

**YCCCART 2014/Y15
North Somerset HER 2015/10**

**Manual surveys using an electronic, hydroystatic level (NIVCOMP) at
Woodspring Priory**

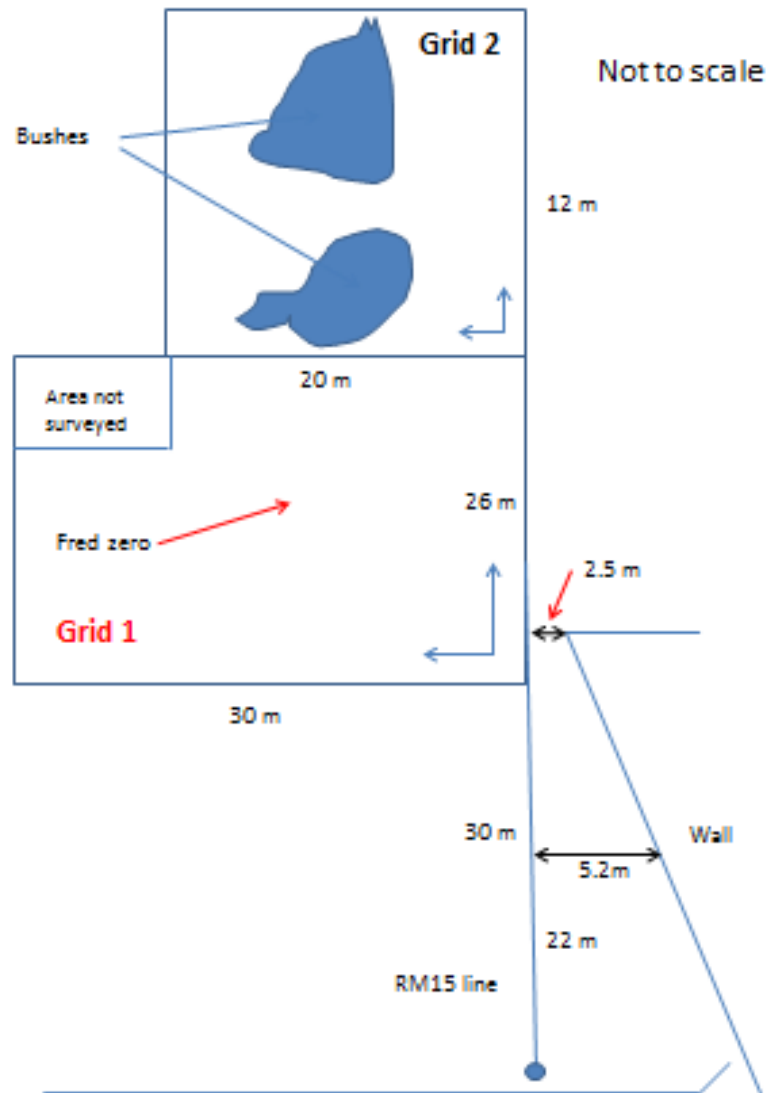
Appendices 1 - 3

**YATTON, CONGRESBURY, CLAVERHAM AND CLEEVE
ARCHAEOLOGICAL RESEARCH TEAM (YCCCART)**

Appendix 1 A

YCCART Site Survey Project – Manual survey – Woodspring Priory	
Survey date	21/06/12
Location	
Site name	Moat grid 1
Reference	
Type / Instrument	NIVCOMP electronic hydrostatic level
Survey area	30 x 26 m grid X axis 14 columns @ 2m intervals North easterly Y axis 16 columns @ 2m intervals North westerly Z axis: height above (+), or below (-) Zero point in mm Zero point: set inside feature at FRED Zero, GPS reading 33447.04E, 166096.27N
Data files	Raw data: Paper copy in Manual Folder, scanned copy in Woodspring, Moat Surfer: Moat Grid 1.xls Moat Grid 1.grd Moat Grid 1.rtf
Survey team and conditions	
Team	C Campbell, U Hassan, M Rosevink, J Burdge, Peter (from Weston)
Weather	Cloudy & damp
Additional information	
Landowner	??????
Tenant	N/A
HER ref	TBC
Site type	Priory Grounds
Description	Unmown grass
Period	????
Geology	????
Land use	Leisure
Comments	Some readings omitted due to terrain
Report date	26 th July, 2012
Author	C Cambell;G Pearson

Plan



Electronic data

Xm	Ym	Zmm
0	0	508
0	2	494
0	4	512
0	6	452
0	8	359
0	10	305
0	12	190
0	14	98
0	16	42
0	18	36
0	20	-13
0	22	23
0	24	19
0	26	63
0	28	-83
0	30	-54
2	0	458
2	2	451
2	4	446
2	6	393
2	8	291
2	10	122
2	12	4
2	14	-66
2	16	-87
2	18	-84
2	20	-28
2	22	-16
2	24	-38
2	26	-95
2	28	-71
2	30	-42
4	0	378
4	2	401
4	4	341
4	6	255
4	8	79
4	10	-84
4	12	-144
4	14	-188
4	16	-118
4	18	-125
4	20	-78
4	22	-80
4	24	38
4	26	-59

4	28	-30
4	30	-32
6	0	290
6	2	266
6	4	218
6	6	62
6	8	-63
6	10	-108
6	12	-186
6	14	-213
6	16	-167
6	18	-129
6	20	-67
6	22	-2
6	24	51
6	26	43
6	28	20
6	30	15
8	0	165
8	2	101
8	4	11
8	6	-55
8	8	-110
8	10	-145
8	12	-138
8	14	-217
8	16	-177
8	18	-143
8	20	6
8	22	74
8	24	108
8	26	86
8	28	98
8	30	55
10	0	1
10	2	-24
10	4	-54
10	6	-89
10	8	-74
10	10	-20
10	12	-73
10	14	-250
10	16	-234
10	18	-70
10	20	69
10	22	62
10	24	148
10	26	159
10	28	158
10	30	189

12	0	-96
12	2	-50
12	4	-44
12	6	42
12	8	51
12	10	25
12	12	-26
12	14	-207
12	16	-170
12	18	-6
12	20	96
12	22	150
12	24	242
12	26	250
12	28	203
12	30	188
14	0	68
14	2	132
14	4	187
14	6	227
14	8	223
14	10	160
14	12	60
14	14	-64
14	16	-140
14	18	-80
14	20	114
14	22	180
14	24	230
14	26	236
14	28	199
14	30	157
16	0	256
16	2	299
16	4	317
16	6	320
16	8	277
16	10	242
16	12	278
16	14	124
16	16	72
16	18	-108
16	20	45
16	22	156
16	24	173
16	26	146
16	28	195
16	30	160
18	0	352
18	2	354

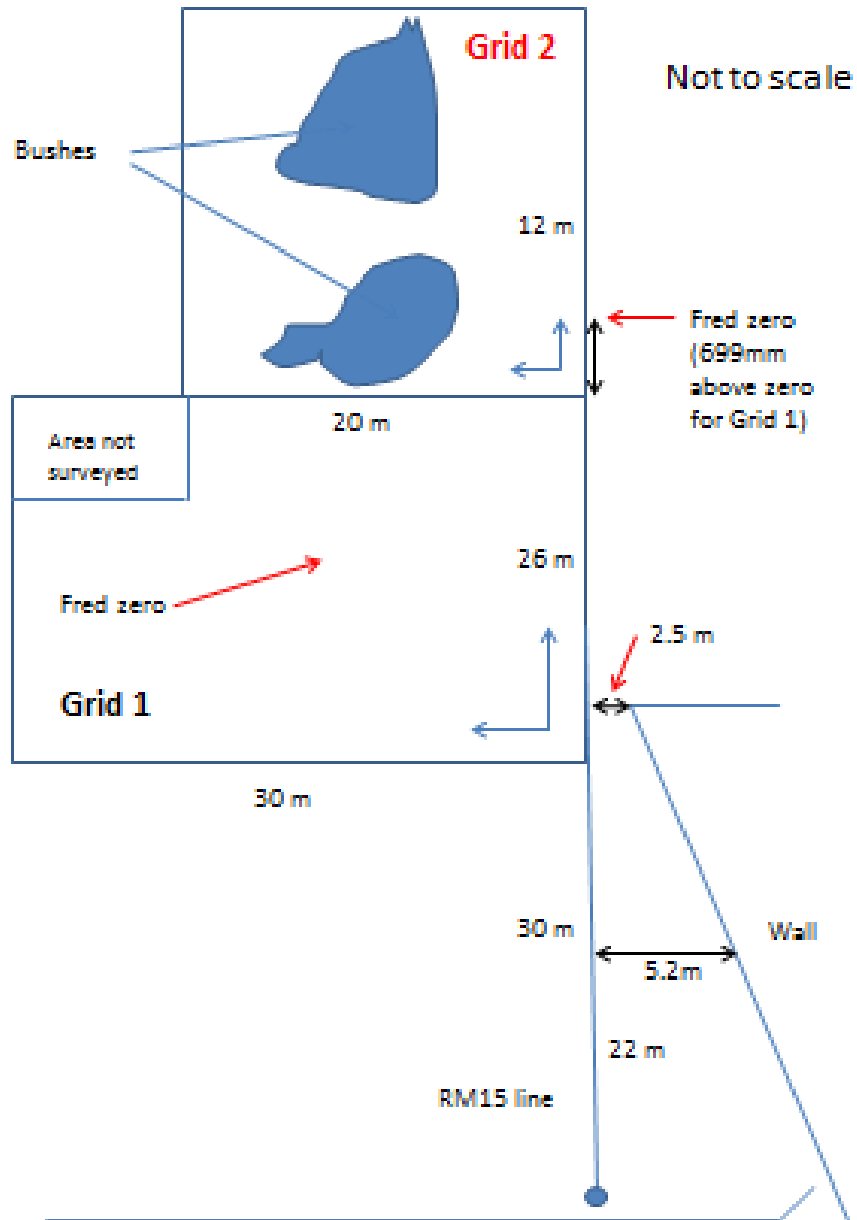
18	4	344
18	6	362
18	8	324
18	10	316
18	12	226
18	14	136
18	16	6
18	18	-219
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18	22	65
18	24	92
18	26	166
18	28	182
18	30	213
20	0	416
20	2	417
20	4	428
20	6	433
20	8	394
20	10	388
20	12	310
20	14	166
20	16	35
20	18	-218
20	20	-106
20	22	26
20	24	94
20	26	119
20	28	150
20	30	176
22	0	510
22	2	514
22	4	501
22	6	489
22	8	427
22	10	436
22	12	354
22	14	247
22	16	49
22	18	-159
22	20	-161
22	22	-56
22	24	14
22	26	53
22	28	33
22	30	105
24	0	550
24	2	482
24	4	487
24	6	542

24	8	510
24	10	480
24	12	372
24	14	301
24	16	140
24	18	-119
24	20	-253
24	22	
24	24	
24	26	
24	28	
24	30	
26	0	607
26	2	568
26	4	540
26	6	500
26	8	488
26	10	471
26	12	354
26	14	316
26	16	208
26	18	-112
26	20	-245

Appendix 1B

YCCART Site Survey Project – Manual survey – Woodspring	
Survey date	28/06/12
Location	
Site name	Moat grid 2
Reference	
Type / Instrument	NIVCOMP electronic hydrostatic level
Survey area	20 x 12 m grid X axis 7 columns north easterly @ 2m intervals Y axis 11 columns north westerly @ 2m intervals Z axis: height above (+), or below (-) Zero point in mm Zero point: set at 60m point on RM15 baseline.
Data files	Raw data: Paper copy in Manual Folder, scanned copy in Woodspring, Moat Surfer: Moat Grid 2.xls Moat Grid 2.grd Moat Grid 2.rtf
Survey team and conditions	
Team	U Hassan, G Pearson, B Wills, Peter (from Weston)
Weather	Cloudy & warm
Additional information	
Landowner	??????
Tenant	N/A
HER ref	TBC
Site type	Priory Grounds
Description	Unmown grass
Period	????
Geology	????
Land use	Leisure
Comments	Some readings omitted due to terrain
Report date	26 th July, 2012, amended 13-10-14 (GRP)
Author	Geoff Pearson & chums

Plan



Electronic data

Xm	Ym	Zmm
0	0	13
0	2	-138
0	4	-169
0	6	-194
0	8	-247
0	10	
0	12	
0	14	
0	16	
0	18	
0	20	-965
2	0	-2
2	2	-26
2	4	-161
2	6	-148
2	8	-219
2	10	
2	12	
2	14	
2	16	-761
2	18	-819
2	20	-960
4	0	10
4	2	-34
4	4	-163
4	6	-234
4	8	-200
4	10	
4	12	
4	14	
4	16	-491
4	18	-723
4	20	-880
6	0	-87
6	2	-108
6	4	-128
6	6	-221
6	8	-190
6	10	-212
6	12	-319
6	14	-365
6	16	-469
6	18	-687
6	20	-778
8	0	-146
8	2	-155

8	4	-121
8	6	-191
8	8	-201
8	10	-219
8	12	
8	14	
8	16	
8	18	-685
8	20	-759
10	0	-152
10	2	-162
10	4	-165
10	6	-161
10	8	-188
10	10	-230
10	12	
10	14	
10	16	-510
10	18	-681
10	20	-757
12	0	-152
12	2	-198
12	4	-208
12	6	-168
12	8	-204
12	10	-298
12	12	
12	14	-444
12	16	-532
12	18	-675
12	20	-736

Appendix 1C

YCCART Site Survey Project – Manual survey – Woodspring Priory	
Survey date	21 and 28/06/12
Location	
Site name	Moat grids 1 and 2 combined
Reference	
Type / Instrument	NIVCOMP electronic hydrostatic level
Survey area	40 x up to 30 m grid X axis 21 columns @ 2m intervals Northeasterly Y axis up to 16 columns @ 2m intervals Northwesterly Z axis: height above (+), or below (-) Zero point in mm Zero point: Zero point for grid 2 was 699mm above grid 1
Data files	Raw data: As for grids 1 and 2, Woodspring, Moat Surfer: Moat Grids 1+2.xls Moat Grids 1+2.grd Moat Grids 1+2.rtf
Survey team and conditions	
Team	As grids 1 and 2; U Hassan did the maths!
Weather	N/A
Additional information	
Landowner	??????
Tenant	N/A
HER ref	TBC
Site type	Priory Grounds
Description	Unmown grass
Period	????
Geology	????
Land use	Leisure
Comments	Some readings omitted due to terrain
Report date	Prepared from raw data, 13-10-14
Author	G Pearson

Plan

See Grids 1 and 2

Electronic data

The Fred Zero point for Grid 2 was 699 mm above Fred Zero of Grid 1. Therefore, 0.699 m was added to each value for grid 2.

x [m]	y [m]	z [m]
0	0	0.508
0	2	0.494
0	4	0.512
0	6	0.452
0	8	0.359
0	10	0.305
0	12	0.19
0	14	0.098
0	16	0.042
0	18	0.036
0	20	-0.013
0	22	0.023
0	24	0.019
0	26	0.063
0	28	-0.083
0	30	-0.054
2	0	0.458
2	2	0.451
2	4	0.446
2	6	0.393
2	8	0.291
2	10	0.122
2	12	0.004
2	14	-0.066
2	16	-0.087
2	18	-0.084
2	20	-0.028
2	22	-0.016
2	24	-0.038
2	26	-0.095
2	28	-0.071
2	30	-0.042
4	0	0.378
4	2	0.401
4	4	0.341
4	6	0.255

4	8	0.079
4	10	-0.084
4	12	-0.144
4	14	-0.188
4	16	-0.118
4	18	-0.125
4	20	-0.078
4	22	-0.08
4	24	0.038
4	26	-0.059
4	28	-0.03
4	30	-0.032
6	0	0.29
6	2	0.266
6	4	0.218
6	6	0.062
6	8	-0.063
6	10	-0.108
6	12	-0.186
6	14	-0.213
6	16	-0.167
6	18	-0.129
6	20	-0.067
6	22	-0.002
6	24	0.051
6	26	0.043
6	28	0.02
6	30	0.015
8	0	0.165
8	2	0.101
8	4	0.011
8	6	-0.055
8	8	-0.11
8	10	-0.145
8	12	-0.138
8	14	-0.217
8	16	-0.177
8	18	-0.143
8	20	0.006
8	22	0.074
8	24	0.108
8	26	0.086
8	28	0.098
8	30	0.055
10	0	0.001
10	2	-0.024
10	4	-0.054
10	6	-0.089
10	8	-0.074
10	10	-0.02

10	12	-0.073
10	14	-0.25
10	16	-0.234
10	18	-0.07
10	20	0.069
10	22	0.062
10	24	0.148
10	26	0.159
10	28	0.158
10	30	0.189
12	0	-0.096
12	2	-0.05
12	4	-0.044
12	6	0.042
12	8	0.051
12	10	0.025
12	12	-0.026
12	14	-0.207
12	16	-0.17
12	18	-0.006
12	20	0.096
12	22	0.15
12	24	0.242
12	26	0.25
12	28	0.203
12	30	0.188
14	0	0.068
14	2	0.132
14	4	0.187
14	6	0.227
14	8	0.223
14	10	0.16
14	12	0.06
14	14	-0.064
14	16	-0.14
14	18	-0.08
14	20	0.114
14	22	0.18
14	24	0.23
14	26	0.236
14	28	0.199
14	30	0.157
16	0	0.256
16	2	0.299
16	4	0.317
16	6	0.32
16	8	0.277
16	10	0.242
16	12	0.278
16	14	0.124

16	16	0.072
16	18	-0.108
16	20	0.045
16	22	0.156
16	24	0.173
16	26	0.146
16	28	0.195
16	30	0.16
18	0	0.352
18	2	0.354
18	4	0.344
18	6	0.362
18	8	0.324
18	10	0.316
18	12	0.226
18	14	0.136
18	16	0.006
18	18	-0.219
18	20	-0.044
18	22	0.065
18	24	0.092
18	26	0.166
18	28	0.182
18	30	0.213
20	0	0.416
20	2	0.417
20	4	0.428
20	6	0.433
20	8	0.394
20	10	0.388
20	12	0.31
20	14	0.166
20	16	0.035
20	18	-0.218
20	20	-0.106
20	22	0.026
20	24	0.094
20	26	0.119
20	28	0.15
20	30	0.176
22	0	0.51
22	2	0.514
22	4	0.501
22	6	0.489
22	8	0.427
22	10	0.436
22	12	0.354
22	14	0.247
22	16	0.049
22	18	-0.159

22	20	-0.161
22	22	-0.056
22	24	0.014
22	26	0.053
22	28	0.033
22	30	0.105
24	0	0.55
24	2	0.482
24	4	0.487
24	6	0.542
24	8	0.51
24	10	0.48
24	12	0.372
24	14	0.301
24	16	0.14
24	18	-0.119
24	20	-0.253
24	22	
24	24	
24	26	
24	28	
24	30	
26	0	0.607
26	2	0.568
26	4	0.54
26	6	0.5
26	8	0.488
26	10	0.471
26	12	0.354
26	14	0.316
26	16	0.208
26	18	-0.112
26	20	-0.245
28	0	0.712
28	2	0.561
28	4	0.53
28	6	0.505
28	8	0.452
28	10	
28	12	
28	14	
28	16	
28	18	
28	20	-0.266
30	0	0.697
30	2	0.673
30	4	0.538
30	6	0.551

30	8	0.48
30	10	
30	12	
30	14	
30	16	-0.062
30	18	-0.12
30	20	-0.261
32	0	0.709
32	2	0.665
32	4	0.536
32	6	0.465
32	8	0.499
32	10	
32	12	
32	14	
32	16	0.208
32	18	-0.024
32	20	-0.181
34	0	0.612
34	2	0.591
34	4	0.571
34	6	0.478
34	8	0.509
34	10	0.487
34	12	0.38
34	14	0.334
34	16	0.23
34	18	0.012
34	20	-0.079
36	0	0.553
36	2	0.544
36	4	0.578
36	6	0.508
36	8	0.498
36	10	0.48
36	12	
36	14	
36	16	
36	18	0.014
36	20	-0.06
38	0	0.547
38	2	0.537
38	4	0.534
38	6	0.538
38	8	0.511
38	10	0.469
38	12	
38	14	
38	16	0.189
38	18	0.018

38	20	-0.058
40	0	0.547
40	2	0.501
40	4	0.491
40	6	0.491
40	8	0.531
40	10	0.495
40	12	
40	14	0.255
40	16	0.167
40	18	0.024
40	20	-0.037

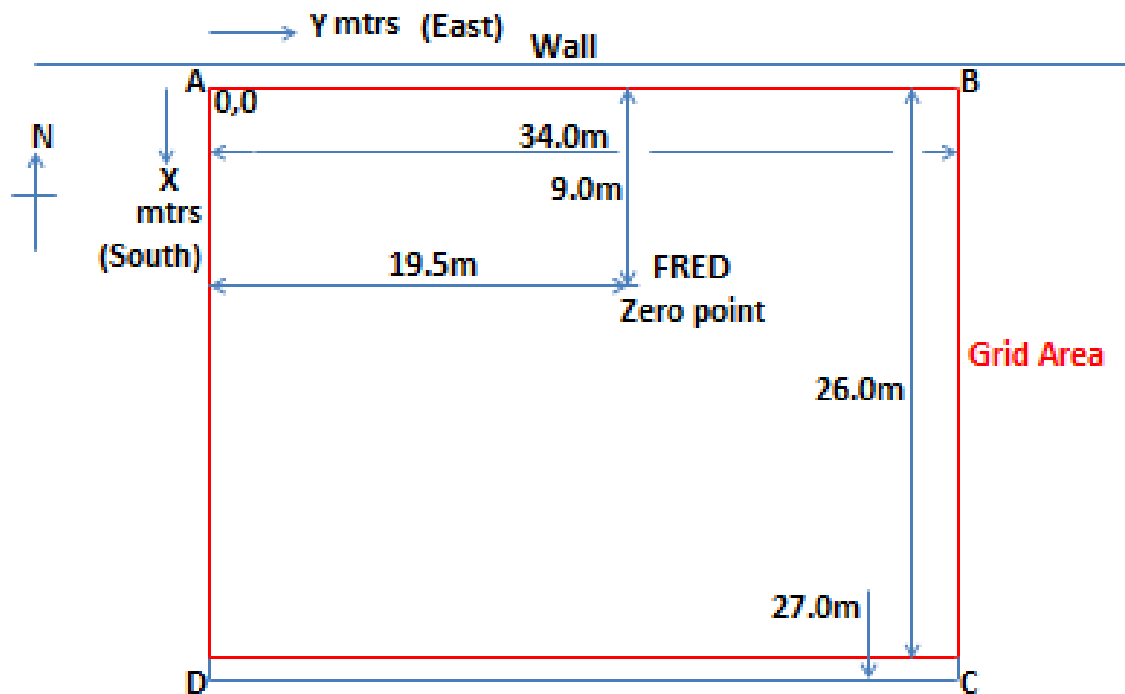
Appendix 2

YCCART Site Survey	
Project – Manual survey – Woodspring Priory	
Survey date	23-08-12
Location	Woodspring Priory
Site name	Spring
Reference	See GPS results below
Type / Instrument	NIVCOMP electronic hydrostatic level
Survey area	34x26 m grid Y axis East , 18 columns @ 2 m intervals X axis South , 14 columns @2 m intervals Z axis: height above (+), or below (-) Zero point in mm Zero point: set inside feature at 9.5m South , 19.5m East
Data files	Raw data: Paper copy in Manual Folder, Woodspring Surfer: Woodspring spring.xls, Woodspring spring.grd Woodspring spring.rtf
Survey Team	G Pearson, B Wills, M Rosevink , U Hassan, Dean (WSM)
Weather	Sunny , Warm
Additional information	
Landowner	Landmark Trust
Tenant	The Toogood Partnership
HER ref	TBC
Site type	
Description	
Period	
Geology	
Land use	
Report date	18- 9 -12: mod GRP15-10-14
Author	B Wills, G Pearson

Plan

Woodspring Priory, Spring Site Layout

Date: 23-08-12



GPS Site Location Reference points: A,B,C,D

GPS Readings recorded on Site Record sheet

GPS Readings:

Position	Eastings	Northings
A	334380.16	166237.51
B	334416.38	166248.60
C	334421.10	166221.94
D	334389.68	166212.80

Recorded data

Xm	Ym	Zmm
0	0	2782
0	2	2718
0	4	2637
0	6	2663
0	8	2528
0	10	2402
0	12	2375
0	14	2289
0	16	2239
0	18	2240
0	20	2136
0	22	2140
0	24	2132
0	26	2181
0	28	2294
0	30	2317
0	32	2304
0	34	2213
2	0	2327
2	2	2185
2	4	2165
2	6	2087
2	8	2059
2	10	1896
2	12	1810
2	14	1776
2	16	1705
2	18	1591
2	20	1453
2	22	1397
2	24	1406
2	26	1570
2	28	1870
2	30	2004
2	32	2021
2	34	1987
4	0	1993
4	2	1881
4	4	1750
4	6	1571
4	8	1537
4	10	1369

4	12	1271
4	14	1211
4	16	1158
4	18	1097
4	20	927
4	22	762
4	24	735
4	26	1046
4	28	1607
4	30	1763
4	32	1756
4	34	1607
6	0	1722
6	2	1630
6	4	1470
6	6	1322
6	8	1204
6	10	1097
6	12	954
6	14	908
6	16	780
6	18	687
6	20	412
6	22	182
6	24	156
6	26	572
6	28	1402
6	30	1686
6	32	1622
6	34	1463
8	0	1546
8	2	1475
8	4	1377
8	6	1134
8	8	1030
8	10	943
8	12	805
8	14	687
8	16	548
8	18	335
8	20	66
8	22	-88
8	24	-57
8	26	400
8	28	1328

8	30	1678
8	32	1572
8	34	1330
10	0	1365
10	2	1368
10	4	1242
10	6	1043
10	8	974
10	10	882
10	12	723
10	14	509
10	16	213
10	18	-2
10	20	-141
10	22	-114
10	24	130
10	26	744
10	28	1328
10	30	1548
10	32	1456
10	34	1190
12	0	1211
12	2	1211
12	4	1126
12	6	1019
12	8	954
12	10	819
12	12	628
12	14	225
12	16	-55
12	18	-171
12	20	-125
12	22	58
12	24	526
12	26	943
12	28	1194
12	30	1433
12	32	1348
12	34	1065
14	0	1109
14	2	1051
14	4	1005
14	6	895
14	8	796
14	10	753

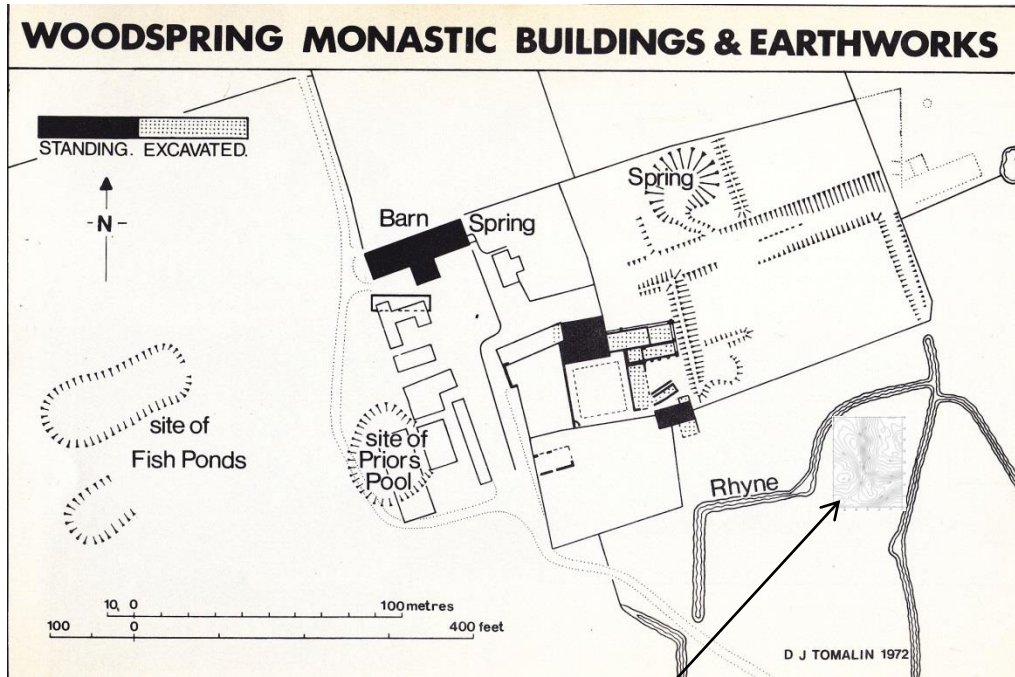
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14	14	176
14	16	-57
14	18	-105
14	20	-62
14	22	221
14	24	604
14	26	860
14	28	1050
14	30	1333
14	32	1246
14	34	937
16	0	949
16	2	867
16	4	845
16	6	750
16	8	609
16	10	545
16	12	423
16	14	188
16	16	42
16	18	46
16	20	212
16	22	412
16	24	477
16	26	641
16	28	933
16	30	1150
16	32	1115
16	34	854
18	0	849
18	2	731
18	4	629
18	6	566
18	8	432
18	10	380
18	12	351
18	14	317
18	16	168
18	18	151
18	20	325
18	22	359
18	24	378
18	26	506
18	28	822

18	30	1003
18	32	1021
18	34	770
20	0	759
20	2	621
20	4	559
20	6	410
20	8	310
20	10	256
20	12	238
20	14	178
20	16	142
20	18	114
20	20	282
20	22	297
20	24	348
20	26	463
20	28	676
20	30	831
20	32	840
20	34	669
22	0	718
22	2	563
22	4	436
22	6	319
22	8	176
22	10	146
22	12	161
22	14	120
22	16	88
22	18	30
22	20	196
22	22	270
22	24	292
22	26	366
22	28	543
22	30	610
22	32	631
22	34	481
24	0	
24	2	542
24	4	468
24	6	274
24	8	177
24	10	95

24	12	144
24	14	59
24	16	90
24	18	30
24	20	10
24	22	174
24	24	239
24	26	313
24	28	379
24	30	434
24	32	439
24	34	297
26	0	
26	2	520
26	4	427
26	6	283
26	8	196
26	10	135
26	12	131
26	14	129
26	16	113
26	18	73
26	20	35
26	22	-13
26	24	116
26	26	161
26	28	193
26	30	241
26	32	239
26	34	134

Appendix 3

Tomalin plan, 1972 . From, Tomalin D J. (1974). *Woodspring Priory, Somerset. The Landmark Trust. First edition. (Courtesy of The Landmark Trust).*

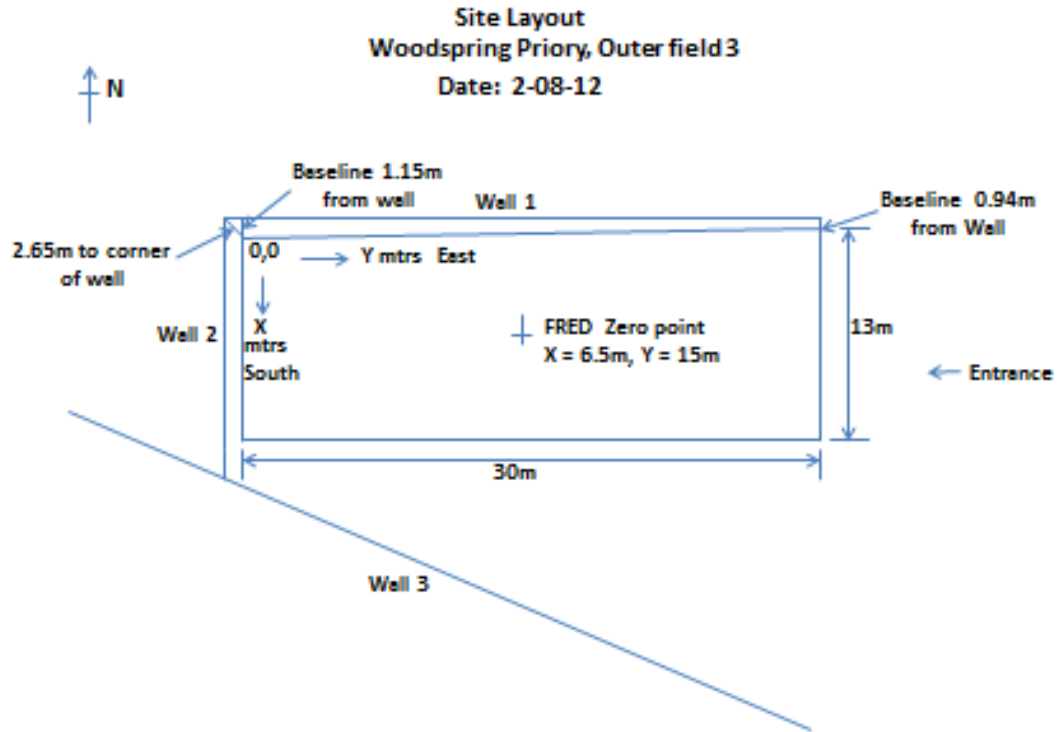


Contour map of moated area drawn to scale

Appendix 4

YCCCART Site Survey Project – Manual survey – Woodspring Priory	
Survey date	2-8-12
Location	Woodspring Priory
Site name	Outer field 3
Reference	See GPS results below
Type / Instrument	NIVCOMP electronic hydrostatic level
Survey area	30 x 13 m grid Y axis easterly, 16 columns @ 2 m intervals X axis , southerly, 14 columns @ 1 m intervals Z axis: height above (+), or below (-) Zero point in mm Zero point: set inside feature (15m along baseline, 6.5 m southerly)
Data files	Raw data: Paper copy in Manual Folder Scanned copy in Woodspring Surfer: Outer field 3.xls Outer field 3.grd Outer field 3.rtf Outer field 3.srf
Survey Team	G Pearson, B Wills, S Brooks, J Burdge , C Campbell
Weather	Cloudy and warm
Additional information	
Landowner	Landmark Trust
Tenant	The Toogood Partnership
HER ref	TBC
Site type	Open land
Description	Un-mown grass/scrub
Period	
Geology	
Land use	
Report date	2/08/12; Completed from raw data, 19-10-14
Author	B Wills; G Pearson

Plan



Electronic data

0	0	339
0	2	286
0	4	250
0	6	240
0	8	275
0	10	194
0	12	161
0	14	200
0	16	194
0	18	151
0	20	116
0	22	16
0	24	-89
0	26	-154
0	28	-212
0	30	-259
1	0	340
1	2	258
1	4	167
1	6	131
1	8	244
1	10	96
1	12	83
1	14	158
1	16	127
1	18	112
1	20	85
1	22	-20
1	24	-135
1	26	-191
1	28	-243
1	30	-255
2	0	274
2	2	198
2	4	101
2	6	34
2	8	42
2	10	21
2	12	34
2	14	75
2	16	70
2	18	93
2	20	36

2	22	-72
2	24	-173
2	26	-219
2	28	-242
2	30	-273
3	0	256
3	2	176
3	4	48
3	6	-51
3	8	-46
3	10	-31
3	12	-10
3	14	5
3	16	44
3	18	65
3	20	31
3	22	-82
3	24	-189
3	26	-221
3	28	-242
3	30	-263
4	0	207
4	2	124
4	4	1
4	6	-102
4	8	-106
4	10	-66
4	12	-34
4	14	-51
4	16	42
4	18	57
4	20	6
4	22	-108
4	24	-188
4	26	-222
4	28	-256
4	30	-364
5	0	174
5	2	115
5	4	-55
5	6	-164
5	8	-118
5	10	-86
5	12	-83
5	14	-42

5	16	26
5	18	34
5	20	8
5	22	-107
5	24	-184
5	26	-220
5	28	-273
5	30	-346
6	0	150
6	2	33
6	4	-132
6	6	-175
6	8	-150
6	10	-142
6	12	-130
6	14	-31
6	16	-33
6	18	-35
6	20	-63
6	22	-157
6	24	-203
6	26	-260
6	28	-346
6	30	-383
7	0	121
7	2	18
7	4	-92
7	6	-183
7	8	-179
7	10	-172
7	12	-157
7	14	-110
7	16	-62
7	18	-101
7	20	-103
7	22	-218
7	24	-226
7	26	-330
7	28	-358
7	30	-427
8	0	67
8	2	23
8	4	-74
8	6	-156
8	8	-203

8	10	-178
8	12	-185
8	14	-175
8	16	-142
8	18	-200
8	20	-212
8	22	-236
8	24	-264
8	26	-364
8	28	-416
8	30	
9	0	19
9	2	-20
9	4	-102
9	6	-182
9	8	-229
9	10	-227
9	12	-229
9	14	-223
9	16	-202
9	18	-236
9	20	-227
9	22	-270
9	24	-330
9	26	-379
9	28	
9	30	
10	0	-23
10	2	-83
10	4	-151
10	6	-226
10	8	-275
10	10	-284
10	12	-258
10	14	-284
10	16	-248
10	18	-234
10	20	-237
10	22	-245
10	24	-315
10	26	-413
10	28	
10	30	
11	0	-115
11	2	-163

11	4	-213
11	6	-246
11	8	-316
11	10	-305
11	12	-323
11	14	-336
11	16	-268
11	18	-254
11	20	-275
11	22	-299
11	24	-360
11	26	-450
11	28	
11	30	
12	0	-172
12	2	-223
12	4	-263
12	6	-312
12	8	-347
12	10	-350
12	12	-378
12	14	-385
12	16	-304
12	18	-312
12	20	-318
12	22	-316
12	24	-385
12	26	-531
12	28	-642
12	30	
13	0	-186
13	2	-244
13	4	-291
13	6	-347
13	8	-392
13	10	-373
13	12	-374
13	14	-406
13	16	-410
13	18	-344
13	20	-354
13	22	-344
13	24	-407
13	26	-541
13	28	-492

13	30	
13	22	-344
13	24	-407
13	26	-541
13	28	-492
13	30	