GUARD ARCHAEOLOGY






Bruach Caorainn Hydropower Scheme
Topographical Survey and Archaeological Controlled Topsoil Strip
Data Structure Report
Project 4283

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Bruach Caorainn Hydropower Scheme
Topographical Survey and Archaeological Controlled Topsoil Strip
Data Structure Report

On behalf of: TLS Hydro

NGR: NN 41849 00774

Project Number: 4283

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Project Manager: Warren Bailie

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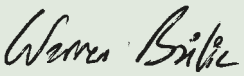
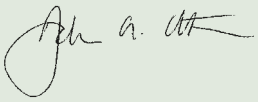
28/06/16		28/06/16	

This document has been prepared in accordance
with GUARD Archaeology Limited standard operating procedures.

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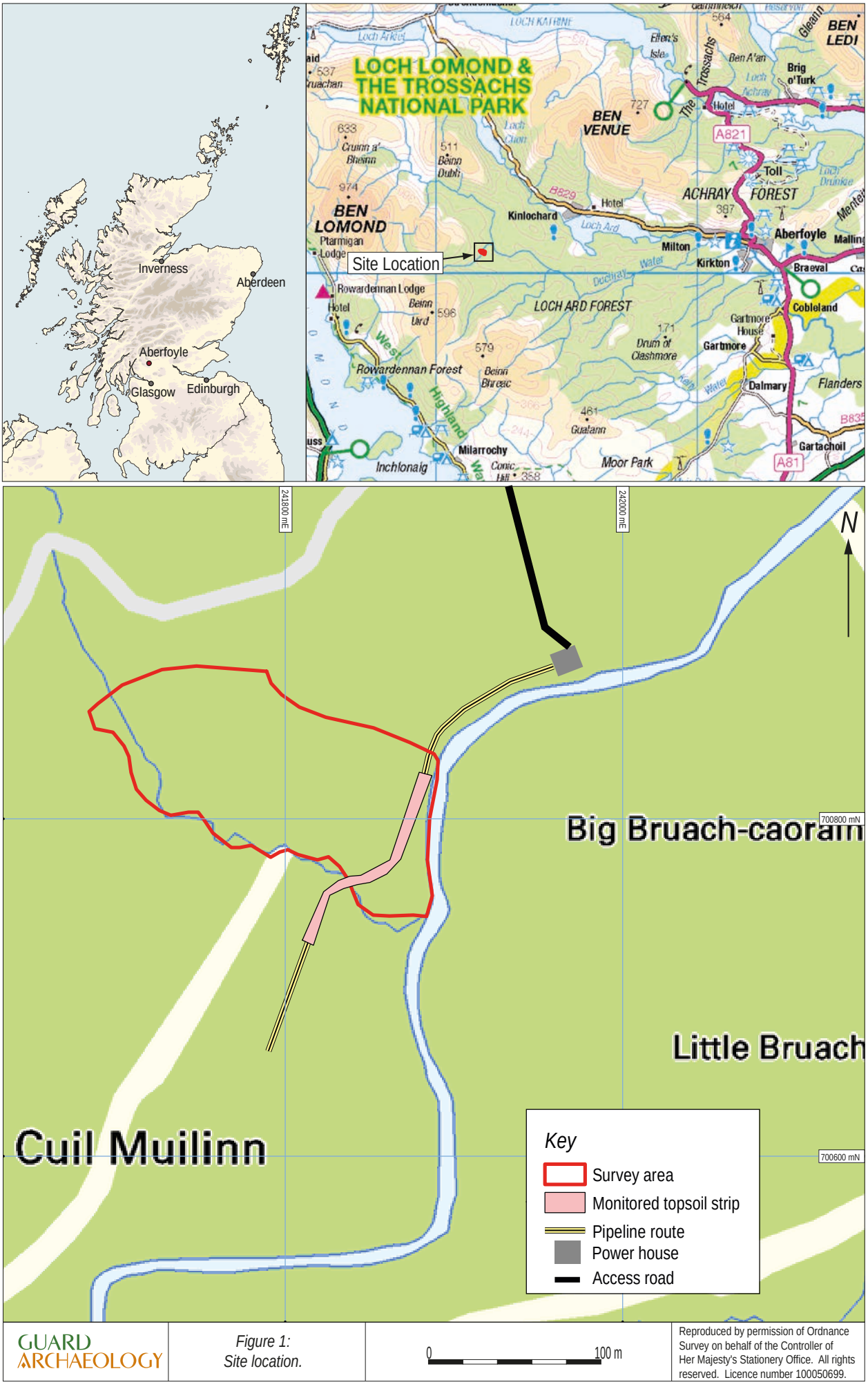

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Figure 1: Site location.

Executive Summary

1.1 An archaeological watching brief was carried out at Bruach Caorainn during ground breaking works associated with the development of a run of river hydro electric scheme and involved controlled topsoil stripping along part of an easement for the pipeline trench from the dam on the Bruach Caorainn Burn towards the Powerhouse building. The course of the easement was diverted from its original planned route to the south away from Big Bruach Caoruinn, a fine example of a pre-clearance homestead, to avoid unnecessary disturbance to sub-surface features associated with the settlement. Despite this a track was found circumventing the north and east sides of the homestead before turning to the south-east towards and terminating at a corn drying kiln located to the south of the homestead. During the Coontrolled Topsoil Strip for the route of the pipeline easement a place named Cuil Muilinn to the south-west of the area subject to archaeological monitoring was visited. In this location three possible clearance cairns and a track aligned from the south-west beyond Cuil Muilinn to the north-east leading to Big Bruach Caoruinn were found and rapidly recorded photographically and by handheld GPS survey.

Introduction

2.1 This data structure report sets out the results for the archaeological watching brief on ground breaking works associated with the Bruach Caorainn Hydropower Scheme (Figure 1). An initial topographical survey was undertaken in December 2015 to facilitate micro-siting of the pipeline corridor leading to the Powerhouse (Figure 2, 3 and 4). An archaeological controlled topsoil strip was to be undertaken during ground disturbance associated with the construction programme of the hydroscheme, to include the access road, pipeline corridor and powerhouse footprint. Part of the controlled topsoil strip had been undertaken without archaeological supervision and prior to a request for the presence of a GUARD Archaeologist. This included the access road leading from the forestry track to the Powerhouse measuring approximately 170 m long by 9.2 m wide, the footprint for the Powerhouse measuring 20m by 20m, and a section of the pipeline easement from the Powerhouse towards the Big Bruach Caoruinn settlement measuring 80 m long by 6.5 m wide. The aim of the controlled topsoil strip was to establish the presence, extent and nature of any significant archaeological remains and if it was not possible to preserve them *in situ,* to ensure any remains were preserved by record through excavation and recording.

Site Location

3.1 The proposed scheme area is located within Loch Lomond and The Trossachs National Park, on the North bank of the Bruach Caorainn Burn, a tributary of Duchray Water, which flows into the River Forth to the East of Loch Ard (Figure 1). The area subject to archaeological monitoring was centred around NGR NN 41849 00774.

Archaeological Background

4.1 One known site of archaeological significance (Site 1: Big Bruach Caoruinn township (Canmore ID: 23935, WoSAS Pins: 64005, 64006 and 64007)) was likely to be disturbed during the proposed ground works for the Bruach Caorainn Hydropower Scheme. The specific ground works are for the powerhouse, associated pipeline and access (Figure 1). The remains of the homestead lie close to the meeting of two water courses, the Bruach Caorainn Burn and a smaller unnamed burn leading in from the north-west. The site is described by RCAHMS as one of two “most interesting examples” of pre-clearance township sites in Stirlingshire (1963, 49). The site is recorded on Roy’s Map of 1747-52 as four buildings, three enclosures, a number of partial dykes and a corn-drying kiln. The site is shown on the First Edition OS 6 inch map of the area (Stirlingshire 1864-5-6, Sheet vi). This settlement was recorded by RCAHMS in 1955 and in the subsequent decades was ploughed and planted with conifers. The ploughing, planting and subsequent harvesting has damaged some of the upstanding remains of the buildings etc. in the settlement (Robertson 2014), although the true extent of this damage is unknown due to the high level of vegetation present across the site.

Aims and Objectives and Scope

5.1 The aim of the archaeological works was to identify:

- the extent of known archaeological structures and deposits associated with the Big Bruach Caoruinn township (Site 1);
- as yet unknown archaeological artefacts, features and deposits within the proposed scheme;
- to ensure that any surviving archaeological remains encountered within the proposed scheme was recorded to an appropriate level.

5.2 The objectives were therefore to:

- Conduct a topographical survey of the areas of archaeological interest to facilitate micro-siting of the proposed ground works and installations;
- Conduct a controlled topsoil strip on any and all ground interventions around and between Site 1, the powerhouse and its new access in order to identify and record any known and/or previously unknown archaeological features existing within the development area, establishing their character, date and extent if surviving;
- Submit a report to data structure level for agreement to the client on completion of the archaeological works, and outline the likely scope of any post-excavation works should any significant archaeology be encountered.

Fieldwork Methodology

6.1 The archaeological fieldwork was undertaken in line with the relevant policies and guidelines of the Chartered Institute for Archaeologists (CIfA) of which GUARD Archaeology Ltd is a Registered Organisation.

- The programme of archaeological work commenced with digital photography of the development area to record its condition prior to topsoil stripping in the remaining unstripped area.
- Not all ground disturbances around and between Site 1, the powerhouse and its new access (Figure 1) were monitored by an archaeologist. The controlled topsoil strip was carried out on part of the pipeline easement over a distance of 150 m with a width of 6 m; the total area subject to controlled topsoil stripping equated to 900 m².
- Where the GUARD Archaeologist monitored the controlled topsoil strip on the south-western part of the pipe corridor, they were assisted, where necessary, by further archaeologists under the overall guidance of an archaeological project manager.
- The number of archaeologists required during the works was dependent on the number of areas being stripped simultaneously and the number of mechanical excavators being deployed. One archaeologist was required per back-acting machine.
- All plant was fitted with a toothless ditching bucket for removal of any previously undisturbed overburden layers to ensure the subsoil interface was not disturbed and any archaeological features could be clearly identified.
- Overburden was removed in spits to the first archaeological horizon or, where none is found, to the natural subsoil. Any archaeological features encountered were cleaned by hand to determine the date of the deposits, their character and extent. Such features

were recorded by written description on *pro forma* recording sheets, by photograph and by measured drawing.

- Any significant archaeological features encountered were dealt with by the on-site archaeologist(s). Where negative-cut features were encountered these were fully excavated in order to determine their significance, date and function. Recording included pro forma sheets, drawings and photographs.
- All excavated feature fills and horizons were be sampled for palaeo-environmental evidence.
- Suitable down time was provided to the on-site archaeologists in order to fully recover any archaeological evidence encountered.
- As significant features were encountered the client and WoSAS, on behalf of the Planning Authority, were alerted, so that a mitigation strategy/contingency could be agreed to deal with them.
- WoSAS were the final judge of significance in any case and required full excavation of features to be destroyed by the proposals.

Results

7.1 Topographical Survey

7.1.1 The methodology agreed with WoSAS on behalf of the planning authority included a preliminary topographic survey of the site of archaeological interest Site 1: Big Bruach Caoruinn township (Figures 2-4) (centred on NGR NN 41816 00812) to enable micro-siting of the pipeline to avoid archaeology where possible. The topographic survey used a combination of GPS and a Total Station to create the topographical survey. The new data was overlain with the previous RCAHMS survey information to show the position of all previously extant remains, as some were not immediately apparent during this survey.

7.1.2 The topographical survey was undertaken over two days, 01st and 08th December 2015, by GUARD Archaeology's Surveyor Diarmuid O'Connor assisted by one other archaeologist. The site at that time had a thick covering of heather and other scrub vegetation and the survey area was partially wooded; with tree planting more concentrated in the north area of the survey area. The proposed pipe corridor (Figure 2 & 3) aimed to avoid all known above ground archaeological remains along the south-east perimeter of the site. Although the pipe corridor had the potential to impact on previously unknown remains associated with the township, using the topographic survey to micro-site the pipeline corridor, measures were taken to avoid known archaeology, therefore minimizing the potential impact that the scheme may have on any surviving known, or previously unknown remains. The corridor was altered from the proposal to utilise the steep slope adjacent to the historic settlement (Figure 4).

7.2 Controlled Topsoil Strip

7.2.1 The results of the Controlled Topsoil Strip should be read in conjunction with the fuller context descriptions in Appendix A. The full details of the results can be found in Appendices A to F and are illustrated in Figures 1-6 and Plates 1-20.

7.2.2 The Controlled Topsoil Strip took place on the western area of the pipeline corridor only (Figure 3). The eastern area leading beyond the Big Bruach Caoruinn site, the footprint for the Powerhouse and its new access track had been stripped and laid with terram and stone prior to the arrival of the GUARD Archaeologist. A section of the pipe corridor was relocated downslope (Figure 4), on a steep incline, from the historic settlement. This new route was monitored by the Archaeologist on site to confirm that no archaeological deposits survived in this location.

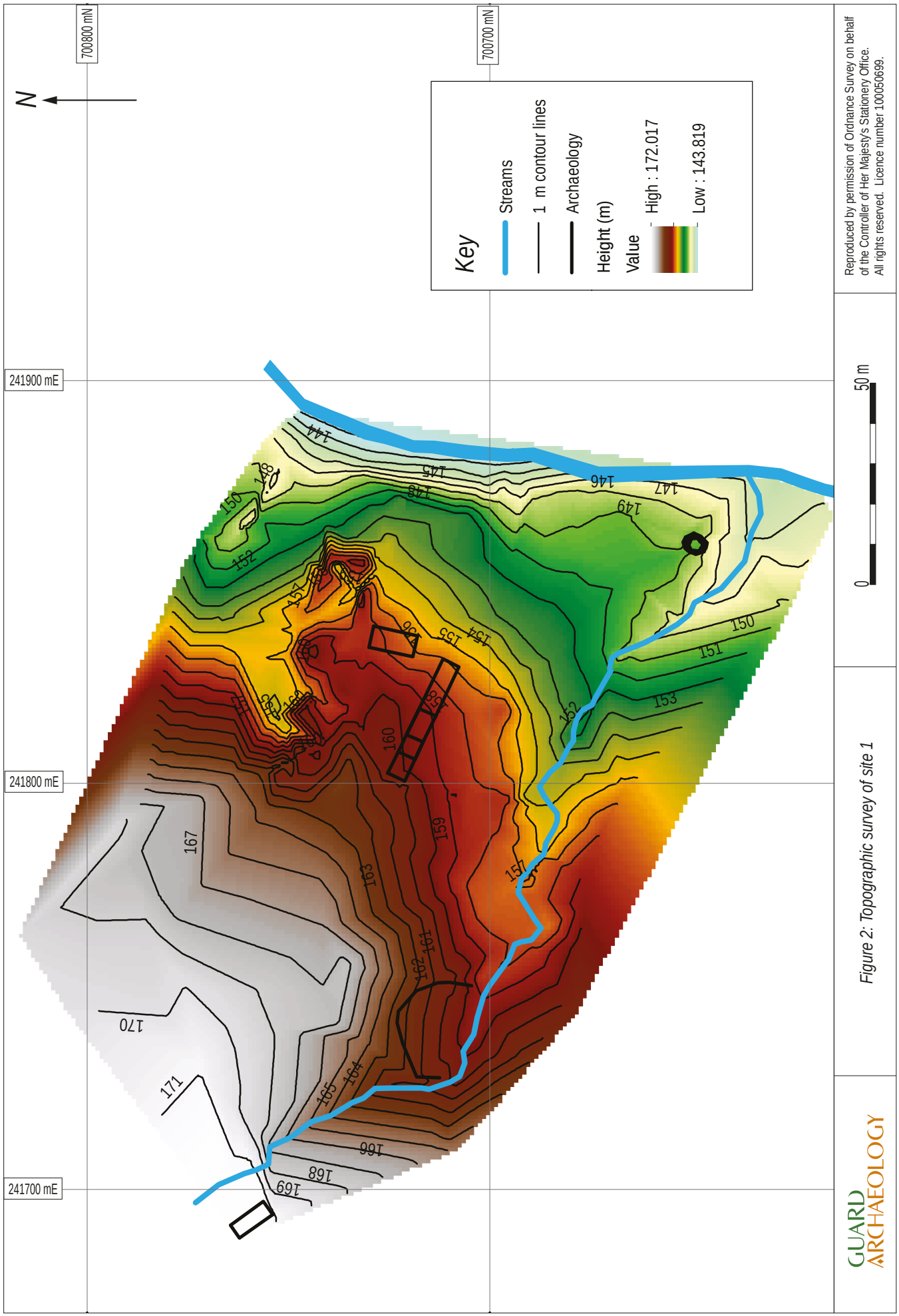

Figure 2: Topographic survey of site 1

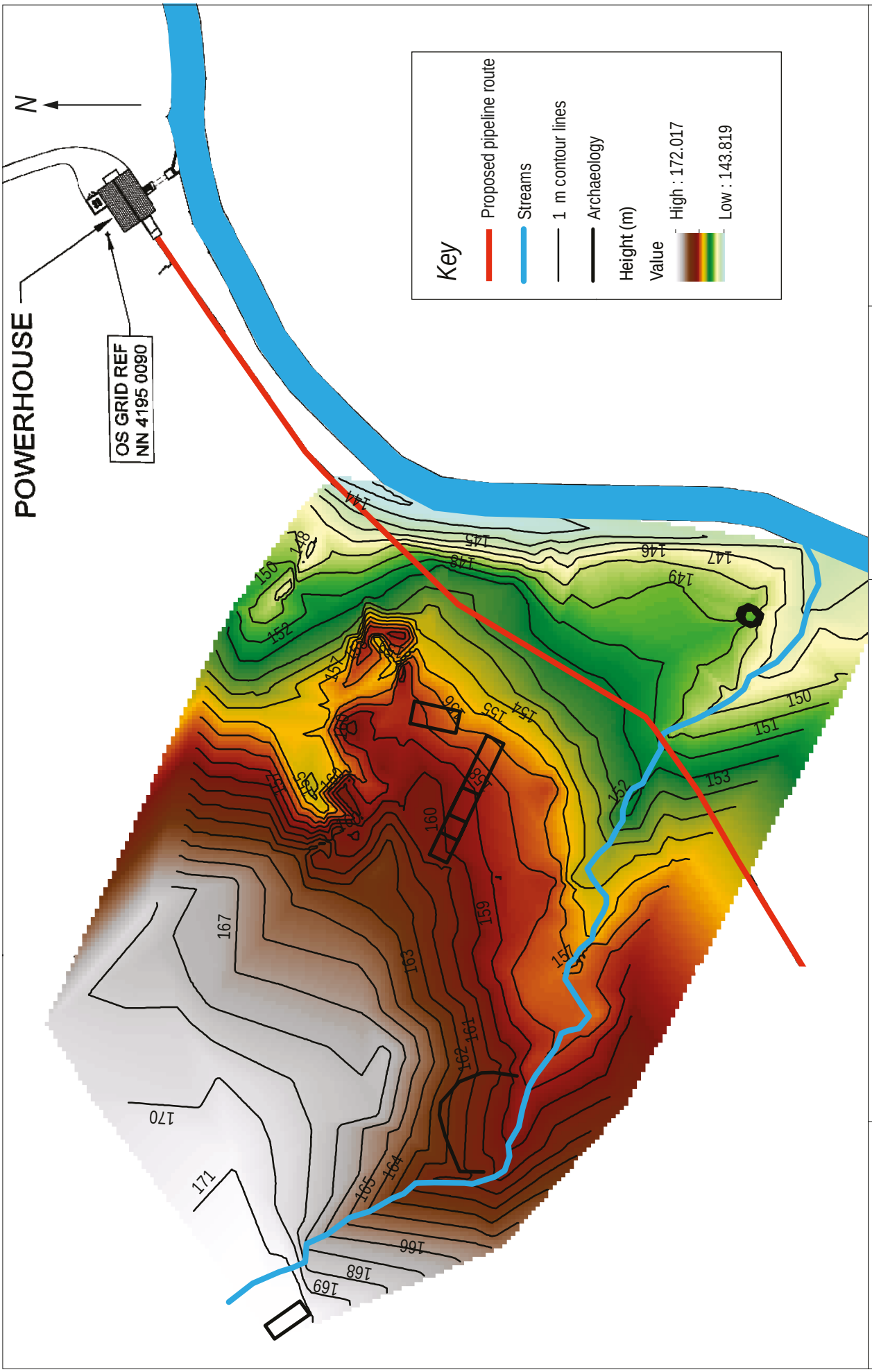

Figure 3 : Topographic survey of site 1 with proposed pipeline route overlay

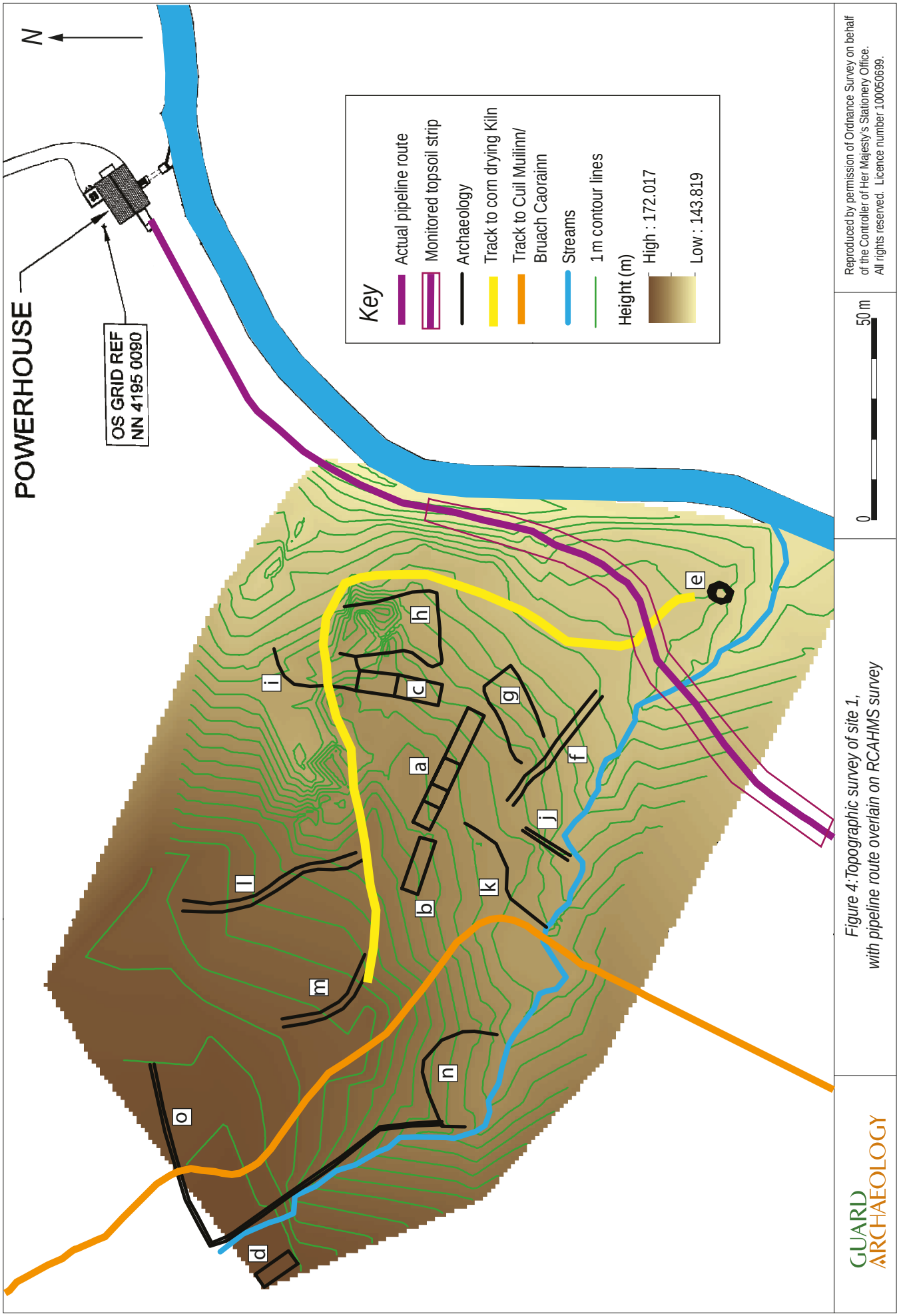

Figure 4:Topographic survey of site 1, with pipeline route overlain on RCAHMS survey

Table 1: Site 1- Big Bruach Caoruinn township- key for features on Figure 4.

1a. Long house	1f. Track	1k. Dyke
1b. House	1g. Enclosure	1l. Track
1c. Long house	1h. Enclosure	1m. Track
1d. House	1i. Dyke	1n. Enclosure
1e Corn drying kiln	1j. Dyke	1o. Boundary Dyke

7.2.3 Monitoring of the pipeline easement trench started at the southerly end of the pipeline diversion (Figure 4) along the side of a steep bank to the east of the homestead and ended 100 m to the south-west of an unnamed burn flowing into the Bruach Caorainn Burn (Figure 1). Topsoil and turf 001 was removed and found overlying peat 002 which was generally fairly shallow 0.2 m in depth but pockets of deeper peat up to 1.75 m in depth were encountered during the course of the work. The peat overlay a stony gravelly till with areas of clay 003.

Plate 1: General view of the pipeline easement, looking towards the homestead, at the south-western end of the monitored area. Areas of deep peat can be seen in the south-east facing (uphill) section of the trench.

7.2.4 A track 006 (Figure 5) was uncovered during the controlled topsoil strip, this was curvilinear in plan and slightly cambered in profile. The track was made up of redeposited natural till 007, 008 and 011 (Figure 6) probably quarried from a steep sided narrow trench 004 which lay parallel to the track along its north side as the track approached the corn drying kiln, located to the south of the settlement The narrow trench 004 switched to the west and south sides of the track as it circumvented the east and north sides of the homestead respectively. The track 006 was excavated over a distance of 7 m within the stripped area, it measured 2.2 m wide and was built up to a height of 0.29 m. The construction trench 004 measured 0.6 m wide by 0.4 m deep and was filled with a turf and negligible topsoil horizon with frequent moss and sparse grass 005 growing in the base and along the sides of the trench cut. The construction trench 004 also appeared to serve as a drain although there was no silt at the base of the trench, this function may explain the change of position of the construction trench from one side of the track to the other. A possible stone implement in the form of an ard point SF 1 was found at the base of the construction trench and the find looks comparable in size and form to at least one held in a collection of stone ard points at the Hunterian Museum in Glasgow (Hunterian Museum Archaeology collections, catalogue number GLAHM B.1914.623).

7.2.5 An adjacent area of archaeology was observed at Cuil Muilinn visible on the Ordnance Survey explorer 1:25000 map sheet 364 south-west of the Bruach Caoruinn settlement. In this location three possible clearance cairns visible as heaps of stones thrown up against and around large erratic boulders were visible. A track aligned from the south-west beyond Cuil Muilinn leading to the north-east to Big Bruach Caoruinn before turning to the north-west and climbing the hill to the forestry track was also observed (Figure 3). These features were rapidly recorded photographically and by handheld GPS survey.

Figure 5: Plan of excavated part of track 006.

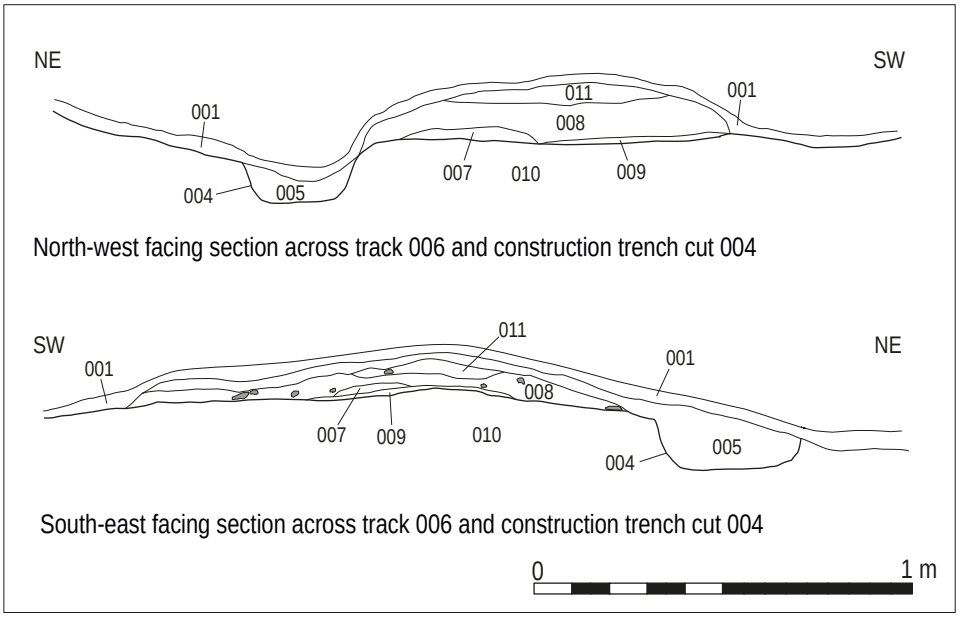

Figure 6: Sections across excavated part of track 006.

Plate 2: General view of track 006 after cleaning, during planning and recording, from the south-west.

Plate 3: General view of track 006 and construction trench 004, from the north-west. Person to rear centre of frame is standing at the corn drying kiln.

Plate 4: North-west facing section through redeposited natural deposits 007 and 008 forming the fabric of the track 006 which overlies buried topsoil horizon 009, from the north-west.

Plate 5: South-east facing section through redeposited natural deposits 007 and 008 forming the fabric of the track 006 which overlies buried topsoil horizon 009, from the south-east.

Plate 6: General view of track 006 and construction trench 004 with the majority of the redeposited natural 007 and 008 forming the fabric of the track removed, from the south-east.

Plate 7: Detail of construction trench 004, overgrown with vegetation layer 005, from the north-west.

Plate 8: Post excavation view of track 006 and construction trench 004, the course of the track is clearly defined by the construction trench along the left hand side of the track and the dark buried topsoil horizon 009 below the removed material forming the fabric of the track, from the north-west.

Plate 9: Pre-excavation view of track 006 and construction trench 004, from the north-west.

Plate 10: Corn drying kiln, stokehole visible to the immediate left of 0.4 m scale, from the south-west.

Plate 11: View towards homestead from corn drying kiln, from the south-east.

Plate 12: Possible clearance cairn at Cuil Muilinn NN 41675 00573.

Plate 13: Possible clearance cairn at Cuil Muilinn NN 41672 00584.

Plate 14: Possible clearance cairn at Cuil Muilinn NN 41666 00594.

Plate 15: South-west facing section across track at Cuil Muilinn which leads to Big Bruach Caoruinn homestead, blue flags to left of track indicate position of construction trench.

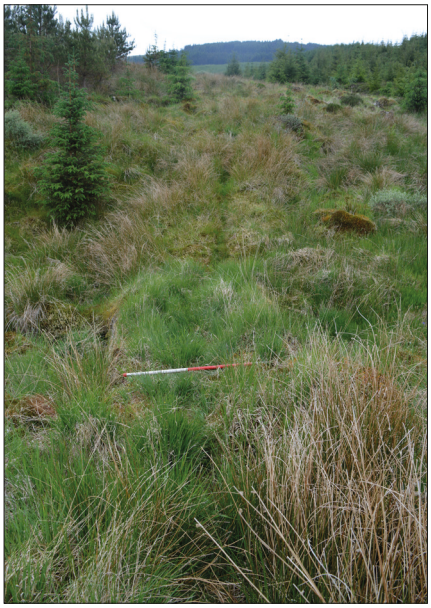

Plate 16: The track crossing the unnamed burn at Big Bruach Caoruinn homestead looking towards Cuil Muilinn.

Plate 17: Tree trunks forming a bridge to carry the track over the unnamed burn at Big Bruach Caoruinn homestead.

Plate 18: The track from Big Bruach Caorainn homestead leading away to the north-west.

Plate 19: Rounded side of possible ard point.

Plate 20: Possible ard point showing edge.

Discussion and Conclusion

8.1 The Controlled Topsoil Strip and subsequent investigations have determined that the area around Big Bruach Caoruinn settlement may have been largely used for agricultural purposes. No evidence of field systems in the form of earth and stone dykes associated with agricultural enclosures were visible in the immediate area surrounding the homestead but relatively recent forestry planting and harvesting may have had a negative impact on features of this type. The tracks recorded during the course of the work probably form part of a network of routes interlinking settlements in the post-medieval landscape in which Big Bruach Caoruinn with its corn drying kiln may have played an important role. The possible ard point (Plates 19 and 20) and samples from the track excavations have been retained should further analyses be required.

8.2 Both the homestead and the tracks have young trees either growing on them or close to them, some of the trees may have reseeded naturally but ultimately these will have an adverse affect on the remains of the homestead and the tracks. It is understood that presently the Forestry Commission leave a 20 m buffer zone around cultural heritage sites when replanting or creating new woodlands. This practice will ensure that future forestry operations will have no further impact upon the surviving remains of Big Bruach Caoruinn.

8.3 A summary of the project results will be submitted to *Discovery and Excavation in Scotland*. A copy of this is included in Appendix G. The archive for the project, including a copy of the report, will be submitted to the National Monuments Records for Scotland within six months of the completion of all fieldwork.

8.4 The online OASIS form at http://ads.ahds.ac.uk/project/oasis/ for this project (OASIS Reference: guardarc1-255615 will be completed within 3 months. Once the Data Structure Report has become a public document by submission to or incorporation into the SMR, the WoSAS will validate the OASIS form thus placing the information into the public domain on the OASIS website.

Acknowledgements

9.1 GUARD Archaeology Ltd would like to thank Cate Robinson and Ian Almond of TLS Hydro for their assistance. Thank you to Paul Robins and Hugh McBrien of WoSAS for their assistance, and thank you to The Loch Lomond National Park Authority. Plant and driver were supplied by Anderson Construction. Technical support was from Aileen Maule and Jen Cochrane. All on site survey and production of the topographical plans was completed by Diarmuid O'Connor, who was assisted on site by Erica Villis and Kenny Green. The report was desktop published by Gillian McSwan. The project was directed by Alan Hunter Blair with assistance from James McGovern and Victoria Huggett and managed for GUARD by Warren Bailie.

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Section 2: Appendices

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Appendices

Appendix A: Sources Consulted

Ordnance Survey First Edition, Stirlingshire 1864-5-6, Sheet vi

Ordnance Survey explorer 1:25000 map sheet 364

Robertson, J. G. 2014. *An Archaeological Survey for the Bruach Caorainn Hydro Scheme, Kinlochard, The Trossachs, Stirlingshire* For Hydroplan UK.

Roy Military Survey of Scotland, 1747-55

https://canmore.org.uk

www.wosas.net

http://maps.nls.uk

Appendix B: List of Contexts

Context No.	Area	Description	Interpretation
001	-	Deposit: A moist, soft dark brown/black sandy silt devoid of conspicuous inclusions. Measured 0.08-0.12 m deep	Topsoil/turf horizon
002	-	Deposit: A moist, soft dark brown/black peat. In deeper areas frequent fragments of roundwood, birch and other species were visible within the layer. Measured 0.2-1.75 m deep	Peat layer below topsoil/turf horizon 001 generally fairly shallow but pockets of deeper accumulations of this layer encountered along the course of the pipeline.
003	-	Deposit: A dry, firm pale orange/brown or orange/grey sand with frequent medium sized sub-angular stones 360 mm x 280 mm x 200 mm<> and angular gravel, occasional large erratic boulders and pockets of clay.	Natural till
004	-	Cut: Curvilinear in plan, U-shaped in profile. Sharp break of slope at top to steep sides which break abruptly to form a flatish base. Measured 7 m long (excavated section of track) x 0.6 m wide x 0.4 m deep	Construction cut to quarry material to form track 006. Also forms a drainage ditch along the side of the track. Found on the north side of the track as the track approaches the corn drying kiln and on the west side of the track as it traverses around the homestead. Filled by 005
005	-	Fill: Turf and negligible topsoil horizon with frequent moss and sparse grass growing in the base and along the sides of ditch cut 004. Measured 0.1 m deep	Natural growth of vegetation in ditch/ construction cut 004 of track 006
006	-	Track: Curvilinear in plan, slightly cambered in profile. Leads from corn drying kiln around the south-eastern edge of the homestead and then turns to the west towards a further track which it probably merges with. The track was excavated over a distance of 7 m and measured 2.2 m wide and was built up to a height of 0.29 m. The second track traverses the south-western side of the homestead before turning, crossing the burn and continuing to the south-west to Cuil Muilinn and beyond.	Track to corn drying kiln
007	-	Deposit: A moist, firm mid-orange silty sand with frequent small stones 40 mm< and gravel, occasional small cobbles 180 mm x 160 mm x 120 mm. Measured up to 0.29 m deep	Re-deposited natural excavated from construction/ditch cut 004 to form track 006
008	-	Deposit: A moist, firm pale grey sandy silt with frequent gravel and small stones 40 mm< occasional small cobbles 150 mm x 100 mm x 80 mm<>. Measured up to 0.29 m deep	Re-deposited natural excavated from construction/ditch cut 004 to form track 006
009	-	Deposit: A moist, firm dark grey/brown/black sandy silt with degraded root mat in places. Measured up to 0.04 m deep.	Buried topsoil turf horizon beneath track make-up deposits 007 and 008

Context No.	Area	Description	Interpretation
10	-	Natural subsoil, firm mid-orage silty sand with frequent gravel.	Below former topsoil 009
11	-	Upper layer of redeposited natural, above 008, below topsoil/turf 001	redeposited natural layer forming upper level of track

Appendix C: List of Finds

Find No.	Area	Context No.	No. of Pieces	Material	Description
1	-	005	1	Coarst Stone	Coarse stone possible ard point wear mark on one side.

Appendix D: List of Samples

Sample No.	Area	Context No.	Size	Reason for Sampling				Application/Comments
				Pot	Bone	Lithics	Botanics	
1	-	007	6 L					Routine sample of little interest
2	-	008	6 L					Routine sample of little interest
3	-	009	5 L				x	Buried topsoil turf horizon below track 006
4	-	009	5 L				x	Buried topsoil turf horizon below track 006
5	-	009	5 L				x	Buried topsoil turf horizon below track 006

Appendix E: List of Drawings

Drawing No.	Area	Sheet No.	Subject	Scale
1	-	1	Plan of track 006	1:20
2	-	3	Overlay plan of track showing position of baulks	1:20
3	-	2	NW facing section of track Baulk A	1:10
4	-	2	SE facing section of track Baulk D	1:10

Appendix F: List of Photographs

Film No.	1		
Frame	Area	Subject	Taken from
1	-	Registration	-
2	-	General view of stripped area for powerhouse stripped prior to arrival on-site	NE
3	-	Easement stripped prior to arrival on-site	NE
4	-	General view of peat sub-soil after vegetation strip	N
5-7	-	General view during tree stump removal	NE
8	-	General view of pipeline trench in relation to homestead	S
9	-	General view of track 006 after vegetation strip	SE
10	-	General view during reduction of deeper peat horizon 002 on the south side of the burn	NE
11	-	General view of pipeline trench on the north side of the burn	SW
12	-	General view showing depth of peat horizon 002 on the south side of the burn	NE
13	-	General view reducing peat horizon 002 on the south side of the burn.	NE
14	-	General view of the stripped area on the south side of the burn	SW
15	-	SE facing section through peat 002 at the south side of the burn	SE
16	-	Track 006 curving around the east side of the homestead	SW
17	-	Track 006 after machine strip of vegetation looking towards corn drying kiln	NW
18	-	General view of pipeline strip towards SW end of watching brief area	SW
19	-	General view of pipeline strip towards SW end of watching brief area	NE
20-22	-	General view towards homestead	SW
23	-	General view of NE end of area monitored during topsoil stripping looking towards corn drying kiln	NE
24	-	General view of track 006 terminating at corn drying kiln	NW
25	-	General view of track 006 looking towards homestead	SE

Film No.	2		
Frame	Area	Subject	Taken from
1	-	Registration	-
2	-	General view of access road and hammerhead leading to powerhouse, stripped prior to arrival on-site	NW
3	-	General view of access leading to powerhouse, stripped prior to arrival on-site	N
4	-	General view of area stripped to form footprint of powerhouse	NE
5	-	General view of pipeline easement to SW of powerhouse stripped prior to arrival on-site	SW
6	-	General view of track leading to homestead from the NW	SE
7	-	General view of track leading from homestead to Cuil Muilinn at the point at which it crosses the burn	NE
8	-	Timber bridge carrying track from homestead across the burn to Cuil Muilinn	SE
9	-	Possible clearance cairn at Cuil Muilinn	SE
10	-	Possible clearance cairn at Cuil Muilinn	SE
11	-	Possible clearance cairn at Cuil Muilinn	SW
12	-	Helicopter refuelling after lifting gear during electric pylon maintenance	
13-14	-	Track 006 during excavation	NNW
15-16	-	General view of easement at start of pipeline diversion	NE
17	-	General view of area to form pipeline diversion	SW
18-19	-	General view of track 006 after cleaning	NW
20	-	General view of track 006 after cleaning	N
21	-	General view of track 006 after cleaning horizontal ranging rod incorrectly positioned	NW
22-25	-	General view of track 006 after cleaning horizontal ranging rod incorrectly positioned	SE
26-27	-	General view of track 006 after cleaning	SE
28-32	-	General view of track 006 after cleaning	NW
33	-	General view of track 006 after cleaning	SE
34	-	Track 006 during recording	NW
35	-	Track 006 during recording	SE
36	-	Track 006 looking towards homestead	SE
37	-	Track 006 at corn drying kiln	NW
Film No.	3		
Frame	Area	Subject	Taken from
1	-	Registration	-
2	-	Buried soil horizon 009 below track make-up deposits 007 and 008	NE
3	-	Buried soil horizon 009 below track make-up deposits 007 and 008	SW
4	-	General view during excavation of track 006	NW
5	-	General view during excavation of track 006	SE
6-7	-	SE facing section through deposits 007 and 008 forming fabric of track which overly buried soil horizon 009	SE
8-9	-	NW facing section through deposits 007 and 008 forming fabric of track which overly buried soil horizon 009	NW
10-11	-	General view during excavation of track 006 after removal of much of the redeposited natural 007 and 008 forming the fabric of the track. Buried soil horizon 009 visible below the track	NW
12-13	-	General view during excavation of track 006 after removal of much of the redeposited natural 007 and 008 forming the fabric of the track. Buried soil horizon 009 visible below the track	SE
14	-	SE facing section of SE baulk detail	SE
15	-	SE facing section of NW baulk detail	SE
16-19	-	Profile of construction trench/ditch 004	NW
20-21	-	Profile of track from homestead to Cuil Muilinn at Cuil Muilinn	SW
22-25	-	Post excavation of track 006	SE
26-31	-	Post excavation of track 006	NW
32-33	-	Corn drying kiln stoke-hole to immediate left of small ranging rod	SW
34-35	-	Corn drying kiln with homestead	SE

Appendix G: Discovery and Excavation Scotland Entry

LOCAL AUTHORITY:	The Loch Lomond and the Trossachs National Park, Stirlingshire
PROJECT TITLE/SITE NAME:	Bruach Caorainn Hydro Power Scheme
PROJECT CODE:	4283
PARISH:	Buchanan
NAME OF CONTRIBUTOR(S):	Alan Hunter Blair
NAME OF ORGANISATION:	GUARD Archaeology Ltd
TYPE(S) OF PROJECT:	Watching Brief/Controlled Topsoil Strip
NMRS NO(S):	NN40SW 7
SITE/MONUMENT TYPE(S):	Township, corn drying kiln
SIGNIFICANT FINDS:	Possible ard point
NGR (2 letters, 6 figures)	NN 41849 00774
START DATE (this season)	1st Dec 2015
END DATE (this season)	15th June 2016
PREVIOUS WORK (incl. *DES* ref.)	RCAHMS Survey
MAIN (NARRATIVE) DESCRIPTION: (May include information from other fields)	An initial Topographical Survey was completed of the Big Bruach Caoruinn settlement and immediate surroundings. This was aimed at providing adequate detail on the topography and surviving archaeology for the proposed pipeline to be micro-sited across the edge of the edge of the post-Medieval settlement. Following the Topographical Survey, a Controlled Topsoil Strip was carried out at Bruach Caorainn Hydropower Scheme during ground breaking works associated with the development of this run of river hydro electric scheme. This monitoring took place along part of an easement for the pipeline trench from the dam on the Bruach Caorainn Burn towards the Powerhouse building. The course of the easement was diverted from its original planned route to the south away from Big Bruach Caoruinn, a fine example of a pre-clearance homestead, to avoid unnecessary disturbance to sub-surface features associated with the settlement. Despite this a track was found circumventing the north and east sides of the homestead before turning to the south-east towards and terminating at a corn drying kiln located to the south of the homestead. An adjacent place named Cuil Muilinn lay to the south-west of the monitoring area was visited. In this location three possible clearance cairns and a track were found. The track was aligned from the south-west beyond Cuil Muilinn to the north-east leading to Big Bruach Caoruinn and this and the cairns were rapidly recorded photographically and by handheld GPS survey.
PROPOSED FUTURE WORK:	---
SPONSOR OR FUNDING BODY:	TLS Hydro
CAPTION(S) FOR ILLUSTRS:	---
ADDRESS OF MAIN CONTRIBUTOR:	52 Elderpark Workspace, 100 Elderpark Street, Glasgow G51 3TR
EMAIL ADDRESS:	bob.will@guard-archaeology.co.uk
ARCHIVE LOCATION (intended/deposited)	Archive to be deposited in NMRS.

Appendix H: Written Scheme of Investigation

BRUACH CAORAINN HYDROPOWER SCHEME

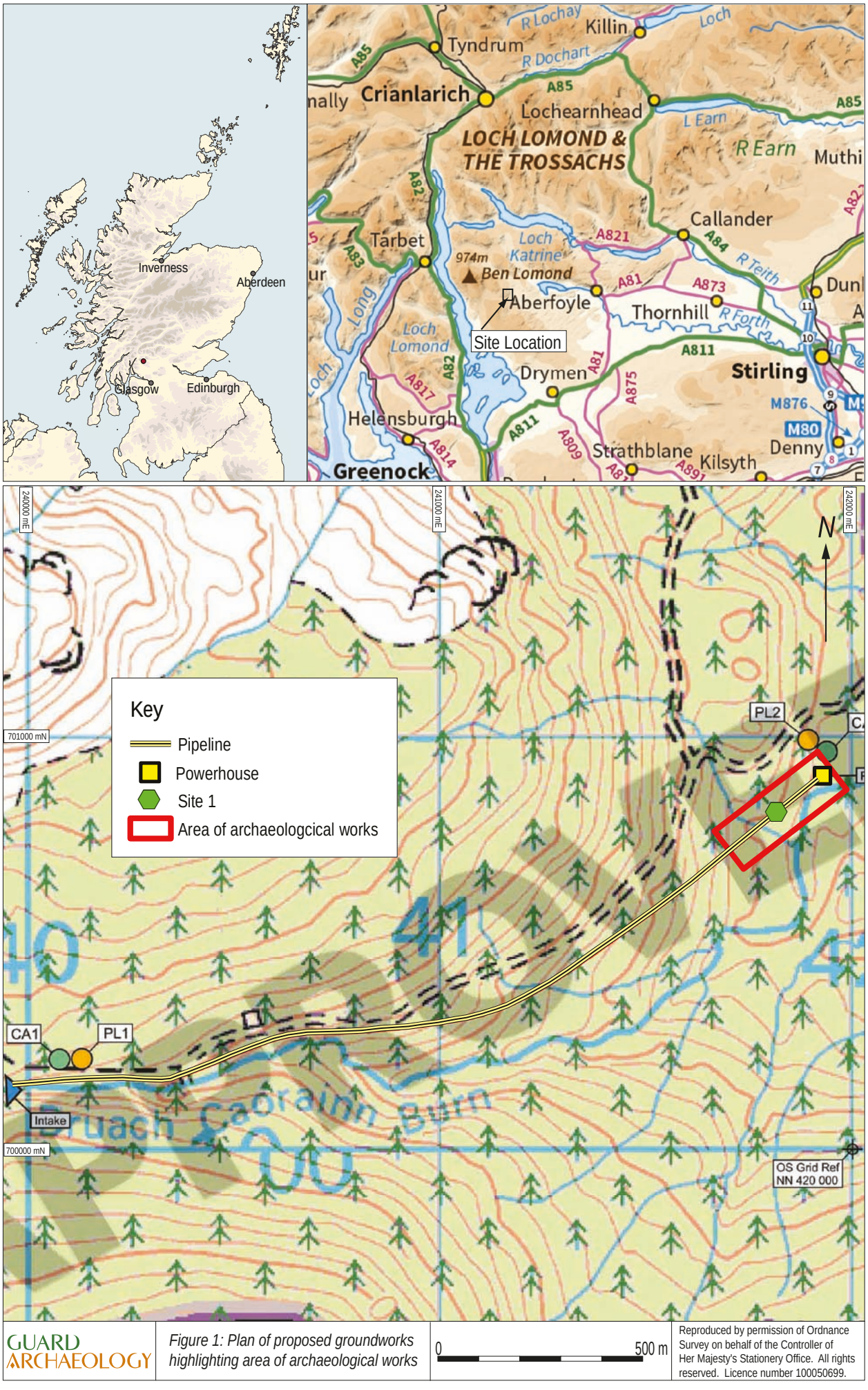
TOPOGRAPHICAL SURVEY AND ARCHAEOLOGICAL CONTROLLED TOPSOIL STRIP

WRITTEN SCHEME OF INVESTIGATION

PROJECT 4283

GUARD ARCHAEOLOGY

REGISTERED CIfA ORGANISATION



GUARD ARCHAEOLOGY

Figure 1: Plan of proposed groundworks highlighting area of archaeological works

Executive Summary

1.1 This Written Scheme of Investigation (WSI) sets out a programme of archaeological work at Bruach Caorainn Hydropower Scheme, Loch Lomond and Trossachs National Park (Planning Reference: 2014/0294/DET). This method statement has been prepared on behalf of Bruach Caorainn Hydro Limited in consultation with WoSAS. The methodology includes a topographic survey of the site of archaeological interest Site 1: Big Bruach Caoruinn township (Figure 1)(centred on NGR NN 41816 00812) the controlled topsoil stripping on any ground disturbance around and between Site 1, the powerhouse and its new access and the hand excavation and recording of any archaeological features encountered. This WSI was prepared in consultation with WoSAS and takes into consideration the Archaeological Survey undertaken by Robertson (2014).

Introduction

2.1 This WSI sets out the scope and methodology for the proposed archaeological mitigation works for the proposed areas of ground disturbance works at Bruach Caorainn Hydropower Scheme. A topographical survey will be undertaken to facilitate micro-siting of the pipeline corridor leading to the Powerhouse (Figure 1). An archaeological controlled topsoil strip will be undertaken during all ground disturbance associated with the construction programme around and between Site 1, the powerhouse and its new access . The aim of the controlled topsoil strip is to establish the presence, extent and nature of any significant archaeological remains. Should significant remains be identified and it is not possible to preserve them *in situ* a further requirement for archaeological works to ensure their preservation through record is likely to be required.

2.2 In addition this Mitigation Strategy outlines the programme of archaeological works that may be needed to mitigate the effects of the proposed scheme. It details the methodology to be employed in implementing the Stage 1 archaeological controlled topsoil strip. The mitigation methodology to be employed during Stage 2 excavation and Stage 3 post excavation analysis and publication, will be specified in *addenda* to this document. These *addenda,* if required, will be submitted to WoSAS, prior to the commencement of any archaeological work. All phases of work will be funded by the developer as required by the Planning Authority.

Site Location

3.1 The proposed scheme area is located within Loch Lomond and The Trossachs National Park, on the North bank of the Brauch Caorainn Burn, a tributary of Duchray Water, which flows into the River Forth to the East of Loch Ard (Figure 1).

Archaeological Background

4.1 One known site of archaeological significance (Site 1: Big Bruach Caoruinn township (Canmore ID: 23935, WoSAS Pins: 64005, 64006 and 64007)) is likely to be disturbed during the proposed ground works for the Bruach Caorainn Hydropower Scheme. The specific ground works are for the powerhouse, associated pipeline and access (Figure 1). The remains lie close to the meeting of two water courses, the Bruach Caorain Baurn and a smaller unnamed burn leading in from the north-west. The site is described by RCAHMS as one of two "most interesting examples" pre-clearance township sites in Stirlingshire (1963, 49). The site is recorded on Roy's Map of 1747-52 as four buildings, three enclosures, a number of partial dykes and a corn-drying kiln. The site is shown on the First Edition OS 6 inch map of the area (Stirlingshire 1864-5-6, Sheet vi). This settlement was recorded by RCAHMS in 1955 and in the subsequent decades was ploughed and planted with conifers. The ploughing, planting and subsequent harvesting has damaged the upstanding remains of the buildings etc. in the settlement (Robertson 2014), although the true extent of this damage is unknown due to the high level of vegetation present across the site.

Aims, Objectives and Scope

5.1 The aim of the archaeological works is to identify:

- the extent of known archaeological structures and deposits associated with the Big Bruach Caoruinn township (Site 1);
- as yet unknown archaeological artefacts, features and deposits within the proposed scheme;
- to ensure that any surviving archaeological remains encountered within the proposed scheme is recorded to an appropriate level.

5.2 The objectives are therefore to:

- Conduct an topographical survey of the areas of archaeological interest to facilitate micro-siting of the proposed ground works and installations;
- Conduct a controlled topsoil strip on any and all ground interventions around and between Site 1, the powerhouse and its new access in order to identify and record any known and/or previously unknown archaeological features existing within the development area, establishing their character, date and extent if surviving;
- Submit a report to data structure level for agreement to the client on completion of the archaeological works, and outline of the likely scope of any post-excavation works should any significant archaeology be encountered.

Topographic Survey

6.1 The strategy to be employed for the topographical survey will consist of the following:

- A photographic record of the present state of the survey area(s) will be taken prior to works commencing.
- The surveyor will create a detailed plan of the area of archaeological works (figure 1) using GPS in a series of grids across the site at 1 m intervals.
- The topographical survey will highlight and label each above ground archaeological feature present to enable comparison with the RCAHMS survey of 1955, an overlay will be created to illustrate the level of disturbance to upstanding archaeological features.
- The data will be processed and used to create a contour model of the site showing the areas of greater/lesser archaeological survival and potential.
- The topographical survey will be supplied in both pdf and GIS format with all tabulated data.
- A version of the topographical survey will be included in the DSR for the archaeological works.

Controlled Topsoil Strip Methodology

7.1 The strategy to be employed during the topsoil strip will consist of the following:

- The archaeological fieldwork will be undertaken in line with the relevant policies and guidelines of the Chartered Institute for Archaeologists (CIfA) of which GUARD Archaeology Ltd is a Registered Organisation.
- The programme of archaeological work will commence with digital photography of the development area to record its condition prior to topsoil stripping.
- All ground disturbances around and between Site 1, the powerhouse and its new access (Figure 1) will be monitored by an archaeologist during a controlled topsoil strip assisted, where necessary, by further archaeologists under the overall guidance of an archaeological project manager.

- The number of archaeologists required during the works will be dependent on the number of areas being stripped simultaneously and the number of mechanical excavators being deployed. One archaeologist will be required per back-acting machine.
- All plant will be fitted with a toothless ditching bucket for removal of any previously undisturbed overburden layers to ensure the subsoil interface is not disturbed and any archaeological features can be clearly identified. A toothed bucket may be used for previously disturbed layers.
- Overburden will be removed in spits to the first archaeological horizon or, where none is found, to the natural subsoil. Any archaeological features encountered will be cleaned by hand to determine the date of the deposits, their character and extent. Such features will be recorded by written description on *pro forma* recording sheets, by photograph and by measured drawing.
- Any significant archaeological features encountered will be dealt with by the on-site archaeologist(s). Should negative-cut features be encountered these will be fully excavated in order to determine their significance, date and function. Recording will include pro forma sheets, drawings and photographs.
- All excavated feature fills and horizons will be sampled for palaeo-environmental evidence. This may also include micromorphological sampling in order to address key issues on soil development.
- Suitable down time will be provided to the on-site archaeologists in order to fully recover any archaeological evidence encountered.
- In the event that significant features, special finds or complex groups of features are encountered the client and WoSAS, on behalf of the Planning Authority, will be alerted, so that a mitigation strategy/contingency can be agreed to deal with them.
- WoSAS will be the final judge of significance in any case and may require full excavation of features to be destroyed by the proposals.
- In the event of human burials being discovered, the archaeologist will procure and comply with all statutory consents and licences. Where any part of a human burial is disturbed, the whole burial must be archaeologically excavated. Specialist advice and support must be provided as appropriate.

Report Preparation and Contents

8.1 A report detailing the results of the archaeological fieldwork will be submitted to the client within four weeks of completion of fieldwork and, subject to client approval, then submitted to WoSAS prior to submission to the local planning authority. The report will take the form of a Data Structure Report and will contain an analysis of the results of the archaeological evaluation. The report will include a full descriptive text that will characterise the date and extent of any archaeological deposits. It will also include plans at an appropriate scale showing the area subjected to ground-breaking works, evaluation trenches, archaeological features and archiving lists of all finds, samples, field drawings and photographs.

8.2 If appropriate, the report will also include an addendum to this Method Statement for further archaeological fieldwork, post-excavation analysis and publication, should significant archaeology have been encountered. Any Post-excavation Research Design (PERD) is to be submitted within three months of WoSAS's agreement to the DSR. Any final publication is to be submitted within one year of WoSAS's agreement to the PERD.

8.3 The report will include the following:

- executive summary;
- a site location plan to at least 1:10,000 scale with at least an 8 figure central grid reference;
- OASIS reference number; unique site code;
- Planning application number;

- contractor's details including date work carried out;
- nature and extent of the proposed development, including developer/client details;
- description of the site history, location and geology;
- a site plan to a suitable scale and tied into the national grid so that features can be correctly orientated;
- discussion of the results of field work;
- context & feature descriptions;
- features, number and class of artefacts, spot dating & scientific dating of significant finds presented in tabular format;
- plans and section drawings of the features drawn at a suitable scale;
- initial assessment of relevant finds/samples if appropriate;
- recommendations regarding the need for, and scope of, any further archaeological work such as excavation (Stage 2) and Post-excavation finds analysis, conservation & publication (Stage 3);
- bibliography.

8.4 An appropriate number of hard copies and digital pdf copies of the report will be prepared for the client, for distribution to the relevant bodies.

8.5 The report will be presented in an ordered state and bound within a protective cover/sleeve. The report will be page numbered and supplemented with section numbering for ease of reference.

Copyright

9.1 The copyright for any report resulting from the archaeological work undertaken as part of the project will be deemed the intellectual property of GUARD Archaeology Ltd.

Publication

10.1 A summary of the project results will be submitted to *Discovery and Excavation in Scotland*. In the event of minor archaeological remains being encountered during the archaeological fieldwork, it is proposed that a comprehensive report submitted to *Discovery and Excavation in Scotland*, will form the final publication of the site. A copy of this will be included in the Data Structure Report.

10.2 If the results from the project are more significant they will be published in an appropriate period or other journal.

10.3 The scope and extent of an appropriate post-excavation programme (including any publication proposals) will be set out in a detailed post-excavation research design (PERD) and approved by WoSAS.

Archive

11.1 The archive for the project, including a copy of the report, will be submitted to the National Monuments Records for Scotland within three months of completion of all relevant work.

11.2 The online OASIS form at http://ads. ahds. ac. uk/project/oasis/ will be completed within 3 months of completion of the work. Once the Data Structure Report has become a public document by submission to or incorporation into the SMR, WoSAS will validate the OASIS form thus placing the information into the public domain on the OASIS website.

Finds Disposal

12.1 The arrangement for the final disposal of any finds made in connection with the archaeological work, will be deposited in keeping with Scottish legal requirements as set out in the Treasure Trove Code of

Practice published by the Scottish Government in December 2008. The laws relating to Treasure Trove and *Bona Vacantia* in Scotland apply to all finds where the original owner cannot be identified. This includes all material recovered during archaeological fieldwork. Accordingly, all assemblages recovered from archaeological fieldwork are claimed automatically by the Crown and must be reported to the Scottish Archaeological Finds Allocation Panel through its secretariat, the Treasure Trove Unit. In the event of the discovery of small finds, a filled-out copy of the form "Declaration of an Archaeological Assemblage from Fieldwork" and two copies of the pertinent Data Structure Report will be submitted to the Panel at the conclusion of the fieldwork. The Panel will then be responsible for recommending to the Queen's and Lord Treasurer's Remembrancer which museum should be allocated the finds. All artefacts will be temporarily stored by GUARD until a decision has been made by the panel.

Personnel and Liaison

13.1 The GUARD team will comprise the following qualified and experienced GUARD archaeologists:

- Project Manager: Warren Bailie
- Project Director (on-site Archaeologist): Project officer to be confirmed
- Finds and Environmental Support and Conservation: Aileen Maule
- Illustrator: Gillian McSwan
- Quality Assurance: Dr John Atkinson

13.2 The GUARD Project Manager, Warren Bailie, will be the point of contact for the archaeological works. A full CV for individuals concerned can be made available on request.

Monitoring

14.1 The proposed start date for the archaeological fieldwork is late November/ early December 2015. WoSAS will be given at least two week's notice prior to the commencement of fieldwork. WoSAS and the client will be informed of the site mobile phone number prior to the start date so that monitoring visits can be arranged.

Health & Safety and Insurance

15.1 GUARD Archaeology Limited adheres to the guidelines and standards prescribed for archaeological fieldwork set down by the CIfA. It is standard GUARD Archaeology Ltd policy, prior to any fieldwork project commencing, to conduct a risk assessment and to prepare a project safety plan, the prescriptions of which will be strictly followed for the duration of all archaeological fieldwork. Copies of the resultant project safety plan and of GUARD Archaeology Ltd's Fieldwork Safety Policy Statement may be viewed upon request.

14.2 GUARD Archaeology Limited also possesses all necessary insurance cover, proofs of which may be supplied upon request.

Sources Consulted

Robertson, J. G. 2014 *An Archaeological Survey for the Bruach Caorainn Hydro Scheme, Kinlochard, The Trossachs, Stirlingshire. For Hydroplan UK*. September 2014 (unpublished)

RCAHMS: Stirlingshire: An Inventory of the Ancient Monuments, 1963, HMSO.

http://archaeologydataservice.ac.uk

http://maps.nls.uk/index.html

http://pastmap.org.uk/

http://www.wosas.net/search.php

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