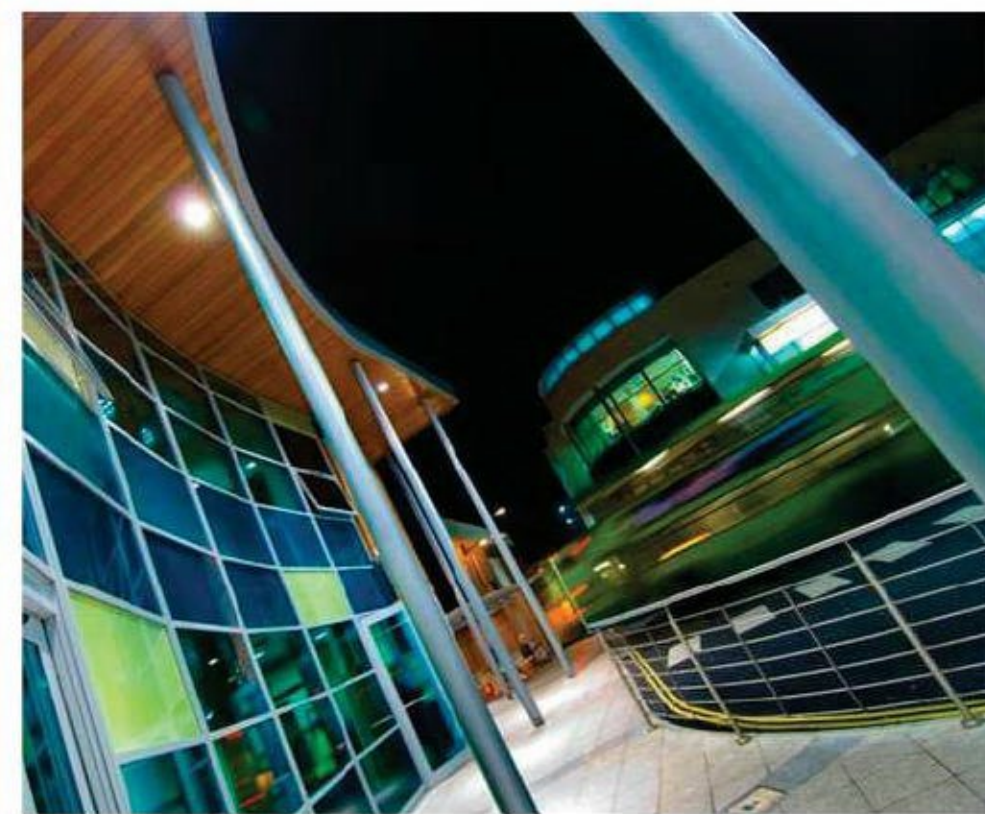


Elsick Development Company Limited

Proposed New Community at Chapelton,
Aberdeenshire



Geo-environmental Desk Study Report:
Phase 1A Development Site

August 2011

FAIRHURST

engineering solutions, delivering results

CONTROL SHEET

FAIRHURST




CLIENT: Elsick Development Company Limited

PROJECT TITLE: Proposed New Community at Chapelton, Aberdeenshire

REPORT TITLE: Geo-environmental Desk Study Report: Phase 1A

PROJECT REFERENCE: 72054

Issue and Approval Schedule:

ISSUE 1	Name	Signature	Date
Prepared by	Catherine Millar		August 2011
Reviewed by	Andrew Kram		August 2011
Approved by	Mark Wills		August 2011

Revision Record:

Issue	Date	Status	Description	By	Chk	App
2						
3						
4						
5						

This Report has been prepared in accordance with procedure OP/P02 of Fairhurst's Quality Management System

Executive Summary

Environmental

Desk based investigation has indicated that historical and current land uses may have caused land contamination. To establish the effects that the historic/current source of contamination may have on the proposed development it is recommended that targeted and non-targeted ground investigation is undertaken.

Radon Gas (from natural sources) may be a potential issue at the site and appropriate investigation/assessment should be undertaken to assess the potential risk to the proposed development.

Geotechnical

Desk based review of gathered information has identified that there may be the following geotechnical/engineering constraints to overcome at the site;

- the presence of buried foundations/obstructions relating to former farms/steadings;
- shallow rockhead and shallow groundwater;
- low infiltration potential of underlying soils, varying engineering characteristics associated with the superficial deposits (including Glacial Till and Alluvium); and
- topography which may require cut and fill operations

It is recommended that a geotechnical investigation is undertaken to identify the presence and extent of the above, while establishing the general ground conditions/engineering characteristics within the proposed development area.

Additional Recommendations

An Asbestos Refurbishment/Demolition Survey should be undertaken at the steadings/farms which are being included within the development proposal prior to any site works.

It is recommended that a Botanical Survey of the site should be considered to confirm the absence of Invasive Species.

A detailed water features survey will be required at the Environmental Assessment stage. This assessment should include any springs, wells and abstractions, as well as discharges, surface water features and potentially sensitive habitat (ground water dependant terrestrial ecosystems – GWDTE) in the area.

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Appendices

Appendix 1:

Drawings

72054/9014	Site Location Plan
72054/9013	Phase 1A Walkover Summary
72054/9011	Approximate Location of Potentially Contaminative Sources for Phase 1A
72054/9012	Approximate Location of Potential Geotechnical Constraints for Phase 1A
72054/9005	Phase 1A Preliminary Conceptual Site Model

Appendix 2:	Landmark Envirocheck (EC 34325749_1_1) Envirocheck Mapping Summary Tables
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Appendix 3:	Phase 1A Site Walkover Summary Proforma Site Photographs (Fairhurst and Turnberry)
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Appendix 4:	Principles of Environmental Risk Assessment
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Appendix 5:	Summary of Fairhurst Consultation Letters and Responses from Regulatory Bodies Consultation Letters and Responses (Scoping Opinion) Scottish Environment Protection Agency (SEPA) Scottish Natural Heritage (SNH) National Biodiversity Network (NBN) Aberdeenshire Council Archaeology Service Historic Scotland Health and Safety Executive (HSE) Aberdeenshire Council (various Departments) Turnberry Consulting
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Appendix 6:	Issued Scoping Report
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List of Tables

No	Table Title
1	Summary of potential contaminative sources (on and offsite) identified during mapping review
2	Summary of historic quarrying activities
3	Summary of surface water features identified during the walkover
4	Offsite Private Water Supply Entry
5	Summary of tanks/premises identified during the walkover
6	Summary of ground conditions
7	Registered Discharge Consents onsite and within 250m of the site
8	List of Registered Contemporary Trade Directory Entries
9	List of Registered Sensitive Land Uses (Areas of Adopted Green Belt)
10	List of Registered Sensitive Land Uses (Nitrate Vulnerable Zone)
11	Initial assessment of potential onsite sources of contamination
12	Initial assessment of potential offsite sources of contamination
13	Contaminants of Concern of onsite sources
14	Contaminants of Concern for offsite sources
15	Preliminary Qualitative Risk Assessment for identified onsite sources of contamination
16	Preliminary Qualitative Risk Assessment for Identified offsite sources of contamination
Appendix 2	
A	Summary of Historic Mapping Segments
B	Historic development of the site from historic maps: Phase 1A Development

1.0 Introduction and Brief

Fairhurst were appointed by Elsie Development Company Limited ('The Client') to undertake a Geo-Environmental Desk Study Report for site a located between Newtonhill and Portlethen, Aberdeenshire (Centred at NO 8963 9366). The site is referred to as the Phase 1A Development. A site location plan is presented in [Drawing 72054/9014, Appendix 1](#).

This Report is being undertaken in support of the proposed development. The Report is being undertaken in order to characterise potential environmental sensitivities and risks and will assess any potential historic land uses that may have resulted in land contamination.

The Report will also identify preliminary engineering or geotechnical constraints that may affect the design proposed for the development of the site.

The information presented in this Report is based on observations made by examination of in-house and external records such as historic maps ([Appendix 2](#)), public body consultations ([Appendix 5](#)) and geological plans ([Appendix 2](#)). The information has been used to provide an assessment of the historical development of the site in relation to past and present contaminative land issues.

1.1. Objectives

The specific objectives of this Report are as follows:

- Establish historic and current site uses;
- Construct a Preliminary Conceptual Site Model for the Phase 1A Development Site;
- Undertake a review of previous boreholes/geotechnical investigations undertaken within the surrounding area;
- Identify potential contaminative sources (including the contaminants and materials that may have historically been present at the development site), pathways and receptors;
- Identify potential geotechnical and engineering constraints that could affect the potential development; and
- Provide recommendations for appropriate ground investigation works to facilitate the proposed development.

2.0 Desk Based Information

Information from a number of sources was consulted as part of the Geo-environmental Desk Study Report. These sources are detailed in the following sections.

2.1. Sources of Information

i Ordnance Survey Maps

A selection of Ordnance Survey Maps has been consulted as part of the desk-based review. A summary of the maps reviewed is also presented in [Appendix 2](#).

ii British Geological Survey

Sheet	Scale	Date
BGS Stonehaven Solid and Drift Combined Edition	1:50,000	1999
BGS Hydrogeological Map of Scotland	1:625,000	1988
Groundwater Vulnerability Map of Scotland	1:625,000	1995

iii Photography

Current aerial and walkover photographs of the site were made available from Turnberry and reviewed. These are presented in [Appendix 3](#). A summary of the Fairhurst photographs taken during the walkover are presented in [Appendix 3](#).

iv Envirocheck Report

A Landmark Envirocheck Report was commissioned for the site and is presented in [Appendix 2](#) (Report reference EC 34325749_1_1). The following information from the Envirocheck Report has been utilised for this investigation:

- Surrounding Site Usage
- Historic Ordnance Survey Maps
- Flood Risk and Groundwater Vulnerability
- Environmentally Sensitive Sites
- Environmental Licences operating at the site and surrounding area
- Discharge Consent Information at the site and surrounding area

v Previous Ground Investigation Reports

Fairhurst is aware of a Geotechnical Interpretative Report for a site located at Bluebell Cottage, Cammachmore approximately 340m north-east of the site. The findings of this investigation are summarised in [Section 4.11.1](#).

Report Title	NGR	Distance & Direction	Date
Fairhurst Geotechnical Interpretative Report at Bluebell Cottage, Cammachmore	NO 907 948	340m north-east	April 2005

vi Consultations

The following organisations have been consulted by Fairhurst in the preparation of this Report. These are summarised in [Section 5.0](#).

Organisation	Date	Method	Response Date
Aberdeenshire Council Contaminated Land Officer	25-03-2011	Letter	13-04-2011
Aberdeenshire Council Petroleum Officer	25-03-2011	Letter	04-04-2011
Scottish Environment Protection Agency (SEPA)	25-03-2011	Letter/Online	06-05-2011
RCHAMS	26-04-2011	Online	N/A
Scottish Natural Heritage (SNH)	13-04-2011	Online	N/A
National Biodiversity Network (NBN)	26-04-2011	Online	N/A

A summary of the Scoping Responses associated with the Development are presented in [Appendix 5](#).

vii Site Walkover

A site walkover was undertaken by a Fairhurst Engineer on the 27th April 2011 and is presented in [Appendix 3](#). A summary of the walkover is presented within [Section 2.2.3](#) of this Report and an annotated plan is presented in [Drawing 72054/9013, Appendix 1](#).

viii Planning Applications

The site and its surrounds appear to have been subject to a number of planning applications. Turnberry Consulting have created a cumulative development and planning history for the surrounding area. This is included in [Appendix 5](#).

2.2. Site Description and current use

2.2.1. Site Overview

The proposed Phase 1A Development site is located to the west of the A90 between Newtonhill and Portlethen. The site is irregular in shape and is located with a predominantly rural setting (associated with occasional dwellinghouses or farm/steadings and agricultural/arable land). The overall Phase 1A Development site occupies an area of approximately 57.9 hectares. A site location plan is presented in [Drawing 72054/9014](#), [Appendix 1](#).

2.2.2. Topography

The site is very undulating throughout. The 'high' point of the site is an area located to the south of Upper Cairnhill at approximately 121mAOD.. From this point the site then falls to the north, east, south and west to levels between 81mAOD and 89mAOD.

A site location plan including a topographical survey is presented in [Drawing 72054/9014](#), [Appendix 1](#).

2.2.3. Summary of Walkover

A site walkover was undertaken in April 2011. The walkover was concerned with establishing the potential contamination and geotechnical constraints to the proposed development. A summary of the walkover is presented below; with a complete transcript and photography of the walkover presented in [Appendix 3](#).

- Newtonhill slip road: There was an area of fly-tipped material (390324, 793535) comprising stone, sub-soil, wood and office equipment (i.e. chairs) and bin bags of unknown contents.
- The electricity sub station (390190, 793662) had oil staining on the slabs/hardcore surrounding the transformers.
- Suspected asbestos containing materials (cement bound roofing tile) was noted in the derelict outbuildings of The Steading.
- Numerous tanks were noted throughout the walkover at the farms/steadings/premises. The majority were self-bunded heating oil tanks.

A drawing identifying the significant features identified on the walkover is presented in [Appendix 1](#), [Drawing 72045/9013](#).

3.0 Historic Site Use

The historic site uses were established from historic Ordnance Survey maps. As a general overview, the site has been predominantly used for agricultural purposes; however, there are a number of potentially contaminative features associated with suspected landfilling and fuel/oil storage.

[Table 1](#) presents a list of potentially contaminative sources identified from the mapping review. Detailed review of the historical mapping is provided in [Tables A](#) and [B](#) presented in [Appendix 2](#).

The location of historic uses with the potential to cause development constraints are identified on [Drawings 72054/9011](#) (environmental) and [72054/9012](#) (geotechnical) which are presented in [Appendix 1](#).

Table 1: Summary of potential contaminative sources (on and offsite) identified during mapping review

Onsite Features with Phase 1A Boundary	Approximate Coordinates
Tank Farm (1977-1980)	390267, 793290
In-filled dam (associated with Nether Carinhill Farm)	389654, 793259
Property: The Steading	389052, 793697
Property: Upper Cairnhill	389102, 793676
Offsite Features	Approximate Coordinates
Former Petrol Filling Station (northbound)	390566, 793557
Former Petrol Filling Station (southbound)	390634, 793548
Garage Premises	390599, 793595
Electricity Sub Station (1)	390190, 793662
In-filled Old Quarry	390402, 793420
Farm/Steady: Rockhead (demolished)	388695, 793967
Farm: Nether Cairnhill (suspected tank)	389561, 794830
Property: Windyedge (suspected tank)	389848, 793699
Property: East Windyedge (suspected tank)	390058, 793694
Property: The Chimneys	390017, 793665
Property: Clairhouse (suspected tank) (formerly Schoolhouse)	390001, 793660
Property: Smithy Croft (suspected tank)/formerly Smithy	389978, 793658
Property: Smithy Cottage (suspected tank)	389970, 793653