F·S·A·R·G
The Faversham Society
Archaeological Research Group
Community Archaeology

Faversham Society Archaeological Research Group with Friends of Oare Gunpowder Works

Friends of Oare Gunpowder Works

Report for the geophysical survey and Map Regression prior to creation of a Habitat Pond within Oare Gunpowder Works Country Park (Revision A)

Grid Ref: TR 00478 625524 (600478 162524)

List entry number: 1016497
Date of Resistivity Survey 28th. March 2019
Date of Report (Rev A): 10th May 2020

Proposed Pond Site

Survey and Map Regression prior to creation of a Habitat Pond

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Survey and Map Regression prior to creation of a Habitat Pond

1. Synopsis

This report forms part of an application for a Section 42 licence to create a new fish-free freshwater habitat for the site, which currently does not exist as all water bodies have fish. The lack of top predators will create a diverse community of invertebrates including dragonflies, beetles, damselflies etc., as part of the woodland management plan. This will be conducted by the Friends of Oare Gunpowder Works, I. G. Pilcher ltd (earthworks contractor) under supervision from Swale Borough Council. It will also provide additional habitat for amphibians that also prefer fish-free environments. This new pond will provide the potential to enhance the offer that the site has for pond dipping and the quality and range of educational activities that can be offered due to the more complex assemblage of freshwater invertebrates. Following initial enquiries with Historic England it was their requirement to conduct a geophysical survey: The results and activities are listed below

The report has been revised to address several comments made by Historic England. These comments are addressed below:

1) **Accuracy of the survey baseline** -
    a. The baseline has been re-established using the original reference points and then measured using a survey grade GNSS Receiver to an accuracy of better than 10cm. There may be an added 20cm or so error in re-establishing the baseline. However, compared to the 1 metre survey grid resolution and the uncertainties in aligning the historic maps this is small.
    b. The 1897 Ordnance Survey 2500:1 map is included because this clearly shows the building in question.
    c. The maps have all been geo-located so that they reference back to current Ordnance Survey Data.
    d. We no longer use Google Earth data since it seems to be misaligned by a few metres when compared with the Ordnance Survey data, the Lidar Data and the survey grade GNSS Receiver.
    e. Models based on Lidar DSM data as well as the DTM data are included.
2) **Processing of resistivity data causing distortion of results and reversed colours** – The data has been replotted with high resistance as white. The data processed in Terra Surveyor is subject to de-spiking with a window of 3 and threshold of 1 and clipping the data to 3 standard deviations. The survey result overlay has been realigned with the new baseline measurements.
3) **Can the Extent of Survey be extended closer to the building (stables)**? – The survey was restricted by dense undergrowth and we extended the survey into scrub and woodland to the maximum extent possible.
4) **Validity of conclusions** – It is difficult to infer that any high resistance measurements in the survey represent. We have rewritten the conclusion to clarify this.
5) **Can the pond be moved further North**? - The new pond site could be moved a few metres, but the intent is to have it close to the undergrowth to encourage the appropriate ecology.
6) We have included photos of the site in the report.

Survey and Map Regression prior to creation of a Habitat Pond

2. Location:

Oare Gunpowder Works, Bysingwood Road, Faversham. Kent. ME13 7UD

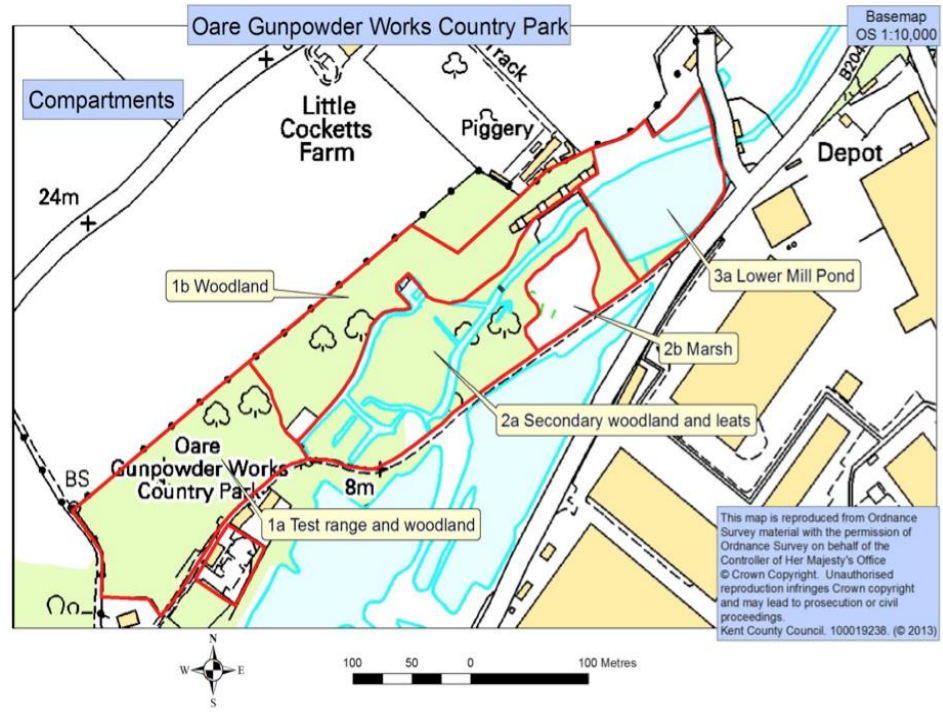


Figure 1 - Plan of the Country Park

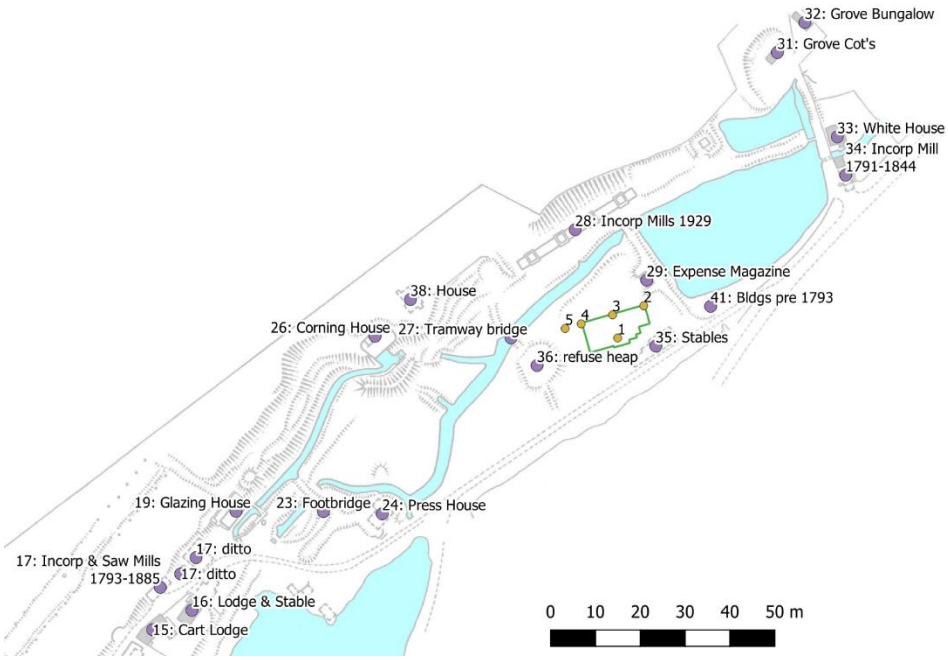


Figure 2 - Building Identification, based on the Conservation Plan

Survey and Map Regression prior to creation of a Habitat Pond

3. Purpose of the Survey

Following initial applications for a Section 42 Licence to carry out any works, Historic England required a geophysical survey to be undertaken on the proposed area. This area was chosen, as it is the area of the site where the creation of a pond is least likely to impact on any underground archaeological features. The survey will help to inform a future Scheduled Monument Consent application. It is understood that on completion of the survey it may still be necessary for us to undertake further mitigation (e.g. an archaeological watching brief) when we actually come to do the works themselves. Furthermore, it is understood that the results of this Survey must be submitted to yourselves before any work commences.

4. Background of the site

The area site falls within the site of former the Oare Gunpowder Works. Within this site Oare Gunpowder Works Country Park was established in 2004, with the full collaboration of the then English Heritage.

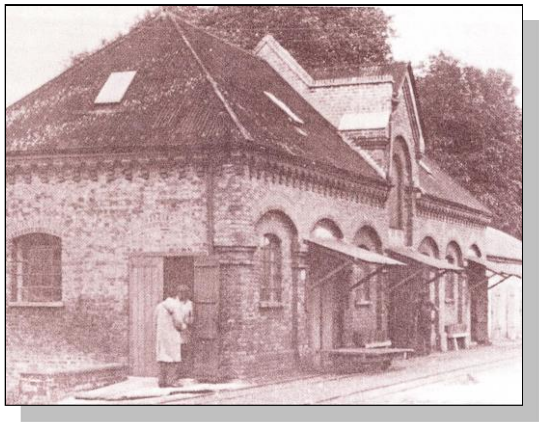
The “Conservation Plan” (Ref 1) includes a complete description of the site.

Description of proposed pond location: This is a marshy area (compartment 2b) within the site that was created when the Lower Mill Pond was dredged as part of the Country Park creation circa 2004. The following picture is a screen grab from a video made of the original early 2000’s work. It shows the Boardwalk in construction and the surrounding mud dumped from the lower pond. The site of the new pond is difficult to estimate on this image, it would be at the extreme right or just off the edge. The yellow line is a rough approximation to the survey baseline.

The location is close to one demolished building, the Conservation Plan describes it as follows:

Building 35 – Stables (1865/1896)

This building first appears on the 1896 plan and there is a good photograph of it in *circa* 1930 by which time a tramway had been laid in front of it. It was a single-storey brick building, similar in appearance to the offices (*Building 12*).



Stables (Building 35) – photograph taken in about

The stables were apparently later converted partly for saltpetre refining and partly for charcoal grinding (*Cocroft 1994 :* 19) but they have since been demolished and all that survives are fragments of brick & mortar and a concrete block.

This building can be seen on the 1940's aerial photograph from Google Earth Figure 15.

5. Equipment and methodology

Type of Survey: electrical resistance

All of the survey will be within the 100 metres square TR 004 625

Equipment Type – The equipment was constructed by FSARG (Faversham Society Archaeological Research Group). It uses the long-established method of injecting a small alternating current between one fixed probe and one probe on the mobile frame and measuring the voltage between a similar pair of probes. The soil resistance is calculated, and the result displayed. The frame mounted probes are the standard 0.5 metres apart, and the fixed probes a similar distance apart. The equipment is regularly calibrated against a known resistance. Results have been compared with commercial equipment and produced results that are identical within the working tolerances.

Equipment Capability - A resistance survey identifies changes in soil composition, varying moisture retention and compaction. The capability of a resistivity survey is to detect changes in the first metre or two from the surface, sometimes deeper. Buried structures, ditches or pits could cause the changes in resistance. Or they could be due to natural phenomenon

such as buried springs. Depending on the soil moisture content at the time, significant features may, on occasion, not be revealed.

Analysis Software – The software used to analyse the survey results was Terra Surveyor. This is one of the leading software packages used in archaeological geophysics surveying.

Persons involved: the Faversham Society Archaeological Research Group (FSARG). carried out this survey. The Lead person was John Clarkstone (Chairman) under the overall supervision of Hon. Dir. Dr Pat Reid. FSARG have carried out over 50 resistivity surveys up to 0.75 HA. Paul Jessett, the Chairman of the Friends of Oare Gunpowder Works also assisted and Kristian Staples the Swale Borough Council representative was on site

Any precautions - None of the monument remains nor park facilities were disturbed during the survey. Much of the site is covered with material dredged from the lower pond. Access to the site is by adjacent park roads and walkways, on three sides of the area of the survey

Methodology
The survey type was an electrical resistivity conducted on a 1m grid over an area of 0.12HA.

The area was marked out using thin wire nails no more than 15 cm long and builders line cord. The use of thin wire nails inserted by hand for markers minimises any damage to archaeological features.

The resistivity geophysical survey equipment is mounted on a frame and the lead person and assistants walked over the area inserting the frame mounted probes into the ground (to a depth of no more than 5 cm) at 1 metre intervals, this was repeated following straight lines across the survey area. The results were recorded by hand onto gridded paper and then transferred onto a laptop computer. Once the survey was completed the thin wire nails and cord were removed taking care not to disturb the ground. The information recorded was then analysed off site.

Resistivity Survey Baseline

The baseline has been resurveyed.

The survey baseline was measured from a line joining the boardwalk (2 metres from the south west corner) to the large tree nearest the boardwalk to the west of the site. These points were chosen to provide a baseline for the survey that could be readily re-established to confirm the position of any features found that needed to be avoided in pond construction and covered the required area. The distance between these two points was 55.3 metres. The baseline of the two grid squares started 10.3 metres from the boardwalk and finished 50.3 metres from the boardwalk (5 metres from the tree).
The base of the tree was at 55.3 metres from the origin. The original baseline grid references were established form Google Earth as 600458, 162534 and 600497, 162544 (now shown to be slightly in error).

A second baseline perpendicular to the midpoint of the original baseline was set up using an optical sight. This was checked by measuring the diagonals of the grid. The remaining corner points were set by triangulation with tape measures.

Survey and Map Regression prior to creation of a Habitat Pond

To accurately align the resistivity data, the baseline was re-established from the same fixed reference points used for the original survey. The corners of the northerly edge of the survey grid were measured using a survey grade GNSS receiver. There are 5 points shown on the composite.

- Point 5 is one of the reference points used for setting the baseline. The other couldn't be checked because it is shaded by trees reducing the accuracy of the GNSS receiver.
- Points 2, 3 and 4 are the baseline of the actual survey.
- Point 1 is the approximate

The error in relocating the original reference points is estimated as 0.2 metre, largely due to the ability to get the tape straight. The error in the GNSS Receiver was displayed as less than 0.05 metres in all measurements despite the surrounding trees.

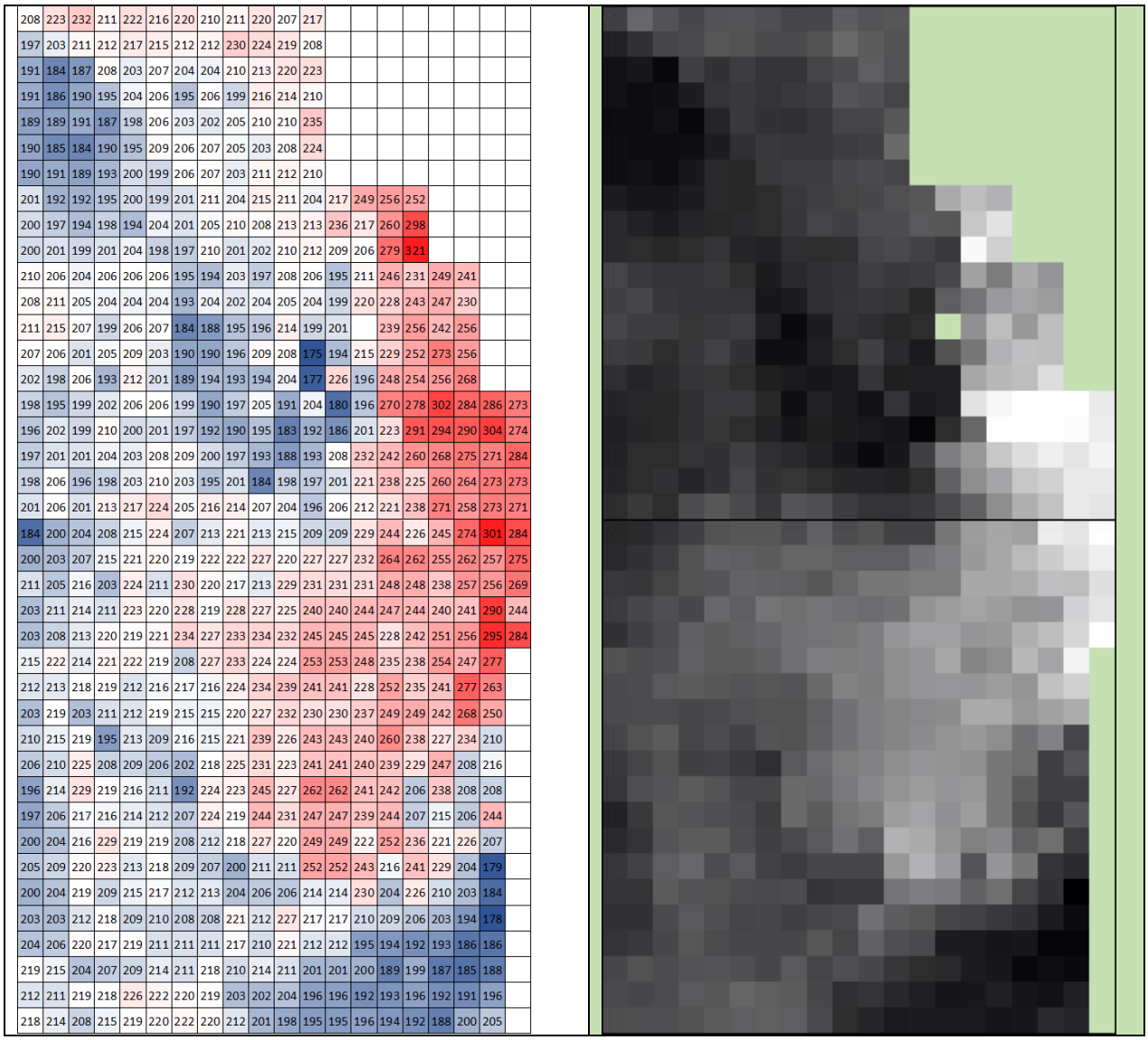
Table of GNSS Receiver surveyed points

point	x	y	Description
1	600477.959	162523.83	Proposed Pond Mid-Point
2	600493.965	162543.605	East End of Baseline
3	600474.781	162538.008	Mid-Point of Baseline
4	600455.537	162532.511	West End of Baseline
5	600445.715	162529.662	Reference point next to Boardwalk

The distance calculated between points 2 and 4 is 39.997 metres. A difference of 0.003 metres from expectation.

The distance calculated between the points 4 and 5 (end of baseline and walkway) is 10.227 metres (expected 10.3 metres) a difference of 0.073 metres from expectation. Point 5 was partly shaded by trees and this may have affected the measurement.

6. Resistance Survey Results



208	223	232	211	222	216	220	210	211	220	207	217								
197	203	211	212	217	215	212	212	230	224	219	208								
191	184	187	208	203	207	204	204	210	213	220	223								
191	186	190	195	204	206	195	206	199	216	214	210								
189	189	191	187	198	206	203	202	205	210	210	235								
190	185	184	190	195	209	206	207	205	203	208	224								
190	191	189	193	200	199	206	207	203	211	212	210								
201	192	192	195	200	199	201	211	204	215	211	204	217	249	256	252				
200	197	194	198	194	204	201	205	210	208	213	213	236	217	260	298				
200	201	199	201	204	198	197	210	201	202	210	212	209	206	279	321				
210	206	204	206	206	206	195	194	203	197	208	206	195	211	246	231	249	241		
208	211	205	204	204	204	193	204	202	204	205	204	199	220	228	243	247	230		
211	215	207	199	206	207	184	188	195	196	214	199	201		239	256	242	256		
207	206	201	205	209	203	190	190	196	209	208	175	194	215	229	252	273	256		
202	198	206	193	212	201	189	194	193	194	204	177	226	196	248	254	256	268		
198	195	199	202	206	206	199	190	197	205	191	204	180	196	270	278	302	284	286	273
196	202	199	210	200	201	197	192	190	195	183	192	186	201	223	291	294	290	304	274
197	201	201	204	203	208	209	200	197	193	188	193	208	232	242	260	268	275	271	284
198	206	196	198	203	210	203	195	201	184	198	197	201	221	238	225	260	264	273	273
201	206	201	213	217	224	205	216	214	207	204	196	206	212	221	238	271	258	273	271
184	200	204	208	215	224	207	213	221	213	215	209	209	229	244	226	245	274	301	284
200	203	207	215	221	220	219	222	222	227	220	227	227	232	264	262	255	262	257	275
211	205	216	203	224	211	230	220	217	213	229	231	231	231	248	248	238	257	256	269
203	211	214	211	223	220	228	219	228	227	225	240	240	244	247	244	240	241	290	244
203	208	213	220	219	221	234	227	233	234	232	245	245	245	228	242	251	256	295	284
215	222	214	221	222	219	208	227	233	224	224	253	253	248	235	238	254	247	277	
212	213	218	219	212	216	217	216	224	234	239	241	241	228	252	235	241	277	263	
203	219	203	211	212	219	215	215	220	227	232	230	230	237	249	249	242	268	250	
210	215	219	195	213	209	216	215	221	239	226	243	243	240	260	238	227	234	210	
206	210	225	208	209	206	202	218	225	231	223	241	241	240	239	229	247	208	216	
196	214	229	219	216	211	192	224	223	245	227	262	262	241	242	206	238	208	208	
197	206	217	216	214	212	207	224	219	244	231	247	247	239	244	207	215	206	244	
200	204	216	229	219	219	208	212	218	227	220	249	249	222	252	236	221	226	207	
205	209	220	223	213	218	209	207	200	211	211	252	252	243	216	241	229	204	179	
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203	203	212	218	209	210	208	208	221	212	227	217	217	210	209	206	203	194	178	
204	206	220	217	219	211	211	211	217	210	221	212	212	195	194	192	193	186	186	
219	215	204	207	209	214	211	218	210	214	211	201	201	200	189	199	187	185	188	
212	211	219	218	226	222	220	219	203	202	204	196	196	192	193	196	192	191	196	
218	214	208	215	219	220	222	220	212	201	198	195	195	196	194	192	188	200	205	

Figure 3 Resistivity Survey: Measured Values (left) and Plotted Results (Right)

The table of results to the left is the raw measured values from the survey, blank cells are points where no measurement was taken due to obstruction by trees. The cells are coloured with dark blue the lowest (wettest) and red the highest (driest) measurement. The image on the right has been created by processing the data on the left through Terra Surveyor by clipping the data to 3 standard deviations and de-spiking with a window of 3 and threshold of 1. Green areas are points where no measurement was made, it was not possible to extend the survey due to dense undergrowth. Dark is low resistance (wet).

Some of the dry area may be due to the uneven underlying terrain, unevenness in the dumped mud from the lower pond, tree roots etc, or it may be due to building rubble or foundations. The map analysis below shows that the nearest mapped building is 5 m away from the edge of the survey and that there are no known tracks closer to the surveyed area. The site has always been marshy.

7. Maps and Interpretation

This section describes the steps taken to align the resistivity results with both historic and current maps.

A. Coordinate system

All maps use a CRS of “EPSG:27700 - OSGB 1936 / British National Grid – Projected”

B. Resistivity Grid Offset

The resistivity date plot is deliberately offset by half a metre North and East. The first row of the survey started exactly on point 2 and the last row 1 metre short of point 4 on the baseline. The offset ensures that the actual measurement point, halfway between the probes is at the middle of the plotted grid squares.

C. Alignment of Maps

As a voluntary organisation we don’t have access to the highest precision data from Ordnance Survey. We do have access the OS Open Data, vector layers, which have simplified data. The buildings layer can often be used to align current and historic maps. The simplification of the open data building outline sometimes precludes this, but in all cases sufficient buildings were found to both align the map and check the alignment. We have also used a screen shot the Kent HER Maps and aligned these to better than 1 metre using the grid reference information on the HER.

We also used LIDAR DSM and DTM data from the National LIDAR Programme. These have a resolution of 1 metre and include georeferencing information already aligned to the national grid. These have been used to confirm alignments of the maps where there has been some uncertainty.

Survey and Map Regression prior to creation of a Habitat Pond

a) Screen shot of the KCC Heritage Maps

This has been included as an up to date accurate map – *however for copyright reasons this cannot be included in a generally published document, it is assumed that this report in its current form is only used for this investigation*. The screen shot was aligned in QGIS using several twelve figure grid references obtained from the KCC HER mapping. Alignment was confirmed using the "OS Open Map building data" as a QGIS layer (Red hashed blocks on composite image). A Helmert transform was used so that the image was only scaled and rotated and not distorted.

The resulting image is aligned with the Ordnance Survey Open Data Buildings Layer to somewhat better than 1 metre judging from the coincident building outlines.

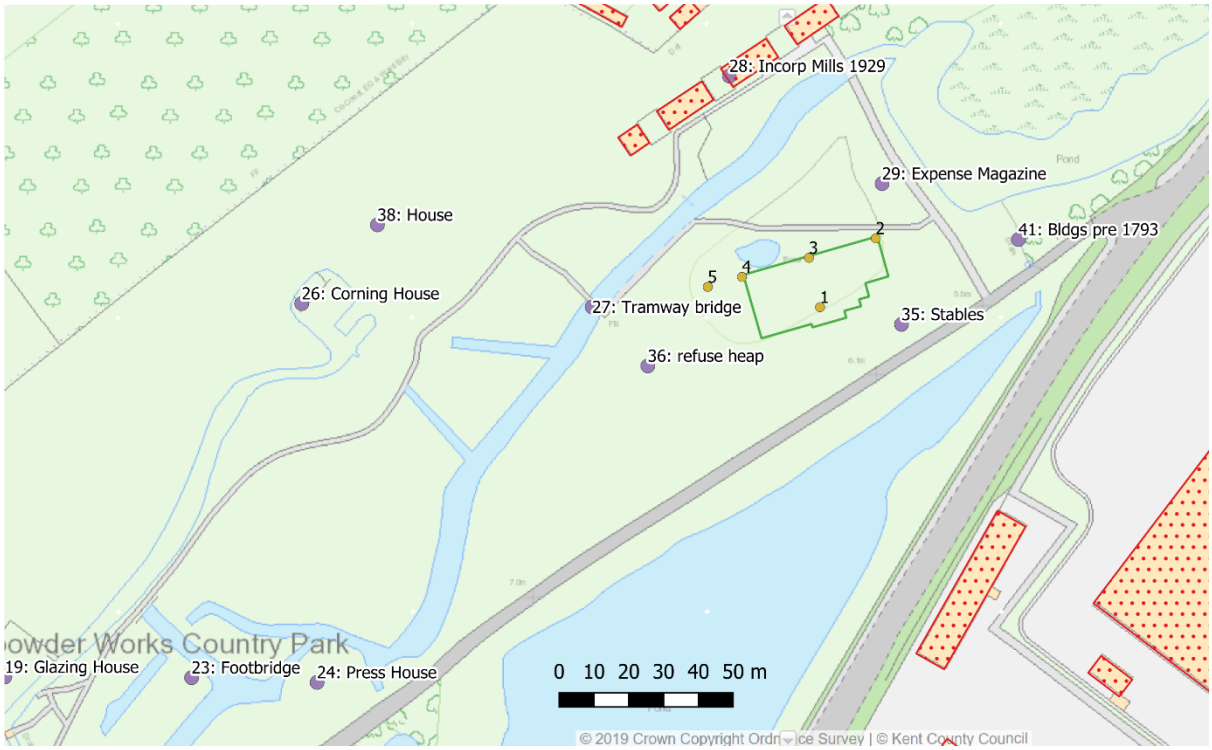


Figure 4 - Screen Shot from KCC HER overlaid on 1897 OS 25 inch Map with OS open Map Buildings Layer

Shows the GNSS Receiver Surveyed points and resistivity survey boundary

Survey and Map Regression prior to creation of a Habitat Pond

b) The 1897 25 inches (2500:1) to the mile map, Kent Sheet XXXIV.5 (1897)

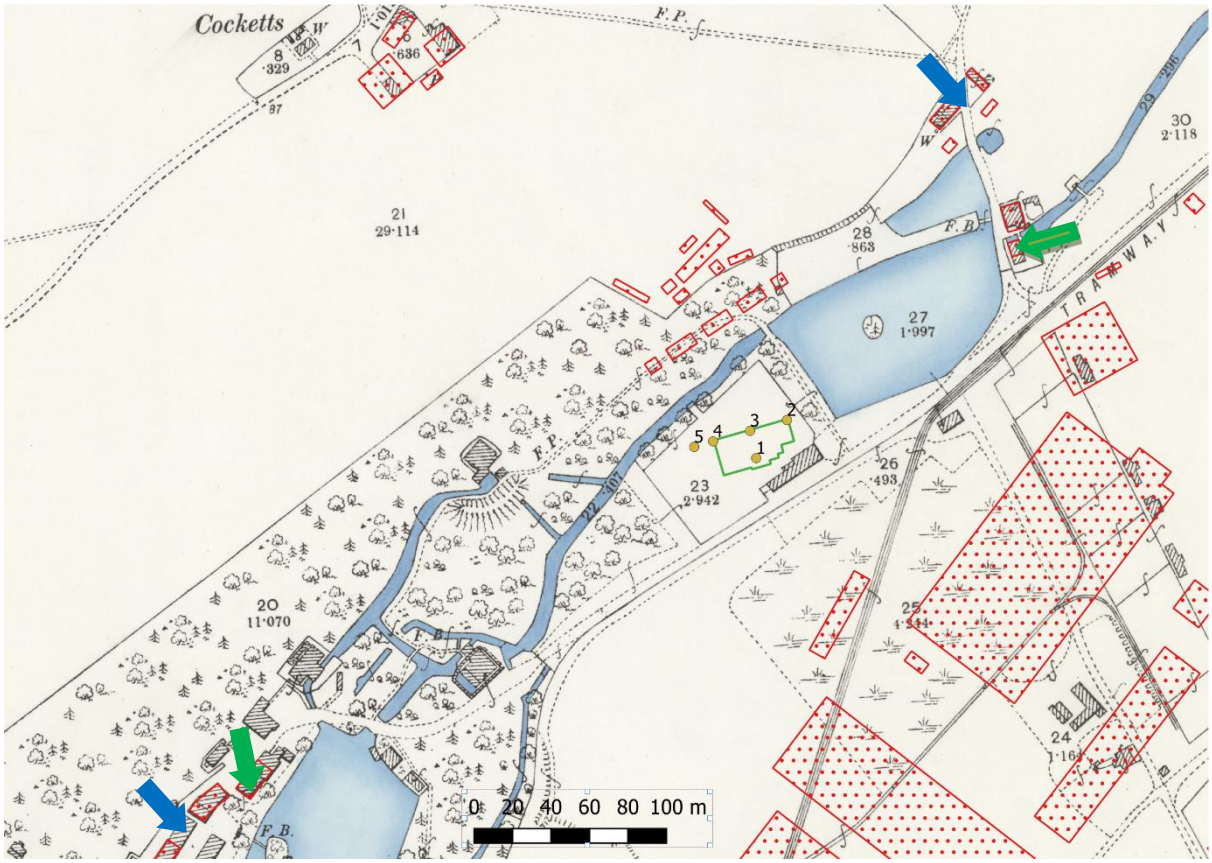
This map was downloaded from the National Library of Scotland. It is the Second Edition 1897, Surveyed 1865 and Revised 1896. *It is subject to the copyright stated on the NLS website which permits non-commercial use.*

Note on the 2500:1 maps at the resolution scanned by the National Library of Scotland 1 pixel corresponds to 0.32 metres on the ground and on paper 0.128 mm (0.005 inches) or hairline width.

The was aligned to reference points, which could be established as unchanged, with the OS Open map Buildings layer. A Helmert transformation couldn't be used as the map was somewhat distorted. The QGIS Polynomial 3 algorithm was used with about 20 reference points. This reduced most errors to less than 5 pixels, with a few larger (max 14 pixels). 1 pixel is equivalent to 0.32 metres on the ground. So these error correspond to less than 1.5 metres typically and 4 metres maximum.

Overall the alignment appears to be good. The OS Open Data Buildings Layer uses simplified building outlines. To further confirm alignment the map was compared with the LIDAR DSM and DTM models.

See next page which compares the OS 2500:1 1897 map and the map from the HER.



Initial Alignment of OS 25 inch map 1897

Blue Arrows show two of buildings used to align survey (32 and 15)

Green Arrows two of the buildings used to check alignmnets (33 and 16)

c) The Site Plan from the Conservation Plan (page 44)

This was aligned with the OS Open Data Buildings Layer with a Helmert Transformation. This showed some minor differences to the other maps. The cause of these errors was not clear and has been investigated, see next section. The Lidar DSM model would appear to show that at least some of the errors stem from the Ordnance Survey, rather than the Conservation Plan.

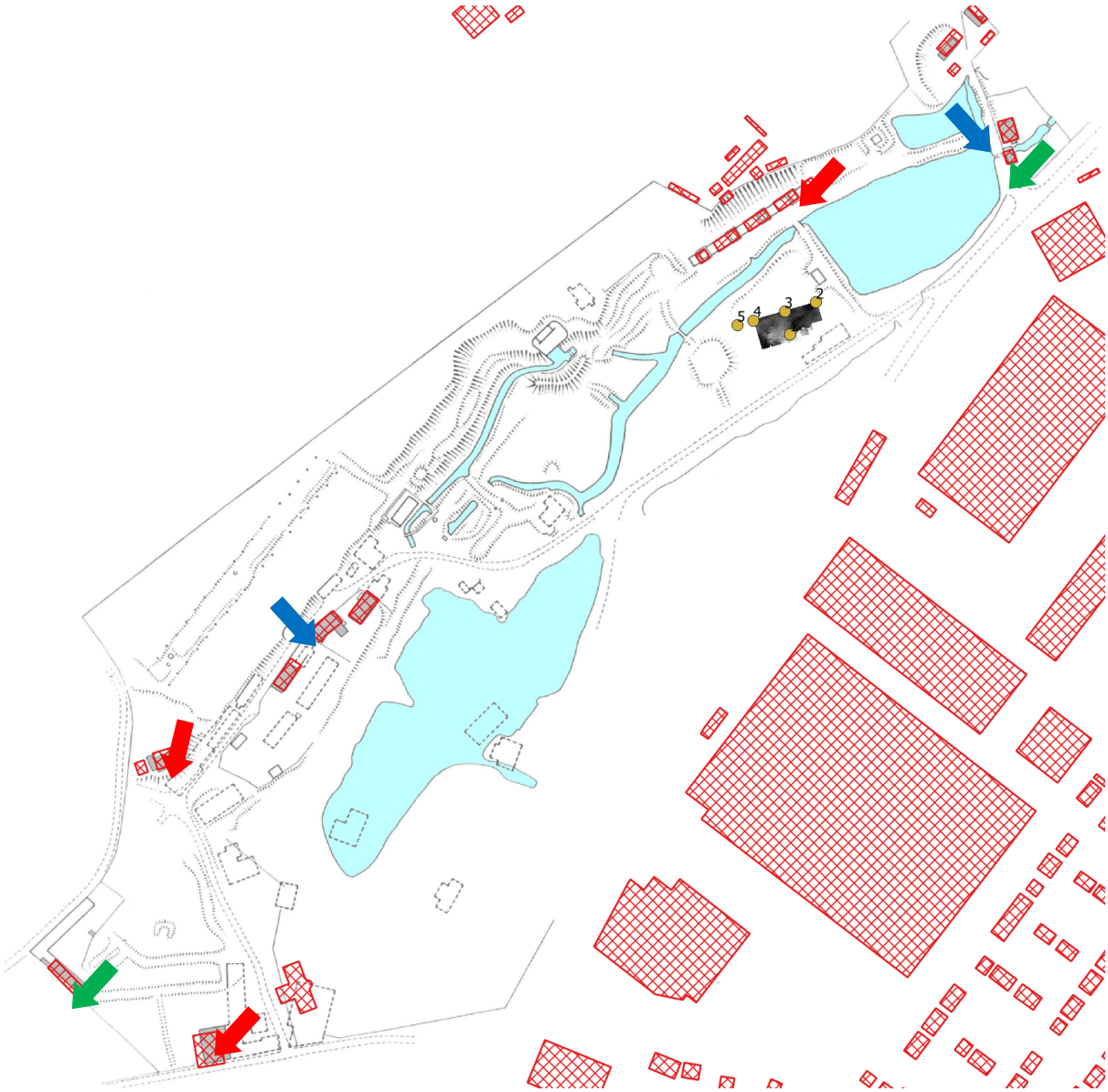


Figure 5 - Site Plan 1999 from the Conservation Plan (Page 44) – overlaid with OS Open Map Buildings Layer

Blue Arrows show buildings used to align plan (33, 15)
Green Arrows two buildings that can be used to check alignmnets (34, 15, 7)
Red Arrows show buildings that should align but don't (28, 9, 3)

d) Sorting out source of misalignment of the Incorporating Mills (Building - 28)

The following figure shows the Lidar DSM model coloured by height (Black < 2.4 m, yellow <9 m). Overlaid on this is the Ordnance Survey Open Data Building Layer. The Incorporating Mills have been part demolished/ collapsed. Originally there were four electric motor room, each with a mill on either side of it. Apart from the back wall in places everything above the mill floors is missing, but the floors are mostly intact. The Motor Rooms have all lost their floors. One of motor rooms and one mill has been reconstructed is roofed. The Lidar shows the building as row of orange, purple and yellow rectangles. The three purple squares are the missing motor room floors, the orange rectangles are the mill floors and the yellow the reconstructed building roof, back walls and overhanging trees. This image is offset from the buildings in the OS Open Data Building Layer, indicating that the OS data is wrong.

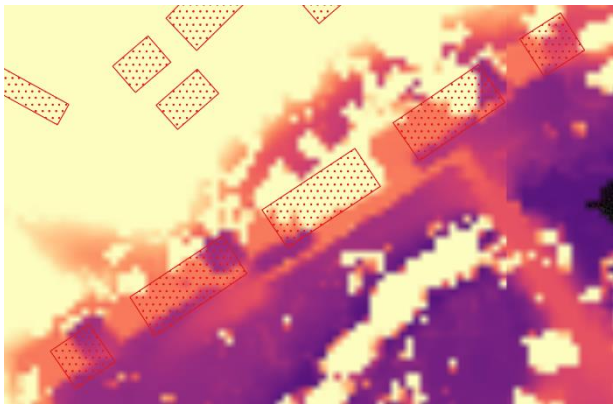


Figure 6 - OS Open Map Buildings Layer and LIDAR DSM

The following figure shows the site plan overlaid on the DSM data. This shows good alignment, even though it showing the motor rooms as intact.

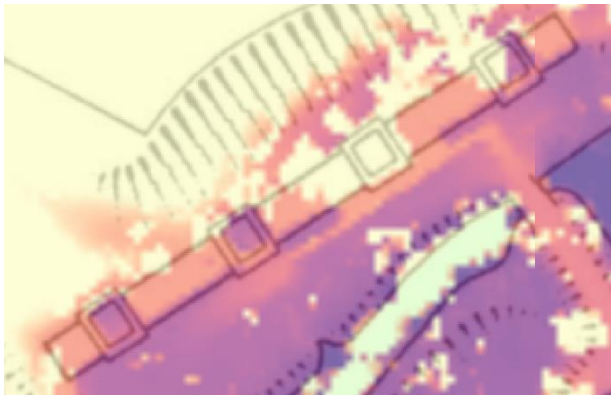


Figure 7 - Site plan and Lidar DSM data

Therefore in this case the OS Buildings Layer is incorrect and the Site Plan correct.

e) Misalignment of 9: Foreman's House and 3: Cartridge Packing Shed

The other two buildings when compared to Lidar DSM are correct on the Ordnance Survey Open Data but out of position on the site plan. These are well away from the site of interest, so not Alignment Confirmation Checks

Survey and Map Regression prior to creation of a Habitat Pond

f) HER Map and 1897 Map

To confirm the alignment of the 1897 map it was overlayed with the HER in QGIS. The 1897 map is shown with grey background with white lines to assist comparison.

The alignment error between the HER and the 1897 map at every point where it can be checked is less than 2 metres or 1.0 mm on the paper map.

In particular the paths to the East and South of the survey area are in good alignment despite no deliberate effort made to align these.

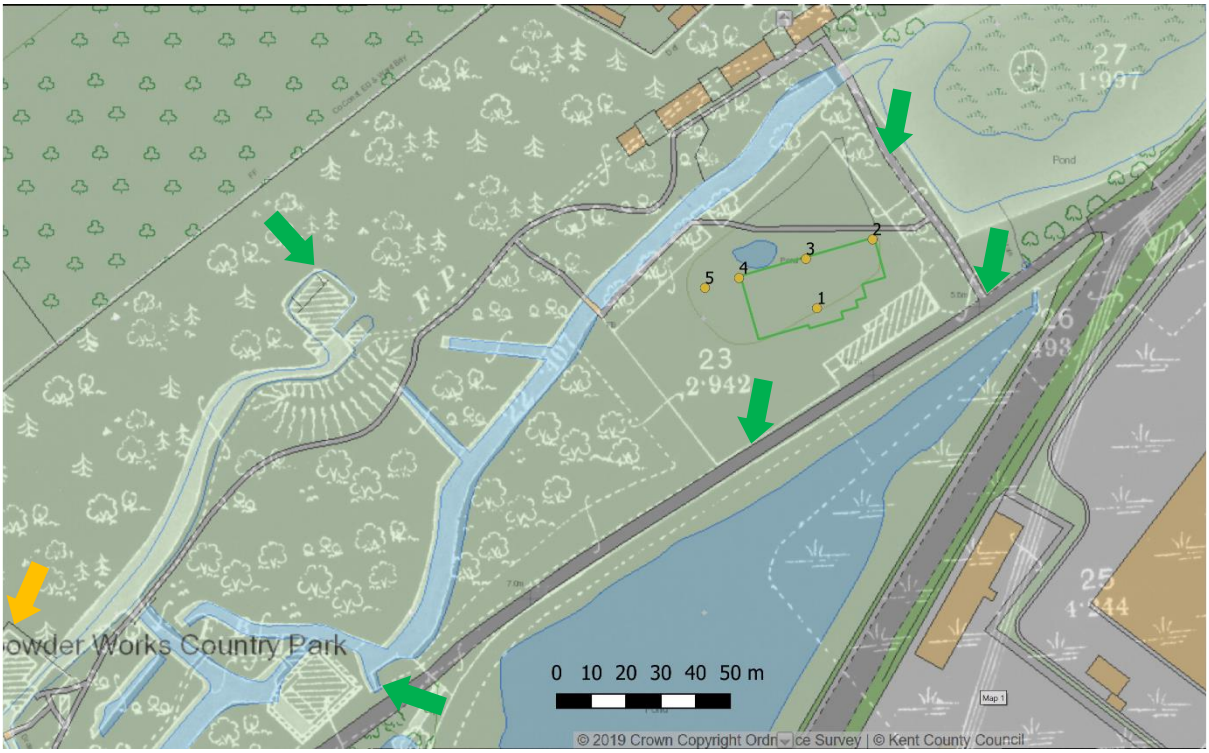


Figure 8 - HER Map and OS 1897 Map

Green Arrows show points show good alignement (better than 1 metre)
Yellow Arrow shows point of worst alignment (2 metres)

g) HER Map and LIDAR DSM

In QGIS we coloured the LIDAR DSM Model by height: Black 4.5 m, through Purple, Orange, Yellow 5.3 m and then overlaid the HER map we had previously aligned. The East west section of the path shows good alignment. The variation to the route of the path going past point 5 can be clearly seen. If you compare the resistivity survey with the LIDAR DSM data (includes vegetation) you will see some correspondence; but this is not the entire cause of variation.

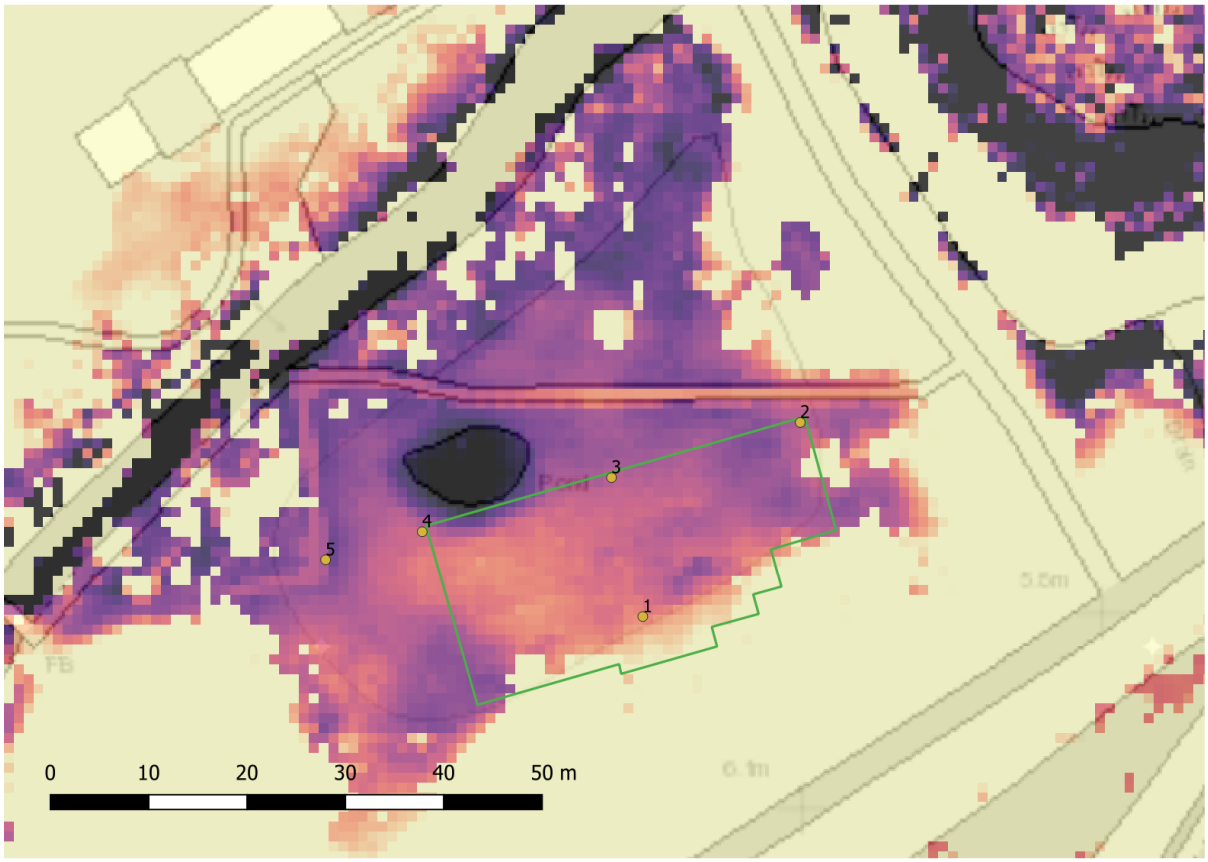


Figure 9 - LIDAR DSM and HER alignment showing height data

Survey and Map Regression prior to creation of a Habitat Pond

h) Conservation Report Site Plan and OS 1897 Map

To confirm the alignment of the 1897 map it was overlayed with the Site Plan in QGIS. The 1897 map is shown with grey background with white lines to assist comparison.

The alignment error between the Site Plan and the 1897 map at every point checked is less than 3 metres.

The Stables are misaligned by about 1.5 metres, depending on the corner measured,

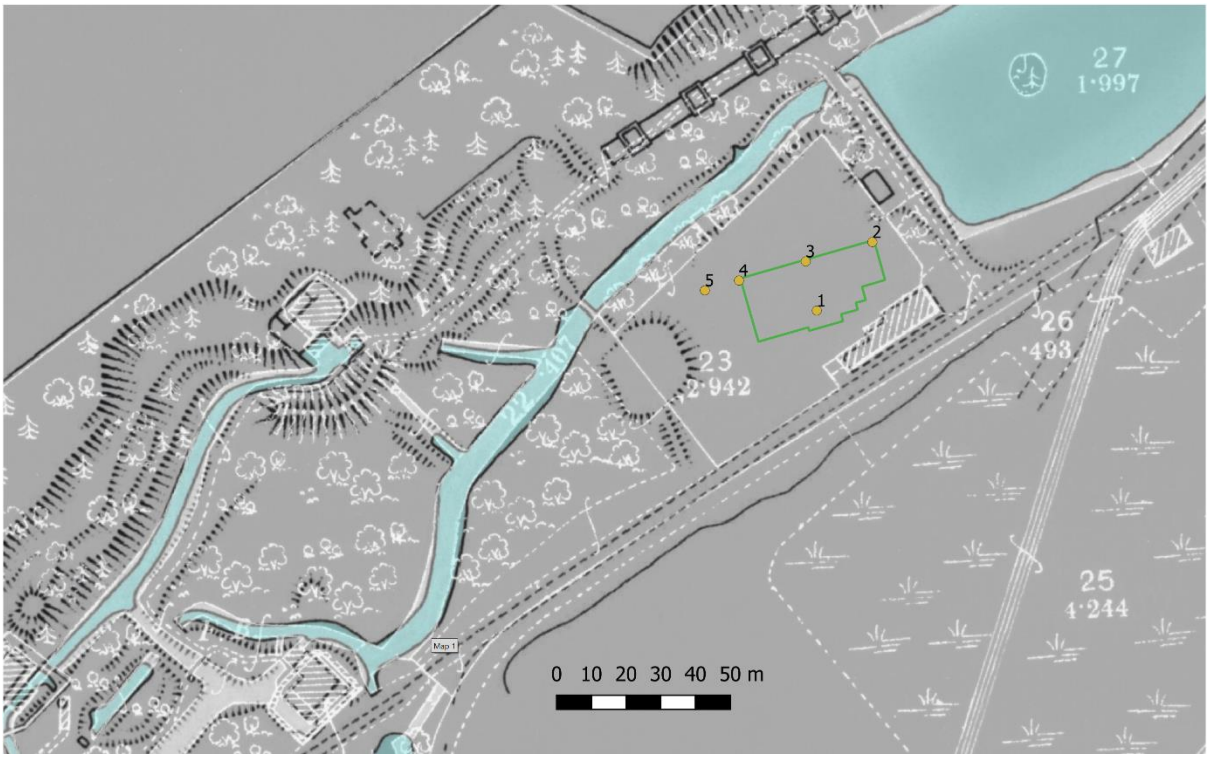


Figure 10 - Site Plan 1990 and OS 1897 Map

Survey and Map Regression prior to creation of a Habitat Pond

D. Final Composite with Resistivity data

The final plan includes the following layers listed from the top downwards:

- GNSS Receiver Surveyed Points
- Resistivity Survey
- Site Plan 1999 from the Conservation Plan (Page 44)
- 1867 OS 2500:1 Map – (Shown as Negative for clarity)

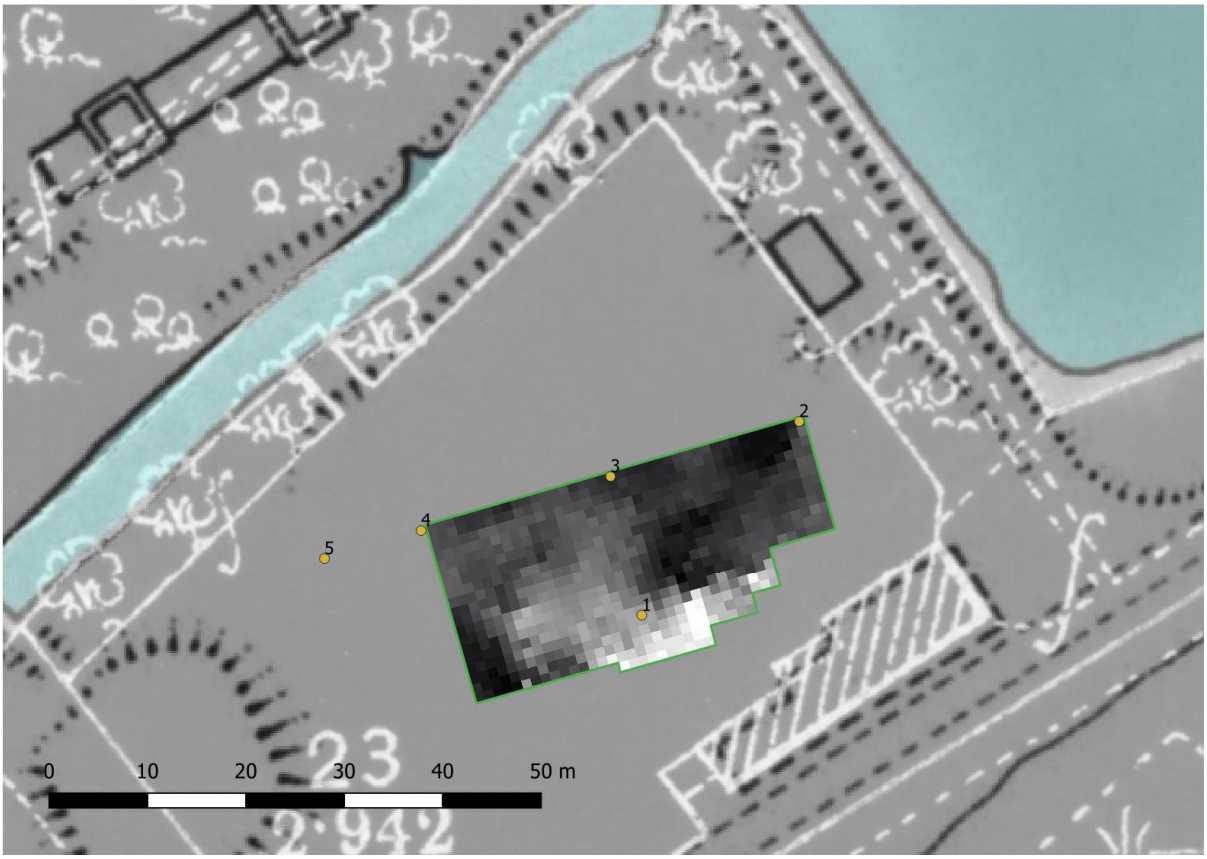


Figure 11 - Final Composite Plan

The shortest distance from the proposed centerpoint of the pond to the Stables Building is 14 metres on the OS 1865 map and 15.5 metres on the site plan.

E. LIDAR DTM Data

This uses DTM data from the National LIDAR Programme which is already Georeferenced.
File: TM_TR0060_P_10799_20161111_20161130.tif
From this two images were derived.
The first is a Hill-Shade image, Illumination Altiude 45 degreees, Azimuth 270 degrees and Z Factor 5.
The second is a Single Band Pseudocolour image from Black at 4.2 metres to Yellow at 6.3 metres.
Both are overlaid with a selection lines traced from the 1867 OS Map in QGIS.

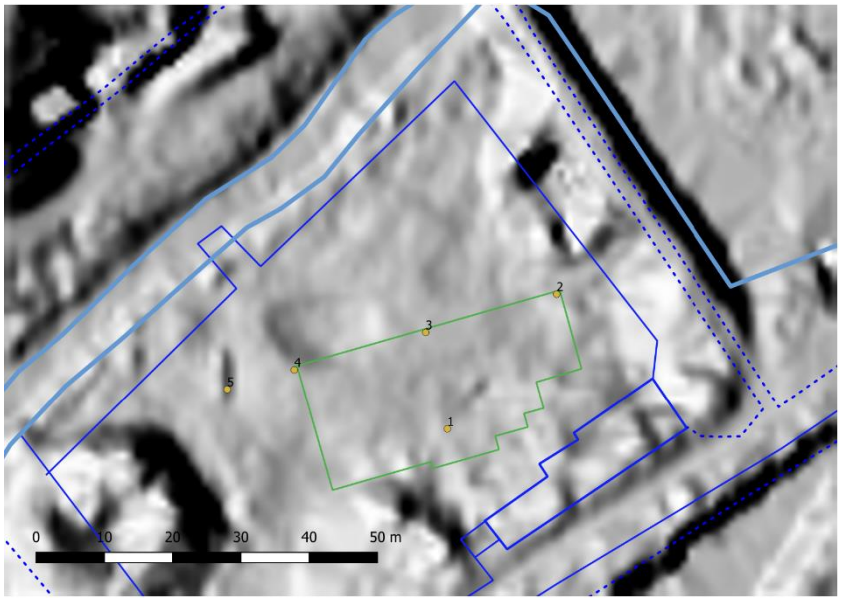


Figure 12 - LIDAR DTM Hill shaded image

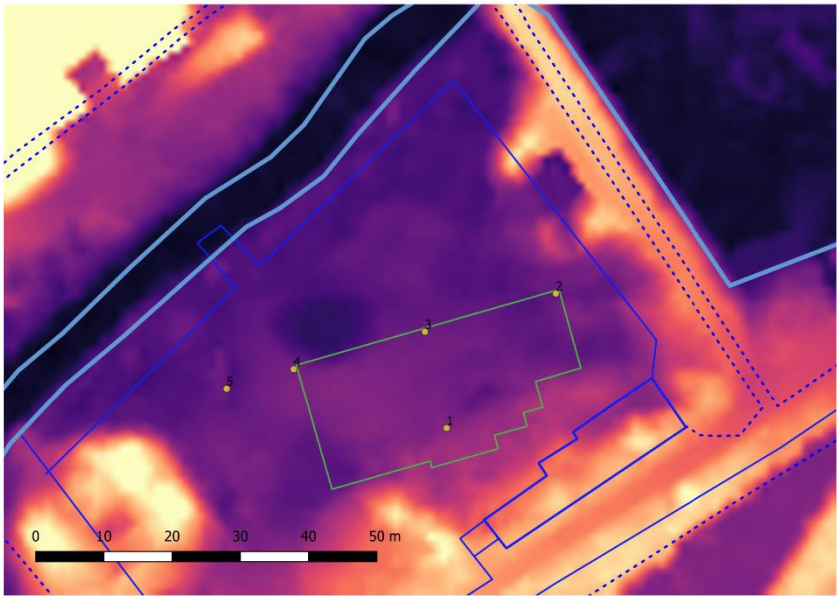


Figure 13 - LIDAR DTM Singleband Pseudocolor image

Both these images show mounds under the site of the building, inspection of the site shows a number of sizeable lumps covered in ivy, some of which are fallen trees, others might be building. However the steepness of access and the dense undergrowth preclude safe access to examine whether there is brickwork present.

The resistivity survey and LIDAR height data show some correspondance, but there are resistivity varaitions that are not expalined by the height data.

The following figures illustrate the correspondance.

- DTM data is the lowest height return from the LIDAR after it has been preprocessed to remove structures (i.e. The walkway in this instance).
- DSM data is the highest height return from the LIDAR. This includes sufficiently dense vegitation.

Both sets of LIDAR dats are colour scaled from 4.5 metres, black to 5.3 metres yellow.

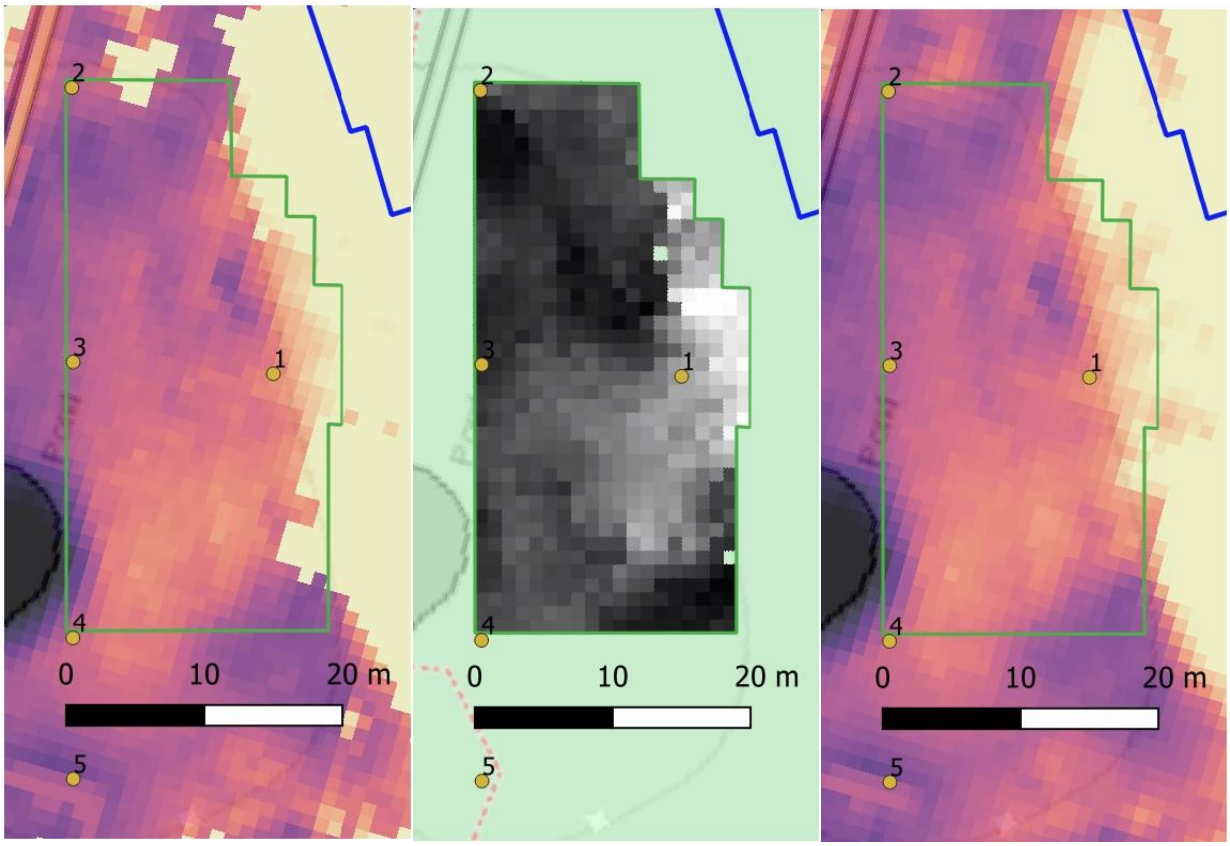


Figure 14 – DSM height, Resistivity Survey and DTM heights

Survey and Map Regression prior to creation of a Habitat Pond

F. Aerial Photo 1940

The 1940 Aerial Photo from Google Earth Historic Images shows the eastern section of the stables clearly, even though it has collapsed or been demolished. An attempt has been made to georeference the image using several different algorithms to both the 1897 OS map and the Site Plan, the final choice was Projective, the match is quite good at image centre, but not so good elsewhere.

The image is overlaid with lines traced from the 1897 map. This shows that the image shows the eastern end of the Stables.

Figure 15 – Aerial Photo 1940

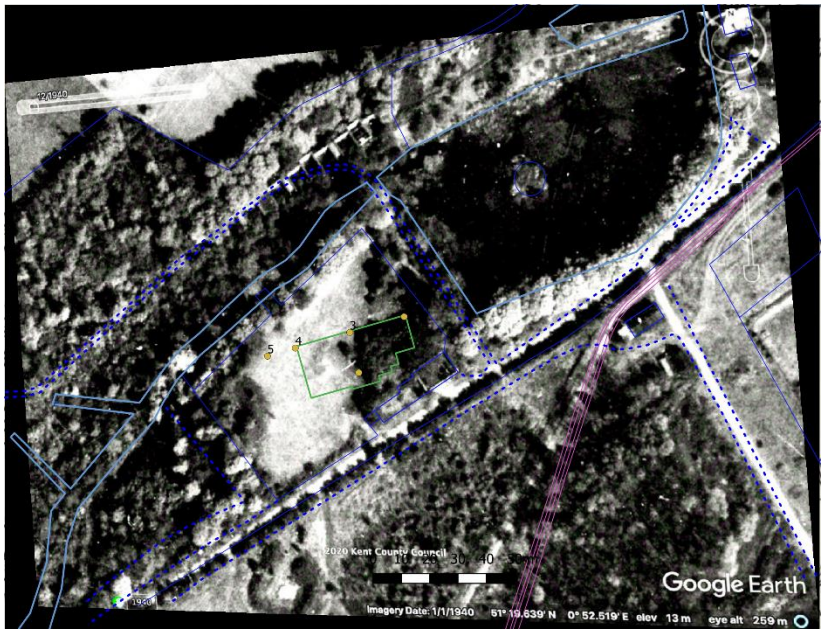


Figure 16 – Aerial Photo 1940 Georeferenced and Overlaid with OS 1897 lines

8. Conclusion

The map evaluation shows that it is not likely that any archaeological features related to the gunpowder works will be encountered at the proposed pond site, centred on grid reference 600478, 162524.

The resistivity survey shows that there is increased resistivity at the proposed pond site, but the highest readings are outside the area of the proposed pond. There are several plausible causes for the variation in reading. The survey is unable to distinguish between these possibilities.

- Some building rubble may be present on the site of the pond; rubble is present in many parts of the Gunpowder Works site.
- Variation in the dumped pond material.
- Variation of ground profile before the dumping of the pond material.
- Tree roots or variation in vegetation due to incursion into undergrowth.

Thank you for giving us the opportunity to perform this task and I hope the results prove to be of assistance to both Heritage England and the Friends of Oare Gunpowder Works.

John Clarkstone
Faversham Society Archaeology Research Group

10th May 2020

9. Acknowledgements

- Thanks to the Kent Archaeological Society (KAS) for the loan of the GNSS.
- Thanks to Fred Birkbeck of the KAS who worked the GNSS.
- Also, thanks to the members of Faversham Society Archaeological Research Group (FSARG) for their help in the provision and operation of the resistance survey equipment. And thanks to the Friends of Oare Gunpowder works who helped in this task.

10. REFERENCES

Ref 1: “Conservation Plan”
A CONSERVATION PLAN for the OARE GUNPOWDER WORKS, FAVERSHAM
Prepared for: GROUNDWORK MEDWAY SWALE
By: BROADWAY MALYAN CULTURAL HERITAGE©
January 2000

“Friends of Oare Gunpowder Works”
http://www.gunpowderworks.co.uk/gunpowderworks

11. Photographs

Photo 1: Re-establishing the baseline from the original measurements. (Feb 2020)

Note: The ground was much drier at the time of the original survey. It was not muddy and there was no standing water, though the surface was damp.

Photo 2: A 180 Degree Panorama of site with a person standing approximately at the centre of the proposed pond site. (Feb 2020)

Note: the red marker is at the centre of the survey grid baseline.

Photo 3: Proposed Pond Site April 2020 – with estimated position of pond site

Photo 4: Site of Stables April 2020, looking West South West from path – With estimated position of stables 10 metres from camera position, 4.5 metres from path to left of image and 8 metres wide.