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**Water of Leith Flood Prevention Scheme,
Balerno Weir:
Test Pit Evaluation and
Archaeological Recording of Sluice Gate**

Report No. 1722

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Water of Leith Flood Prevention Scheme, Balerno Weir: Test Pit Evaluation and Archaeological Recording of Sluice Gate

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CONTENTS

1.	Introduction	3
2.	Methods	4
3.	Results	5
4.	Conclusions	6

APPENDICES

Appendix 1	Context Register	7
Appendix 2	Photograph Register	7

ILLUSTRATIONS (bound at rear)

Fig. 1	Location map
Fig. 2	Plan of sluice
Fig. 3	West facing Section of Test Pit
Fig. 4	North facing Section of Test Pit
Fig. 5	View of sluice within setting
Fig. 6	View of front of sluice
Fig. 7	View of back of sluice
Fig. 8	Detail of gate-winding mechanism
Fig. 9	Detail of stones (004) <i>in situ</i>
Fig. 10	Section of test pit showing brick pier (005/1)

1. INTRODUCTION

1.1 General

This report presents the results of archaeological works undertaken prior to construction works for the Water of Leith Flood Prevention Scheme at Balerno Weir, Balerno, West Lothian (NGR: NT 164 659) during November 2009. The work was commissioned by The City of Edinburgh Council.

Archaeological recording of a sluice gate was required in advance of works at Balerno Weir.

The work was project managed by John Lawson of City of Edinburgh Council Archaeology Service (CECAS).

1.2 Objectives

The aims of the work were:

- To record the sluice by photography and plan drawing.
- To excavate a 1m by 1m test pit abutting the sluice to establish the presence or absence of earlier sluice gate structures.

2. METHODS

2.1 General

CFA follows the Institute for Archaeologists' Standards and Guidance and Code of Conduct.

All excavation and on-site recording was carried out according to standard CFA procedures, principally by drawing, by photography and by completing standard CFA record forms.

Photographs were taken using a Nikon D100 SLR camera.

3. RESULTS

3.1 General

The sluice was situated at the entrance to a lade running along the west bank of the Bavelaw Burn, alongside a large weir (Fig 4). A 1m by 1m test pit was excavated against the sluice pier to a depth of 1.2m.

3.2 Sluice Recording

The structure consisted of a timber framed (007) penstock sluice. The timber frame was set on brick (005) and sandstone (006) piers built into the riverbank. The wooden gate (008) would have been lifted vertically by an iron rack and pinion winding mechanism (009) with a detachable crank arm. A brake plate was present to hold the gate open in its raised position. Visually the sluice gate was in good condition although it is not known if it functioned.

The brick piers (005) measured 1.2m square and were founded deeper than 1.2m below the surface, probably on a concrete bed. They were capped with 1.2m square 0.25m thick cement bonded sandstone slabs (006). The east pier was built out to the weir edge from stugged ashlar blocks with a chamfer to direct flow to the weir. The east pier also featured two sandstone steps (010) leading down to the edge of the lade, although these had been disturbed at the time of this survey. A single step was situated on the downstream side of the opposite pier.

3.3 Test Pit Results

A test pit measuring 1m by 1m was excavated against the west pier of the sluice to a depth of 1.2m. Topsoil was 0.1m - 0.15m thick dark loamy soil (001) overlying c.0.4m thick subsoil (002) comprising mid brown clayey silt which contained occasional floating stones and was heavily bioturbated by tree roots. A deposit of stony clay (003) underlay 002. This is likely to be redeposited backfill from the construction of the sluice pier rather than undisturbed natural as it abuts the face of the pier. An *in situ* lump of concrete (011) was found at the bottom of the test pit, attached to the pier, suggesting that the pier was built on a concrete foundation. An alignment of four sub-angular stones (004) was situated on the surface of 003, although they did not appear to be the remains of any structure as they were not firmly bedded into the surface of 003.

4. CONCLUSIONS

The sluice gate was recorded and the excavation of the test-pit did not identify evidence of an earlier structure below the surviving sluice gate, although natural was not reached. An alignment of stones (004) was revealed in the test pit, situated on the surface of a stony clay deposit (003) however it seems likely that this deposit was redeposited natural and that the stones were part of infill around the piers following construction.

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 Edinburgh City Council Sites and Monuments Record.

A summary statement of the results of this work, to be submitted for publication in *Discovery and Excavation in Scotland*, with the other work that is undertaken on the Water of Leith flood prevention scheme.

APPENDIX 1: CONTEXT REGISTER

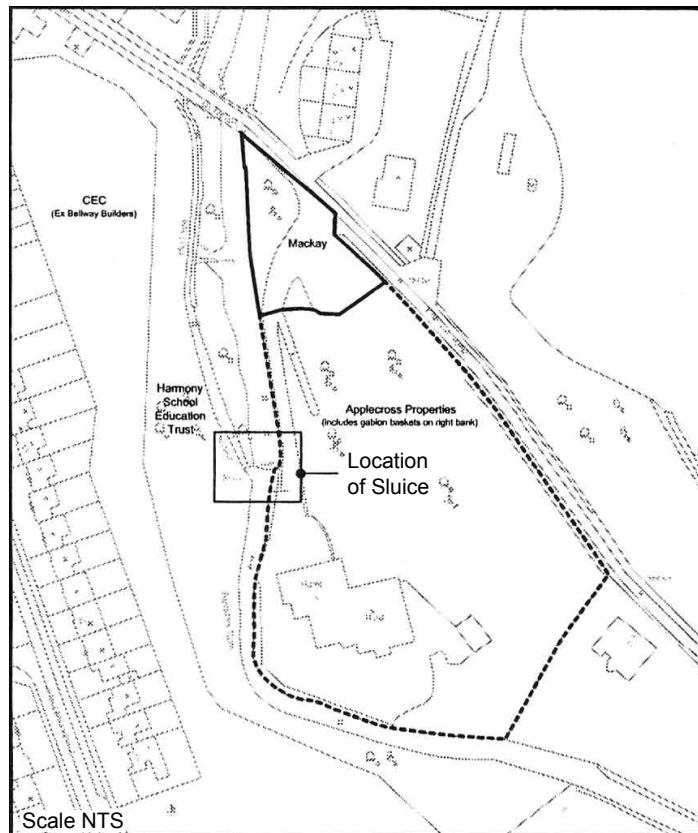
Context No.	Description
000	Natural Subsoil
001	Topsoil
002	Foundation cut
003	Infill
004	Sandstones
005	Brick pier
006	Sandstone settings
007	Timber sluice frame
008	Timber sluice gate
009	Steel and iron sluice gate winding mechanism
010	Sandstone steps
011	Concrete

APPENDIX 2: PHOTOGRAPH REGISTER

Digital images

Shot	Description	From
Film 1		
1	Registration shot	
2	General view of sluice	N
3	General view of sluice	N
4	General view of sluice	N
5	Detail of stone settings at side of sluice	N
6	Detail of sluice gate	N
7	Detail of sluice frame	N
8	General view of sluice and lade	N
9	General view of sluice and lade	N
10	General view of sluice and lade	N
11	Detail of sluice and weir	N
12	Detail of sluice and weir	NW
13	View of sluice and top of weir	SW
14	Detail of sluice	S
15	Detail of sluice	S
16	Detail of stone setting	W
17	Detail of stone setting	W
18	Detail of sluice and stone setting	NW
19	Detail of stone setting	W
20	Detail of winding mechanism	
21	Detail of winding mechanism	
22	Detail of winding mechanism	
23	General view of winding mechanism and frame	SW
24	General view of sluice	SW
25	General view of sluice	W
26	General view of winding mechanism	
27	Test pit with stones (003) <i>in situ</i>	W
28	Test pit with stones (003) <i>in situ</i>	W
29	Test pit with stones (003) <i>in situ</i>	W
30	Test pit fully excavated	W
31	Test pit fully excavated	W
32	Test pit fully excavated	W
33	Test pit fully excavated	W
34	Test pit fully excavated	W

35	Test pit fully excavated	W
36	Test pit fully excavated showing north-facing section	N



Key:



Fig. No:	1	Revision:	A	Client:	City of Edinburgh Council
Title:	Location Map				
Project:	Water of Leith Flood Prevention Scheme, Balerno Weir				



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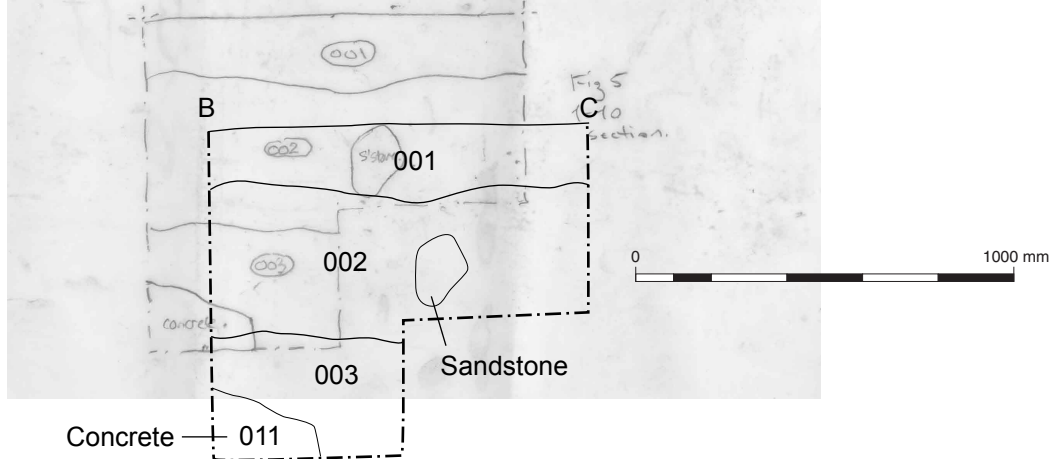
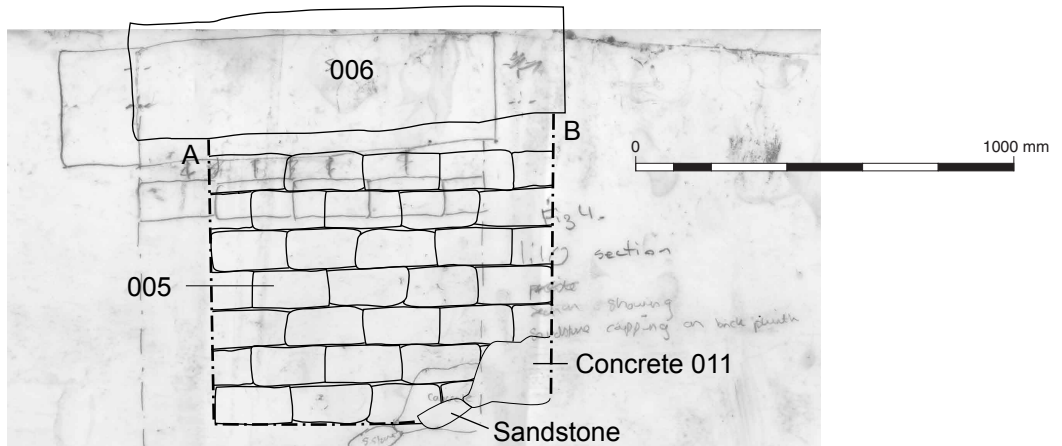
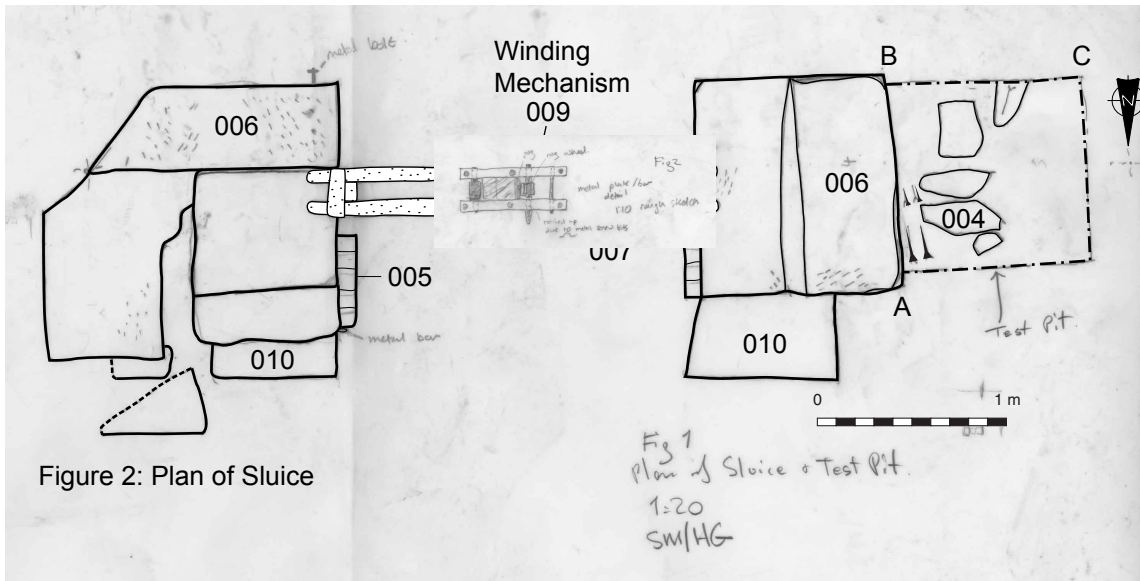
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Key:

-  Wood
-  Metal

Fig. No: 2-4 Revision: A Client: City of Edinburgh Council

Title:

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Figure 5: View of sluice within setting



Figure 6: View of front of sluice



Figure 7: Detail of back of sluice




Figure 8: Detail of gate-winding mechanism



Figure 9: Detail of stones (004) *in situ*



Figure 6: Section of test pit showing brick pier (005/1)

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	Project:	Water of Leith Flood Prevention Scheme, Balerno Weir				
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