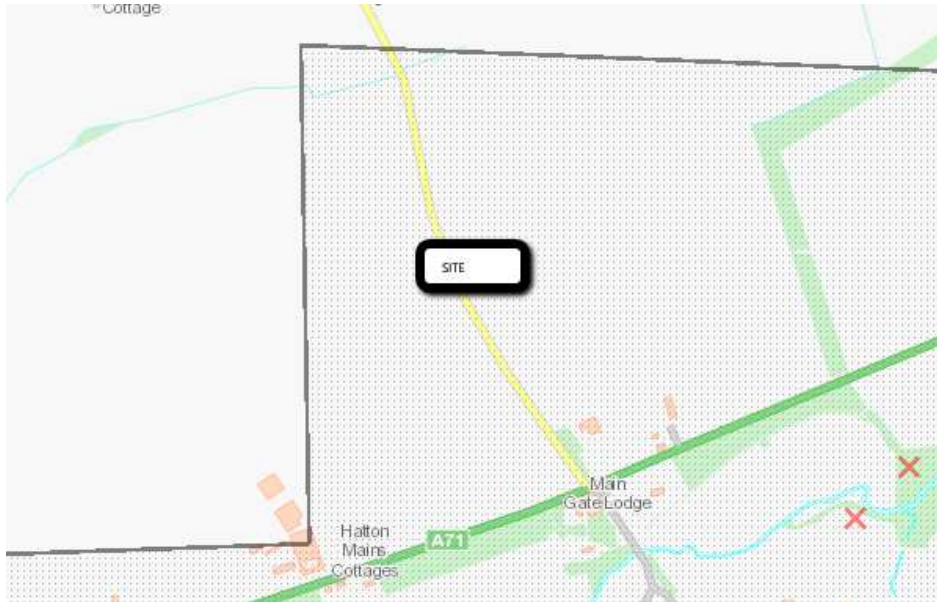
British Geological Survey

British Geological Survey

British Geological Survey

British Geological Survey

Appendix F: Coal Mining Map



Coal Mining Data

Change Theme

Grey layers cannot be viewed at this scale
Click on a layer name for layer information

- Mine Entry
- S46
- Seam Level
- Working Date
- Geological Disturbance
- Outcrop
- Seam Level Contour
- Child Phase
- Coalfield Consultation Area
- Country
- Court Order
- Court Order Amendment
- Legal Notice
- Licence Area
- Parent Phase
- Probable Working
- Underground Working
- Unlicensed Opencast

Appendix G: SEPA Interactive Map

