Millhaugh MH14.1: Fieldwalking, test pitting and geophysics

16-20 March 2015

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1. Introduction

The objectives for Phase 2 of the prehistoric element of the SERF Project is to carry out investigations to develop an understanding of the archaeology of Dunning and its place within the wider landscape (cf. Driscoll *et al*. 2010; Poller 2014).

The fieldwork carried out on 16-20 March 2015 at Millhaugh (NO1SW 34 and NO1SW 36), hereinafter referred to as MH14.1 (Figure 1), comprised of a test pitting programme, fieldwalking and geophysical survey.

The work represented the third phase of investigations at Millhaugh following fieldwalking of fields MH14.1 and MH14.2 (cf. Wright 2014), and the excavations at Millhaugh cairn (cf. Brophy 2014) in 2014.

Figure 1: Location of Millhaugh cairn (MH14.3) and fields MH14.1, MH14.2 and MH14.4.

2. Archaeological background

Millhaugh cairn (MH14.3)

Prior to the SERF excavations in 2014 (Brophy 2014), no previous archaeological work had ever taken place at this monument, and indeed there is no tradition of this being a prehistoric burial mound until relatively recently. This prominent, upstanding, tree-topped mound was not even recorded formally as an archaeological site until 1991 when it was recognised by Gordon Barclay (1991), then Inspector of Ancient Monuments, as a possible barrow. The mound quickly became a scheduled ancient monument. The site is also known as Parkside, and has NMRS no. NO01SW 41 with NGR NO 010140. Subject to the completion of post-excavation tasks, the excavations have demonstrated that the monument is a kerb cairn, possibly Bronze Age in date (cf. Brophy 2014).

Millhaugh cairn and cropmarks

In the same field (MH14.3) as the Millhaugh cairn are cropmarks which were scheduled in 2001. They are located 200m south-east of the cairn and comprise of a putative barrow, sub-rectangular ditched enclosure and other indeterminate cropmarks (NO01SW69; NGR NO 0096613916).

Millhaugh settlement

The settlement in field MH14.4 (Figure 1) comprises of an interrupted ditch enclosure, pit alignment and a putative Neolithic mortuary enclosure, referred to a pit enclosure at Canmore (NO01SW 28, NO01SW 38 and NO01SW43). The monuments were scheduled in 1993.

The aerial photograph also shows cropmarks which may represent Pictish square barrows.

MH14.1

There is no record of any archaeological investigations at MH14.1, save for the fieldwalking undertaken in 2014, which also included MH14.2 [Figure 1] (Wright 2014).

The cropmarks were formally scheduled in June 1996 (NO01SW 34/NGR NO 0067813952 and NO01SW 36/NGR NO 0061514044). They are recorded as a prehistoric settlement comprising of a number of circular enclosures and other cropmarks; interpreted as an enclosure/barrow, pit alignment, ring ditch and later rig and furrow (Figure 2). Another aerial photograph from Royal Commission on the Ancient and Historic Monuments of Scotland 'RCAHMS' is shown at Figure 3. A search using the online PastMap facility at RCAHMS confirms that all of MH14.1 has been scheduled.

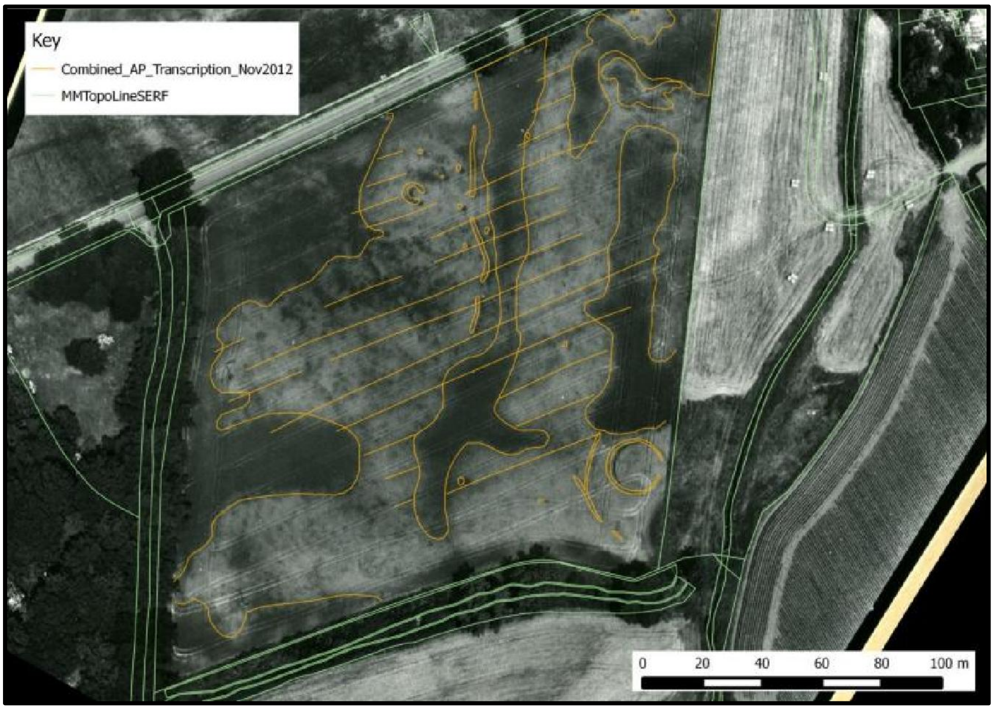

Figure 2: Combined aerial photograph and draft transcription of the scheduled monuments located within MH14.1.

Figure 3: Aerial photograph of WH14.1. © RCAHMS SC505287.

3. Geology

The drift geology for MH14.1 is predominantly fluvio-glacial deposits of gravels and sand bordered by glacial till (Figure 4).

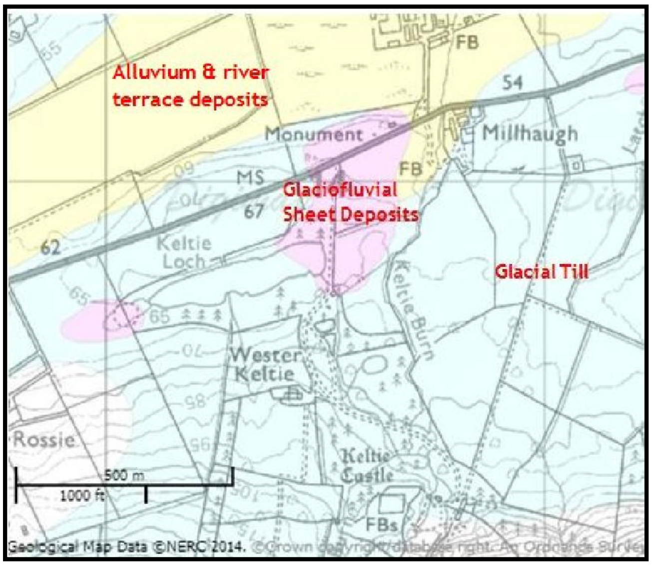

Figure 4: Drift geology at Millhaugh (Digimap® ED*i*NA Geology Roam online resource; © NERC/Crown copyright database right).

4. Aims and objectives

Test pitting

Excavation of a series of test pits to determine if the prehistoric material recovered indicates the presence of lithic scatters and/or artefactual evidence for other events and record any features revealed.

Geophysics

The geophysical survey was undertaken not only to prospect for undetected features, but also potentially enhance the interpretation of the known features in the cropmark record. A small area in the south-east of MH14.1 (Figure 5) was subject to both magnetometry and resistivity to compare and contrast the results from both forms of geophysical survey.

Fieldwalking

The aim of the fieldwalking is site prospection by recovering from the ploughed surface lithics, prehistoric pottery and artefacts to assist in the interpretation of the cropmarks and chronology of prehistoric events at Millhaugh.

Subsequent ploughing rotations will bring artefacts to the surface. It is for this reason that a second phase of fieldwalking was carried out at MH14.1. The results from 2015 would allow the comparison of artefact recovery locations from 2014 to potentially offer further understandings of potential activity areas.

5. Methodology

Test pitting

A series of 1m^2 test pits were excavated. The location of the test pits was systematic in a chequer board pattern sampling the area targeted (Figure 5), which equated to where the majority of the lithics were found in 2014, which may be described as a broad linear band running south-west to north-east across the field (cf. Wright 2014, Figure 10).

The excavation of the test pits removed the top soil only and all artefactual material recovered was recorded by test pit. The test pits were excavated by hand and, where deemed necessary, spoil was sieved using a 2mm mesh to maximise the recovery of artefactual material.

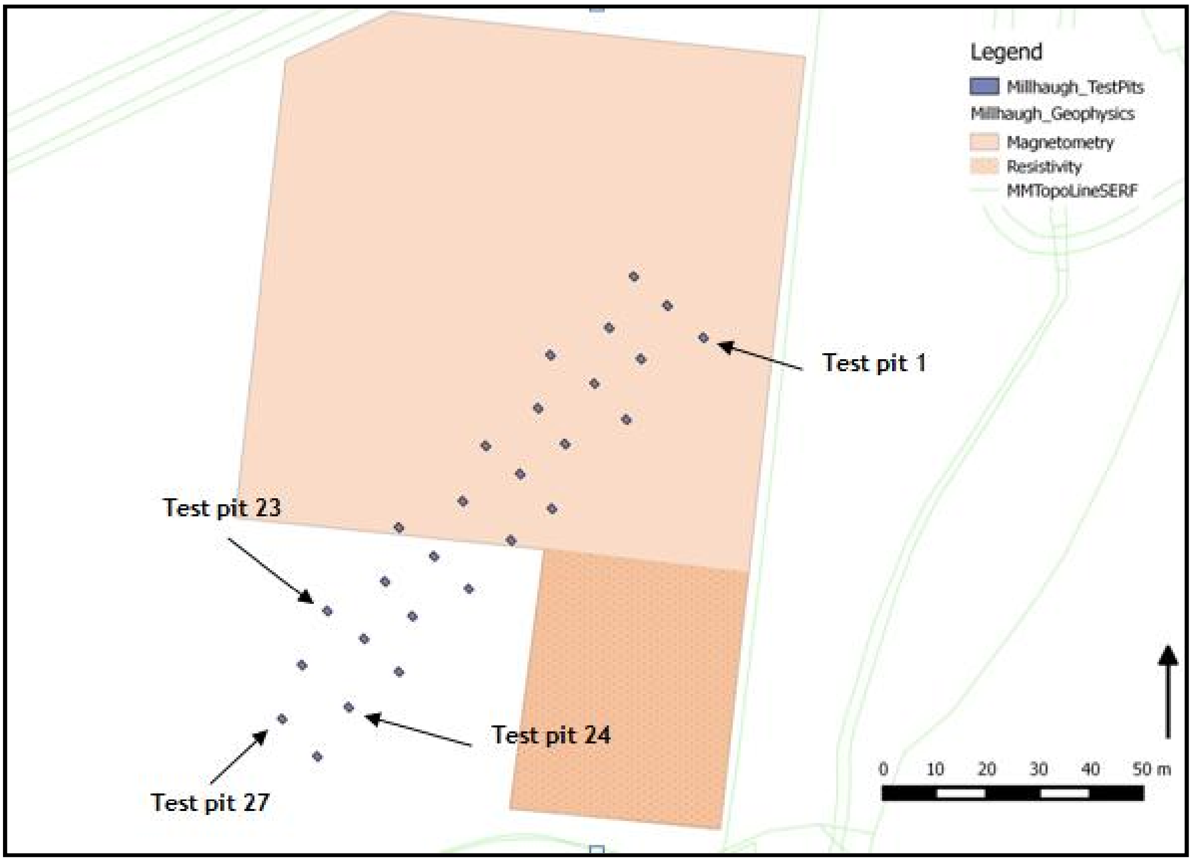

Figure 5: Location of 27 test pits.

Geophysics

The geophysical survey was carried out with sample intervals of one metre (Figure 5). The shaded areas shown in Figure 5 were subject to magnetometry survey. A resistivity survey was undertaken in the area highlighted by darker shading to compare and contrast the results from the two forms of geophysical survey.

Figure 6: Magnetometry survey at Millhaugh.

Fieldwalking

Artefact recovery locations were recorded using a Garmin® GPSMap® 62S, with an accuracy resolution of c.2-3m.

The majority of the students had no previous experience of fieldwalking and as such were set at 1m, 6m and 11m and so on, each covering 5m laterally for the transverse and so on. The writer followed behind the fieldwalkers to attempt to ensure that artefacts were not missed.

The fieldwalkers placed pin flags to highlight material to be examined. All artefacts were allocated a unique number with eastings and northings plotted using the GPS and bagged. All data was entered in the fieldwalking daybook.

6. Results

Test pitting

The results of the test pitting programme were disappointing. There were neither features revealed in, nor artefacts recovered from 23 of the 27 test pits. Samples of top soil were taken from Test pits 16 and 17 for pH analysis. The site records are at Appendix III.

Figure 7: Test pitting at Millhaugh.

Test pit 1

Two small charcoal rich sub-circular features (007) (008) were recorded in test pit 1 (Figure 8).

Figure 8: Test pit 1 showing location of charcoal rich features (007) and (008).

Test pit 23

One sherd of modern pottery was recovered.

Test pit 24
The artefacts recovered comprised of one sherd of modern glass and two sherds of modern pottery.

Test pit 27
Two tertiary, irregular flint flake fragments were recovered from test pit 27.

Geophysics (C MacIver)

A gradiometer survey was carried out (Figure 9). Resistivity was applied to a small area to the south of the field where a ploughed out circular enclosure is depicted on aerial photographs (Figures 1 and 10). Due to the underlying soil and geology conditions both techniques produced inconclusive results.

The preliminary results showed linear striations running across the data in a NE-SW direction showed the alignment of modern ploughing. Slightly positive readings indicate the location of possible pits/postholes, but could also be geological. Strong negative and positive readings next to each other (dipoles) are locations of metal deposits, which are likely modern farming debris in most cases. The 'busy' areas in the far north, south and west of the plot are likely a sign of plough soil disturbance. In the area where features have been noted on the aerial photographs up the middle of the field there are no obvious anomalies, which implies that the local background noise from the underlying geology is clouding the magnetometry results even after initial processing. This might also suggest that these linear features on the aerial photos are archaeological because a geological edge would be expected to show up on the magnetometry plot. The small penannular feature in the top NW corner is visible as a faint positive reading, the circular enclosure in the bottom SE corner is also visible as very faint, broken positive circle with a strong positive reading in the interior suggesting a possible internal feature.

The resistivity survey only picked up a slightly higher resistance running roughly NE-SW, most likely the result of geology (Figure 10).

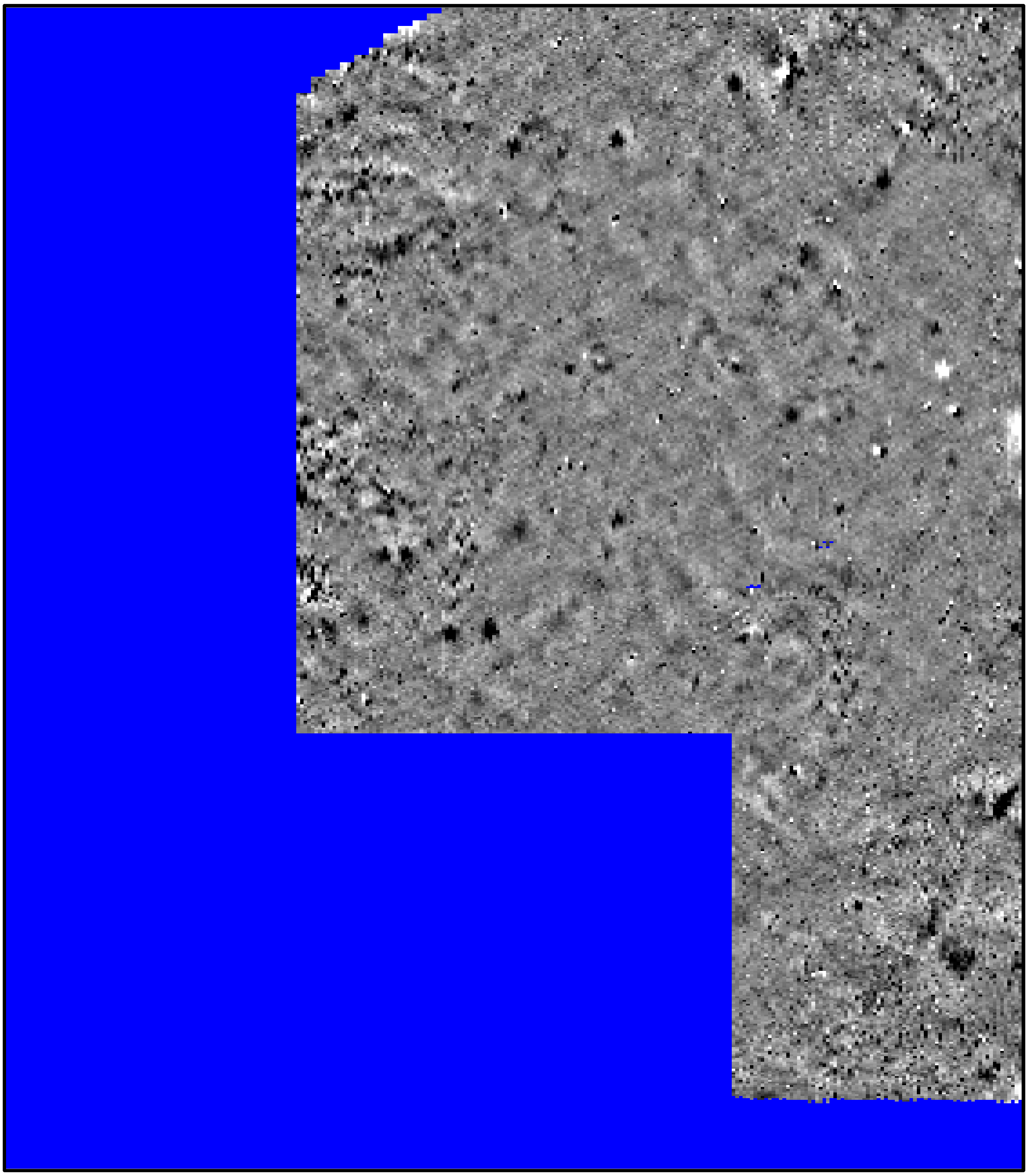

Figure 9: Preliminary results from the magnetometry survey following the initial processing of raw data.

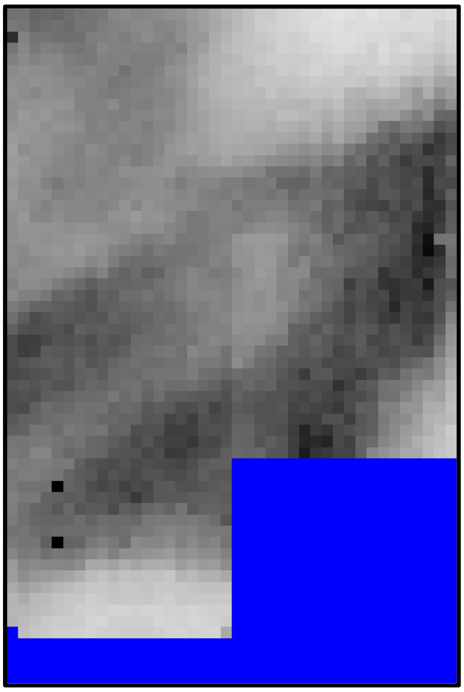

Figure 10: Preliminary results from the resistivity survey following the initial processing of raw data.

Fieldwalking

Non-lithic materials

All of the glass, pottery sherds and metalwork could be typologically dated to the 19^{th} and early 20^{th} centuries.

Lithics: preliminary notes

The lithic artefacts collected are representative of and evidence for prehistoric events at Millhaugh.

74 lithics were recovered from the fieldwalking (Appendix I). The number of lithics from MH14.1, including the 2014 fieldwalking and the two flake fragments from Test pit 27, totalled 182 artefacts (Appendix II). Overall the most common raw material is flint (Figure 11). It was surprising that the 2015 fieldwork produced, in terms of percentage frequency, fewer flint and a greater number of quartz artefacts.

SERF

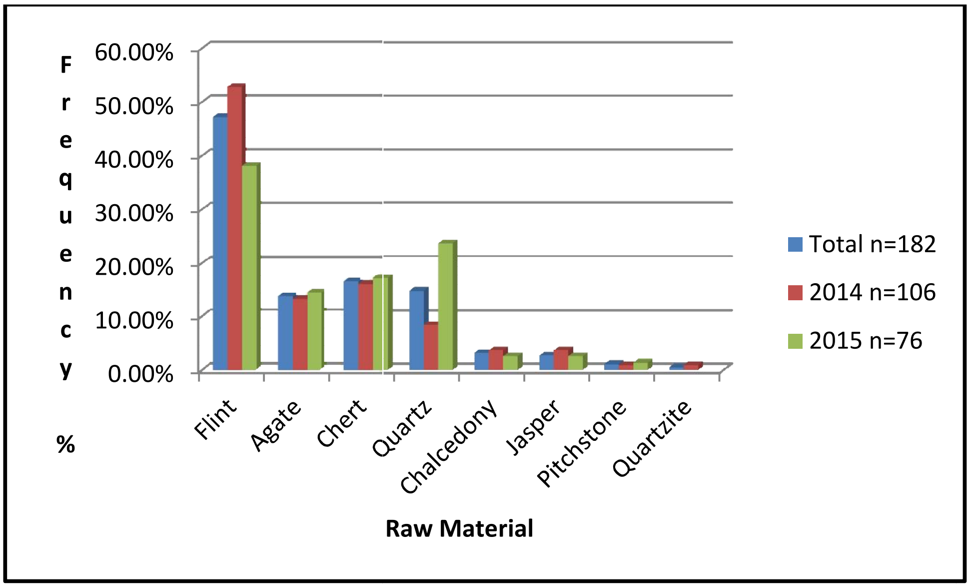

Figure 11: Percentage frequency of lithics by raw materials.

A brief typological analysis of the lithics has been carried out (Appendices I and II). Flakes dominate the assemblage with relatively few blades recovered (Figure 12). Flakes are common in lithic assemblages and cannot without other corroborating evidence be unequivocally be ascribed to any particular period in prehistory. If there was to be evidence for Mesolithic events we would have expected to have recovered more blades and bladelets. The presence of an Arran pitchstone blade and a non-specific core may suggest either a Neolithic or Early Bronze Age provenance (cf. Brophy *et al*. 2012; Wright 2012b, 2014). Pitchstone artefacts from mainland contexts generally relate to Post-Mesolithic activities (cf. Ballin 2009).

The flakes indicate the use of platform and bipolar reduction strategies. There is no attribute evidence to suggest that these strategies were coeval and bipolar reduction may indicate a separate phase of reduction at Millhaugh.

A 'true' flint blade with edge damage (catalogue number 385; Figure 14) would not look out of place in either a Mesolithic or Early Neolithic assemblage.

Generally quartz has a low percentage frequency in Mesolithic assemblages, although there are exceptions, e.g. Powbrone (cf. Wright 2012a; Wright in prep). An increase in the use of quartz has been attributed as a development from the Early Neolithic onwards in Eastern Scotland (cf. Warren 2006).

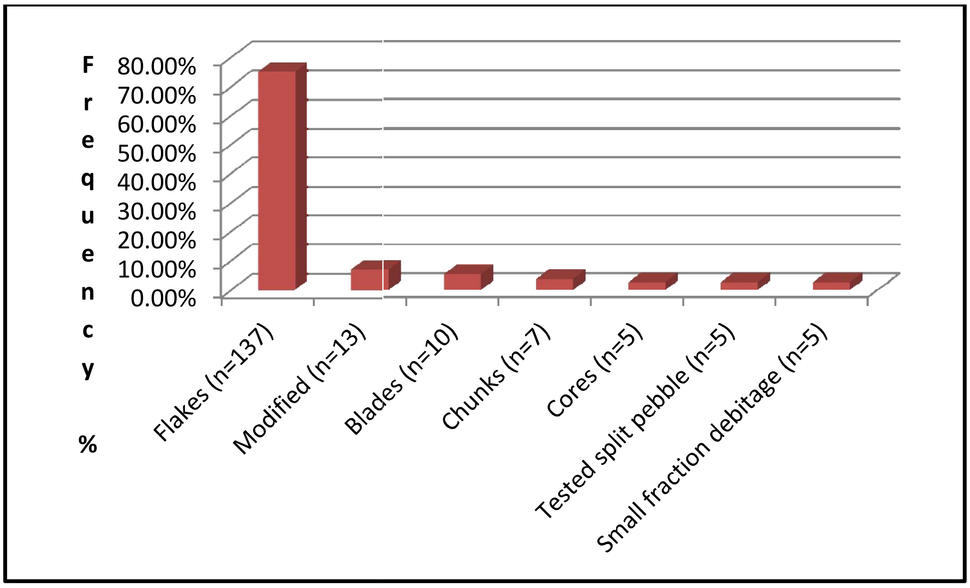

Figure 12: Typological analysis of assemblage from Millhaugh MH14.1 (2014-15).

The retouched pieces from 2015 comprise of three short convex scrapers (370; 400; 408), one scraper fragment (401), a distal end scraper fashioned on a true blade (387), a flint flake (416) and blade (407) with miscellaneous retouch, and two flint flakes (381; 422) with trimming/blunting to create a cutting edge.

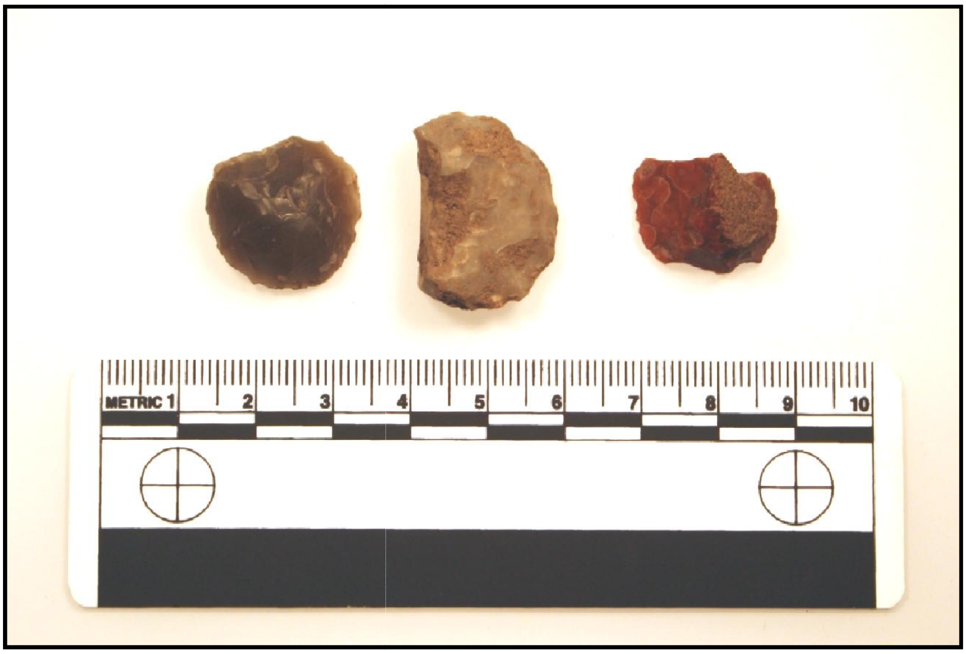

Figure 13: Left to right - short convex scraper with invasive retouch (400); short convex scraper with semi-abrupt retouch (370); short convex scraper with semi-invasive retouch (408) [preliminary record photographs only].

Scrapers are common artefacts in the assemblages of later prehistory (cf. Finlay *et al*. 2000, 583). The scraper with semi-invasive direct retouch could be referred to as a ‘thumbnail scraper’ (408), together with the sub-circular scraper with invasive retouch (400) are typically Bronze Age (cf. Edmonds 1995, 159-160; Hardy and Wickham-Jones 2007) [Figure 13].

The Late Neolithic is represented by the distal end scraper (387) fashioned on a true blade (cf. Edmonds 1995, 104). None of the other modified artefacts can be ascribed to an archaeological period.

Figure 14: Left to right - distal end scraper on true blade (387); true blade (385); flake with trimming/blunting retouch to create cutting edge (422); flake with perfunctory scalar retouch to create cutting edge (381) [preliminary record photographs only].

There are flakes which present with edge damage. These artefacts will be considered as part of a full technological analysis of the assemblage which will be undertaken in due course.

Artefact distribution

The recovery locations of lithics by raw material is highlighted in the distribution map at Figure 15. The 2015 fieldwalking has provided further evidence that the majority of the lithics were collected from an area which may be described as a broad linear band running south-west to north-east across the field. The only known archaeological features in this area are those revealed in Test pit 1. It is interesting to note that the lithics were recovered away from the northern penannular ring ditch/enclosure, the southern enclosure/barrow and the putative pit alignment.

It remains possible that a number of cropmark anomalies where the majority of the lithics have been recovered may represent unrecognised archaeological features.

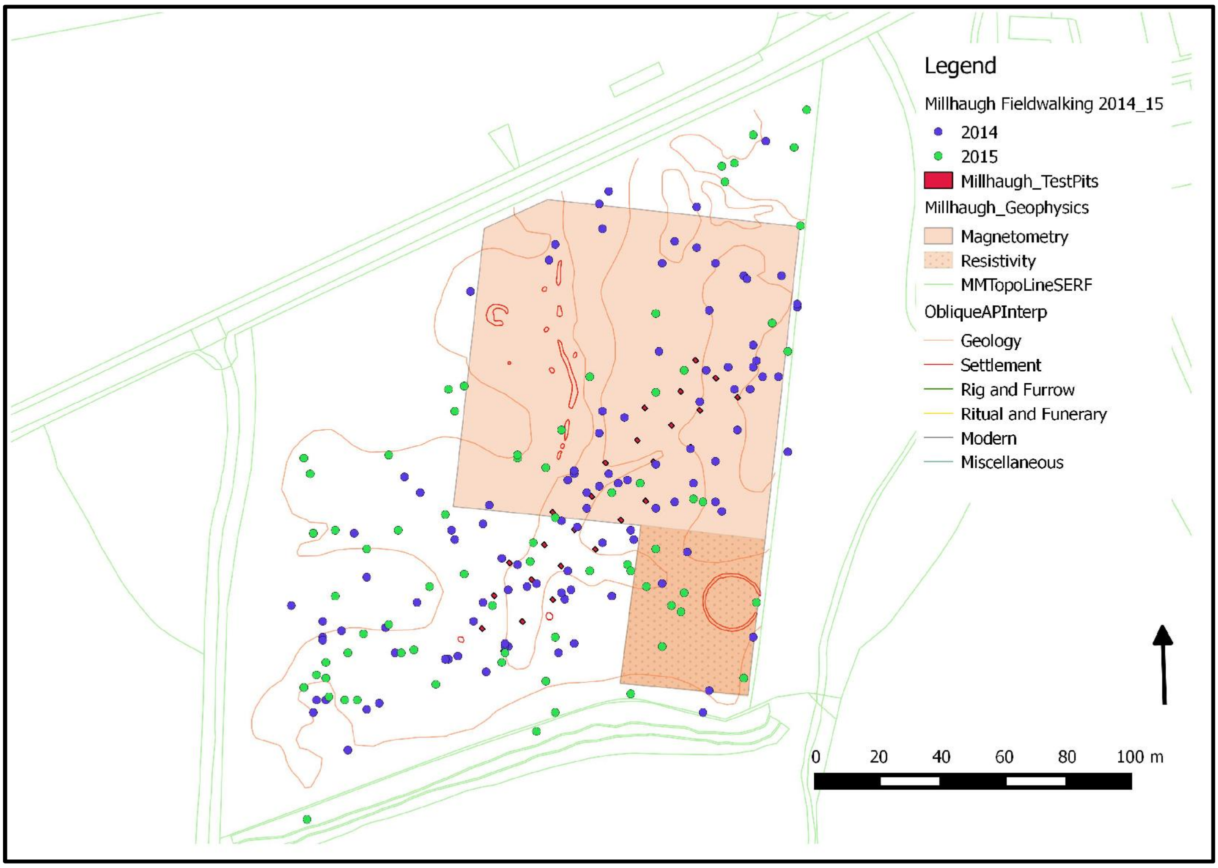

Figure 15: Recovery locations of lithics.

8. Summary

Lithic assemblages associated with ritual sites from the Neolithic, and the same may be said of the Bronze Age (e.g. Watson and Bradley 2000), are generally small in comparison to those from the Mesolithic period (after Warren 2006, 34). This has been explained by radical changes in depositional practice in the Neolithic (Healy 1987; Warren 2006a, 34-35). The work undertaken on the SERF project may be said to attest to these comments. The limited scope from the test pitting programme did not reveal any evidence for the presence of discrete lithic scatters *in situ*.

The results of the geophysical survey. Once again, and not unexpectedly from our previous experience at archaeological sites investigated in and around Dunning, magnetometry was proved to produce better results than resistivity. It is hoped that with the further processing of the magnetometry raw data the visibility of archaeological features will be enhanced.

The success of the fieldwalking particularly at MH14.1 has been particularly pleasing and, in particular the recovery of artefacts that can be typologically ascribed to archaeological periods. Scheduled monument consent has been received to undertake fieldwalking at MH14.3, which will be carried out later this year.

Planning for SERF 2016 is underway and, it is hoped that permissions will be obtained to carry out excavations at MH14.1. In addition, consideration should be given to the possibility of a further season of work to undertake geophysical survey and excavations at MH14.4. If the necessary permissions can be obtained, this would potentially allow the SERF Project to offer an understanding of the multi-period archaeology of Millhaugh and place it within its the wider environs.

9. Acknowledgements

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My gratitude must also be extended to Cathy MacIver for producing the distribution map, and carrying out the initial processing of the geophysics data and reporting thereon, and Oliver Lewis and the SMC team at Historic Scotland. Special mention must be made of Kenny Brophy who not only visited Millhaugh but also brought with him a vast array of baked goods for our consumption.

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All SERF reports and more information about the project may be found at our web pages.

www.gla.ac.uk/schools/humanities/research/archaeologyresearch/projects/serf/

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Appendix I: MH14.1 2015 - Character of the lithic assemblage from fieldwalking and test pitting

	Total	Agate	Chert	Chalcedony	Flint	Jasper	Pitchstone	Quartz
Tested Split Pebbles	3		1					2
Chunks	2		1	1				
Cores	1						1	
Flakes	54	9	10	1	17	1		16
Primary	4							4
Secondary	7	4	1	1	1			
Tertiary	43	5	9		16	1		12
Primary regular								
Primary irregular	4							4
Secondary regular								
Secondary irregular	7	4	1	1	1			
Tertiary regular								
Tertiary irregular	43	5	9		16	1		12
Blades	3	1			2			
Primary								
Secondary	1				1			
Tertiary	2	1			1			
Primary regular								
Primary irregular								
Secondary regular	1				1			
Secondary irregular								
Tertiary regular	1				1			
Tertiary irregular	1	1						
Small Fraction	4	1	1		2			
Modified	9				8	1		
Total	76	11	13	2	29	2	1	18

Appendix II: MH14.1 2014-15 - Character of the lithic assemblage from fieldwalking and test pitting

	Total	Agate	Chert	Chalcedony	Flint	Jasper	Pitchstone	Quartz	Quartzite
Tested Split Pebbles	5		2					3	
Chunks	7	3	2	1		1			
Cores	5	1	2		1		1		
Flakes	137	18	23	5	63	4		23	1
Primary	11		1		1			8	1
Secondary	20	7	3	1	8	1			
Tertiary	106	11	19	4	54	3		15	
Primary regular									
Primary irregular	11		1		1			8	1
Secondary regular									
Secondary irregular	20	7	3	1	8	1			
Tertiary regular	4				4				
Tertiary irregular	102	11	19	4	50	3		15	
Blades	10	2			6		1	1	
Primary									
Secondary	4				3			1	
Tertiary	6	2			3		1		
Primary regular									
Primary irregular									
Secondary regular	2				2				
Secondary irregular	2				1			1	
Tertiary regular	3				3				
Tertiary irregular	3	2					1		
Small Fraction	5	1	1		3				
Modified	13				13				
Total	182	25	30	6	86	5	2	27	1

Appendix III: Site records

Contexts

Context	Test pit	Description	Interpretation	Relationship to other contexts
1	1	Top soil	Top soil	Overlying all
2	2	Top soil	Top soil	
3	3	Top soil	Top soil	
4	4	Top soil	Top soil	
5	5	Top soil	Top soil	
6	6	Natural	Natural	Underlying all
7	1	Deposit	Charcoal rich	Charcoal rich deposit in SW corner of test pit underlying (001)
8	1	Deposit	Charcoal rich	Charcoal rich deposit east of (007) of test pit underlying (001)
9	8	Top soil	Top soil	Overlying all
10	7	Top soil	Top soil	
11	6	Top soil	Top soil	
12	9	Top soil	Top soil	
13	10	Top soil	Top soil	
14	12	Top soil	Top soil	
15	11	Top soil	Top soil	
16	15	Top soil	Top soil	
17	14	Top soil	Top soil	
18	13	Top soil	Top soil	
19	16	Top soil	Top soil	
20	17	Top soil	Top soil	
21	18	Top soil	Top soil	
22	22	Top soil	Top soil	
23	22	Top soil	B soil horizon	Underlying (022)
24	21	Top soil	Top soil	Overlying all
25	19	Top soil	Top soil	
26	20	Top soil	Top soil	
27	27	Top soil	Top soil	
28	25	Top soil	Top soil	
29	24	Top soil	Top soil	
30	23	Top soil	Top soil	
31	26	Top soil	Top soil	

Drawings

Drawing	Subject	Description	Scale	Type
1	Test pit 3	NW facing section	1:10	Section
2	Test pit 5	NW facing section	1:10	Section
3	Test pit 2	NW facing section	1:10	Section
4	Test pit 4	NW facing section	1:10	Section
5	Test pit 1	Plan	1:20	Plan
6	Test pit 1	NW facing section	1:10	Section
7	Test pit 8	NW facing section	1:10	Section
8	Test pit 6	S facing section	1:10	Section
9	Test pit 9	W facing section	1:10	Section
10	Test pit 7	S facing section	1:10	Section

11	Test pit 10	S facing section	1:10	Section
12	Test pit 12	S facing section	1:10	Section
13	Test pit 11	SW facing section	1:10	Section
14	Test pit 14	SE facing section	1:10	Section
15	Test pit 13	E facing section	1:10	Section
16	Test pit 15	SW facing section	1:10	Section
17	Test pit 17	NW facing section	1:10	Section
18	Test pit 16	NE facing section	1:10	Section
19	Test pit 18	SE facing section	1:10	Section
20	Test pit 22	S facing section	1:10	Section
21	Test pit 25	NW facing section	1:10	Section
22	Test pit 23	N facing section	1:10	Section
23	Test pit 27	W facing section	1:10	Section
24	Test pit 19	S facing section	1:10	Section
25	Test pit 20	E facing section	1:10	Section
26	Test pit 20	N facing section	1:10	Section
27	Test pit 24	S facing section	1:10	Section
28	Test pit 26	S facing section	1:10	Section

Samples

Sample	Context	Size	Material	Reason for sample
1	Test pit 16	1L	Top soil	pH
2	Test pit 17	1L	Top soil	pH

Photographs

Photo	Area	Context	Description	Taken from
1	Test pit 3		Post-ex	N
2	Test pit 5		Post-ex	NW
3	Test pit 2		Post-ex	NW
4	Test pit 4		Post-ex	NW
5	Test pit 1	(007) (008)	Post-ex	NE
6	Test pit 8		Post-ex	NE
7	Test pit 7		Post-ex	NE
8	Test pit 6		Post-ex	NW
9	Test pit 6		Post-ex	NW
10	Test pit 9		Post-ex	W
11	Test pit 10		Post-ex	S
12	Test pit 12		Post-ex	S
13	Test pit 11		Post-ex	SW
14	Test pit 14		Post-ex	SE
15	Test pit 13		Post-ex	SE
16	Test pit 15		Post-ex	NW
17	Test pit 17		Post-ex	SE
18	Test pit 16		Post-ex	NE
19	Test pit 18		Post-ex	SW
20			General working shot of rest pitting	N
21			General working shot of test pitting	S

22			General working shot of fieldwalking	N
23			General working shot of test pitting	S
24	Test pit 22		S facing section	S
25	Test pit 27		W facing section	W
26	Test pit 24		W facing section	W
27	Test pit 20		E facing section	E
28	Test pit 20		E facing section	E
29	Test pit 19		S facing section	S
30	Test pit 21		NE facing section	NE
31	Test pit 25		NW facing section	NW
32	Test pit 26		S facing section	S
33	Test pit 25		NW facing section	NW