

Drainage Report &
Certification

JWD 2664



Little Lediken
Insch
AB52 6UA

For: A & D Grant

9th October 2023



CONTENTS

1.0 DEVELOPMENT PROPOSALS

2.0 SITE VISIT

3.0 SITE INVESTIGATION

3.1 *Preliminary Ground Assessment*

3.2 *Trial Pit*

3.3 *Percolation Test*

4.0 FOUL WATER DRAINAGE

4.1 Foul Water Certificate

5.0 SURFACE WATER DRAINAGE

5.1 *Surface Water Calculations*

5.2 *Surface Water Certificate*

This report is prepared in line with the following guidance:

Scottish Executive Development Department's Planning Advice Note No. PAN 61 -
Planning and Sustainable Urban Drainage Systems

The Water Environment (Controlled Activities) (Scotland) Regulations 2005

Building (Scotland) Act 2003 Building (Scotland) Regulations 2004 - Domestic Handbook 2019
Section 3- Environment

1.0 DEVELOPMENT PROPOSALS

The development site is located on agricultural land to the south west of Kellockbank. It is proposed to erect a new dwelling house and domestic garage on the site.

The National Grid Reference is: NJ 65080 29749.

2.0 SITE VISIT

On 9th October 2023, trial pits were excavated using a Volvo EC18 360 degree slew excavator with a 450mm digging bucket. The weather was fair and cold.

Existing Drainage

There are currently no drainage facilities on the site.

3.0 SITE INVESTIGATION

3.1 Preliminary Ground Assessment

- (i) *identification of the underlying geology and aquifers*
Insch Pluton, Upper Zone - Olivine-gabbro, fe-rich. Igneous bedrock formed between 485.4 and 443.8 million years ago during the Ordovician period.
Refer to: <https://www.bgs.ac.uk/map-viewers/geology-of-britain-viewer/>
- (ii) *whether the ground is liable to flooding*
According to the SEPA flood risk map the site does not have a likelihood of flooding.
Refer to: <https://map.sepa.org.uk/floodmap/map.htm>
- (iii) *nature of the sub-soil and groundwater vulnerability*
The generalised soil type in the area is Brown soils, Brown Soils are well drained with brownish subsoils where iron oxides created through weathering processes are bonded to silicate clays.
Refer to: https://map.environment.gov.scot/Soil_maps/?layer=1
&
<https://soils.environment.gov.scot/soils-in-scotland/guide-to-soil-types/>
- (iv) *implication of plot size*
The site and surrounding land are owned by the applicant. There is sufficient area within the proposed site to accommodate the development and soakaways.
- (v) *proximity of underground services*
The land owner has advised that there are no known underground services.
- (vi) *ground topography and local drainage patterns*
A GPS topographical survey has been carried out on the site indicating that the site slopes gradually down to the north. The data allows us to position the house on the site in a location that will not significantly alter the existing topography or drainage patterns.
- (vii) *whether water is abstracted for drinking, used in food processing or farm dairies*
No water abstraction takes place in the immediate vicinity of the site.
- (viii) *implication for, and of, trees and other vegetation*
There are no trees or shrubs or other vegetation which will be adversely affected by the proposals.

This preliminary assessment indicates good prospects for the construction of a satisfactory foul water and rainwater soakaway at the site.

3.2 Trial Pit

The test pit locations were chosen taking into consideration of the proposed development and the topography of the site.

The trial pit was excavated to a depth of 2 metres, there was no evidence of running water or saturation of the gravel layer. The strata was 'dry' to the base of the trial pits at 2.00m.

3.3 Percolation Testing

One hole, 300mm square was excavated below the proposed invert level. The excavated hole was saturated and filled with water to a depth of at least 300mm, the time for the water to seep away from 75% full to 25% full was observed and timed in seconds.

Average time taken for water to drain 3 times in each sump hole = **2700seconds**

$$V_p = 2700s/150mm$$

$$V_p = \mathbf{18s/mm}$$

4.0 FOUL WATER DRAINAGE

The floor area of a sub-surface drainage trench required to disperse effluent from septic tanks is calculated using the following formula:

$$A = P \times V_p \times 0.25$$

A - is the area of the sub-surface drainage trench, in m²

P - is the number of persons served by the tank,

V_p - is the percolation value obtained, as described above, in secs/mm.

Population Equivalent = 6 (4 bedrooms)

$$A = 6 \times 21 \times 0.25$$

$$\mathbf{A = 27m^2}$$

It is recommended that a septic tank with a minimum capacity of **3,800 litres** is installed.

4.1 Foul Soakaway Certificate

Planning Application Ref No N/A

CERTIFICATE FOR PROPOSED FOUL WATER SUB-SURFACE 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; and
2. A percolation test must be carried out to determine the area of the ground required.

Certificate

Applicant's name A & D Grant
(name of person applying for planning permission)
Address Little Lediken, Insch, AB52 6UA
Site address Little Lediken, Insch, AB52 6UA

Date of test 09/10/2023 Time 12:30pm.
Weather conditions Fair and Cold

Trial Pit Test (see attached location plan and drainage report identifying test pit and all wells within 100 metres of test pit)

Depth of drain 1m
Depth of excavation 2m
Water table present Yes / No (delete)

Percolation Test

Time taken (means of three) 2700s
Percolation value Vp 18s
Number of persons 6
Floor area of soakaway 27m²

I hereby certify that I have carried out the above tests in accordance with procedures specified in British Standard BS6297:1983, as amended by AMD6150 1990, and in conjunction with the full requirements set out within the Domestic Scottish Building Standards Technical Handbook (Environment Standard 3.9 Infiltration Systems), the result 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 9th October 2023.
Name/Company John Wink Design
Address Midtown of Foudland, Glens of Foudland,
Huntly, AB54 6AR
Qualification MCIAT, RIAS

5.0 SURFACE WATER DRAINAGE

5.1 Surface Water Soakaway Calculations

Project - 2664 Location: Little Lediken, Insch



TRENCH SOAKAWAY CALCULATION DETAILS

RAINFALL

STORM DURATION	M5	M10
10	9.2	10.9
15	11.2	13.4
30	15.0	17.9
60	20.0	23.8
120	26.0	30.7
240	34.2	40.2
360	40.0	46.8
600	48.0	55.7
1440	67.0	77.1

VOLUME EQUATION

$$I - O = S$$

$$I = A \times R$$

A

228

AREA

228

STORM DURATION	M10	INFLOW
10	10.9	2.5
15	13.4	3.1
30	17.9	4.1
60	23.8	5.4
120	30.7	7.0
240	40.2	9.2
360	46.8	10.7
600	55.7	12.7
1440	77.1	17.6

144

OUTFLOW

$$O = A_{s50} \times f \times D$$

LENGTH m WIDTH m

As50
Vp secs/mm
f

6 5.5

23

18

1.85185E-05

SOAKAWAY VOLUME
ASSUME 30% VOIDS

$$S = 0.3 \times L \times W \times D \quad \text{cubic metres/m}$$

	DEPTH REQUIRED
D10	0.22
D15	0.26
D30	0.40
D60	0.51
D120	0.66
D240	0.80
D360	0.82
D600	0.88
D1440	1.00

OUTFLOW cubic metres/m depth

D10	600	1.278
D15	900	1.917
D30	1800	0.383
D60	3600	0.767
D120	7200	0.767
D240	14400	1.533
D360	21600	3.067
D600	36000	4.600
D1440	86400	7.667

$$9.9 \times D$$

The maximum depth is the design depth

5.2 Surface Water Soakaway Certificate

Planning Application Ref No

**CERTIFICATE FOR PROPOSED SURFACE WATER
SUB-SURFACE SOAKAWAY**

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

Certificate

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(name of person applying for planning permission)
Address Little Lediken, Insch, AB52 6UA
Site address Little Lediken, Insch, AB52 6UA
Date of test 09/10/2023 Time 12:30pm.
Weather conditions Fair and Cold

Trial Pit Test (see attached location plan and drainage report identifying test pit and all wells within 100 metres of test pit)

Depth of drain 1.....m
Depth of excavation 2.....m
Water table present Yes / No (delete)

Percolation Test

Percolation value Vp 18.....s
Roof Area 228.....m²
Floor area of soakaway 33.....m²

I hereby certify that I have carried out the above tests in accordance with procedures specified in British Standard BS6297:1983, as amended by AMD6150 1990, and in conjunction with the full requirements set out within the Domestic Scottish Building Standards Technical Handbook (Environment Standard 3.9 Infiltration Systems), the result 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 Signature] Date 9th October 2023
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Address Midtown of Foudland, Glens of Foudland
Huntly, AB54 6AR
Qualification Architectural Agent, MCIAT, RIAS