

FANE ROAD ARCHAEOLOGY GROUP (FRAG)



ARCHAEOLOGICAL SURVEY RESULTS AND ANALYSIS FRAG 17-1/RA-1

GEOPHYSICAL RESISTIVITY SURVEY RESULTS AND ANALYSIS - ITTER PARK GEOPHYSICAL TRAINING (FRAG 17-1)

by

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1. **Introduction.** Geophysical training was delivered to both Fane Road Archaeology Group (FRAG) and Fenland Young Archaeologists' Club (YAC) members on 6 May 17 consisting of a single resistivity survey, the purpose of which was to:

- 1.1. Present a basic overview of geophysical resistivity survey procedures.
- 1.2. Acquaint participants with both the Geoscan Research RM85 Resistance Meter System and PA20 Probe Array assembly, and Geoscan FM256 Fluxgate Gradiometer.
- 1.3. Teach the principles of setting out a geophysical survey grid.
- 1.4. Teach the principles of conducting a geophysical survey.
- 1.5. Provide a hands-on geophysical resistivity survey experience.

2. **Site Details.**

2.1. **Location.** Itter Park is situated within the residential area and electoral ward of Paston within the City of Peterborough, just north of the A47 (Soke Parkway) and straddles National Grid Reference (NGR) squares TF 1801 and TF 1802 (Figure 2.1).

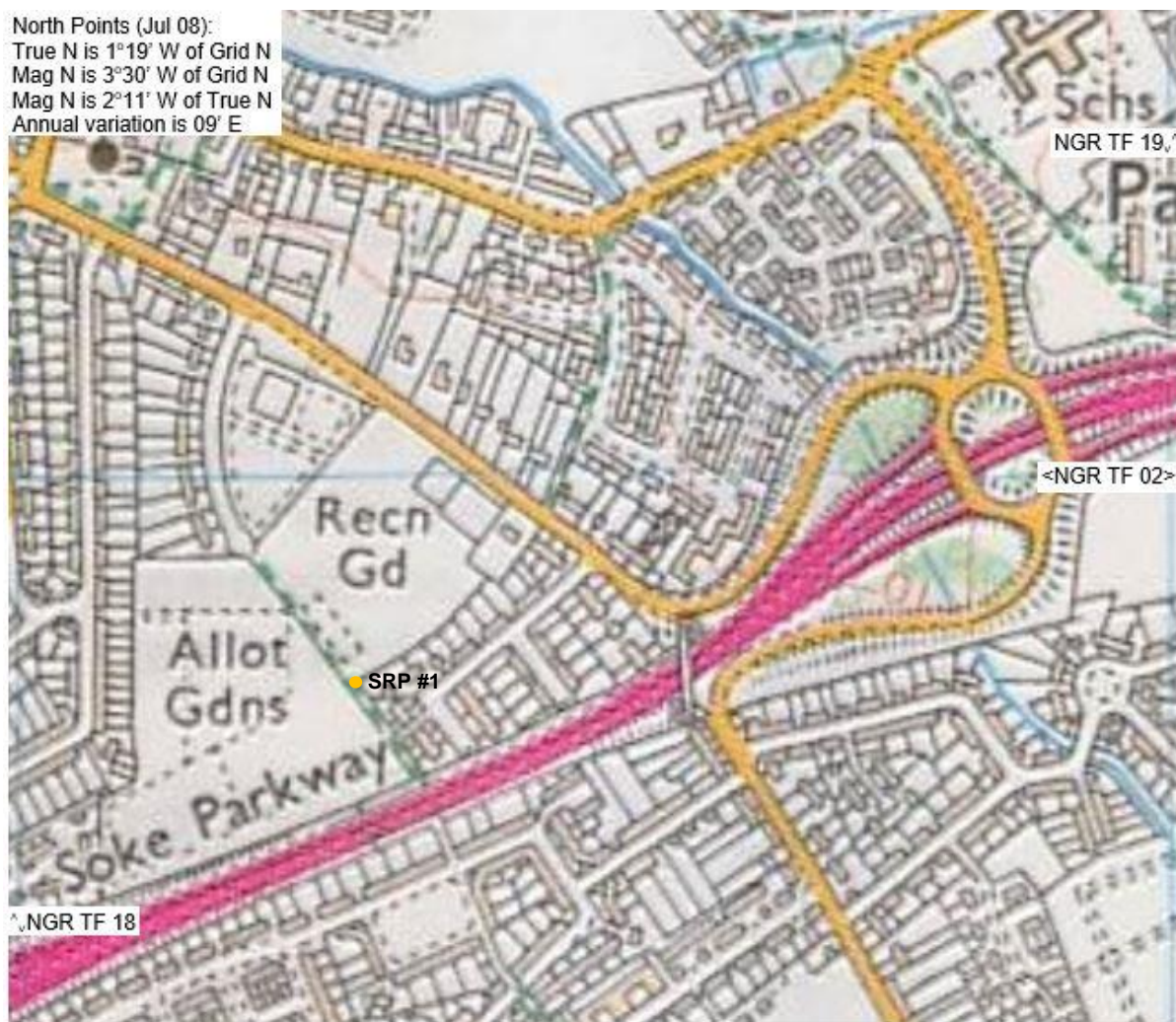


Figure 2.1: Itter Park Site (Ordnance Survey, 2006)

2.2. **Site Benchmark (SBM).** In order to allow an initial grid of 60m x 40m on a north alignment, and allowing for expansion of this grid to encompass the full site of the southern open recreational area of Itter Park, it was necessary to set the SBM at TF 18290 0185; being 27.9m from SRP #1 on a bearing of 345° (15°W).

2.3. **Geology.** The site is located on a bedrock of Cornbrash Formation-Limestone with superficial deposits of Undifferentiated River Terrace Deposits comprising sand and gravel with lenses of silt, clay or peat (Figure 2.2).

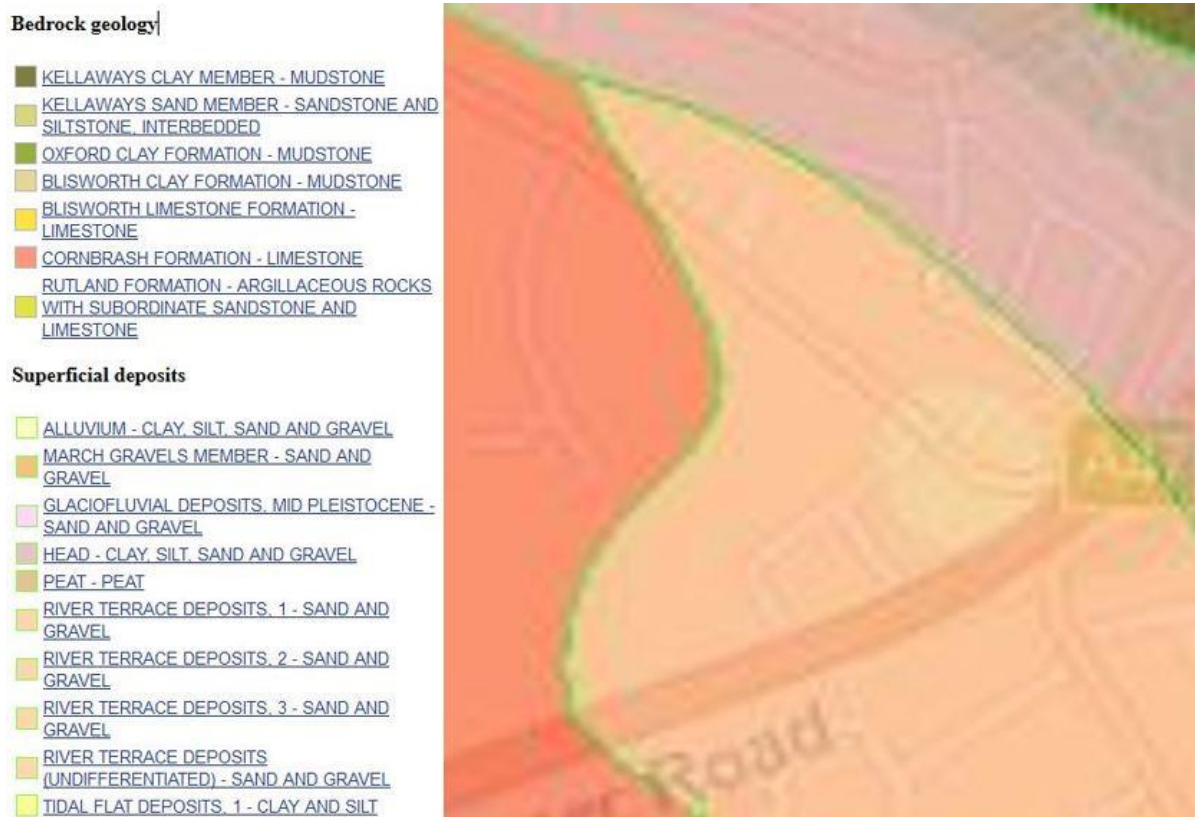


Figure 2.2: Site Geology (British Geological Survey, 2017)

2.4. **Protection.** Itter Park is not listed nor are there any listed buildings or structures within the boundary. The site is not within a conservation area.

2.5. **Land Use.** Itter Park is currently used for recreational purposes. It consists of two distinct areas; north - comprising formal gardens, recreational spaces and coffee kiosk, and south - comprising open space, enclosed play area, basketball area, enclosed tennis courts, football pitches (seasonal) and club-house. The training survey was undertaken in the southwest of the southern open area.

2.6. **Utilities.** A high pressure gas pipeline is known to traverse on a northeast-southwest axis through the south/east of the survey area (Figure 2.3).

2.7. **Historical Background.** The boundaries of the south area, the boundary dividing the north and south areas, and the northeast boundary of the north area are historic and pre-date 1885. The west boundary of the north area was created between 1927 and 1938. The presence of a dew pond and field numbering on OS Maps suggest that the land was previously pasture until at least 1926.

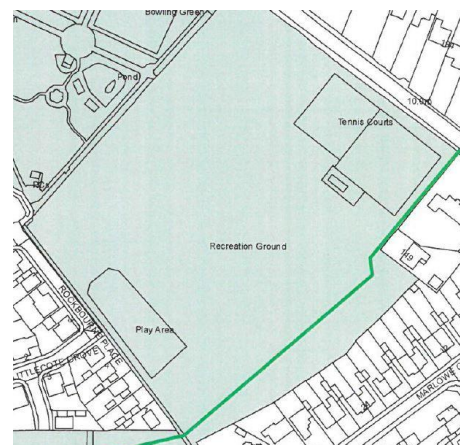


Figure 2.3: High Pressure Gas Pipeline (National Grid, 2017)

3. **Methods.**

3.1. **Survey Grid.** An initial survey grid was established which extended 60m east and 40m north from the SBM on a north-south alignment (Figure 3.1). The survey grid clipped

the southeast corner of the enclosed play area and encompassed the basketball area. The survey grid was divided into 20m² with a subsequent 20m² being added to the south of the southwest square. Each square was then allocated a unique reference number; A2 and A3 were not surveyed.



Figure 3.1: Geophysical Survey Grid (Google Earth, 2016)

3.2 **Topographical Survey.** No topographical survey was undertaken.

3.3. **Resistivity Survey.** The survey was carried out using the Geoscan Research RM85 Resistance Meter System and PA20 Probe Array assembly. The survey sequence was B1, B2, B3, C1, C2, C3 and A1. Each grid consisted of twenty traverse lines with readings being taken at one metre intervals along each traverse. The traverses in each grid square started in the SW corner and followed a north-south zig-zag pattern to end in the SE corner. The Survey Record Sheet is at Annex A.

3.4. **Magnetometry Survey.** No magnetometry survey was undertaken.

3.5. **Field Walking Survey.** No field walking survey was undertaken.

4. **Results.** Survey data was imported into Snuffler (version 1.21) and the resultant data plots presented in Figures 4.1 to 4.4 are displayed in greyscale, other display options are at Annex B:

black = low resistance; pits, ditches, clay dumps
white = high resistance; walls, rubble, paving areas

red = areas not surveyed

4.1 - Raw Data Plots. Raw data plots are provided in pairs (Figures 1a and 1b); the first plot without grid lines in order to present an uninterrupted picture, the second plot with grid lines in order to aid with orientation.

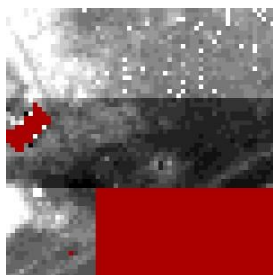


Figure 4.1a: Raw data

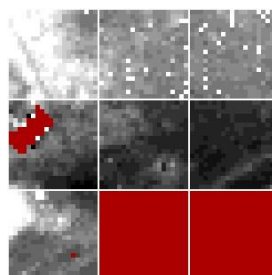


Figure 4.1b: Raw data, grid

4.2 - Corrected Data Plots. Corrected data plots are provided in pairs (Figures 2a and 2b); the first plot without grid lines in order to present an uninterrupted picture, the second plot with grid lines in order to aid with orientation. Correction to the raw data has been through the application of clip, de-spike and edge correction.

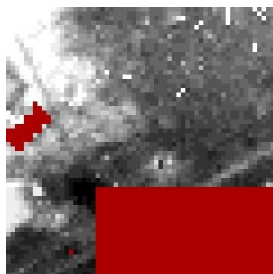


Figure 4.2a: Corrected data

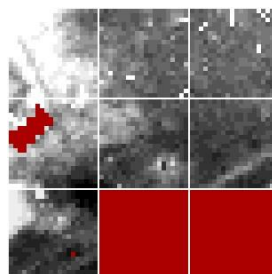


Figure 4.2b: Corrected data, grid

4.3 - Filtered Data Plots. Filtered data plots are provided in pairs; (Figures 3a and 3b) the first plot without grid lines in order to present an uninterrupted picture, the second plot with grid lines in order to aid with orientation. They were first filtered by the application of interpolate (x2).

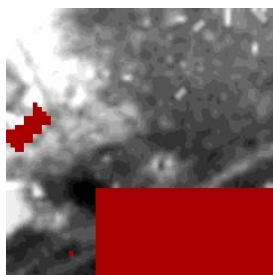


Figure 4.3a: First Filtered data

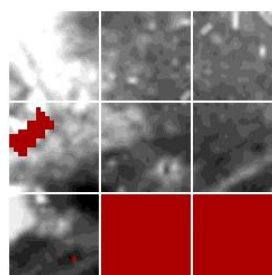
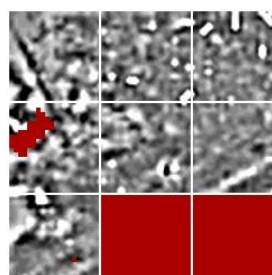
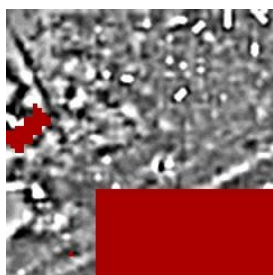


Figure 4.3b: First Filtered data, grid

The data plot in Figure 3 was subsequently filtered further by the application of remove geology and sharpen (Figures 4a and 4b).



5. **Analysis.** The results in Figure 4.3a and 4.4a show a number of distinct anomalies of both high and low resistance. These are contrasted through the differing application of filters in each figure. Of significant interest are:

5.1. The corner of the enclosed play area can be clearly seen as a high resistance feature bounded by low resistance linear features on the west edge of the of the B1/C1 juncture.

Figure 4.4a: Second Filtered data WFigure 4.4b: Second Filtered data, grid
rea is clearly visible as a west-southwest - east-northeast linear feature of weak high resistance in the southeast corner of the A1 and reappearing as strong high resistance in the southern half of B3.

5.3. The dew pond evident on the early OS maps appears as a strong low resistance anomaly at the juncture of A1/A2/B1/B2. This is clearly geological as there is no evidence of the dew pond in Figure 4.

5.4. The strong high resistance mass in C1 is predominantly geological as, again, there is no evidence of this in Figure 4. The weak low resistance north-northwest - south-southeast cut in this mass is clearly evident as a strong low resistance linear anomaly that extends in to B1 in Figure 4. There is no apparent relationship to other features or anomalies and warrants further surveying north and west of C1 in order to determine the extent of this anomaly.

5.5. The weak high resistance mass in the northwest corner of A1, bounded by strong high resistance anomalies is suggestive of structure rather than geology. Further surveying to the west of A1, along with magnetometry survey is warranted.

5.6. The weak high resistance linear anomaly in A1 on a southwest - northeast alignment north of the gas pipe re-appears as a very weak low resistance anomaly in B2 and B3. Although its proximity to the gas pipe suggests an association, the differing alignments merit further interest.

5.7. The six rectangular strong high resistance anomalies in C2/C3 measure between 3-4m in length and all but one are 2m in width; the other being 1.5m. Resurvey of these grids with shorter traverse intervals and magnetometry survey should be considered in the first instance.

6. **Summary.** The training survey on the whole was a success and achieved the purposes specified in para 1. Additionally, whilst the survey was undertaken for training purposes, the results revealed several anomalies of interest, specifically; the strong low resistance north-northwest - south-southeast linear anomaly in C1 and extending in to B1, the weak high resistance mass in A1 and the six rectangular strong high resistance anomalies in C2 and C3.

ANNEXES

- A. Survey Record Sheets.
- B. Additional Data and Composite Plot Display Options.

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