Site Code: SBW02 Date: November 2007 Client: Kilbraur Wind Energy Ltd.

Kilbraur Windfarm, Strath Brora, Highland

Phase 2 construction programme:

Archaeological watching brief on excavations for the site access track, turbine bases, borrow pit and other groundworks.

Jamie Humble

PROJECT SUMMARY SHEET (SBW02)

Client	Kilbraur Wind Energy Ltd.			
National Grid Reference	NC 071 770			
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Schedule				
Fieldwork	May to September 2007			
Report	November 2007			

Summary

An archaeological watching brief was undertaken at the site of the Kilbraur Windfarm, Strath Brora, Highland. The work was commissioned by Kilbraur Wind Energy Ltd and followed a specification from the Highland Council Planning and Development Service (Archaeology Unit).

This phase of work comprised monitoring excavations for construction of the access track, turbine bases, batching plant and an earth grid around the sub-station. From the latter area were recovered trees preserved beneath the peat which were examined and recorded in detail as trees recovered on a previous phase of the work had shown cut marks and occasional charring. No archaeology or artefacts were observed.

This phase also involved monitoring of the peat stripping at the borrow pit. During this 18 cairns and a linear bank were recorded with excavation of some being necessary. The cairns proved to be simple field clearance cairns associated with the prehistoric settlement to the north east (Site 4/5).

KILBRAUR WINDFARM, STRATH BRORA, HIGHLAND: RESULTS OF AN ARCHAEOLOGICAL WATCHING BRIEF

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1. INTRODUCTION

This report presents the results for the watching brief associated with the Kilbraur Windfarm, Strath Brora, Highland, which took place between May and September 2007. Headland Archaeology Ltd was commissioned by Kilbraur Wind Energy Ltd to carry out this archaeological watching brief. The project was undertaken in accordance with a specification prepared by the Highland Council Planning and Development Service (Archaeology Unit) and followed previous work undertaken in the area in conjunction with the Environmental Statement for the windfarm and its associated mitigation programme (WCE 2004; Dalland & Lowe 2005; Lowe 2006).

2. OBJECTIVES AND METHOD

The Council specification required that all site groundbreaking work be archaeologically monitored. This period of the project involved excavations for the construction of the site access track, borrow pit, the turbine bases, a batching plant and an earth grid around the substation. Archaeological monitoring of all groundbreaking work within this period of the project was intended to minimise the impact of the development upon all archaeological remains within the development area and where this was not possible to excavate and record any archaeological features.

The boundaries of recognised sites were marked as necessary along with a 25m buffer zone when the proximity of development work put them at risk of accidental damage.

All excavations were carried out using a 1.6 or 2m wide toothless ditching bucket under the control of an archaeologist. Any archaeology uncovered was, where possible, preserved in situ and where preservation was impossible features were excavated and recorded.

3. RESULTS

Site Access Track

The onsite access track was constructed using a mixture of floating and founded road (*Figure 1*). The construction method of the road was generally decided by the depth of the peat with the road being floated, where practical, over the deeper deposits of peat. However in areas it was impossible to float the road, especially near the turbine bases and where the ground was steeply sloping, as these would have proved to be weak points in the track. Any

previously identified archaeological sites along the length of the road were marked out and a 25m buffer zone established in order to prevent accidental damage or intrusion and the stripping of the peat was monitored. The depth of peat varied along the course of the road from 0.6m to 2.5m. No archaeological features were found along the length of the road. Several treestumps, roots and branches were encountered. These were located, measured and sampled as cut marks had been observed on some of the tree stumps recovered during the watching brief on the sub-station excavations (Matthews 2007).

Batching Plant

An extension to the main site compound (*Figure 1*) with separate access was stripped in order to provide a batching plant for mixing of concrete. Site 1 lay close by and so was marked out with a 25m buffer zone to prevent any accidental damage or intrusion. Then the stripping of the peat was monitored. No archaeology was identified within the stripped area.

Borrow Pit

Topsoil stripping continued in the borrow pit to expose a larger area for stone quarrying. This meant that the plantation to the south was to be excavated. Once the pine plantation was felled it became apparent that a number of upstanding features were preserved in this area (*Figure 2*).

The majority of these were cairns that had been damaged by forestry ploughing running from NW to SE leaving parallel 0.80m wide scars 2.5m apart across the whole hillside. The cairns were all similarly constructed of sub-angular to sub-rounded stones of mixed geology. The boulder interstices were filled with sandy silt that had been carried around through the stones by water and wind action after the cairn was constructed. The cairns were set directly on an orange brown sand and gravel subsoil, with no peat underlying the cairn. The size and shape of the cairns varied (*Table 1, Figures 3 to 21*).

As Cairn 1 was badly damaged by the machine removal of the peat it was decided to record subsequent cairns in plan prior to excavation and then machine-excavate a section across them.

Several of the cairns remained unexcavated as the whole potential area of the borrow pit was not utilised, meaning that some of the cairns were unaffected by quarrying.

There was also a fragment of stony bank located at NC 76888, 06774 (*Figure* 22). This ran NE-SW down the slope of the hill and measured 17.5m by 2.5m

Cairn	Shape	Dimensions	Height	Location	Comments
1 (Fig. 3)	Sub-circular	3.2 by 2.8m		NC 76894, 06865	Centred around a large boulder
2 (Fig. 4)	Sub-circular	2.9 by 2.9m	1.0m	NC 76899, 06848	
3 (Fig. 5)	Sub-oval	6.0 by 3.7m	1.0m	NC 76879, 06860	
4 (Fig. 6)	Sub-circular	4.0 by 3.7m	0.8m	NC 76876, 06878	Central area of cairn heavily voided
5 (Fig. 7)	Sub-circular	3.9 by 3.7m	0.9m	NC 76876, 06865	Centred around 2 large boulders
6 (Fig. 8)	Sub-oval	5.0 by 3.6m	0.8m	NC 76867, 06875	
7 (Fig. 9)	Sub-circular	6.2 by 5.2m	0.7m	NC 76867, 06867	
8 (Fig. 10)	Sub-circular	4.5 by 4.1m	0.7m	NC 76856, 06874	
9 (Fig. 11)	Sub-oval	4.5 by 2.5m	0.9m	NC 76879, 06839	
10 (Fig. 12)	Sub-oval	4.4 by 3.5m	0.6m	NC 76875, 06831	
11 (Fig. 13)	Sub-circular	3.2 by 2.9m	0.7m	NC 76879, 06823	
12 (Fig. 14)	Sub-oval	4.5 by 2.9m	0.9m	NC 76903, 06815	
13 (Fig. 15)	Sub-circular	5.0 by 4.5m	0.6m	NC 76875, 06811	
14 (Fig. 16)	Sub-oval	7.5 by 5.2m	0.5m	NC 76912, 06767	Unexcavated
15 (Fig. 17)	Sub-circular	3.7 by 3.6m	0.5m	NC 76886, 06776	Undamaged by forestry ploughing
					Unexcavated
16 (Fig. 18)	Sub-oval	5.0 by 3.9m	0.5m	NC 76866, 06767	Undamaged by forestry ploughing
					Unexcavated
17 (Fig. 19)	Sub-circular	4.7 by 3.0m	0.9m	NC 76853, 06830	Damaged by test pit dug into N edge
					Centred on large boulder
18 (Fig.20)	Sub-circular	4.6 by 2.3m	0.6m	NC 76846, 06814	
19 (Fig. 21)	Sub-oval	6.0 by 4.7m		NC 76839, 06811	Excavation showed this to be a
					natural mound

wide (max) with a maximum height of 0.5m. This was not excavated as it was not to be affected by the quarrying.

Table 1: Clearance Cairn locations and descriptions.

Turbine bases

An area measuring 30m by 70m was stripped of peat for each of the turbine bases (*Figure 1*). Any previously identified archaeological sites in close proximity to the turbine bases were marked out and a 25m buffer zone established to prevent any accidental damage or intrusion. Then the stripping of the peat was monitored. The depth of the peat varied from 0.6m to 2.5m. No archaeological features were encountered in any of the turbine bases. Trees stumps were encountered from several of the turbine bases with a concentration at Turbines 8 and 9. At Turbine 9 a forest ground surface with many branches and roots of varying sizes was preserved within the peat. All the trees observed were located, recorded and sampled as cut marks and charring had been observed on some of the trees during the watching brief on the sub-station area (Matthews 2007).

Sub-station earth grid

Four trenches were excavated running from the sub-station in order to provide an earth grid (*Figure 23*). These trenches measured 0.7m wide and

were excavated to a depth of 0.9m with a total length of 675m. The trenches to the SW of the substation reached the natural subsoil. The trenches to the NE of the sub-station did not reach the natural subsoil as the depth of the peat was too great. These two trenches did however reach a layer of tree stumps preserved within the peat. These preserved trees were left in situ as the trench was not required to go any deeper. No archaeological features were observed in any of these trenches.

4. DISCUSSION

During the stripping of the peat in the borrow pit area several features were identified and recorded. Excavation of the cairns showed them to be simple field clearance cairns associated with the large prehistoric settlement to the northeast (Site 4/5). This combination of hut circles and small cairns is frequently encountered across upland Scotland with as many as 500 systems to be found in the county of Sutherland alone (Edwards, 1978; Fairhurst & Taylor 1971; Yates 1984).

Several of the clearance cairns appear to have been constructed around large central boulders that are either in earthfast positions or have been the first stones to be cleared from the fields as the largest and the most obvious obstacles to cultivation.

The cairns show that the land around them was used for the cultivation of crops while the absence of any peat below the cairns suggests that the cairns were built at a time when the soil conditions were more favourable for agriculture. The location of the sites on gentle south and southwesterly facing slopes would have proved important for the additional warmth and light that this would provide. The gentle slope would also have provided good drainage whilst still being easy to work (Yates 1984).

The cairns probably represent the south westerly limits of the settlement to the NE as below these sites the ground becomes boggy and may have been unsuitable for cultivation.

The short stony bank found in the borrow pit appears to be the linear equivalent of a clearance cairn (Yates 1984).

No archaeology was identified during the excavations at the batching plant. During the construction of the access track, turbine bases and earth grid several preserved tree stumps were recovered, with a concentration at Turbine 8 and a preserved forest ground surface encountered at Turbine 9. These tree stumps were measured, recorded and sampled. No archaeological features or artefacts were discovered during the course of these excavations.

5. **BIBLIOGRAPHY**

Dalland, M & Lowe, C E 2005 *Kilbraur Wind Farm: further supplemental information Part II: Archaeology Sketch Plans and Notations*. Unpublished client Report, August 2005.

Edwards, K. J 1978 'Excavation and environmental archaeology of a small cairn associated with cultivation ridges in Aberdeenshire', *Proc Soc Antiq Scot*, **109**, 22-9.

Fairhurst, H & Taylor, D.B 1971 'A hut-circle in Kilphedir, Sutherland', *Proc Soc Antiq Scot*, **103**, 65-99.

Lowe, C E 2006 *Kilbraur Wind Farm: Method Statement for an archaeological programme of works*. Unpublished client report, October 2006.

Matthews, A 2007 *Kilbraur Windfarm, Strath Brora: Archaeological Watching Brief Road and Sub-Station Excavations.* Unpublished client report, April 2007

WCE (West Coast Energy) 2004 *Kilbraur Windfarm Environmental Statement* (Chapter 9, Cultural Heritage)

Yates, M. J 1984 'Groups of small cairns in northern Britain – a view from SW Scotland', *Proc Soc Antiq Scot*, **114**, 217-234.

6. APPENDIX

Context	register
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Context no.	Area	Description
201	T8	Tree roots and base (near road)
202	T8	Tree roots and base (near road)
203	T8	Tree roots and base (near road)
204	T8	Tree roots and base (near road)
205	T8	Tree roots and base (near road)
206	T8	Tree roots and base (near road)
207	T8	Tree roots and base (near road)
208	T9	Preserved forest ground surface
209	T10	Tree trunk
210	T14	Tree stump

Sample register

Sample	Context	Description
001		Void
002	201	Tree stump with possible axe marks, Turbine 8
003	202	Tree stump with possible axe marks, Turbine 8
004	203	Tree stump with possible axe marks, Turbine 8
005	204	Tree stump with possible axe marks, Turbine 8
006	205	Tree stump with possible axe marks, Turbine 8
007	206	Tree stump with possible axe marks, Turbine 8
008	207	Tree stump with possible axe marks, Turbine 8
009	208	Preserved forest ground surface with roots and timber, Turbine 9
010	209	Tree trunk section, Turbine 10
011	210	Tree stump, Turbine 14

Photographic Register

Film 1 C.S. and B/W

Shot no.	Direction	Description
1		ID Shot
		Photos 1-23 taken on previous phase of project
24	S	Site 4 general view
25	Е	Site 4 general view
26	NE	Site 4 general view
27	NW	Site 5 general view
28	NE	Site 5 general view
29	Ν	Site 5 general view
30	Е	Site 5 general view
31	S	Site 5 general view
32	SE	Site 3
33	SE	Clearance Cairn 1
34	SE	Clearance Cairn 2 section in edge of borrow pit
35	Ν	Clearance Cairn 3 pre-excavation
36	N	Clearance Cairn 4 pre-excavation

Shot no. Direction Description W Clearance Cairn 4 E-facing section 1 2 S Clearance Cairn 5 pre-excavation 3 Е Clearance Cairn 6 pre-excavation 4 Ν Clearance Cairn 7 pre-excavation 5 NW Clearance Cairn 8 pre-excavation 6 SE Clearance Cairn 9 pre-excavation 7 NE Clearance Cairn 10 pre-excavation 8 SE Clearance Cairn 11 pre-excavation 9 Е Clearance Cairn 12 pre-excavation 10 I.D. shot NW 11 Clearance Cairn 12 SE-facing section 12 NW Clearance Cairn 11 SE-facing section 13 NW Clearance Cairn 10 SE-facing section NW 14 Clearance Cairn 3 SE-facing section 15 NW Clearance Cairn 5 SE-facing section NW 16 Clearance Cairn 6 SE-facing section 17 NW Clearance Cairn 7 SE-facing section NW 18 Clearance Cairn 8 SE-facing section 19 NE Clearance Cairn 9 SW-facing section 20 Ν Clearance Cairn 13 pre-excavation NE 21 Clearance Cairn 14 pre-excavation 22 S Stony bank pre-excavation 23 S Stony bank pre-excavation 24 SW Clearance Cairn 15 pre-excavation 25 SW Clearance Cairn 16 pre-excavation 26 S Clearance Cairn 17 pre-excavation 27 NE Clearance Cairn 18 pre-excavation 28 S Tree trunk and root system from peat Feature 19 (Natural mound) pre-excavation 29 Ν 30 SE Clearance Cairn 13 NW-facing section 31 SE Clearance Cairn 17 NW-facing section 32 SE Clearance Cairn 18 NW-facing section 33 SE Feature 19 (Natural mound) NW-facing section 34 _ Tree stump (205) - Turbine 8 35 Tree stump (203) – Turbine 8 _ 36 W (208) - Woody/forest floor material in Turbine 9

Film 2 C.S. and B/W

Film 3 C.S. and B/W

Shot no.	Direction	Description	
1		Cairn c in borrow pit – machine section	
2		Tree stump from turbine 14	
3		I.D. shot	
4	S	Turbine 6	
5	Е	Turbine 8	
6	S	Turbine 13	
7	S	Turbine 12	

8	S	Turbine 10
9	E	Turbine 9
10	NW	Land slip over Site 20 head dyke
11	NW	Earth trench running E-W by sub-station
12	E	Earth trench running E-W by sub-station
13	SW	Earth trench running NE-SW at sub-station
14	W	Earth trench running E-W at sub-station

Drawing Register

No.	Туре	Description	Date
		Drawing 1-5 on previous phase of project	
6	Plan	Clearance Cairn 1 Pre-Excavation	22/5/07
7	Section	Clearance Cairn 2 NE facing section	23/5/07
8	Plan	Clearance Cairn 3 Pre-Excavation	23/5/07
9	Plan	Clearance Cairn 4 Pre-Excavation	23/5/07
10	Section	Clearance Cairn 4 E facing section	23/5/07
11	Plan	Clearance Cairn 5 Pre-Excavation	23/5/07
12	Plan	Clearance Cairn 6 Pre-Excavation	23/5/07
13	Plan	Clearance Cairn 7 Pre-Excavation	23/5/07
14	Plan	Clearance Cairn 8 Pre-Excavation	23/5/07
15	Plan	Clearance Cairn 9 Pre-Excavation	23/5/07
16	Plan	Clearance Cairn 10 Pre-Excavation	24/5/07
17	Plan	Clearance Cairn 11 Pre-Excavation	24/5/07
18	Plan	Clearance Cairn 12 Pre-Excavation	24/5/07
19	Section	Clearance Cairn 12 SE facing section	31/5/07
20	Section	Clearance Cairn 11 SE facing section	31/5/07
21	Section	Clearance Cairn 10 SE facing section	31/5/07
22	Section	Clearance Cairn 3 SE facing section	31/5/07
23	Section	Clearance Cairn 5 SE facing section	31/5/07
24	Section	Clearance Cairn 6 SE facing section	31/5/07
25	Section	Clearance Cairn 7 SE facing section	31/5/07
26	Section	Clearance Cairn 8 SE facing section	31/5/07
27	Section	Clearance Cairn 9 NW facing section	6/6/07
28	Plan	Clearance Cairn 13 Pre-Excavation	6/6/07
29	Plan	Clearance Cairn 14 Pre-Excavation	7/6/07
30	Plan	Stony bank Pre-Excavation	7/6/07
31	Plan	Clearance Cairn 15 Pre-Excavation	7/6/07
32	Plan	Clearance Cairn 16 Pre-Excavation	7/6/07
33	Plan	Clearance Cairn 17 Pre-Excavation	7/6/07
34	Plan	Clearance Cairn 18 Pre-Excavation	7/6/07
35	Plan	Feature 19 (Natural mound) Pre-	12/6/07
		Excavation	
36	Section	Clearance Cairn 13 W facing section	13/6/07
37	Section	Clearance Cairn 18 W facing section	13/6/07
38	Section	Clearance Cairn 17 NW facing section	13/6/07

Record of Trees

All trees discovered during the course of peat stripping were examined for cut marks or charring.

No.	Location	Туре	Depth	Х-	Roots	Burnt	Cuts	Photo	Sample
				Section					
201	Turbine 8	Pine		0.5m	Y	Ν	Possible		002
202	Turbine 8	Pine		0.3m	Y	Ν	Possible		003
203	Turbine 8	Pine	2.5m		Y	Ν	Possible	2/35	004
204	Turbine 8	Pine	2.5m	0.9m	Y	Ν	Possible		005
205	Turbine 8	Pine		0.9m	Y	Ν	Possible	2/34	006
206	Turbine 8	Pine		1.2m	Y	Ν	Possible		007
207	Turbine 8	Pine	2.5m	1.2m	Y	Ν	Possible		008
209	Turbine 10	Pine	0.5m	0.2m	Ν	Ν	Modern		010
210	Turbine 14	Pine	1.2m	0.2m	Ν	Ν	Possible		011

The following table records all the trees which were measured, located and sampled:



Figure 1: SBW02 - Area of watching brief on road April - September 2007



Figure 2: Location of cairns in borrow pit



Clearance Cairn 1, looking W, pre-excavation





Clearance Cairn 2, looking N



Natural - orange-brown coarse sand

Section through Clearance Cairn 2, NE facing





Clearance Cairn 3, facing N



Pre-excavation plan of Clearance Cairn 3

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Figure 5: Clearance Cairn 3 plate, pre-excavation plan and SE facing section



Clearance Cairn 4, facing N





Section through Clearance Cairn 4, SE facing



Figure 6: Clearance Cairn 4 plate, pre-excavation plan and SE facing section





Clearance Cairn 5, S facing



Section through Clearance Cairn 5, SE facing

	forestry plough furrow		
_		peat	
/ /	>		

NE 不







Clearance Cairn 6, looking E





Figure 8: Clearance Cairn 6 plate, pre-excavation plan and SE facing section





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Clearance Cairn 7, facing N
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Pre-excavation plan of Clearance Cairn 7

Section through Clearance Cairn 7, SE facing

Figure 9: Clearance Cairn 7 plate, pre-excavation plan and SE facing section







sw \bigcirc natural

Section through Clearance Cairn 8, SE facing

Pre-excavation plan of Clearance Cairn 8



Figure 10: Clearance Cairn 8 plate, pre-excavation plan and SE facing section



Clearance Cairn 9, looking SE



Section through Clearance Cairn 9, NW facing



Pre-excavation plan of Clearance Cairn 9

Figure 11: Clearance Cairn 9 plate, pre-excavation plan and NW facing section



Clearance Cairn 10, looking NE



Section through Clearance Cairn 10, SE facing



Pre-excavation plan of Clearance Cairn 10

Figure 12: Clearance Cairn 10 plate, pre-excavation plan and SE facing section



Clearance Cairn 11, looking SE



sw 不 forestry plough furrow \bigcirc \bigcirc dark brown sandy silt natural

Pre-excavation plan of Clearance Cairn 11

Section through Clearance Cairn 11, SE facing



Figure 13: Clearance Cairn 11 plate, pre-excavation plan and SE facing section



Clearance Cairn 12, looking E









Figure 14: Clearance Cairn 12 plate, pre-excavation plan and SE facing section





Pre-ex plan of clearance cairn 13

Clearance cairn 13, looking N



1 m

Figure 15: Cairn 13 plate, pre-ex plan and NW facing section



Clearance Cairn 14, looking NE



Figure 16: Plate and pre-excavation plan of Clearance Cairn 14



Clearance Cairn 15, looking SW





Figure 17: Clearance Cairn 15 plate and pre-excavation plan



Clearance Cairn 16, looking SW



Figure 18: Clearance Cairn 16 plate and pre-excavation plan





Clearance Cairn 17, looking S



Section through Clearance Cairn 17, NW facing

Pre-excavation plan of Clearance Cairn 17





Pre-ex plan of clearance cairn 18

Clearance cairn 18, looking NE



Figure 20: cairn 18 plate, pre-ex plan and NW facing section



Feature 19 (natural mound) looking north



Figure 21: Feature 19 (natural mound) plate and pre-excavation plan



Stony bank, facing S



Figure 22: Stony bank plate and pre-excavation plan



Figure 23: Location of substation earth grid trenches