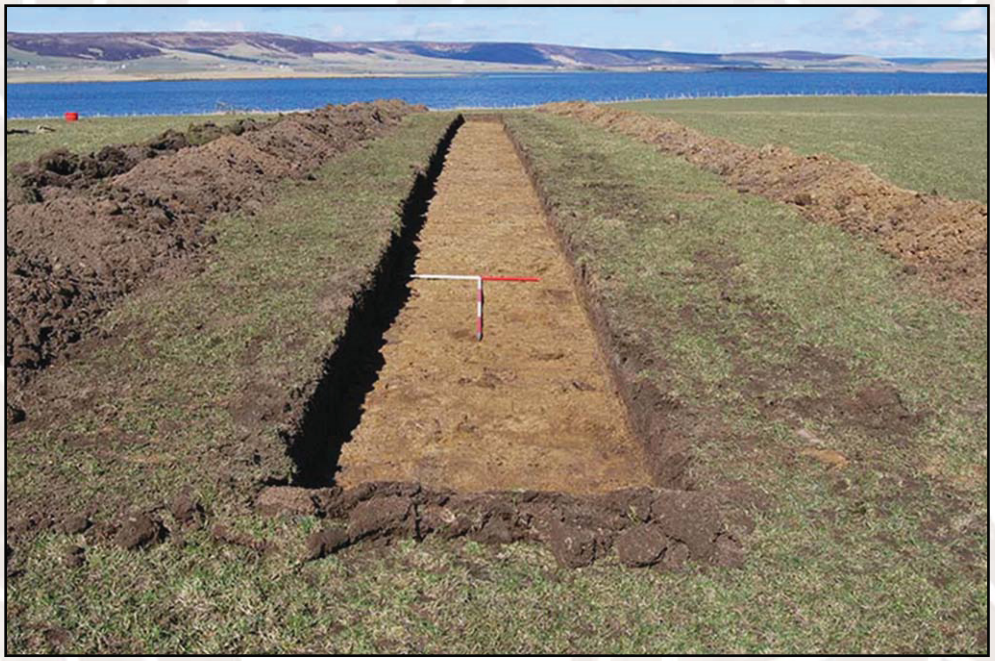
ORCA
Orkney Research Centre for Archaeology

Rennibister Wind Turbine
Firth
Orkney



Evaluation Data Structure Report

April 2013

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Rennibister Wind Turbine, Firth, Orkney

Evaluation

Data Structure Report

Project No: 405

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Funded by:
Scotrenewables Ltd.

April 2013

This documents has been prepared in accordance with ORCA standard operating procedures and IFA standards	
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Executive Summary

Scotrenewables Ltd commissioned the Orkney Research Centre for Archaeology (ORCA) to undertake an intrusive archaeological evaluation on land near Rennibister Farm, Firth, Orkney. The archaeological work was undertaken in order to investigate two parallel geophysical anomalies identified in a recent survey of the area (ORCA 2013).

This work was undertaken in advance of a proposed development consisting of the erection of a 45m high Enercon E44 wind turbine and associated access track. The archaeological work has been undertaken as a condition of planning consent (OIC Planning Refs. 12/108/TPP, 12/800/TPP) and complies with the archaeological and cultural heritage issues highlighted by the Environmental Statement (Rennibister Wind Power Ltd 2012).

A single, 50m long by 1.5m wide evaluation trench (Trench 1) was machine excavated across the geophysical anomalies to investigate this feature. No significant archaeological features were found. A possible furrow base was found in the NNW end of the trench, which is of low archaeological significance.

The cause of the two parallel geophysical anomalies was not conclusively identified, but they could have derived from the underlying geology, or alternatively from archaeological features that have been completely truncated away by ploughing.

Further archaeological work (such as a watching brief) may be desirable over the remainder of the development area due to the archaeological potential of the area. The decision as to whether additional archaeological work is required on site rests with the Local Authority's Planning Archaeologist.

Acknowledgements

The author would like to thank Barry Johnston of Scotrenewables for commissioning the work, and Mr Watson of Rennibister Farm for allowing access to his land.

This report was prepared by Dave Reay and the illustrations were prepared by Linda Somerville.

1.0 Introduction

Scotrenewables Ltd commissioned the Orkney Research Centre for Archaeology (ORCA) to undertake an intrusive archaeological evaluation on land near Rennibister Farm, Firth, Orkney (hereafter 'the site'). The archaeological work was undertaken in order to investigate two parallel geophysical anomalies identified in a recent survey of the area (ORCA 2013).

This work was undertaken in advance of a proposed development consisting of the erection of a 45m high Enercon E44 wind turbine and associated access track. The archaeological work has been undertaken as a condition of planning consent (OIC Planning Refs. 12/108/TPP Condition 17, 12/800/TPP) and complies with the archaeological and cultural heritage issues highlighted by the Environmental Statement (Rennibister Wind Power Ltd 2012).

A Written Scheme of Investigation (WSI) for the evaluation has been prepared previously (ORCA 2013a). The WSI was submitted to, and approved by the Local Authority Planning Archaeologist in advance of the commencement of the fieldwork.

The purpose of the evaluation was to characterise any archaeological deposits which may be present on the site and might be affected by the proposed development. The results of this evaluation, in conjunction with the previous archaeological work, will be used to determine if any further archaeological mitigation might be required.

This report details the results of the evaluation which was carried out on 28th March 2013.

2.0 Site Location, Topography and Geology

Rennibister farm is located 6 km west of Kirkwall, north of the main road and close to the south-east shore of the Bay of Firth (see Figure 1). The proposed turbine is to be situated at HY 39694 12872, circa 300m north of the farmstead, with the access track running along the east side of the farm

complex.

The evaluation consisted of a single 50m x 1.5m trench, which was located at NGR HY 39737.207 12823.165 (NNW end) HY 39756.265 12776.939 (SSE end). The field was under pasture, and it sloped up slightly from the shore at 3m OD, rising to 9m OD.

The solid geology of the proposed development comprises of Upper Stromness Flagstone formation made up of siltstone, mudstone and sandstone. Two igneous dykes were identified from the geophysical survey aligned north-east to south-west. These are likely to be an extension of those recorded by the British Geological Survey to the south-west of the survey area, which belong to the 'Orkney Swarm' and are formed of Monchiquite (BGS 2013).

3.0 Archaeological Background

In the general area of this development a number of archaeological sites have been noted that cover a range of periods from the Neolithic up to the medieval. One of the earliest Neolithic sites discovered in Orkney was partially excavated on the opposite side of the main road at the base of Wideford Hill (HY41SW 47). A sequence of both timber and stone built structures were revealed that dated back to the mid fourth millennium BC. A burnt mound of presumed Bronze Age date is also known to have existed in the vicinity (HY31SE 2). The farm of Rennibister is renowned for the scheduled Iron Age souterrain (HY31SE 3; SAM No. 90245) that was discovered in 1926 when its roof gave way beneath the weight of a threshing machine. This underground structure is presumed to have been associated with an above ground structure (Ritchie 1995, 142-3; Armit 1998, 43-5).

A chapel known as 'Mary Kirk' (HY31SE 18) is said to have stood in a field known as the 'North Sheed' which lies a short distance NE of the house of Rennibister. No evidence of the structure is now apparent above ground but traces of it are said to have been detected during some excavations in November 1926 by a Mr. Traill. This may be associated with records of an apparent mound of 'considerable dimensions' that existed till about 1900, when 'it was wholly removed and carted to the beach' (Wood 1927). The association of chapel sites with broch mounds is well attested at many sites

in Orkney and it may be that the large mound referred to was such a broch mound (RCAHMS 2013).

In the same field as the chapel, lies Rennibister burnt mound (HY31SE 2) which measures 19m in diameter, by 1m high.

To the west of the burnt mound, in the adjacent field (the field under investigation in this evaluation), the NMRS has an entry for a mound (HY31SE 19), centred on NGR HY 3982 1292. This grid reference seems to correspond to a 1946 description of 'the site of a mound which had been entirely swept away by cultivation was pointed out, in 1934, by the farmer of Rennibister, about 250 yards N. of the house' (RCAHMS 2013). However, in the same entry for HY31SE 19, a different mound was described in 1966 which was a 'grass covered mound, 10m in diameter and 0.04m high…80m N. of Rennibister farmhouse'. These two elements of the entry for HY31SE 19 seem to relate to two separate sites, given the absence of the former site in 1946, and the disparity in the distances given to the farmhouse.

During the geophysical survey, a mound was identified in the topography, and the eastern periphery of the mound was within the survey area. The Area adjacent to it, gave a signature (Anomaly 1) that was consistent with it being a probable prehistoric settlement site (ORCA 2013), and a hammer-stone was also found during the survey. Given the location of this site, it seems to correspond with the 1966 entry for HY31SE 19, however, the grid reference given appears to relate to the mound described in 1946.

The recent geophysical survey (ORCA 2013) revealed a number of geophysical anomalies that have a high potential for being archaeological in nature. Two large linear parallel anomalies (Anomaly 2) in particular lie on the route of the proposed new access route. Anomaly 2 extends to the NE from the probable settlement site identified (Anomaly 1). These would not seem to coincide with any known historic field boundaries and were thought to be archaeological in origin.

4.0 Fieldwork Aims and Objectives

The primary aim of the intrusive archaeological evaluation was to investigate two parallel geophysical anomalies identified in the geophysical survey

(ORCA 2013). The objectives were to identify the nature, extent, condition, significance, survival and depth below the current ground surface of archaeological deposits and features.

The investigations aimed to clarify the potential impact upon the archaeological resource of the proposed development, and seek to aid in the establishment of a mitigation strategy.

The work was carried out in accordance with accepted professional standards outlined by the *Institute for Archaeologists* (2008).

The limited nature of the works and the archaeological evaluation made it unreasonable to establish many specific archaeological research objectives. The archaeological brief was limited to establishing where, if at all, archaeological deposits may survive (presence / absence), recording where necessary, and to ensuring that the excavation of evaluation trench did not involve the destruction of the above. A few research questions were outlined:

What is the nature and level (m OD) of natural topography?

What is the character, nature, significance and depth of the deposits identified?

What is the nature of the two linear parallel features picked up in the geophysical survey (Anomaly 2)?

If so what is the character, nature extent and date of this activity?

Is there evidence for settlement in this location? If so what is the character, date, significance, nature and extent of such settlement?

Are the features likely to be prehistoric, non-domestic or funerary in nature?

What is the character and nature of the latest deposits identified?

5.0 Fieldwork Methodology

The position of Trench 1 was located using a Leica Viva Series GNSS to

target the anomaly identified during the geophysical survey (ORCA 2013).

The trenches were opened using a backhoe mechanical excavator with a 1.5m wide toothless grading bucket, under constant archaeological supervision. Initially, just the turf was removed, then the topsoil and subsoil (where present) were removed in 50mm spits, until the underlying natural geology or archaeological deposits were encountered. The turf, topsoil and subsoil were stored separately, to allow the excavated material to be reinstated in the same stratigraphic sequence during the backfilling process.

The trench was hand cleaned and two representative sections (at 1:10 scale) through the deposits was recorded. The layers within the trench were recorded using ORCA's *pro-forma* recording system, in accordance with the ORCA excavation manual (*in prep*) under the ORCA Project code 405.

The trench, sections and levels were located using a Leica Viva Series GNSS in order to provide an accurate plan record of the evaluation. All evaluation survey data was recorded using the OSGB36 British National Grid coordinate system. During fieldwork, digital plans were produced using AutoCAD.

A photographic record of the site was created using a Nikon D60 digital camera (at a resolution of 300PPI), including appropriate scales. General site photographs were also taken to give an overview of the site and the progress of the evaluation. Photographs are available from ORCA on request.

No environmental samples were taken from the site.

6.0 Fieldwork Results

6.1 Trench 1

Trench 1 (Figures 1 and 2) measured 50.60m by 1.5m, was aligned NNW to SSE and was machine excavated to a maximum depth of 0.4m. The turf and topsoil **100** measured between 0.3m and 0.23m thick, and was shallowest in the middle of the trench, which corresponded to a rise in the topography. The topsoil consisted of a dark orange brown silty clay with 2% sub-angular to rounded flagstone inclusions between 10mm and 100mm. In the NNW

13.5m of the trench, topsoil **100** overlay **102**, a deposit of mid yellow brown silty clay with 2% sub-angular to sub-rounded flagstone inclusions which ranged in size from 10mm to 60mm. Layer **102** was either a deposit of subsoil, or alternatively could have been the remains of a furrow base, it measured 0.15m thick to the NNW, and thinned out to the SSE. Context **102** sealed the underlying glacial till **101**, which was overlain by the topsoil in the areas of the trench where **102** was not present. Glacial till **101** comprised a firm light orange brown silty clay with 30% sub-angular to sub-rounded flagstone inclusions, between 20mm and 600mm in size. Small, localised patches of the weathered upper surface of underlying bedrock were evident protruding through the glacial till, which appeared to slope off to the NNE at an angle of c.30^0. The bedrock was light brown fine grained slightly laminated sandstone, which had mid orange brown ferrous patches and laminations present. Throughout the course of Trench 1, the upper disturbed portion (predominantly around 0.1m) of glacial till **101** was removed, to ensure that no poorly defined archaeological features were present cut into this deposit.

7.0 Discussion

As per the original research aims (see Section 4):

What is the nature and level (m OD) of natural topography?

The nature of the natural topography consists of glacial till **101** varying in height from 7.99m OD in the NNW to 8.73m OD in the middle of the trench.

What is the character, nature, significance and depth of the deposits identified?

The soil profile consisted of topsoil **100** overlying subsoil / furrow base **102** in the NNW end of the trench, which sealed glacial till **101**. The topsoil was between 0.3m and 0.23m thick, and the subsoil was a maximum of 0.15m thick in the NNW end of the trench. No significant archaeological features were revealed within Trench 1. The deposit of subsoil **102** in the NNW end of the trench may represent the base of a furrow from rig and furrow cultivation of the area. Numerous NNW to SSE geophysical trends were seen in the geophysical survey of the area (ORCA 2013), one of which

aligns exactly with this area of the trench (see Anomaly 3, Figure 2). Rig and furrow cultivation was widely practiced throughout Orkney in the Post-Medieval period (Thomson 2008: 315ff), and is of low archaeological significance.

What is the nature, character, extent and date of the two linear parallel features picked up in the geophysical survey (Anomaly 2)?

It is not clear from this evaluation what had caused the two parallel geophysical anomalies, which were aligned NNE to SSW, as no evidence was seen of these within the trench. It is possible that the cause of the two parallel geophysical anomalies may have been geological folds or faults in the sandstone bedrock, underlying the glacial till, and therefore not seen in this evaluation. A slight rise / ridge was evident in the topography which was present in the centre of the trench, and was aligned NNE to SSW. This may account for the geophysical anomalies seen.

Alternatively, if the geophysical anomalies were not geological in origin, they may have derived from archaeological features that had been completely truncated away by ploughing.

What is the character and nature of the latest deposits identified?

The latest deposit identified was the topsoil **100**.

Given the lack of featues present, the following two research aims were not applicable:

Is there evidence for settlement in this location? If so what is the character, date, significance, nature and extent of such settlement?

Are the features likely to be prehistoric, non-domestic or funerary in nature?

8.0 Conclusions and Recommendations

No significant archaeological features were found within Trench 1. The possible furrow base in the NNW end of the trench is of low archaeological significance. The cause of the two parallel geophysical anomalies, Anomaly 2, in the Geophysical Survey, (ORCA 2013) was not conclusively identified,

but they could have derived from the underlying geology, or alternatively from archaeological features that have been completely truncated away by ploughing.

Trench 1 was located on the route of the proposed access track to the proposed wind turbine, over potential archaeological features that were highlighted in the geophysical survey (ORCA 2013).

This evaluation has shown that within the limits of the trench excavated, no archaeological features are present, however it should be noted that the remainder of the site that has been subject to geophysical survey (ORCA 2013) remains un-proved (i.e. not ground-truthed) and given the high density of archaeological sites within the immediate vicinity of the development area, and the known limitations of geophysical survey techniques, there remains slight potential for archaeological deposits to be present on site.

The decision as to whether further archaeological work is required on site rests with the Orkney Island Council Planning Archaeologist.

9.0 References

9.1 Policy and Advisory Documents

Institute for Archaeologists 2008, *Standard and Guidance for Archaeological Field Evaluations* consulted at: http://www.archaeologists.net/sites/default/files/node-files/ifa_standards_field_eval.pdf 2011.

9.2 Bibliographic References

Armit, I (1998) Scotland's Hidden History, Tempus, Stroud

ORCA 2013, *Rennibister, Firth, Orkney: Geophysical Survey Report*, unpublished client report, ORCA Project 313.

ORCA 2013a, *Rennibister Wind Turbine: Written Scheme of Investigation for an Archaeological Evaluation of Geophysical Anomalies*, unpublished client WSI, ORCA Project 405

Ritchie, A. (1995) Prehistoric Orkney, Batsford/Historic Scotland, Avon

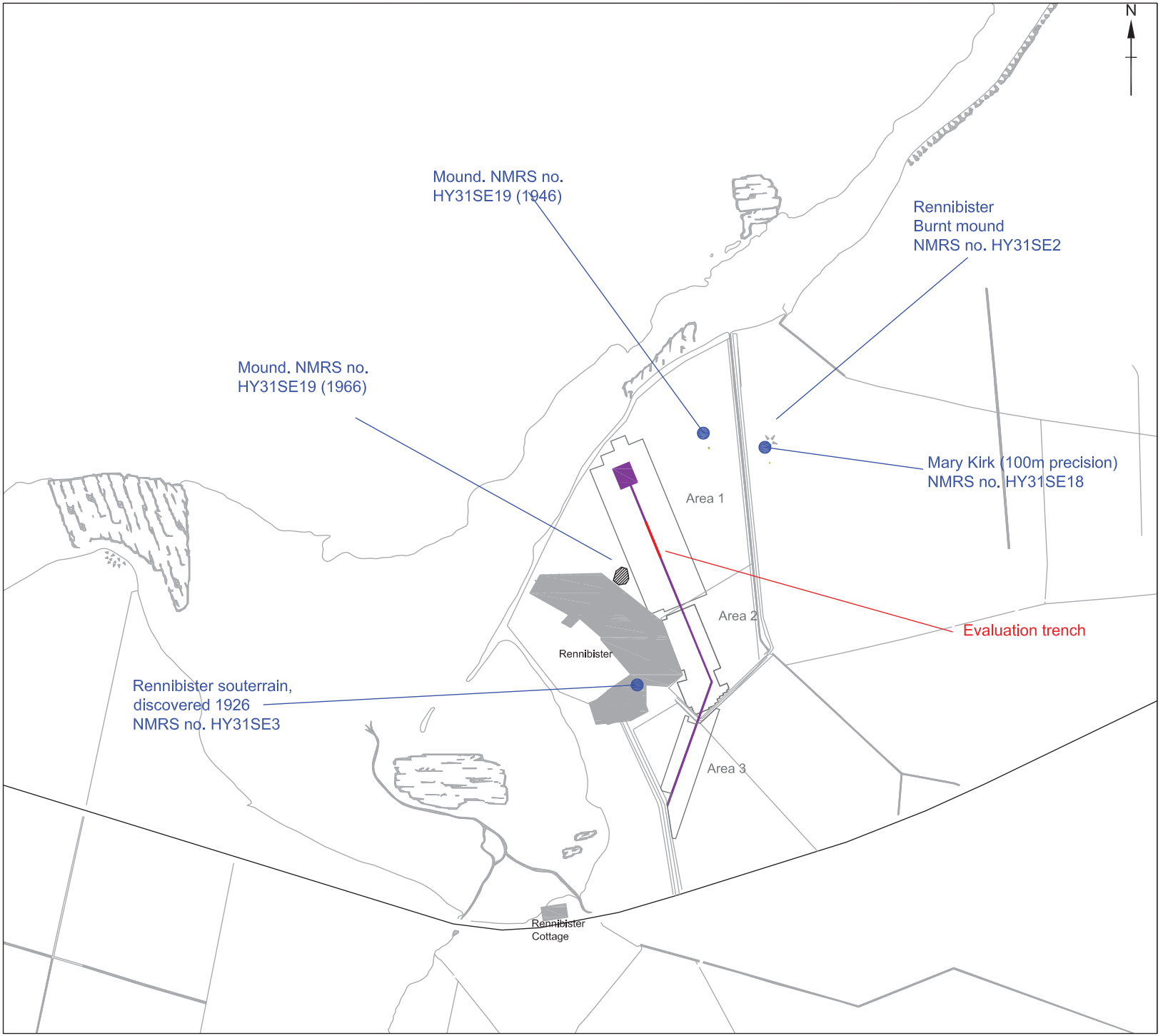
Rennibister Wind Power 2012, *Rennibister Farm Wind Turbine Project: Environmental Statement, Volume 1*, consulted at: http://planningandwarrant.orkney.gov.uk/online-applications/files/2A67C04D6DEC4D6CC1B390A0B70A5012/pdf/12_108_TPP-Environmental_Statement_-_Volume_1-103513.pdf

Thomson, W. P. L. 2008, *The New History of Orkney* (Third Edition) Birlinn, Edinburgh.

9.3 Cartographic References

BGS 2013, http://maps.bgs.ac.uk/geologyviewer/

RCAHMS 2013, http://jura.rcahms.gov.uk/PASTMAP/Map



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OS map

Site location (inset)

Survey area

Development area

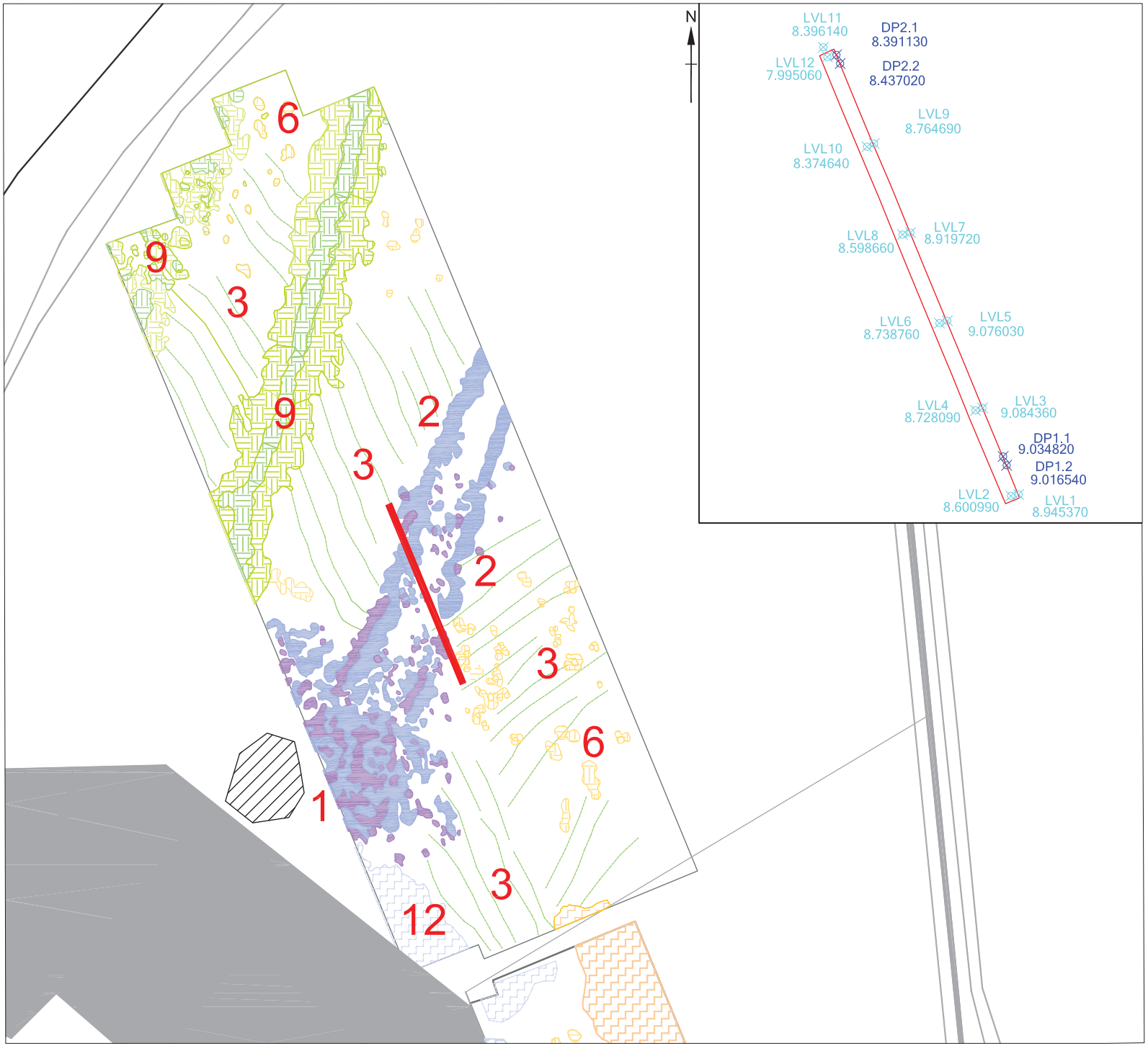
Evaluation Trench location

Figure.1. Site location

Project Name	Rennibister
Project No.	405
Date	March 2013
Creator	LS/DR
Scale 1:5000 @ A3	Revision No. 2

ORCA, Orkney College, East Road, Kirkwall, KW15 1LX

X:\ORCA\ORCA Projects\405 Rennibister Evaluations\Geomatics\CAD\Current\405_Report_Figures.dwg(Fig. 2)***** 05 Apr 2013



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- OS basemap
- Survey area
- Evaluation trench
- Archaeology positive
- Archaeology negative
- Rig and furrow
- Modern
- Ferrous
- Geology positive
- Geology negative
- 1 Anomaly number

Figure. 2 Evaluation trench location with geophysical interpretation and close-up (inset)

Project Name	Rennibister
Project No.	405
Date	March 2013
Creator	LS/DR
Scale 1:1000 @ A3	Revision No. 2

ORCA, Orkney College, East Road, Kirkwall, KW15 1LX

Plate 1: Overall shot of Trench 1, looking NNW

Plate 2: Overall shot of Trench 1, looking SSE

Plate 3: Representative section, SSE end of trench, looking ENE

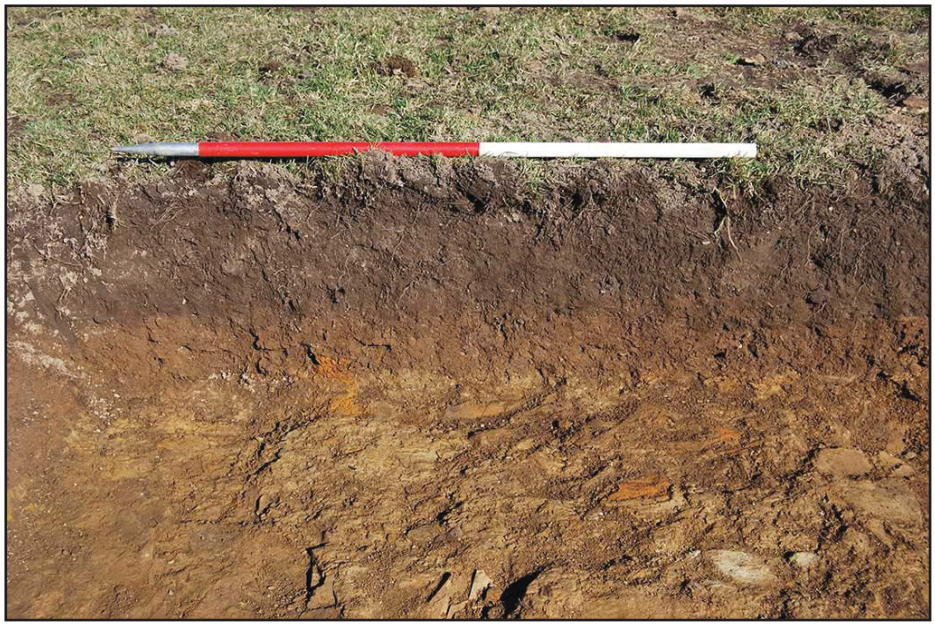

Plate 4: Representative section showing 102, NNW end of trench, looking ENE

Appendix 1: Evaluation Trench Summary

Trench no. 1	**Type:** Machine Evaluation		**Dimensions:** 50.60m x 1.5	**Alignment:** NNW - SSE
Minimum depth: 0.29m	**Maximum depth**: 0.4m		**Ground level (mOD)** 8.39 (NNW), 8.94 (SSE)	**Natural geology(mOD)** 7.99 (NNW), 8.60 (SSE)
Context	**Description**			**Depth (m bgl)**
100	Layer	Topsoil		0.3m deep
101	Layer	Glacial till		0.3m (+) deep
102	Layer	Subsoil / furrow base, present for 13.5m from NNW end of trench.		0.15m thick

Appendix 2: Drawing Register

Drawing No.	Type	Site Subdivision	Description	Scale
1	Section	Trench 1	WSW facing rep. sec. SSE end of trench	01:10
2	Section	Trench 1	WSW facing rep. sec. NNW end of trench	01:10

Appendix 3: Photographic Register

Batch 1

Frame	Site Subdivision	Description	Direction of shot
1	Trench 1	Pre-ex shot of site	NNW
2	Trench 1	View SW towards mound / settlement	SW
3	Trench 1	View SW towards mound / settlement	SW
4	Trench 1	Overall shot of trench	NNW
5	Trench 1	Overall shot of trench	NNW
6	Trench 1	Overall shot of trench	NNW
7	Trench 1	Overall shot of trench	NNW
8	Trench 1	WSW facing rep. sec (SSE end)	ENE
9	Trench 1	WSW facing rep. sec (SSE end)	ENE
10	Trench 1	Overall shot of trench	SSE
11	Trench 1	Overall shot of trench	SSE
12	Trench 1	Overall shot of trench	SSE
13	Trench 1	Overall shot of trench	SSE
14	Trench 1	Overall shot of trench	SSE
15	Trench 1	WSW facing rep. sec (NNW end)	ENE
16	Trench 1	WSW facing rep. sec (NNW end)	ENE

Appendix 4: Oasis Form

9.4 OASIS ID: orkneyre1-147171

Project details

Project name	Rennibister Wind Turbine
Short description of the project	Orkney Research Centre for Archaeology (ORCA) were commissioned to undertake an intrusive archaeological evaluation on land near Rennibister Farm, Firth, Orkney. The archaeological work was undertaken in order to investigate two parallel geophysical anomalies identified in a recent survey of the area. This work was undertaken in advance of a proposed development consisting of the erection of a wind turbine and associated access track. The archaeological work has been undertaken as a condition of planning consent. A single, 50m long by 1.5m wide evaluation trench (Trench 1) was machine excavated across the geophysical anomalies to investigate this feature. No significant archaeological features were found. A possible furrow base was found in the NNW end of the trench, which is of low archaeological significance. The cause of the two parallel geophysical anomalies was not conclusively identified, but they could have derived from the underlying geology, or alternatively from archaeological features that have been completely truncated away by ploughing.
Project dates	Start: 28-03-2013 End: 28-03-2013
Previous/future work	Yes / Not known
Any associated project reference codes	ORCA 313 - Contracting Unit No.
Type of project	Field evaluation

Site status	None
Current Land use	Grassland Heathland 4 - Regularly improved
Monument type	NONE None
Significant Finds	NONE None
Methods & techniques	""Targeted Trenches""
Development type	Wind farm developments
Prompt	Planning condition
Position in the planning process	After full determination (eg. As a condition)

Project location

Country	Scotland
Site location	ORKNEY ISLANDS FIRTH Rennibister Wind Turbine
Postcode	KW15 1TX
Study area	75.00 Square metres
Site coordinates	HY 39737 12823 58 -3 58 59 55 N 003 02 56 W Line
Site coordinates	HY 39756 12776 58 -3 58 59 53 N 003 02 55 W Line
Height OD / Depth	Min: 8.00m Max: 9.00m

Project creators

Name of Organisation	Orkney Research Centre for Archaeology
Project brief originator	Local Authority Archaeologist and/or Planning Authority/advisory body

Project design originator	Orkney Research Centre for Archaeology
Project director/manager	Nick Card
Project supervisor	Dave Reay
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Scotrenewables

Project archives

Physical Archive Exists?	No
Digital Archive recipient	RCAHMS
Digital Media available	"Images raster / digital photography","Spreadsheets","Survey","Text"
Paper Archive recipient	RCAHMS
Paper Media available	"Drawing","Map","Notebook - Excavation"," Research"," General Notes","Report","Section","Survey "

Entered by	Dave Reay (Archive.ORCA@orkney.uhi.ac.uk)
Entered on	4 April 2013