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Field Evaluation & Excavation

Site & Landscape Survey

Geophysical Survey

Auldhouseburn Farm Hydroelectric Scheme, Muirkirk, **East Ayrshire** 

> Archaeological Survey and **Watching Brief**

> > Report No. 2021

# **CFA ARCHAEOLOGY LTD**

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This document has been prepared in accordance with CFA Archaeology Ltd standard operating procedures.

# Auldhouseburn Farm Hydroelectric Scheme, Muirkirk, East Ayrshire

Archaeological Survey and Watching Brief

Report No. 2021

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# 1. INTRODUCTION

## 1.1 General

This report presents the results of an archaeological walkover survey and watching brief undertaken by CFA Archaeology Ltd (CFA) between February 2012 and August 2013 on land at Auldhouseburn Farm, Muirkirk, East Ayrshire (Fig. 1). The work was commissioned by Mr H A Blackwood.

A Written Scheme of Investigation (WSI) dated 01 February 2012 was produced by CFA Archaeology Ltd from information provided by Green Cat Renewables Ltd and was designed to fulfil the requirements of the West of Scotland Archaeology Service (WoSAS).

# 1.2 Background

Planning permission has been granted for the construction of a hydroelectric scheme on land at Auldhouseburn Farm (NGR: NS 70235 27015 to NS 71060 26450).

The proposed hydroelectricity generation scheme lies within an Archaeological Consultation Trigger (ACT) area, associated with the former industrial landscape surrounding Muirkirk. This area is rich in material remains relating to the former use of the area for the mining of coal, quarrying and processing of lime, and the working of iron. Two elements associated with this industrial past appear likely to be directly affected by construction of the proposed hydroelectric scheme.

At its western end, the route of the proposed pipe will cross the line of the Muirkirk Canal. This canal was constructed in 1789 in order to serve the needs of industrial development. The remains of a mineral railway network, opened in the 1840s and expanded in the 1870s and 1900s, are also likely to be directly affected by construction of the scheme. Although the tracks have been removed, the remains of the cuttings, embankments and viaducts form a series of major features. It appears that the proposed route of the pipeline would cross both the canal and the later rail- and tramways and a watching brief was therefore required on these sections of the scheme.

# 1.3 Objectives

The objectives of the work were:

- To conduct a walkover survey of the whole development site, from the intake to the power house, to identify and record any additional unrecorded features associated with the former industrial use of the area that may be present and which may be impacted by the scheme.
- To conduct an appropriate programme of archaeological investigation (watching brief) to monitor excavation of the pipe trench at the western end of the scheme where it crosses the former course of the Canal and the railways, and of any additional areas identified as a result of the walkover survey.

• To mitigate the effects of construction on any archaeological deposits or features identified through excavation and recording, and produce a report on them.

# 2. WORKING METHODS

# 2.1 General

CFA Archaeology Ltd follows the Institute for Archaeologists' Code of Conduct, Standards and Guidance for Archaeological Fieldwork. Recording of all elements followed established CFA methods, as detailed in the approved Method Statement.

## 2.2 Walkover Survey

A desk-based assessment was undertaken. Historic map coverage for the area was examined together with other readily available cartographic information on pre-recent land use in the development area. The National Monuments Record of Scotland (NMRS), the Sites and Monuments Record (SMR), the Statutory List of Buildings of Special Architectural or Historic Interest and the Inventory of Gardens and Designed Landscapes (through Pastmap), and any other readily available bibliographic sources related to the area were consulted.

A reconnaissance walkover survey of the whole area affected by the hydro scheme was undertaken, from the intake to the power house, to identify and record any additional unrecorded features associated with the former industrial use of the area that may be present, so that they could be taken into account as appropriate when developing further mitigation measures. This covered an estimated 1.3km in length by 100m wide centred on the pipeline.

The fieldwork assessed any information previously obtained through the desk-based assessment, to identify the extent and condition of any visible archaeological monuments, and assessed the proposed development location.

Site locations were recorded using GPS and plotted onto base plans. Written descriptions, scale sketch plans and photographic records were made of all sites located within the study corridor.

# 2.3 Archaeological Watching Brief

A watching brief was required to monitor excavation of the pipe trench at the western end of the scheme where it crosses the former course of the Canal and the railways (NGR: NS 70235 27015 to NS 70330 26910).

Excavation was undertaken with a tracked mechanical excavator with a smoothbladed ditching bucket, under constant archaeological supervision.

All discoveries, including soil profiles and subsoil characteristics, were recorded using standard CFA recording forms and digital photography.

# **3. ARCHAEOLOGICAL RESULTS**

#### 3.1 Desk-based Assessment

#### NMRS/SMR Sites

Two sites were recorded within the development area.

#### WoSAS PIN 12956, NMRS no. NS72NW 7

From NS 7198 2815 to NS 6974 2669.

The remains of a canal can be followed over a distance of some 2.5km, from the Ashaw Burn to the site of the Muirkirk Ironworks (NS62NE 17). Opened in the early 1790s, the canal served two purposes: in the first place, it supplied the Ironworks with coal and limestone from the eastern part of the mineral field; secondly, it provided the Ironworks with additional water-power to operate the blowing engine and a forge. The canal was fed from the River Ayr, and an adequate head of water was subsequently assured by the two reservoirs which had been built upstream on the course of the River Ayr for the mills at Catrine. The upper reservoir, also known as Glenbuck Loch and located some 6km to the E of the Ironworks, was created in 1802 and is still used to store water (centred NS 7583 2860), but the lower reservoir, constructed a short distance downstream in 1808, has been breached and now survives as a grass-grown embankment (centred NS 7408 2842).

The construction of the canal involved a substantial embankment on the N side along much of its route; this was wide enough to accommodate the towpath. When originally constructed, the canal is said to have measured 2.4m wide at the bottom, 4.8m wide across the top and to have been 1.2m deep. The course of the canal was dictated largely by the gradient, and three aqueducts were built to carry the canal across natural stream gullies (NS 7051 2727; NS 7077 2756; NS 7185 2809). The canal basin was located to the SE of the furnace bank at the Ironworks, and an outflow to the N fed a reservoir. This reservoir supplied the water to power the blowing engine at the Ironworks and is depicted on the 1st edition of the OS 25-inch map (1860). With the demolition of the Ironworks in the late 1960's, the canal basin was destroyed, however, the course of the canal, though now drained, can still be traced to the E. The 1st ed OS map depicts the canal with various tramway connections into the extraction field, but by 1896, when the 2nd edition OS map was published, it had been superseded by the mineral railway and was no longer in use.

#### WoSAS PIN 12955, NMRS no. NS72NW 6

#### From NS 7100 2769 to NS 6958 2654.

The remains of the railways that carried the minerals and finished goods to and from the Ironworks at Muirkirk (NS62NE 17) can still be followed across the surrounding moorland. Although the tracks have been removed, the remains of the cuttings, embankments and viaducts form a series of major features. The first line to be built was the Muirkirk branch of the Glasgow and South Western Railway (NS62NE 32), which opened in the late 1840s. This line connected with the port of Ayr and allowed materials to be exported more efficiently.

It was not until the early 1870s that a branch from the Caledonian Railway was opened, providing a cross-country route from Muirkirk to Lanark. Early in the present

century, they built a second branch, from Muirkirk to Spyreslack and, although complete, this line was never used. The Auldehouseburn Viaduct (NS72NW 6.01), which once carried this branch across the River Ayr, has been demolished, and most of the piers have been reduced to rubble. The junction between the two branches of the Caledonian Railway lies at the S end of the Auldhouseburn Viaduct, and at this same point both an earlier canal (NS72NW 7) and a mineral railway operated by William Baird and Company, can still be seen. The Muirkirk to Lanark railway was closed to regular passenger traffic in 1964.

## Cartographic

The canal is visible on the 1860 Ordnance Survey map (Fig. 2), travelling SW-NE through the study area and crossing the Auldhouse Burn via an aqueduct.

The railway and mineral line are both visible on the 1896 OS map, running roughly parallel to the canal which is still depicted as water-filled. A much more substantial crossing is depicted over the Auldhouse Burn, to accommodate the railway line. A branch line is depicted running to the south-east, terminating at an old coal shaft; this branch line is not depicted on the 1909 map.

# 3.2 Walkover Survey

The walkover survey was carried out in February 2012 in good conditions. The only previously known sites within the study area were the canal and railways. The walkover survey recorded the presence of a further 10 sites, which included quarry scoops, rig-and-furrow cultivation, paths or tracks, and clearance heaps.

A gazetteer of recorded sites is produced as Table 1 and representative photographs are provided as Figs. 3-12.

No.	NGR	Description		
1	NS 71070 26450	Rig-and-furrow cultivation visible on the surface up to 0.3m max. in height, with a wavelength of 6-8m, aligned NW-SE. The field containing these features has recently been drained.		
2	NS 70918 26577	Ditch and bank, possibly surviving remains of aqueduct running across a steep-sided tributary to the east of the Auldhouse Burn. Ditch 2m wide, straight channel 10m long, replaced by an embankment with a kink in the channel. Modern pipework runs along the top.		
3	NS 70882 26577	Roughly circular depression, approx 3m across and up to 0.5m in depth. Possible quarry scoop.		
4	NS 70887 26584	Roughly circular depression, approx 3m across and up to 0.3m in depth. Possible quarry scoop.		
5	NS 70857 26645 to NS 70883 26597	Possible track, up to 4m wide and 55m long.		
6	NS 70766 26713	Moss-covered dump of stones 6m by 5m, probable field clearance.		
7	NS 70767 26717	Circular depression, approx 4m across by 1m in depth. Possible quarry scoop.		
8	NS 70773 26767	Former path or small track, 1m wide by approx 50m in length, which survives in Glen Wood. Runs from a blocked gate in a stone wall beside the existing road, north-east to a demolished bridge which formerly crossed the Auldhouse Burn.		
9	NS 70239 26926 to NS 70324 27007	Former railway line. Blocked culvert at NS 70276 26941. Stone bridge with brick repairs carrying railway over the stream at NS		

		70317 26978.			
10	NS 70192 26950 to NS 70304 26997	Former canal, now infilled. Partially overlain by mineral railway. Crosses over the stream at NS 70295 26996 where a sluice and iron			
	pipe survive				
11 NS 70254 26986 to NS Brick sheep creep beneath the railway, blocked at SE end by an old					
	70248 26991	gate and now partly flooded. 6m long by 2.5m wide by 1m across			
		internally. Field boundary wall abuts NE end.			
12	NS 70214 27022	Turf-covered circular mound, 5.5m across by 0.75m high. Flattish			
		top, cut on its SW side by a field boundary wall.			
Table 1. Gazetteer of sites					

The route of the pipeline was altered to limit the predicted impact upon Sites 2 and 5.

# 3.3 Watching Brief

The watching brief was carried out in August 2013. The work monitored consisted of the pipeline trench excavated across the former railways and canal, aligned NW-SE. The trench was c.60m in length by up to 3m wide and 3m deep.

The mineral railway line overlying the canal was recorded at the northern end of the trench. It measured 9m wide by 3m in height and was composed of a core of dumped reddish-brown clay, similar to natural, measuring 5.3m wide and 1.3m thick covered with loose, black, ashy industrial waste (Fig. 13). There were no railway sleepers surviving or other features, and the embankment was turf-covered with a post-and-wire fence delineating the public footpath.

Adjacent to the mineral line embankment was the infilled canal. Due to a high water table and influx of water to the trench, the trench was only excavated to a depth of c.0.8m maximum. This area was covered with reeds and peaty turf to a depth of c.0.3m and the excavated deposits were soft black silts filling a basin measuring c.7m in width (Fig. 14). There was no evidence for any clay or stone lining and the bottom of the canal was not reached.

Continuing SE from the canal, the ground rose up and natural orange-brown clay was exposed beneath topsoil for a distance of c. 11m before further industrial deposits associated with the railway embankment were encountered.

The railway embankment was c.25m wide and was a flat-topped, wide mound. It was composed of dumped deposits of black, brown and grey, ashy material and stones to a height of 1.5m at maximum overlying a core of orange-brown clay (Fig. 15). There were no railway sleepers surviving or other features, and the embankment was turf-covered.

# 4. CONCLUSION

A walkover survey and watching brief was carried out during ground works for the construction of a hydroelectric scheme at Auldhouseburn Farm, Muirkirk.

The walkover survey recorded the remains of quarry scoops, rig-and-furrow cultivation, paths or tracks, and clearance heaps along the route, as well as the former canal and railway embankments.

The watching brief recorded the composition of the railway embankments, which each consisted of a clay core covered with industrial ashy deposits, and recorded a partial section through the former canal which was waterlogged and filled with soft silt. No additional features were recorded.

The project archive, comprising all CFA record sheets, maps and reports, will be deposited with the National Monuments Record of Scotland (NMRS) and copies of reports will be lodged with the West of Scotland Archaeology Service.

A summary statement of the results of this watching brief will be submitted for publication in *Discovery and Excavation in Scotland* (Appendix 3) and an online OASIS form will be completed.

# 5. **REFERENCES**

Ordnance Survey 1860 Ayr Sheet XXXI.5. 25" to the mile.

Ordnance Survey 1896 Ayrshire, Sheet 031.05. 25" to the mile.

Ordnance Survey 1909 Ayrshire, Sheet 031.05. 25" to the mile.

# **APPENDIX 1: Drawings Register**

Dwg No.	Sheet No.	Scale	Plan / Section	Description/contexts
1	1	01:50	S	North-East-facing section of excavated trench

# **APPENDIX 2: Digital Photographic Register**

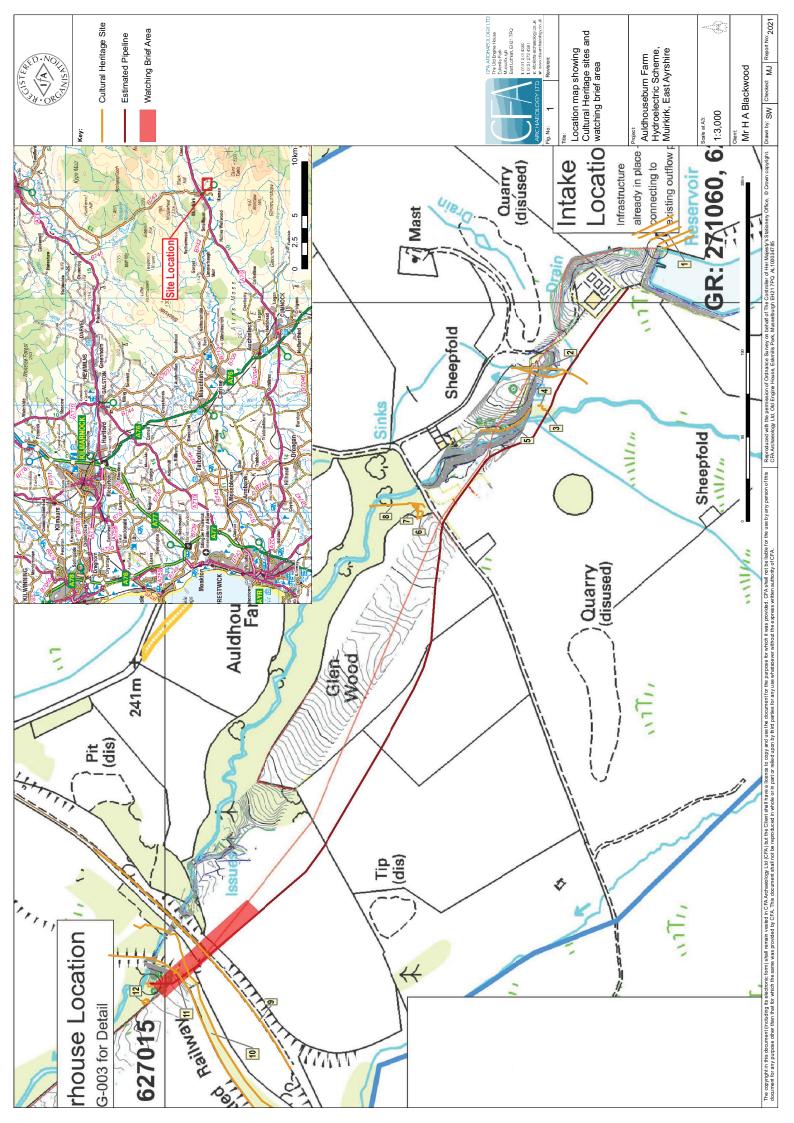
Shot No.	Summary description of subject	Taken from	Conditions
1	Site 1, rig-and-furrow	NW	Overcast
2	Site 1, rig-and-furrow	NW	Overcast
3	Site 1, rig-and-furrow	SE	Overcast
4	Looking towards Site 2	SE	Overcast
5	Looking towards Site 2	Е	Overcast
6	Site 2	Е	Overcast
7	Site 2	S	Overcast
8	Site 2	S	Overcast
9	Site 2	N	Overcast
10	Sites 3 and 4, quarry scoops	N	Overcast
11	Site 2	NW	Overcast
12	Sites 3 and 4, quarry scoops	Е	Overcast
13	Site 5	N	Overcast
14	Site 5	S	Overcast
15	Site 5	N	Overcast
16	Site 5	SW	Overcast
17	Site 5	NW	Overcast
18	Site 8, blocked gate in wall	S	Overcast
19	View of bridge over road	SE	Overcast
20	Site 6	N	Overcast
21	Site 7	NW	Overcast
22	Site 6 & 7	Е	Overcast
23	Site 8, demolished bridge	S	Overcast
24	Site 8, track	N	Overcast
25	View of bridge over road	N	Overcast
26	Site 9, wall	S	Overcast
27	Site 9	SE	Overcast
28	Site 9, blocked culvert	S	Overcast
29	Site 9, blocked culvert	S	Overcast
30	Site 9	S	Overcast
31	Site 9	SE	Overcast
32	Site 10, bridge	SE	Overcast
33	Site 10, bridge	SE	Overcast
34	Site 10, bridge	SE	Overcast
35	Site 10, bridge	S	Overcast
36	Site 10, sluice	SE	Overcast
37	Site 10	Е	Overcast
38	Site 10	Е	Overcast
39	Site 10	SE	Overcast
40	Site 10	NW	Overcast
41	Site 11	NW	Overcast
42	Site 11	S	Overcast
43	Site 11	S	Overcast
44	Site 11	NW	Overcast
45	Site 9	NW	Overcast
46	Site 9	NE	Overcast

47	Site 9	NE	Overcast
48	Site 12	SE	Overcast
49	Site 12	SE	Overcast
50	Site 12	NW	Overcast
51	Site 10, mineral line	NE	Overcast
52	Site 10, mineral line	W	Overcast
53	Site 10, mineral line	W	Overcast
54	Site 10, mineral line	W	Overcast
55	Site 10, mineral line	NW	Overcast
56	Site 10, mineral line	NW	Overcast
57	Site 10, mineral line	SE	Overcast
58	Site 10, mineral line	SE	Overcast
59	Site 10, mineral line	SE	Overcast
60	Site 10, mineral line	SW	Overcast
61	Site 10, causeway	SW	Overcast
62	Area across railway embankment before excavation	N	Overcast
63	Industrial waste at S end of trench.	N	Overcast
64	Industrial waste at 7m mark	N	Overcast
65	Top removed from canal strip	S	Overcast
66	Topsoil removed	S	Overcast
67	Trench work at edge of canal and northern embankment	W	Overcast
68	Canal being excavated	W	Overcast
69	Canal being excavated	SW	Overcast
70	East-facing section	E	Overcast
70	East-facing section	E	Overcast
72	East-facing section	E	Overcast
73	East-facing section	E	Overcast
73	East-facing section	E	Overcast
75	East-facing section	E	
76		E	Overcast
	East-facing section	E	Overcast
77 78	East-facing section looking from S side of canal	E	Overcast
78	East-facing section	E	Overcast
/9	East-facing section looking towards the canal and N	E	Overcast
0.0	embankment	Г	
80	East-facing section	E	Overcast
81	East-facing section	E	Overcast
82	East-facing section	E	Overcast
83	East-facing section	Е	Overcast
84	East-facing section	Е	Overcast
85	East-facing section	Е	Overcast
86	East-facing section	Е	Overcast
87	East-facing section	Е	Overcast
88	East-facing section	Е	Overcast
89	East-facing section	Е	Overcast
90	East-facing section	Е	Overcast
91	East-facing section	Е	Overcast
92	West-facing section looking E from middle of trench	W	Overcast
	along S embankment		
93	Trench at N side showing infill of canal for N rail	W	Overcast
	embankment.		
94	Trench at N side showing infill of canal for N rail	W	Overcast
	embankment		
95	East-facing section through N embankment (public	Е	Overcast
	footpath)		
96	East-facing section through N embankment (public	Е	Overcast
	footpath)		
97	East-facing section on N side of N embankment	Е	Overcast
98	East-facing section on N side of N embankment	Е	Overcast

99	West-facing section of N embankment	W	Overcast
100	Canal west-facing section just prior to pipe laying.	N	Overcast

# **APPENDIX 3: Discovery and Excavation in Scotland Entry**

LOCAL AUTHORITY:	Foot Armshine
LOCAL AUTHORITY:	East Ayrshire
PROJECT TITLE/SITE NAME:	Auldhouseburn Farm Hydroelectric Scheme, Muirkirk
PROJECT CODE:	BURF
PARISH:	Muirkirk
NAME OF CONTRIBUTOR:	M Johnson
NAME OF ORGANISATION:	CFA Archaeology Ltd
TYPE(S) OF PROJECT:	Watching Brief
NMRS NO(S):	-
SITE/MONUMENT TYPE(S):	-
SIGNIFICANT FINDS:	-
NGR (2 letters, 10 figures)	NS 70235 27015 to NS 71060 26450
START DATE (this season)	February 2012
END DATE (this season)	August 2013
PREVIOUS WORK (incl. DES ref.)	
MAIN (NARRATIVE) DESCRIPTION: (May include information from other	A walkover survey and watching brief was carried out during ground works for the construction of a hydroelectric scheme at Auldhouseburn Farm, Muirkirk.
fields)	The walkover survey recorded the remains of quarry scoops, rig-and- furrow cultivation, paths or tracks, and clearance heaps along the route, as well as the former canal and railway embankments.
	The watching brief recorded the composition of the railway embankments, which each consisted of a clay core covered with industrial ashy deposits, and recorded a partial section through the former canal which was waterlogged and filled with soft silt. No additional features were recorded.
PROPOSED FUTURE WORK:	None
CAPTION(S) FOR ILLUSTRS:	N/A
SPONSOR OR FUNDING BODY:	Mr H A Blackwood
ADDRESS OF MAIN CONTRIBUTOR:	The Old Engine House, Eskmills Park, Musselburgh, EH21 7PQ
EMAIL ADDRESS:	cfa@cfa-archaeology.co.uk
ARCHIVE LOCATION (intended/deposited)	National Monuments Record of Scotland (archive) East Ayrshire Sites and Monuments Record (report)



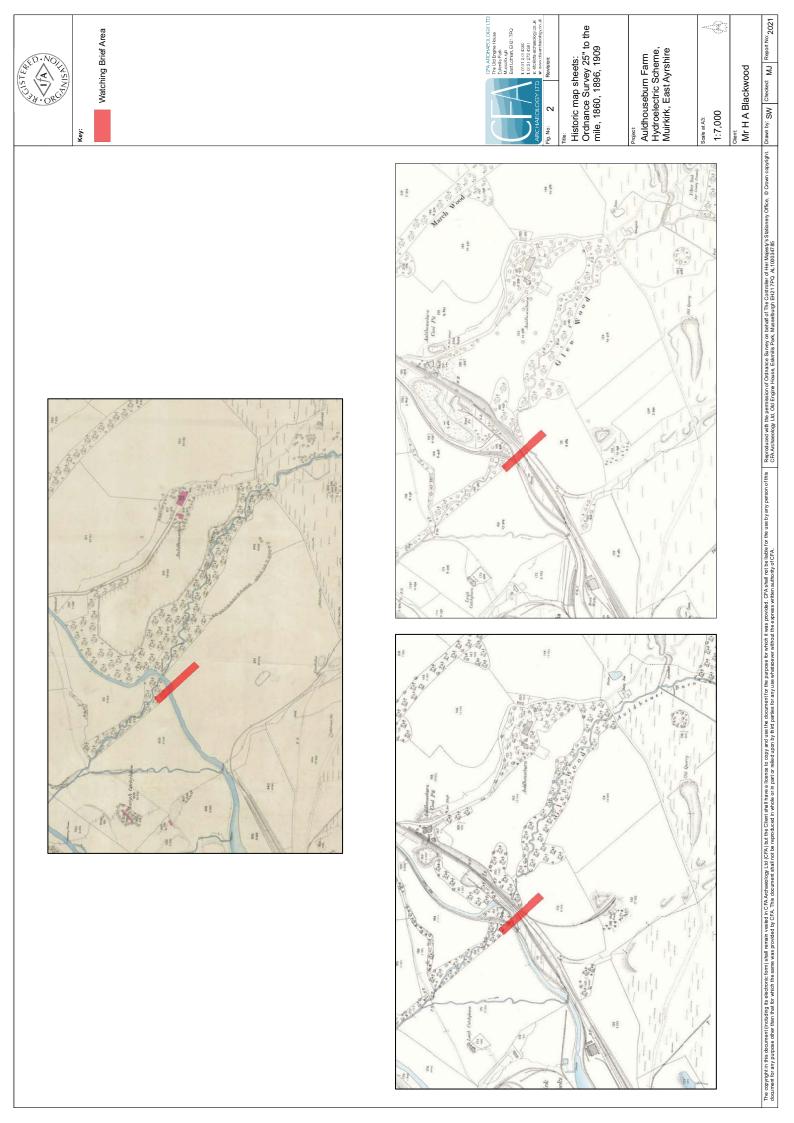




Fig. 3 - Site 1 from SE

Fig. 4 - Site 2 from S



Fig. 5 - Sites 3 and 4 from E

Fig. 6 - Site 5 from N



Fig. 7 - Sites 6 and 7 from E

Fig. 8 - Site 8 from N



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Fig. 9 - Site 9 from SE



Fig. 10 - Site 10, public footpath on top of embankment, from NE



Fig. 11 - Site 11 from S

Fig. 12 - Site 12 from SE



Fig. 13 - Mineral railway embankment, NE-facing section

Fig. No: 9-13 Revision: A		Revision: A	Project: Auldhouseburn Farm Hydroelectric Scheme, Muirkirk, East Ayrshre	CISTER S		CFA ARCHAEOLOGY LTD The Old Engine House Eskmills Park, Musselburgh
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Fig. 14 - SW-facing section of canal basin with mineral embankment in foreground





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Fig. 15 - Railway embankment, NE-facing section

Fig. No: 14·	-15	Revision: A	Project: Auldhouseburn Farm Hydroelectric Scheme, Muirkirk, East Ayrshre	CUSTER,	CFA ARCHAEOLOGY I The Old Engine House Eskmills Park, Musselbu	
Drawn by:	Checked:	Report No:	Client:		East Lothian, Eh21 7PC	
SW	MJ	2021	Mr. H A Blackwood	CANISMI	T: 0131 273 4380 F: 0131 273 4381	
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