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Drainage Report, Recommendations and Associated Test Certificates

Site: Minmore Mill,
Glenlivet

C/O: Etch Architects
Aberdeen

Report Prepared: 21/02/2024,

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Introduction

Following a request from Etch Architects on behalf of their client a site visit was made to Minmore Mill, Glenlivet.

At the site it is proposed that an existing old mill building will be converted to allow for the creation of a 2 bedroom dwelling. Although drainage is being put in place to facilitate up to 5 bedrooms given the proposals remain at single storey.

Our site visits were carried out in order perform various ground analyse to determine what the underlying ground build up is and to perform the following:

> Percolation Testing – This is to determine the suitability of the ground build-up for the disposal of effluent from a septic tank to the ground via a purpose built soakaway system.

Site Location & Initial Information

The site given its close proximity to other buildings will have easy access to electricity, water and telephone. Although it should be pointed out that there is no mains drainage available. For further information as to the layout of the premises please see the attached images/drawing.

There is a ditch to the east of the site which leads to the River Livet some 380 meters to the east of the site. This can be seen in the attached visual information.

Site Work – Trial Pits

On the 6th of February 2024, various trail pits were excavated using a tracked digger with a 300mm wide bucket attached in order to allow for analysis of the ground build-up and conditions. Furthermore this was also carried out to allow for percolation and infiltration testing to occur adjacent to the trial pits.

Percolation Testing

Percolation testing was carried out adjacent to trial pits in accordance with BS6297: 2007+A1:2008 and as described in Section 3.9 of the Scottish Building Standards Technical Handbook (Domestic). The test results are as shown below: -

Average time taken for water to drain 3 times in each sump hole. (middle 150mm)	289 minutes (approx.)
Depth of Water Table below Ground Level (m)	>2
Average Soil Percolation Values, Vp, s/mm	115.6

Infiltration Testing

Infiltration testing was carried out adjacent to trial pit SWS1 in full accordance with BRE Digest 365. The test results are tabulated below: -

Trial Pit No.	Test Zone Depth (M)	In-Fill	Soil Infiltration Rate, f (m/s)
SWS1	0.5	Open	$f = 2.88 \times 10^{-6}$ m/s

Encountered Ground Conditions

The ground is of poor drainage characteristics. For a full and detailed examination of the encountered ground conditions please refer to the attached trial pit logs showing the various ground conditions encountered and at what depth(s).

Ground Water Observations

The water table was not discovered.

Published Geology

There are various sources of published geology available that cover the area this site is in. An example of which is the British geological survey 1:50,000 maps. However for a more accurate description of the actual site conditions please see the attached trial pit logs.

Drainage Recommendations

Foul Water Discharge

We recommend the installation and use of a packaged sewage treatment plant as the Vp rate calculated is too high for a conventional septic tank and soakaway. Therefore, the PSTP will provide the treatment necessary to the foul water, it will then discharge to the River Livet. Any deviation from the use of a PSTP would not be consistent with the recommendations of this report.

Surface Water Disposal

We recommend that the existing source of surface water disposal be maintained, i.e all rainwater feeding into mills water wheel which in turn feeds into the river Livet. No changes are proposed to this existing system and there is no increase in impermeable area.

Drainage Layout

Indicative locations can be seen in the attached drawings at the end of this report.

System Maintenance

The PSTP should be fully maintained and done so in conjunction with the manufacturer's recommendations. Additionally, the system should be inspected on a regular basis by the owner and emptied when needed to prevent a build-up of solids and silts which could prevent the soakaway from working properly.

Regulations

It should also be noted that there a multitude of regulations involving effluent disposal. Examples of sources that provide information on this include BS 6297:2007+A1:2008 and BRE Digest 365.

Additional Information

Relevant Insurance

Employees of regulators/public authorities seeking proof of this company's professional indemnity and public liability insurance may do so by contacting the author using the details below. Furthermore, any information/questions about this report can also be answered by the author using the details below.

Author

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Attachments

Site Location Plan & Satellite Imagery

Indicative Test Location Plan

Indicative Drainage Layout

Trial Pit Logs

Certificate - Foul Water

Site Location Plan & Satellite Imagery

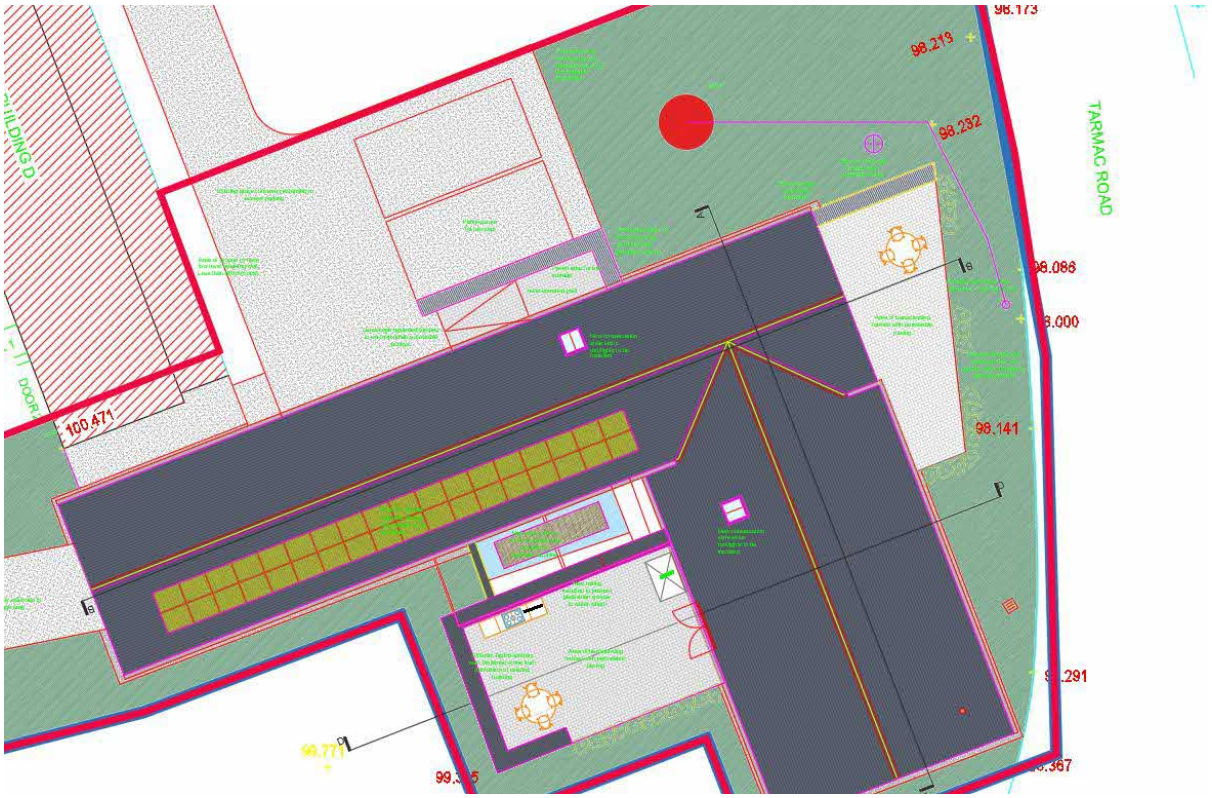
Indicative Test Location Plan

Key

Red Circle – Approximate Percolation Test Location(s) (Trial Pit 1)

Blue Circle – Approximate InfiltrationTest Location(s) (Trial Pit 2)

Indicative Drainage Layout



Key

Red Circle – Proposed Packaged Sewage Treatment Plant feeding into existing drainage channel that leads to the River Livet.

Existing Surface Water Discharged to water wheel, this is proposed to be maintained and this also leads to the River Livet.

Please note this is an indicative location plan for the proposed soakaways and should not be used for scaling. Additionally, the minimum sizes specified in the drainage recommendation section of the report should be used.

Ferguson GEOTECHNICAL					Site: Minmore Mill, Glenlivet	Trial Pit No. Both Trial Pits
Excavation Method: Tracked Digger with a 300mm bucket attached.		Dimension: 0.3 x 2.0m Location: As seen on plan.	Dates: 06/02/2024		Practice: Etch Architects	Page: 1/1
Depth (m)	Sample/ Tests	Water Depth (m)	Field Records	Thickness (m)	Description	Water
			Testing done.	0.3	Top Soil	
				At least 1.7	Grey Stoney Clay	
			The water table was not encountered.	Unknown	Water Table	
Comments				Author JF	Scale: Not to Scale.	Date: 06/02/2024

Photo of Trial Pit 1 (Trial Pit 2 is Identical)

CERTIFICATE FOR PROPOSED FOUL WATER SUBSURFACE SOAKAWAY

Two tests are normally required to demonstrate the suitability of the proposed drainage scheme:

1. A trial pit must be excavated to a depth of 1 metre below the proposed invert of the drain to establish whether or not the water table will interfere with the operation of the soakaway.

2. A percolation test must be carried out to determine the area of the ground required.

Certificate

Address: c/o Etch Architects
Site address: Minmore Mill, Glenlivet
.....

Date of test: 06/02/2024 Time: From 3:00PM Weather: Cold, Dry & Sunny

Encountered Ground Conditions

300mm Layer of Topsoil
At least 1700mm Layer of Grey Stoney Clay

Ground Water Observations

The water table was not discovered.

Wells: No wells for the supply of potable water within 50m of the proposed soakaway locations.

Depth of Drains: 0.5m **Depth of Excavations:** 2.0m

Percolation Test	**FWS 1**
Time Taken (mean of three times)	17340 s
Soil Percolation Value	Vp 115.6 s/mm
Population Equivalent	7

Recommendation

Package Sewage Treatment Plant, discharged into existing drain that leads to the River Livet.

I hereby certify that I have carried out the above tests in accordance with procedures specified in British Standard BS6297:2007+ A1 2008, and in conjunction with the full requirements set out within the Domestic Scottish Building Standards Technical Handbook (Environmental Standard 3.9 Infiltration Systems), the results of which are tabulated above, and that the proposed drainage scheme detailed on the attached plans and report has been designed taking into account the recommendations in the aforementioned standards.

Signed: [redacted] Date: 23/02/2024

Name/Company: Ferguson Geotechnical Ltd, Jack Ferguson

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Qualification: BSc (Hons) Architectural Technology, Drainage Consultant