

GUARD ARCHAEOLOGY



**Loirston Loch
Data Structure Report
Project 3444**

www.guard-archaeology.co.uk

Loirston Loch

Data Structure Report

On behalf of: Barr Construction

NGR: NJ93930153

Project Number: 3444

Project Manager: John Atkinson

Report by: Warren Bailie

Illustrations: Fiona Jackson

Approved by:



Date:

27/01/2012

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

GUARD Archaeology Limited
52 Elderpark Workspace
100 Elderpark Street
Glasgow
G51 3TR

Tel: 0141 445 8800
Fax: 0141 445 3222
email: info@guard-archaeology.co.uk



www.guard-archaeology.co.uk

Contents

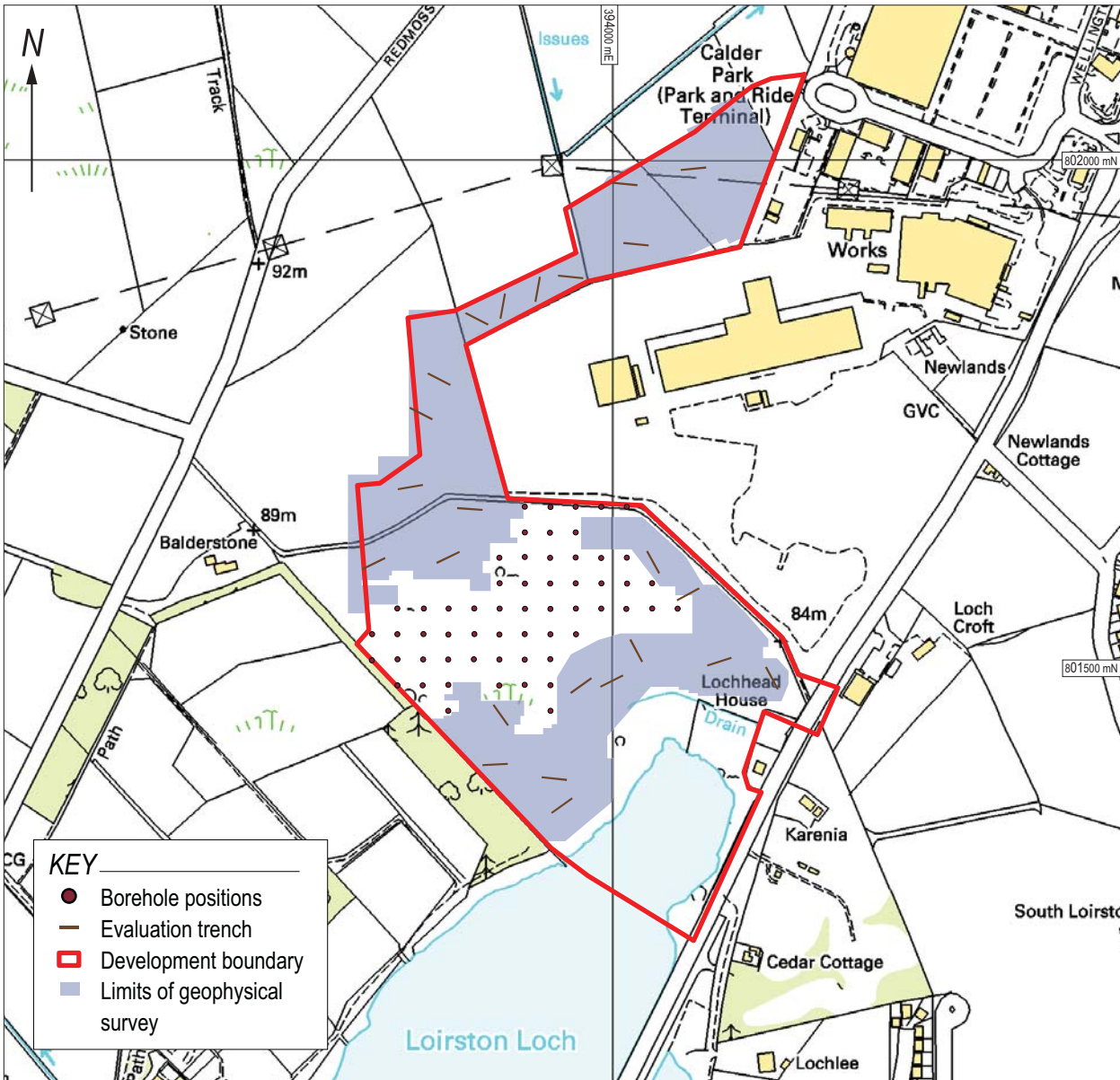
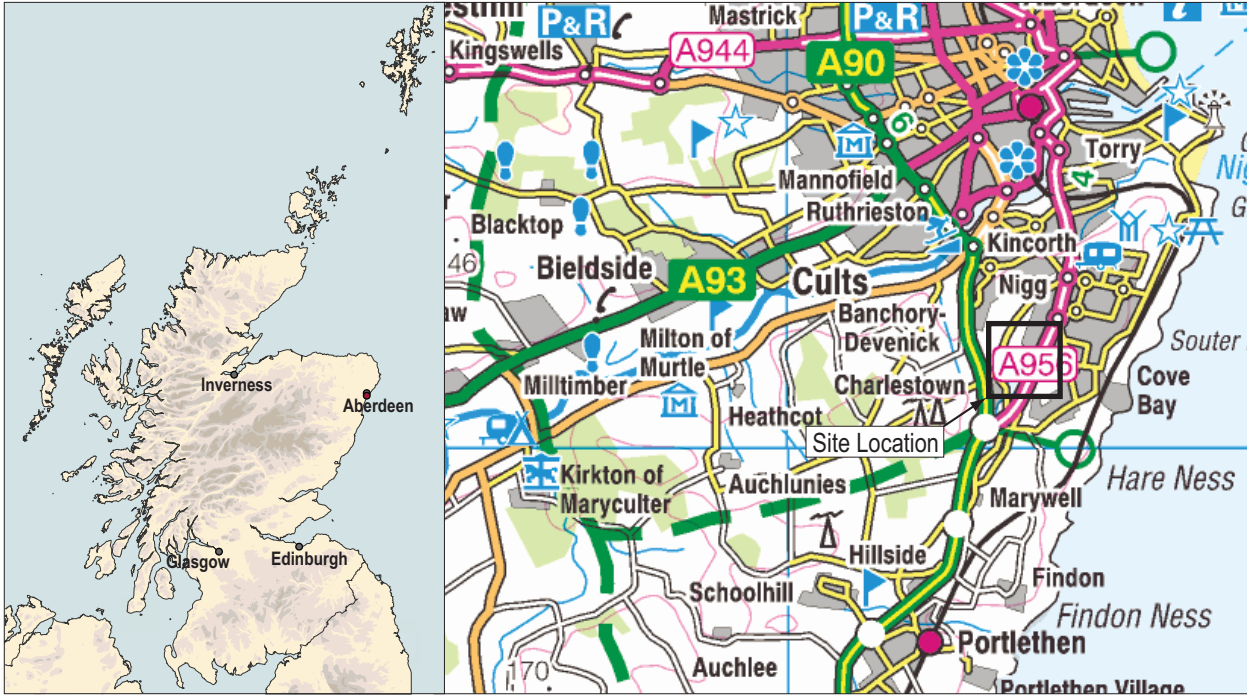
Executive Summary	5
Introduction	5
Site Location, Topography and Geology	5
Archaeological Background	5
Aims and Objectives	5
Methodology	6
Results	6
Discussion	6
Recommendations	8
Acknowledgements	8
Appendices	10
Appendix A: Trench Records	10
Appendix B: Borehole Records	12
Appendix C: List of Contexts	13
Appendix D: List of Samples	13
Appendix E: List of Photographs	13
Appendix F: DES Entry	15
Appendix G: Written Scheme of Investigation	16

List of Figures

Figure 1: Site location	4
Figure 2: Trench and Borehole numbers	7

List of Plates

Plate 1: Trench 5 from south-west, granite boulder in foreground	6
Plate 2: Trench 22 from west, granite boulder half-way along trench	8
Plate 3: Trench 18 from east, two drains and soakaway at end of trench	8



- KEY**
- Borehole positions
 - Evaluation trench
 - ▭ Development boundary
 - Limits of geophysical survey

Figure 1:
Site location.



Executive Summary

- 1.1 An archaeological evaluation was carried out by Archaeology Limited (GUARD), on behalf of Barr Construction, having been commissioned by AECOM, on an area proposed for development at Loirston Loch, Aberdeen. The 24 trial trenches were targeted on potentially archaeological anomalies highlighted by geophysical prospection carried out on the site and was therefore not based upon the total area proposed for development (15.9 ha). The boreholes were laid out in a grid across the central wet area of the site where access to both the geophysics and plant machinery was restricted. No significant archaeological features were encountered during the evaluation although selective samples of the cores taken were retained for further assessment and potential analysis of the environmental history of the site. The work was undertaken between 16 and 18 January 2012.

Introduction

- 2.1 This report sets out the results of an archaeological evaluation undertaken by GUARD, on behalf of Barr Construction on a site proposed for the construction of a new football stadium for Aberdeen Football Club on the edge of Loirston Loch, Aberdeen (Figure 1). During the course of the evaluation a total of 1150 square metres of trenching was undertaken, spread over twenty three individual trenches (one trench was abandoned due to overhead power-lines) targeted on geophysical anomalies across the site. Included in the evaluation were a series of fifty-eight boreholes across the central wet area on site. These were intended to determine the archaeological potential of this area of the site and to provide an opportunity to examine the palaeoecological background of the site.

Site Location, Topography and Geology

- 3.1 The proposed development location lies adjacent to Loirston Loch to the south of Aberdeen (NGR NJ 9393 0153). The development area covers approximately 15.9 hectares and sits between 86m and 91m AOD.
- 3.2 The site is bounded by the A956 to the south-east, an industrial area to the north, and the site is surrounded by rough pasture and currently consists of undulating rough pasture which rises gradually to the north (Figure 1).
- 3.3 The underlying drift geology consists of glacial till with frequent granite erratics and loose angular granite pockets; the solid geology consists of Precambrian Metamorphic rock (British Geological Survey 1:63,600, Drift and Solid).

Archaeological Background

- 4.1 A review of desk-based sources undertaken in advance of the trenching revealed a total of fifty known cultural heritage sites within 500m of the centre of the proposed development. One of these sites has been tentatively located within the boundary of the development site through aerial photography.

Aims and Objectives

- 5.1 The aims and objectives of the archaeological work were to:
 - establish the presence or absence of archaeological resources within the area of development under targeted archaeological evaluation conditions
 - determine the character, extent and significance of any archaeological deposits encountered;
 - excavate and record any significant archaeological remains should they be encountered;

- undertake funded post-excavation analysis and publication of the results on the archaeological works should they be warranted.

Methodology

- 6.1 Topsoil was stripped using a mechanical excavator, fitted with a flat-bladed ditching bucket, under close archaeological supervision. The topsoil was removed in linear trenches to the surface of the subsoil or the first significant archaeological horizon. The trenches were in twenty five metres long by two metres wide. Trenches were located to target geophysical anomalies of archaeological potential (Figure 2).
- 6.2 All on-site recording, written, drawn and photographic, was to the standards normally pertaining in archaeological fieldwork. Trenches were surveyed and located within the National Grid using a Leica GS 08. Weather conditions for the evaluation were cold and dry although the conditions underfoot were wet throughout.

Results

- 7.1 During the course of the evaluation no features of archaeological significance were encountered. Twenty three trenches were excavated (Figures 1 and 2), totalling 1150 square metres, the results of which are set out in Appendix 1. It was not possible to excavate Trench 24 due to the vicinity of overhead power-lines. For the majority of the area trenches revealed a very dark brown peaty silt topsoil 001 of between 0.22m and 0.55m thick, which lay over natural subsoil 002, consisting of very firm light grey gritty silt.
- 7.2 During the coring of the fifty-eight boreholes a series of strata were observed across the central area of the site. These strata represent the accumulation of peat and other sediment deposited during the periodic inundation of this part of the site as Loirston Loch has advanced and receded throughout history. The details of the strata found during the coring can be found in Appendix 2.
- 7.3 Seven core samples were retained for further analysis and more specifically to enable a palaeo- environmental reconstruction of the site and its environs throughout the period of peat formation.

Discussion

- 8.1 The evaluation trenching did not uncover any significant archaeological deposits. From the results it is likely that no significant archaeological deposits survive across the site. The majority of the trenches revealed the presence of large granite boulders and in some cases, pockets of angular granite stones. These boulders and collections of metamorphic rock may account for the geophysical anomalies which were suspected to be archaeological at the outset. Relatively modern drainage features were also numerous and may have given signals that had the potential to be archaeological.
- 8.2 The coring revealed deposits with a high potential to reveal palaeoenvironmental indicators. Material suitable for analysis may include pollen, coleopteran and other insect remains, diatoms, as well as plant micro- and macro-fossils. Intact core sequences may be analysed to establish high resolution micro-morphological environmental changes in the environment here through time.



Plate 1: Trench 5 from south-west, granite boulder in foreground.

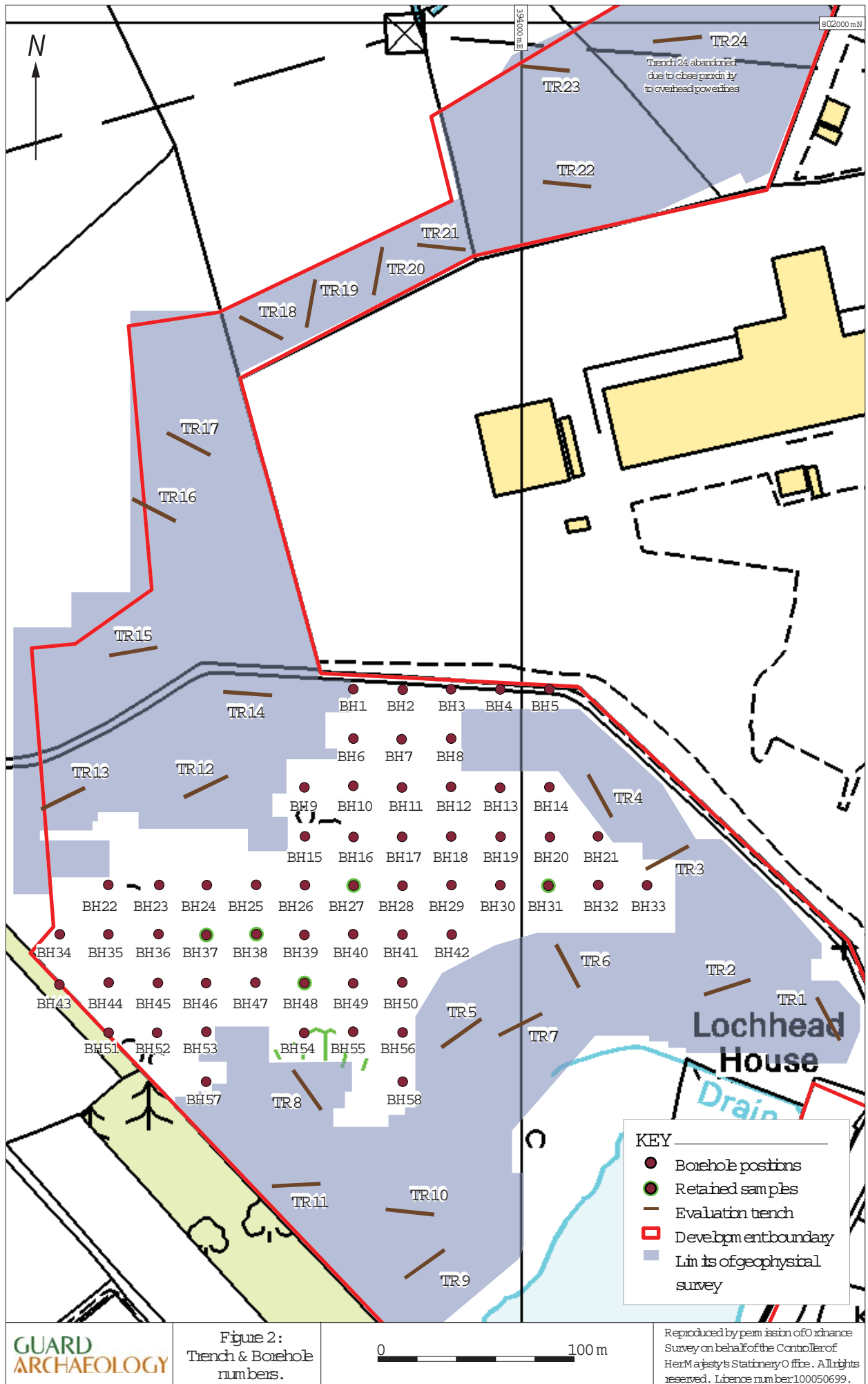




Plate 2: Trench 22 from west, granite boulder half-way along trench.



Plate 3: Trench 18 from east, two drains and soakaway at end of trench.

- 8.3 The reconstruction of the past environmental change here may establish the role of human agency in the environs of Loirston Loch. The reconstruction will also become a useful tool when considering other archaeological activity in the area and the wider North Sea coastline in prehistory.
- 8.4 This environmental reconstruction will also contribute to research discussions conducted by ScARF (Scottish Archaeological Research Framework) with specific research questions due for release in March 2012. One example of discussion conducted by the Science in Archaeology panel was in January 2011 in collaboration with SAGES (Scottish Alliance for Geoscience, Environment and Society). This was entitled: Moments of Crisis: From Coincidence to Hypothesis in Linking Environmental Pressures to Scottish Prehistoric Change.

Recommendations

- 9.1 The evaluation trenches did not show evidence of archaeologically sensitive deposits or features existing within the development area. In consequence, it is recommended that no further archaeological trenching work is required.
- 9.2 It is recommended that the samples retained from the peat coring are assessed by a specialist to ascertain if full analysis of the retained cores will be a worthwhile exercise. If suitable environmental material is present, it may be used in a multi-proxy approach to reconstruct the past environmental change around Loirston Loch, with further implications for mapping environmental changes for north-east Scotland for the period of time the peat profile represents.
- 9.3 GUARD would stress that these recommendations are intended for guidance only. While the recommended mitigation strategy was developed following consultation with AECOM of final decisions on the nature and extent of any future archaeological work rest with the planning authority.

Acknowledgements

- 10.1 GUARD would like to thank AECOM and Barr Construction for their assistance. Plant and drivers were supplied by Muirhead Plant. Technical support was from Aileen Maule, John Keily and Jen Cochrane. A survey of trench locations was conducted by Fiona Jackson. The illustrations were also produced by Fiona Jackson. The project was directed by Warren Bailie with assistance from Beth Spence and Scott Wilson. The report was desk top published by Gillian McSwan. The project was managed for GUARD by John Atkinson.

**Loirston Loch
Data Structure Report**

Section 2: Appendices



www.guard-archaeology.co.uk

Appendices

Appendix A: Trench Records

Tr No	Length (m)	Width (m)	Depth (m)	Topsoil/Overburden (001)	Subsoil (002)	Details
1	25	2	up to 0.75	0.27-0.4m thick, dense, soft, v. dark brown peaty silt, freq. Roots and occas. Angular stones	0.27- 0.4m below surface, v. firm light grey gritty silt, freq. Angular stones	One drainage feature observed at 10m from SE end: (1001) [1002], 1.8m wide, 0.55m deep, extends E and W. Peaty silt fill with angular stones along base.
2	25	2	0.3-0.38	0.3-0.38m thick, dense, soft, v. dark brown peaty silt, freq. Roots, occas. Frags. Of wood	0.3-0.38m below surface, v. firm light brownish grey gritty silt, freq. Angular stones	Two field drains, almost identical, 10m apart: (2001) [2002], (2003) [2004], 0.25-0.35m wide, up to 0.25m deep, extending E and W. Filled by peaty silt and loosely packed angular stones
3	25	2	0.31-0.4	0.31-0.4m thick, v. dark brown peaty silt, freq. Roots, occas. Wood frags. And detritus	0.31-0.4m below surface, very firm light brown grey gritty silt with occas. Veins of reddish brown, freq. Angular stones	No features, but one large granite boulder encountered at approx. 10m from NE end of trench
4	25	2	0.28-0.34	0.28-0.34m thick, firm, v. dark brown peaty silt, occas. Wood frags. And detritus	0.28-0.34m below surface, v. firm light grey gritty silt, veins of reddish brown, freq. Angular stones	large field drain (4001) [4002], 11m from NW end, 0.6m wide, ?m deep, extends N and S. Filled by dark brown peat, grey gritty silt and medium angular stones
5	25	2	0.22-0.28	0.22-0.28m thick, firm, dark brown peaty silt, freq. Roots	0.22-0.28m below surface, v. firm, light grey gritty silt with brown mottling, freq, angular stones	minor field drain (5001) [5002], 9.5m from SW end, 0.15m wide, extends NNW and SSE, filled by small angular stones and brown silt, also one boulder at 3m from SW end and a pocket of angular stones at 5-6m from NE end.
6	25	2	up to 0.3	up to 0.3m thick, dense, soft, v. dark brown peaty silt, freq. Roots	0.3m below surface, v. firm, light grey gritty silt with occas. Brown veining, freq. Angular stones	one drainage feature (6001) [6002], encountered at 0.3m below surface, extends for 18m along trench from SE end before extending WNW. 0.28m wide, ?m deep, filled by medium angular stones and brown peaty silt infill. Also large granite boulder at NW end.
7	25	2	0.28-0.33	0.28-0.33m thick, dense, soft, v. dark brown peaty silt, freq. Roots	0.28-0.33m below surface, v. firm, light grey gritty silt with brown veining, freq. Angular stones	series of three field drains, (7001) [7002], (7003) [7004] and (7005) [7006], all approx 8m apart, all orientated WNW-ENE, 0.28-0.3m wide, filled by v. dark brown peaty silt and angular stones. NOTE: The cut for [7002] was visible on the surface showing the recent date for these drains.
8	25	2	0.28-0.3	0.28-0.3m thick, firm dark brown peaty silt, freq. Roots	0.28-0.3m below, v. firm light grey gritty silt with brown mottling, freq. Angular stones	Three minor field drains, (8001) [8002], (8003) [8004] and (8005) [8006], all orientated approx. W-E. 0.15-0.18m wide, filled by peaty silt and angular stones, orange ceramic pipe in [8002]. Also two large angular stones observed near centre of trench
9	25	2	0.4-0.48	0.4-0.48m thick, firm v. dark brown peaty silt, freq. Roots	0.4-0.48m below surface, v. firm light brownish grey gritty silt with reddish brown veining, v. freq. Angular stones and occas. Boulders	One large granite boulder at approx. 6m from SW end, one minor field drain (9001) [9002], 0.13m wide, filled by peaty silt and angular stones

Tr No	Length (m)	Width (m)	Depth (m)	Topsoil/Overburden (001)	Subsoil (002)	Details
10	25	2	0.29-0.41	0.29-0.41m thick, firm, v. dark peaty silt, freq. Roots	0.29-0.41m below surface, v. firm light brownish grey gritty silt, freq. Pockets of angular stones	One large granite boulder at E end and numerous pockets of angular stones throughout the trench
11	25	2	0.34-0.41	0.34-0.41m thick, firm dark brown peaty silt, freq. Roots	0.34-0.41m below surface, v. firm light grey gritty silt with brown veining, freq. Angular stones	one field drain (11001) [11002], orientated NW-SE, 0.15m wide, 0.12m deep, filled by peaty silt and orange clay pipe. Also large boulder at 2m from W end and large pocket of angular stones at E end
12	25	2		up to 0.31m thick, firm dark brown peaty silt, freq. Angular stones	0.31m below surface, v. firm, light grey brown silt, freq. Angular stones	one large boulder at 10.5m from SW and one stone socket at 18.4m from SW end
13	25	2	up to 0.45m	0.42-0.45m thick, firm dark brown peaty silt	0.42-0.45m below surface, v. firm light brownish grey gritty silt, occas. Angular stones and boulders	one large drain, at 7m from SW end, (13001) [13002], 0.7m wide, encountered at 0.43m below surface, extends W and E, filled by loosely packed large angular stones and peaty silt
14	25	2	0.41-0.47	0.38-0.4m thick, firm dark brown peaty silt	0.38-0.4m below surface, v. firm, light brownish grey gritty silt, occas. Gravel and broken stones	Two minor field drains orientated NW-SE
15	25	2	0.25-0.32	0.2-0.28m thick, firm dark brown peaty silt	0.2-0.28m below surface, v. firm light brownish grey gritty silt, mod. Angular stone and occas. Gravel	No features or boulders
16	25	2	0.4-0.47	0.4-0.47m thick, firm v. dark brown peaty silt, occas. Angular stones	0.4-0.47m below surface, v. firm light grey gritty silt, occas. Large angular stones	No features or boulders
17	25	2	Up to 0.49	Up to 0.49m thick, firm v. dark brown peaty silt	0.36-0.49m below surface, v. firm light brownish grey gritty silt, mod. Angular stone and occas. Gravel	One drain, (17001) [17002], 5m from E end. 0.35m wide, extends N and S, filled by angular stones
18	25	2	Up to 0.49	0.22-0.38m thick, firm mid-brown peaty silt, occas. Angular stones	0.22-0.38m below surface, v. firm light grey gritty silt, freq. Large angular granite stones	One drain soakaway at NW end, up to 5m visible in trench and extended N and S. loose angular stones with peaty silt infill, one drain on SE edge flowed in to the soakaway. Post-medieval pot sherds observed in fill, not retained
19	25	2	up to 0.38	up to 0.32m thick, firm v. dark brown peaty silt	0.32 below surface, v. firm light grey gritty silt, freq. Large angular granite stones	Large boulder observed at 11m from SE end
20	25	2	0.35-0.4	0.35-0.4m thick, firm dark brown peaty silt with a reddish tinge	0.35-0.4m below surface, v. firm light grey brown silt, freq. Angular stones, occas. Pockets of dark brown silt	Three minor field drains observed near SW end
21	25	2	up to 0.42	0.36-0.4m thick, firm dark reddish brown peaty silt	0.36-0.4m below surface, v. firm light grey brown gritty silt, freq. Angular stones, freq. Pockets of dark brown silt	Two large granite boulders observed at 3m and 10m from the E end
22	25	2	0.3-0.34	0.3-0.34m thick, firm v. dark brown peaty silt	0.3-0.34m below surface, firm light brown grey gritty silt, freq. Frags. Of angular stone, occas. Boulders of granite	Two minor field drains with orange ceramic pipe, one large boulder at 7m from W end

Tr No	Length (m)	Width (m)	Depth (m)	Topsoil/Overburden (001)	Subsoil (002)	Details
23	25	2	0.32-0.55	0.32-0.55m thick, firm, v. dark brown peaty silt, rough pasture on surface, occas. Large pieces of rotted wood, freq. Roots	0.32-0.55m below surface, v. firm, light grey gritty silt, freq. Angular stones	One field drain (23001) [23002], orientated N-S, 0.28m wide, 0.33m deep, filled by brown peaty silt and medium angular stones
24	-	-	-	-	-	Abandoned, below power lines

Appendix B: Borehole Records

Borehole No.	Core Depth (m)	(001) thickness (m)	(003) thickness (m)	(004) thickness (m)	(005) thickness (m)	(002) found at (m)
1	0.37	-	-	-	0.28	0.28
2	0.3	-	-	-	0.25	0.25
3	0.36	-	-	-	0.32	0.32
4	0.21	-	-	-	0.19	0.19
5	0.19	-	-	-	0.19	0.19
6	0.5	-	-	-	0.33	0.33
7	0.42	-	-	-	0.36	0.36
8	0.38	-	-	-	0.29	0.29
9	0.57	0.42	-	-	-	0.42
10	0.67	0.53	-	-	-	0.53
11	1.06	0.54	0.26	0.1	-	0.9
12	0.59	0.52	-	-	-	0.52
13	0.34	0.28	-	-	-	0.28
14	0.31	0.23	-	-	-	0.23
15	0.59	0.56	-	-	-	0.56
16	1.51	0.83	0.33	-	-	1.16
17	1.04	0.71	0.19	0.1	-	1
18	0.62	0.6	-	-	-	0.6
19	0.51	0.48	-	-	-	0.48
20	0.29	0.26	-	-	-	0.26
21	0.63	0.37	-	-	-	0.37
22	0.48	0.42	-	-	-	0.42
23	0.4	0.4	-	-	-	0.4
24	0.53	0.52	-	-	-	0.52
25	0.57	0.54	-	-	-	0.54
26	1.3	0.74	0.19	0.26	-	1.19
27	1.32	0.65	0.42	0.25	-	1.32
28	1.01	0.46	0.53	-	-	0.99
29	0.6	0.56	-	-	-	0.56
30	0.36	0.25	-	-	-	0.25
31	0.51	0.28	-	0.11	-	0.39
32	0.67	0.59	-	-	-	0.59
33	0.61	0.57	-	-	-	0.57
34	0.55	0.52	-	-	-	0.52
35	0.86	0.6	-	-	-	0.6
36	0.93	0.93	-	-	-	0.93
37	1.01	0.7	0.31	-	-	1.01
38	1.09	0.77	0.32	-	-	1.09
39	1.14	0.71	0.43	-	-	1.14
40	0.91	0.9	-	-	-	0.9
41	0.89	0.64	-	-	-	0.64
42	0.48	0.42	-	-	-	0.42
43	0.5	0.45	-	-	-	0.45
44	0.91	0.85	-	-	-	0.85

Borehole No.	Core Depth (m)	(001) thickness (m)	(003) thickness (m)	(004) thickness (m)	(005) thickness (m)	(002) found at (m)
45	0.91	0.79	-	-	-	0.79
46	1	0.76	-	-	-	0.76
47	0.91	0.81	-	-	-	0.81
48	0.64	0.53	-	-	-	0.53
49	0.95	0.61	-	-	-	0.61
50	0.53	0.51	-	-	-	0.51
51	0.72	0.62	-	-	-	0.62
52	0.95	0.73	-	-	-	0.73
53	0.68	0.57	-	-	-	0.57
54	0.8	0.52	-	-	-	0.28
55	0.43	0.29	-	-	-	0.29
56	0.4	0.28	-	-	-	0.28
57	0.44	0.21	-	-	-	0.21
58	0.6	0.47	-	-	-	0.47

Appendix C: List of Contexts

Context No.	Area	Description	Interpretation
001	Boreholes and trenches	Very dark brown peaty silt (some variations), freq. Roots and occas. Detritus, 0.21 to 0.9m thick	Topsoil
002	Boreholes and trenches	Light to mid-grey gritty silt (some variations) encountered at between 0.19 and 1.32m below surface	Natural subsoil
003	Boreholes	Mid-brown silty peaty clay (fine compact sediment), 0.19- 0.53m thick	Sub-topsoil strata
004	Boreholes	Mid-grey fine silty sand, 0.1-0.26m thick	Sub-topsoil strata

Appendix D: List of Samples

Sample No.	Area	Context No.	Core Depths	Reason for Sampling				Application/Comments
				Pot	Bone	Lithics	Botanics	
1	BH47	001, 002	0.46-0.96m: 0.5m				yes	Palaeo-environmental reconstruction
2	BH38	001, 002, 003	0.52-1.24m: 0.72m				yes	Palaeo-environmental reconstruction
3	BH37	001, 003	0.4-0.9m: 0.5m				yes	Palaeo-environmental reconstruction
4	BH27	003, 004	0.72-1.17m: 0.45m				yes	Palaeo-environmental reconstruction
5	BH27	002, 003, 004	1 – 1.54m: 0.54m				yes	Palaeo-environmental reconstruction
6	BH27	001, 003	0.29-0.79m: 0.5m				yes	Palaeo-environmental reconstruction
7	BH31	001, 002, 004	0-0.52m: 0.52m				yes	Palaeo-environmental reconstruction

Appendix E: List of Photographs

Frame	Area	Context No.	Subject	Taken from
1	-	-	ID shot	-
2	-	-	T23 general	W
3	-	-	T23 general	W
4	-	-	T22, boulder in foreground	W
5	-	-	T21, boulder in foreground	E
6	-	-	T20 general	S
7	-	-	T19 general	E
8	-	-	T18 general	E

Frame	Area	Context No.	Subject	Taken from
9	-	-	T18 soakaway at west end	E
10	-	-	T17 general	NW
11	-	-	T17 general	NW
12	-	-	T16 general	W
13	-	-	T15 general	W
14	-	-	T12, showing large boulder at mid-point	W
15	-	-	T13 general	W
16	-	-	(13001), drain/boundary	W
17	-	-	T14 general	W
18	-	-	T14 general	W
19	-	-	T4 general	NW
20	-	-	T4, (4001) [4002]	NW
21	-	-	T3 general	NE
22	-	-	T1, (1001) [1002], boundary ditch/ drain	W
23	-	-	T1, (1001) [1002], boundary ditch/ drain	W
24	-	-	T1 general	SE
25	-	-	T2 general	SW
26	-	-	T2, close up of drain (2003) [2004]	SW
27	-	-	T6 general	NW
28	-	-	T7 general, (7001) [7002] in foreground	SW
29	-	-	T5, boulder in foreground	SW
30	-	-	T8 general	NW
31	-	-	T10, boulder being removed	E
32	-	-	T10, boulder 2m from E end	E
33	-	-	T9 general	W

Appendix F: DES Entry

LOCAL AUTHORITY:	Aberdeen City
PROJECT TITLE/SITE NAME:	Loirston Loch, Aberdeen
PROJECT CODE:	3444
PARISH:	Nigg
NAME OF CONTRIBUTOR(S):	Warren Bailie
NAME OF ORGANISATION:	GUARD Archaeology Limited
TYPE(S) OF PROJECT:	Archaeological Evaluation
NMRS NO(S):	n/a
SITE/MONUMENT TYPE(S):	n/a
SIGNIFICANT FINDS:	none
NGR (2 letters, 6 figures)	NJ 939 015
START DATE (this season)	16 th January 2012
END DATE (this season)	18 th January 2012
PREVIOUS WORK (incl. <i>DES</i> ref.)	Geophysical prospection of the site (? <i>DES</i> ref.)
MAIN (NARRATIVE) DESCRIPTION: (May include information from other fields)	The evaluation involved the machine excavation of twenty three trenches targeted over geophysical anomalies established through an earlier phase of work. No archaeological deposits were uncovered. In addition, the evaluation involved the extraction of fifty-eight core samples, seven of which were retained for potential palaeoecological analysis.
PROPOSED FUTURE WORK:	Palaeo-environmental reconstruction of site using retained peat core samples
SPONSOR OR FUNDING BODY:	Barr Construction
CAPTION(S) FOR ILLUSTRS:	n/a
ADDRESS OF MAIN CONTRIBUTOR:	GUARD Archaeology Limited, 52 Elderpark Workspace, 100 Elderpark Street, Glasgow G51 3TR
EMAIL ADDRESS:	warren.bailie@guard-archaeology.co.uk
ARCHIVE LOCATION (intended/deposited)	The archive will be submitted to the National Monuments Records for Scotland.

Appendix G: Written Scheme of Investigation

File Note

AECOM

Project:	Aberdeen Arena	Job No:	60224712
Subject:	Archaeological Evaluation at Loirston Loch	Date:	6th December 2011

Site Location: The site lies adjacent to Loirston Loch in the parish of Nigg. The city centre of Aberdeen lies to the north of the site.

NGR (centre): NJ 9393 0153

Proposal: The proposal is for a new football stadium, car parking and access routes.

Planning ref: Application Number 101299

Site area: Approximately 15.9 hectares.

Land use: Mixed pasture and nature reserve.

Client: Aberdeen Football Club/Barr Construction

1.0 Site location and description

- 1.1 The site is centred on National Grid Reference NJ 9393 0153 and is located south of Aberdeen city centre, adjacent to Loirston Loch. The area comprises pasture fields, scrub and a nature reserve. It is currently mainly under grass and light scrub with occasional light woodland within the nature reserve. A portion of the central part of the site is peat bog (Figure 1).
- 1.2 The soils within the development area comprise of glacial tills forming clays, silts and sands although some deposits of peat have been recorded within the central part of the development site. The solid underlying geology is Dalradian metamorphic rocks.
- 1.3 The area which requires field evaluation is approximately 15.9 hectares in area.
- 1.4 The evaluation trenching is the second stage of investigation of this site. This stage follows a geophysical survey undertaken in November 2011. The work is being undertaken in support of a planning application for the construction of a 21,000 seat sports stadium, car and coach parking areas and access roads. This application has been approved subject to conditions. One of these was that a programme of archaeological investigations should be undertaken to determine the potential and significance of any underlying archaeological deposits and features.

2.0 Archaeological and historical background

- 2.1 A prior desk-based assessment and EIA of the area has indicated archaeological and built heritage features both within and in proximity to the development. This assessment covered the proposed site and a 500m study area surrounding it. A walkover survey, historic map regression and aerial photographic analysis were employed to enhance the baseline data. A total of 50 sites were identified within this area.
- 2.2 Prehistoric remains are known from the north-west and north of the area whilst possible remains of this date have been tentatively identified within the footprint of the development from aerial photographs. Aside from the Bronze Age remains to the north, no precise date is known for the other sites.
- 2.3 One find spot, a carved stone tablet, of Roman date is recorded although the authenticity of this is not certain. No other remains of this date are presently recorded. Only one site of early medieval date is known, that of a silver chain, which may have been reforged from Roman silver during the Pictish period. No sites of medieval date are recorded within the study area.
- 2.4 Most of the known sites date to the post-medieval period and date after the turnpike road was constructed. This road heralded land improvements and associated farms, consumption dykes and industrial sites such as quarries and gravel pits.

Direct Tel: +44 (0)113 301 2145
 T +44 (0)113 391 6800
 F +44 (0)113 391 6899
 E jonathan.shiple@aecom.com
 www.aecom.com

5th Floor
 2 City Walk
 Leeds
 LS11 9AR
 United Kingdom

File Note



2.5 Consultation with the Lead Curator, Local History and Archaeology for Aberdeen has indicated that there is sufficient potential for archaeological remains to exist within the development area to warrant further archaeological investigations.

2.6 The geophysical survey identified a number of anomalies which could be interpreted as being of archaeological origins. Field 3 had the highest concentration of possible features although these may also have a geological origin. A number of small relatively isolated possible pit-like features have been identified. A large section of the site could not be surveyed due to boggy ground conditions. The results can be seen on Figure 2.

3.0 Requirement for work

3.1 The evaluation excavation is required to examine the features located during geophysical survey and to test seemingly blank areas and their potential to contain archaeological features. This information will be used to inform any requirement for further work. The evaluation stage forms one element of the planning process.

3.2 No set percentage of the total area has been required for the evaluation. Instead, the evaluation is targeted at specific features identified from the prior geophysical survey and selected areas where no potential archaeological features have been currently identified. The evaluation should be undertaken following standard practice to achieve the best results. It is envisaged that 24 trenches will provide sufficient coverage of the area for the purposes of this evaluation. The evaluation trench locations are shown on Figure 3. Trench dimensions are 25m length by 2m width.

3.3 The programme will result in the preparation of a report, which should follow the report outline in the standards and guidance listed in 3.4 below.

3.4 The fieldwork should be carried out in accordance with the Institute for Archaeologists (IfA) *Standards & Guidance: Field Evaluation* (1999 rev. 2008), and *Standards & Guidance for Excavation* (1999 rev. 2008).

3.5 The evaluation trenches should aim to determine the extent, preservation, character, date, depth and importance of archaeological remains.

3.6 The area currently covered by peat and/or waterlogged ground conditions will be subject to a programme of auger boreholes. These will form a grid of 25m by 25m. The layout of this grid can be seen on Figure 4. As the area is not accessible by heavy plant, it is envisioned that the auguring will be undertaken by hand coring. A total of 58 cores are required.

3.7 The programme of coring is intended to ascertain the potential for subsurface remains in the area where evaluation trenching is not feasible. It is intended to enhance and complement the evaluation trench investigations and should be conducted together. The results of both investigation types should be considered in one final report.

3.8 The archaeological fieldwork will result in the preparation of a report, which should follow the report outline in the IfA standards and guidance listed in section 3.4 above.

3.9 The archaeological investigation should provide sufficient information to inform the requirements for additional archaeological mitigation prior to, or recording during, the construction phase.

3.10 Project staff are required to follow health and safety procedures and a risk assessment should be carried out prior to work to ensure the safety of workers on site.

4.0 Methodology

4.1 The excavation of archaeological trenches will be undertaken using a back-acting excavator fitted with a toothless or ditching bucket only. Trenches will be approximately 2m wide and 25m in length. The machine will be used to remove topsoil and subsequent spits, of a maximum 0.2m thickness, until *in situ* archaeological deposits or the top of the natural subsoil are encountered, whichever is the higher. Bulldozers or wheeled scraper buckets should not be used to remove

Direct Tel: +44 (0)113 301 2145
T +44 (0)113 391 6800
F +44 (0)113 391 6899
E jonathan.shiple@aecom.com
www.aecom.com

5th Floor
2 City Walk
Leeds
LS11 9AR
United Kingdom

File Note



- overburden above archaeological deposits. All machine work must be undertaken under archaeological supervision. Under no circumstances should the machine be used to cut arbitrary trenches down to natural deposits. Where surface materials or foundations are exceptionally difficult to lift, they should be broken up first, and a toothed bucket used temporarily to do this. There are no areas where this is anticipated.
- 4.2 Where structures, finds, soil features and layers of archaeological interest are exposed in the evaluation trenches, the archaeological contractor should observe, clean, assess, excavate by hand where appropriate, sample and record these features and finds. Archaeological features should be excavated sufficiently to identify, where possible, the nature of the deposits, date and depths. The application of archaeological science to artefacts and samples is a standard requirement for all archaeological investigations, and arrangements should be made to ensure that specialist advice and analysis are available as appropriate to the potential of the site. It should be noted that any deposit that may be of palaeoecological value should be sampled appropriately. Liaison with the Lead Curator, Local History and Archaeology for Aberdeen for advice on the required sampling strategy is recommended.
- 4.3 AECOM should be informed as soon as possible of the discovery of any unexpected archaeological remains, or changes in the programme of ground works on site. Arrangements will then be made to contact the Lead Curator, Local History and Archaeology for Aberdeen if required.
- 4.4 Any human remains which are discovered must initially be left *in situ*, covered and protected. If removal is necessary, this must comply with the relevant legislation. AECOM and the Lead Curator for Local History, Aberdeen Council must be informed if human remains are found. If the latter is not available the finds should be reported to the Procurator Fiscal for Aberdeen.
- 4.5 All appropriate records must be made and kept, and should include, but are not limited to, records of contexts, photographs, scale drawings and written descriptions, as sufficient to permit the preparation of an adequate report on the material. Sections will normally be drawn at a scale of 1:10. Archaeological plans will normally be drawn at a scale of 1:20. The actual areas of ground disturbance and any features of archaeological interest are to be accurately located on a site plan and to a known, permanent location. A site grid is to be accurately tied into the National OS Grid and located on the 1:2500 map of the area.
- 4.6 The terms relating to Treasure Trove in Scotland (<http://www.treasuretrovescotland.co.uk>) must be followed with regard to any finds which might fall within its purview. Any finds must be removed to a safe place and reported through the Treasure Trove process as required by the procedures as laid down in the "Code of Practice". Where removal cannot be effected on the same working day as the discovery, suitable security measures must be taken to protect the finds from theft.
- 4.7 The boreholes will be undertaken by hand. The locations of the boreholes should be recorded using a digital GPS system and be relocatable by a third party.
- 4.8 The purpose of the coring should be to provide information on subsurface palaeoenvironmental data, geomorphological information and potential for evidence of prior human activity. The cores will be subject to rapid assessment and sample collection in the field for specialist scientific analysis. The scientific analysis should include recommendations of the micro and macro-faunal contributions and possible Carbon 14 dating.
- 4.9 Guidance from "Environmental Archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation" (English Heritage 2011) should be followed during both the field sampling exercise and during post-excavation assessment and reporting.
- 4.10 The archaeological contractors will be responsible for locating any drainage pipe, service pipes, cables etc. which may cross any of the trench lines, and for taking the necessary measures to avoid disturbing such services.

Direct Tel: +44 (0)113 301 2145
T +44 (0)113 391 6800
F +44 (0)113 391 6899
E jonathan.shiple@aecom.com
www.aecom.com

5th Floor
2 City Walk
Leeds
LS11 9AR
United Kingdom

File Note



4.11 Any variations to this specification must be agreed in advance with the AECOM on behalf of the client and the Lead Curator, Local History and Archaeology for Aberdeen.

5.0 Monitoring arrangements

5.1 To ensure that archaeological work is conducted in accordance with the agreed project design, monitoring of fieldwork and post-fieldwork analysis may be required. This may be by AECOM staff or their representative or the Lead Curator, Local History and Archaeology for Aberdeen.

5.2 Monitoring will be arranged to satisfy *The Standards of Execution and Monitoring of Archaeological Work* (IfA, 2008). The monitors are not liable in any way for the failings of the archaeological contractor and such monitoring is not intended to take the place of proper self-regulation. Trenches should, where possible, be left open until adequate monitoring has taken place.

6.0 Post-Fieldwork Methodology

6.1 Upon completion of fieldwork, any samples should be processed and evaluated, and all finds cleaned, identified, assessed, spot-dated, and properly stored. A field archive should be compiled consisting of all primary written documents, and any plans, sections, and photographs. The Archaeologist should arrange for either the Lead Curator, Local History and Archaeology for Aberdeen or an independent post-excavation specialist to inspect the archive before making arrangements for the transfer of the archive to an appropriate repository

6.2 An interim statement of the results of the evaluation and a preliminary plan of any archaeological remains should be provided as soon as possible, but no later than two weeks after completion of fieldwork.

6.3 The final report should be produced no later than four weeks upon completion of the fieldwork element. Any alterations to this will need to be agreed by AECOM.

7.0 Report requirements

7.1 Essentially the report must define the location, extent and significance of archaeological features recorded as part of the evaluation. The final report should follow the guidance in the standards and guidance listed in paragraph 3.5 above, but is likely to consist of the following sections:

- Abstract
- Introduction
- The Archaeological Background
- Methodology
- Results
- Finds
- A table showing the contexts, classes and quantity of artefacts recovered
- An assessment of the environmental potential of the site
- Any results from the application of archaeological scientific techniques e.g. specialist dating will be included in the assessment report.
- An interpretation of the archaeology of the site.
- Figures & Photographs.

7.2 The final report on the site should be presented in Word format and any digital images in tiff format and should be produced within four weeks of completion of fieldwork, or sooner if at all possible.

Direct Tel: +44 (0)113 301 2145
T +44 (0)113 391 6800
F +44 (0)113 391 6899
E jonathan.shipley@aecom.com
www.aecom.com

5th Floor
2 City Walk
Leeds
LS11 9AR
United Kingdom

File Note



- 7.3 Copies of the final report should be provided to the following:
- AECOM (hard copy and pdf), including copies for distribution to the client
 - Lead Curator, Local History and Archaeology for Aberdeen (hard copy and pdf, for inclusion in the Sites and Monuments Register)
 - OASIS (pdf)

7.4 The site archive, to include all project records and cultural material produced by the project, is to be prepared in accordance with *Guidelines for the preparation of excavation archives for long-term storage (UKIC 1990)*. On completion of the project the Archaeological Contractor will arrange for the archive to be deposited with the RCAHMS within six months of the end of the evaluation. Any alternative arrangements will be agreed with the Lead Curator, Local History and Archaeology for Aberdeen.

8.0 Health and Safety and Insurance

- 8.1 Health and safety will take priority over archaeological matters. All archaeologists undertaking fieldwork must comply with all Health and Safety Legislation. All archaeologists or archaeological organisations undertaking the fieldwork should ensure that they, or any proposed sub-contractors, are appropriately qualified and adequately insured to undertake such projects.
- 8.2 The appointed archaeological contractor will need to provide a copy of their Health and Safety policy, copies of relevant insurance documents and a site specific risk assessment.
- 8.3 Staff working on site will be required to undergo a site specific induction. A valid CSCS card for site staff is preferred but not essential.

9.0 Programme

- 9.1 The evaluation phase needs to be completed as soon as possible in advance of the construction phase. An indication of programme should be provided with the tender.
- 9.2 Submission of the final report to AECOM should take place within four weeks of the completion of fieldwork or as soon as possible. Interim results within two week of works being completed on site or sooner, if possible, are required.

10.0 Tendering

- 10.1 In response to this WSI, the archaeological contractor shall, if they wish to tender for the contract, submit a quotation and brief method statement for the work as specified above. McIntosh Plant Hire (Aberdeen) Ltd Tele No 01330 860751 should be invited to provide plant hire rates for the fieldwork.
- 10.2 The contractor should also submit appropriate documentation to support their quotation as necessary to demonstrate their experience and capability to undertake the evaluation trenching.
- 10.3 A list of key personnel must be supplied along with details of their relevant experience in *Curriculum Vitae* for each member of staff as appropriate. Details of an insurance statement are also required.
- 10.4 Questions on this WSI and the tender process should be directed to Matt Parker using the contact details below.
- 10.5 If the contractor wishes to tender for the project a proposal should be returned no later than **Thursday 15th December**. Tender submissions should be returned to:

Jonathan Shipley
AECOM
2 City Walk
Leeds
LS11 9AR

Direct Tel: +44 (0)113 301 2145
T +44 (0)113 391 6800
F +44 (0)113 391 6899
E jonathan.shipley@aecom.com
www.aecom.com

5th Floor
2 City Walk
Leeds
LS11 9AR
United Kingdom

File Note



Tel: 0113 301 2145
Fax: 0113 391 6899
Jonathan.shipley@aecom.com

Direct Tel: +44 (0)113 301 2145
T +44 (0)113 391 6800
F +44 (0)113 391 6899
E jonathan.shipley@aecom.com
www.aecom.com

5th Floor
2 City Walk
Leeds
LS11 9AR
United Kingdom

GUARD Archaeology Limited
52 Elderpark Workspace
100 Elderpark Street
Glasgow
G51 3TR

Tel: 0141 445 8800

Fax: 0141 445 3222

email: info@guard-archaeology.co.uk



www.guard-archaeology.co.uk