

**Abbey House Gardens  
Malmesbury  
Wiltshire**

**GROUND PENETRATING RADAR SURVEY REPORT**

for

**Martin Leay Associates**

David Sabin and Kerry Donaldson

March 2021

Ref. no. J850

ARCHAEOLOGICAL SURVEYS LTD

**Abbey House Gardens  
Malmesbury  
Wiltshire**

Ground Penetrating Radar Survey Report

for

**Martin Leay Associates**

Fieldwork by David Sabin (Hons) MCIfA

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Survey date - 22<sup>nd</sup> February 2021

Ordnance Survey Grid Reference - **393402 187371**



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## SUMMARY

Archaeological Surveys Ltd carried out a ground penetrating radar survey to the east of Abbey House, Malmesbury, Wiltshire. The survey was limited to paths between garden beds and, as a consequence, interpretation is limited. The results demonstrate the presence of a thick topsoil layer across most of the site underlain by horizons containing features or layers of archaeological potential, generally at 0.6m – 0.8m and extending to a depth of approximately 1.5m deep. A possible wall and former surface or floor were located in the northern part of the area as well as evidence of potential structural remains or debris. Reflections possibly indicative of a former wall and debris were also located in the western part of the site. An area of complex reflections immediately to the north of the circular herb garden could also be related to structural debris, although an area of deep ground make-up or former garden feature is also possible.

## 1 INTRODUCTION

### 1.1 *Survey background*

- 1.1.1 Archaeological Surveys Ltd was commissioned by Archaeology & Planning Solutions, on behalf of Martin Leay Associates, to undertake a ground penetrating radar survey (GPR) at Abbey House in Malmesbury, Wiltshire. The survey aims to provide information on the archaeological potential of land likely to be disturbed by development of a new events building to the east of the house. The survey area lies within a scheduled monument comprising the Benedictine Monastery known as Malmesbury Abbey.
- 1.1.2 In order to carry out the GPR survey within the scheduled area, a licence, under Section 42 of the 1979 Ancient Monuments and Archaeological Areas Act (as amended by the National Heritage Act 1983) was granted by Hugh Beamish, Assistant Inspector of Ancient Monuments at Historic England.

### 1.2 *Survey objectives and techniques*

- 1.2.1 The objective of the survey was to use GPR to locate geophysical anomalies that may be archaeological in origin so that they may be assessed prior to development of the site. The methodology is considered an efficient and effective approach to archaeological prospection.
- 1.2.2 Geophysical survey can provide useful information on the archaeological potential of a site; however, the outcome of any survey relies on a number of factors and as a consequence results can vary. The success in meeting the aims and objectives of a survey is, therefore, often impossible to predetermine.

### 1.3 Standards, guidance and recommendations for the use of this report

- 1.3.1 The survey and report follow the recommendations set out by: European Archaeological Council (2015) *Guidelines for the Use of Geophysics in Archaeology*; Institute for Archaeologists (2002) *The use of Geophysical Techniques in Archaeological Evaluations*. The work has been carried out to the Chartered Institute for Archaeologists (2014) *Standard and Guidance for Archaeological Geophysical Survey*. Note: currently Historic England (2018) no longer support the guidelines set out in English Heritage (2008) *Geophysical survey in archaeological field evaluation* and there are currently no plans to update the document. As a consequence other sources of written guidance referring to this document may be out of date and/or contain unsupported information (e.g. Chartered Institute for Archaeologists, 2014).
- 1.3.2 Archaeological Surveys Ltd carries out ground penetrating radar surveys under a Wireless Telegraphy Act licence from Ofcom (No. 078907/01). It is operated in accordance with Ofcom regulations (OfW 350 Requirements and Guidance Notes for Ground Probing Radar).
- 1.3.3 Archaeological Surveys Ltd provide a detailed geophysical survey report and it is recommended that where possible the contents should be considered in full. The Summary provides a brief overview of the results with more detail available in the Discussion and/or Conclusion. The *List of anomalies* within the Results provides a detailed assessment of the anomalies within separate categories which can be useful in inferring a level of confidence to the interpretation. Quality and factors influencing the interpretation of anomalies is also set out within the results.
- 1.3.4 It is recommended that the full report should always be considered when using data and interpretation plots; where this is not possible, in the field for example, the abstraction and interpretation plots should retain their colour coding and be used with a corresponding legend.
- 1.3.5 Where targeting of anomalies by excavation is to be carried out, care should be taken to place trenches over solid lines or features visible on the abstraction and interpretation plots. Archaeological Surveys abstraction and interpretation avoids the use of dashed or dotted line formats, and broken or fragmented lines used in interpretive plots may well correspond closely with truncation of archaeological features.

### 1.4 Site location, description and survey conditions

- 1.4.1 The site is located within the gardens immediately east of Abbey House, Malmesbury, Wiltshire. It is centred on Ordnance Survey National Grid Reference (OS NGR) 393402 187371 which is a central point within the site located a short distance to the east of Abbey House, see Figs 01 and 02.
- 1.4.2 The geophysical survey covers approximately 230m<sup>2</sup> of garden paths split into 9 separate survey areas (Areas 1 – 9). The paths are located between garden



beds and the surface material is a fine gravel, mainly well compacted but less compacted in Areas 7 – 9 (the circular herb garden). The garden beds were unsurveyable due to plant cover, shrubs and trees. The area is mainly flat although within the southern part of the site around the periphery of the circular herb garden, there appears to be some ground make-up. The herb garden itself is approximately 0.6m lower and this may be a product of some lowering of the soil inside the feature combined with make-up around the periphery. The northern boundary of the site is defined by a brick wall with land immediately to the north falling away steeply into the River Avon valley; paths have been terraced in to the valley side to the north. The site is located immediately east of the cafe attached to Abbey House and approximately 15m east of the house itself.

- 1.4.3 The ground conditions across the site were generally considered to be favourable for the collection of GPR data. The weather during the survey was initially wet followed by fine conditions.



*Plate 2: Survey Area 1 looking east*



*Plate 1: Survey Area 2 looking east*



*Plate 3: Survey Area 3 looking north*



*Plate 4: Looking towards survey areas from the circular herb garden*

## 1.5 Site history and archaeological potential

- 1.5.1 The survey area lies at the north eastern edge of the wider scheduled monument *Benedictine monastery known as Malmesbury Abbey* (List entry no: 1010136), which has 7<sup>th</sup> century origins, with several phases of building but the current buildings date to the 12<sup>th</sup> century. The monastic buildings, none of which are now upstanding, stood on the north side of the church and consisted of the cloister immediately north of the church with the frater beyond, the chapter house to the east of the cloister and the dorter north of the chapter house, stretching east in the area now occupied by the 16<sup>th</sup> century Abbey House. A major part of this building's undercroft belonged to the rere-dorter of the abbey and the house was built by clothier William Stumpe after he bought the site after the dissolution of the abbey in 1539.
- 1.5.2 Previous geophysical survey within the proposed survey area identified high resistance anomalies that could be consistent with the foundations of substantial ranges of buildings, however it is possible that they could relate to garden features of a more recent date (Bartlett, 1996).
- 1.5.3 The location of the site within the scheduled area and the existence of high resistance responses within the survey area indicates that there is a high potential for the site to contain archaeological features. However, modern landscaping and groundworks associated with the garden could also result in anomalies at depth.

## 1.6 Geology and soils

- 1.6.1 The underlying solid geology across the site limestone from the Cornbrash Formation (BGS, 2017).
- 1.6.2 The overlying soil across the survey area is from the Sherborne association and is a brown rendzina and which consists of a shallow, well drained, brashy, calcareous clayey soil over limestone (Soil Survey of England and Wales, 1983).

# 2 METHODOLOGY

## 2.1 Technical synopsis

- 2.1.1 Ground penetrating radar systems transmit an electromagnetic wave into the ground and record the time delay and amplitude of reflections from buried features. Reflections occur from changes in conductivity or dielectric permittivity.
- 2.1.2 Electromagnetic waves are increasingly attenuated as frequency increases and, therefore, lower frequencies provide greater penetration into the subsurface. However, the longer wavelengths associated with lower frequencies reduce the resolution of buried features. Typical frequencies chosen for archaeological

prospection are around 500 and 200 MHz.

## 2.2 *Equipment configuration and data collection*

- 2.2.1 Ground penetrating radar data were acquired using an Utsi Electronics Groundvue 3A system running with a 400MHz shielded antenna. The system utilises a wheeled encoder system on a small cart. A dielectric constant of 10 was used in the field to set up the instrument and view data. The value is for display purposes only and does not affect the recorded data.
- 2.2.2 A value of 80ns (nanoseconds) was chosen for the time sweep (two way GPR signal travel time) in order to balance potential depth of penetration and resolution.
- 2.2.3 Data were collected from scans recorded at 0.0295m along traverses separated by 0.25m. The data captured along each traverse were logged to an internal disk drive to allow further processing and analysis.

## 2.3 *Survey referencing and base mapping*

- 2.3.1 Ground penetrating radar data were collected along traverses originating from separate baselines forming 9 separate survey blocks (Areas 1 - 9), see Figure 02. The start position for each traverse along the baseline from the start point or origin was measured using a hand tape. A parallel tape was used as a guide to ensure that traverses were surveyed perpendicular to the baseline and parallel to adjacent traverses.
- 2.3.2 Baselines for Areas 1 – 6 were referenced to mapped topographic features such as wall corners and the outer corners of garden beds. Areas 7 – 9 were surveyed to the OSGB36 datum using a Leica GS10 RTK GNSS. The GNSS is used in conjunction with Leica's Smartnet service, where positional corrections are sent via a mobile telephone link. Positional accuracy of around 10 – 20mm is possible using the system.
- 2.3.3 Digital topographic survey base mapping was supplied by the client.

## 2.4 *Data processing and presentation*

- 2.4.1 Ground penetrating radar data were analysed using REFLEX v9.1 software. Each traverse was analysed as an individual profile to allow a manual assessment of anomalies. In addition, profiles across each survey area were combined and processed in order to create time slices showing the variation in reflector amplitude at various depths. The following processing has been carried out on GPR data captured during this survey:
- background removal - improves the appearance of the data by removal of strong horizontal bands,
  - gain - increased with time in order to amplify weaker reflections from deeper

features,

- bandpass filtering - lowers noise by the removal of energy below 200MHz and above 800MHz.

- 2.4.2 Time slices were analysed using both absolute and envelope reflectivity strengths. The latter use a square root function of the energy at an instant in time and is generally the preferred option; however, occasionally the absolute values provide more detailed anomalies.
- 2.4.3 An abstraction and interpretation plot has been produced for significant anomalies located by the survey. Approximate depth to anomalies has been added along with reference numbers in order to aid the written description of the results.
- 2.4.4 The main form of data display prepared for this report is the colour scale plot derived from Reflex as TIF files. Generally blue shades indicate very low amplitude reflections with green and yellow relating to mid range reflections and red indicative of high amplitude reflections.
- 2.4.5 Anomalies are abstracted using colour coded points, lines and polygons. All plots are scaled to landscape A3 for paper printing.
- 2.4.6 The raster images are combined with base mapping using ProgeCAD Professional 2020 creating DWG file formats. All images are externally referenced to the CAD drawing in order to maintain good graphical quality. A digital archive, including raster images, is produced with this report, see Appendix D below.

## 3 RESULTS

### 3.1 *General assessment of survey results*

- 3.1.1 The GPR survey located linear, discrete and complex anomalies within the survey areas. The majority of these cannot be confidently interpreted due to the limited coverage along pathways between beds and the characteristics of the GPR reflections; however, given the location of the site within a scheduled monument, all anomalies that lie underneath the garden topsoil could be of archaeological potential. Several shallow anomalies are associated with features of modern origin such as drains.
- 3.1.2 An average GPR wave velocity of 0.08m/ns was calculated using hyperbola matching. There were very few clear hyperbolae that could be used for the analysis, but the velocity would be consistent with the damp clay soil likely to exist below the improved topsoil.

### 3.2 *Statement of data quality and factors affecting the interpretation of anomalies*

- 3.2.1 The GPR data were collected with due consideration given to surface conditions, obstructions and area constraints. GPR signals appear to have achieved moderate penetration within all survey areas and maximum depth is likely to be approximately 1.5m - 2m. Surfaces were mainly well compacted fine gravel, although less compacted gravel within Areas 7 – 9 may have produced increase noise due to less efficient antenna coupling.
- 3.2.2 The restriction of the survey to paths between garden beds has provided limited coverage of the site and as a consequence interpretation is limited. Time slices were produced to allow an assessment of anomaly depth and plan, but they are of limited use in assessing the extent of anomalies due to the physical restrictions to the survey areas. Abstraction and interpretation is also reliant on assessment of GPR profiles.

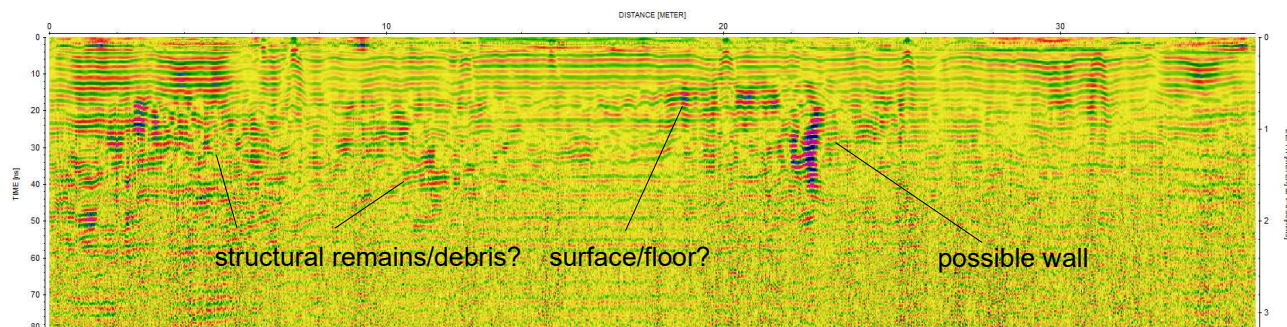
### 3.3 *Data interpretation*

- 3.3.1 An assessment of anomalies located within each area is set out below. Example GPR profiles have been included and numbered anomalies should be cross referenced to Fig13. Shallow anomalies relating to the recent use of the site have not been abstracted for clarity.

### 3.4 *Area 1 – northern path*

Area 1 centred on OS NGR 393400 187374, see Figs 3-13 and Radargram 1.

- 3.4.1 A clear linear anomaly **(1)**, oriented north to south, with an approximate width of 1m was located in the eastern part of the survey area. The feature could be consistent with former wall remains, GPR profiles indicate a depth of 0.6m with an increase in width at 0.9m. This may indicate wider foundations starting at 0.9m deep with some narrower wall material representing a lower course approximately 0.3m thick. Immediately to the west of this feature there is a zone of strong planar reflections at approximately 0.6m deep that become more variable and complex further to the west **(2)**; it is possible that this indicates a former surface or floor associated with **(1)**. Within the western part of Area 1, further reflections at approximately 0.8m deep **(3)** may indicate structural debris although this does not resolve to a coherent feature and may, therefore, be a buried layer.

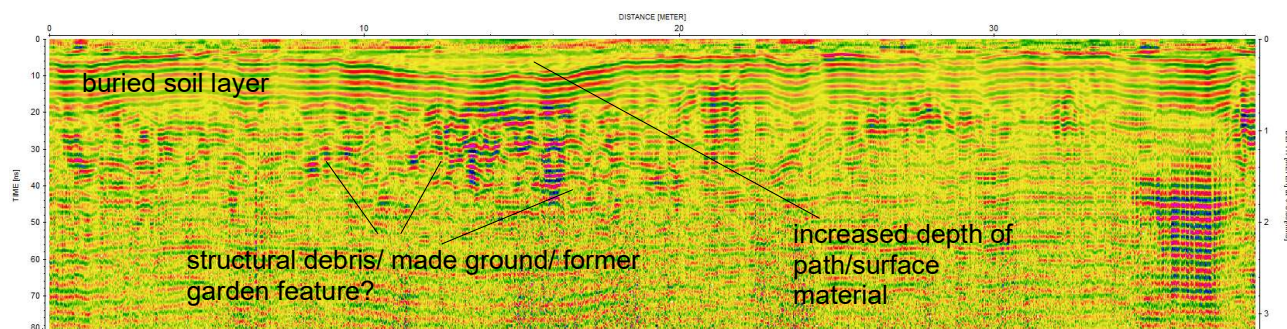


Radargram 1: File AH005 - northern side of Area 1 from west to east

### 3.5 Area 2 – southern path

Area 2 centred on OS NGR 393398 187366, see Figs 3-13 and Radargram 2.

3.5.1 The GPR data clearly show modern ground make-up associated with the perimeter of the circular herb garden immediately to the south of the central part of the survey area. Topsoil has been buried by material such as compacted gravel with an increasing depth (0.3m – 0.4m) towards the central zone. The buried topsoil is approximately 0.5m thick and below this a large zone of complex reflections was located (4) at a depth of approximately 0.8m. The zone may represent buried structural debris, although it is possible that it could indicate ground make-up and/or be associated with former garden features. Similar zones of complexity were located within the western and eastern parts of the area (5) and these too occur at similar depths of 0.7m – 0.8m.



Radargram 2: File AH022 - Area 2 from west to east

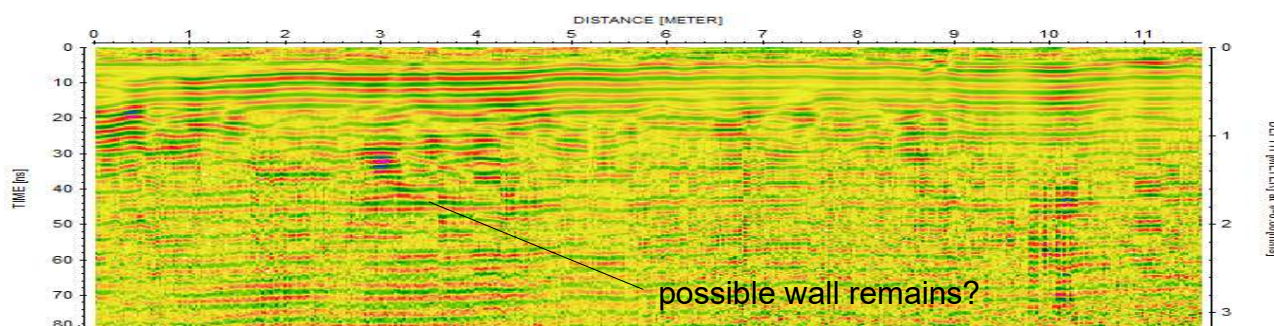
### 3.6 Area 3 – western path

Area 3 centred on OS NGR 393384 187368, see Figs 3 - 13 and Radargram 3.

3.6.1 Within the southern part of the survey area reflections form a linear feature (6) approximately 0.8m wide at an approximate depth of 0.8m. Planar and complex reflections could be consistent with structural remains such as a

former wall. At a shallow depth in the same location there is evidence of a drain or other service but there is no clear evidence that the deeper anomaly **(6)** is related to this. The southern part of the survey area contains a zone of planar and variable reflections **(7)** that may indicate buried debris at a depth of approximately 0.7m.

- 3.6.2 Within the central part of the survey area two weak linear trends with an approximate depth of 0.8m **(8)** were abstracted from the data. The orientation is not reflected in the layout of the gardens or Abbey House and the anomalies are of uncertain origin. Similar anomalies can be associated with former ditch-like features.

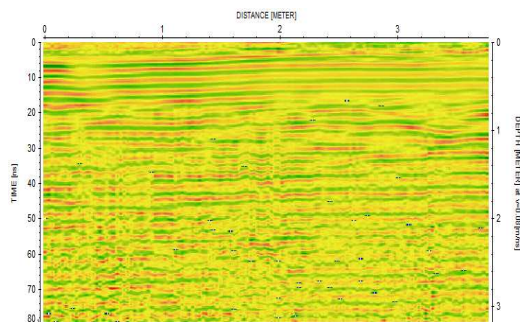


Radargram 3: File AH033 - Area 3 from south to north

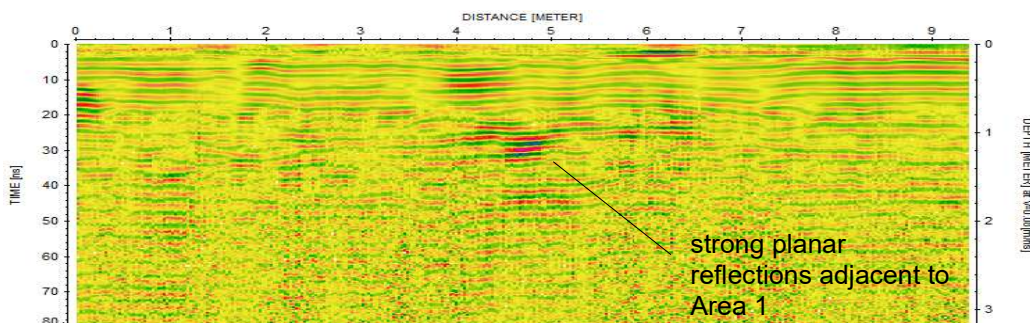
### 3.7 Areas 4, 5 & 6 – short paths linking Areas 1 and 2

Area 4 centred on OS NGR 393390 187368, Area 5 centred on 393407 187370 and Area 6 centred on 393418 187371 see Figs 3 - 13 and Radargrams 4, 5 and 6.

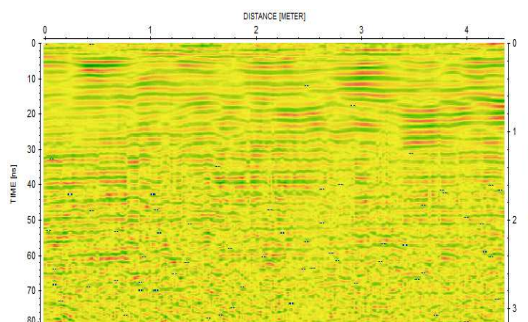
- 3.7.1 No anomalies were abstracted from Area 4; however, analysis of GPR profiles indicates a shallow gravel path covering garden topsoil to a depth of approximately 0.6m. Below the topsoil there appears to be some complexity to GPR reflections that may be consistent with made ground down to a depth of approximately 1.4m, it is possible that this lower horizon is of archaeological significance given the nature of the site.
- 3.7.2 Within Area 5, just to the south of Area 1, a zone of strong planar reflections **(9)** was located at an approximate depth of 1m. Given the depth of the reflections, and their close proximity to anomalies **(1)** and **(2)**, it is possible that they relate to features of archaeological potential within this part of the site.
- 3.7.3 GPR wave penetration within Area 6 appears more limited compared to other areas and this may relate to the ground make-up. The area contains numerous discrete, shallow reflections with penetration limited to approximately 1m.



*Radargram 4: File AH038 - Area 4 from south east to north west*



*Radargram 5: File AH043 - Area 5 from south west to north east*



*Radargram 6: File AH054 - Area 6 from north to south*

**3.8 Areas 7, 8 & 9 – narrow paths within the northern part of the circular herb garden**

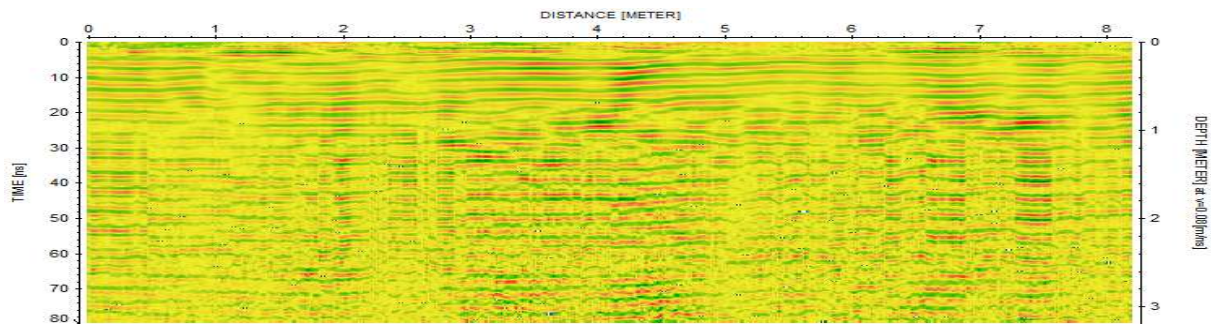
Area 7 centred on OS NGR 393402 187361, Area 8 centred on 393398 187361 and Area 9 centred on 393394 187360 see Figs 3 - 13 and Radargrams 7, 8 and 9.

3.8.1 No anomalies were abstracted from Area 7; however, analysis of GPR profiles indicates a shallow gravel path covering garden topsoil to a depth of approximately 0.7m. Below the topsoil there appears to be a more variable

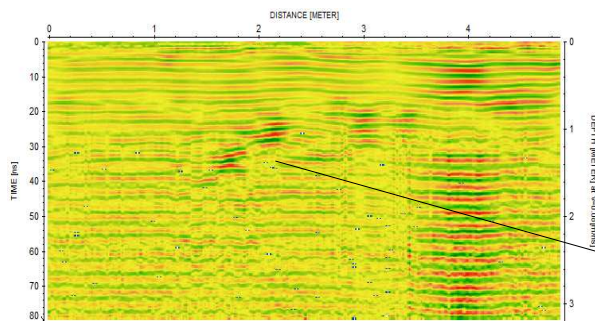


layer down to approximately 1.2m

3.8.2 Within Areas 8 and 9 planar reflections at a depth of 0.9m were located, anomalies **(10)** and **(11)**. Due to the constraints of the surveyed area, interpretation is limited but given the similar depth and nature of the reflections, it is possible that they are both linked to a common feature crossing this part of the site.

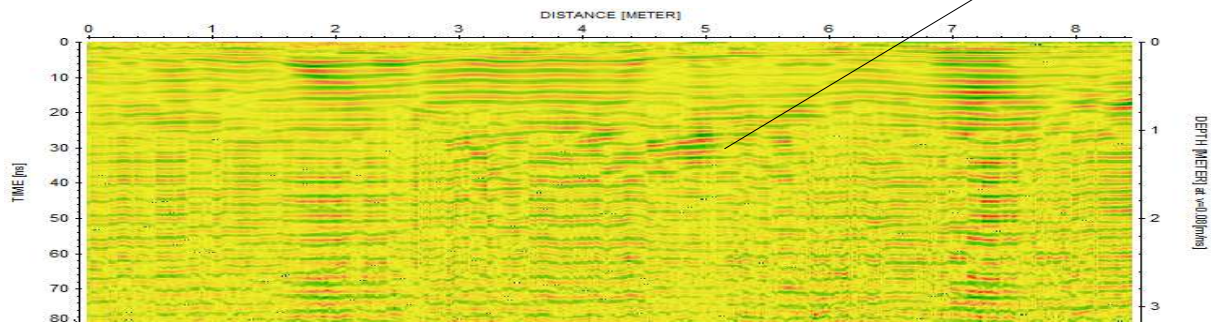


*Radargram 7: File AH057 - Area 7 from south west to north east*



*Radargram 8: File AH061 - Area 8 from south to north*

response to common feature? (anomalies 10 and 11)



*Radargram 9: Area 9 from south east to north west*

## 4 CONCLUSION

- 4.1.1 The results of the GPR survey indicate the presence of reflections that may relate to features and layers of archaeological potential across the site. Traverses were confined to several pathways located between garden beds and, as a consequence, only a limited area was covered by the survey. Interpretation is, therefore, also limited as the full extent of anomalies cannot be determined.
- 4.1.2 Within the northern part of the site, traverses surveyed from west to east indicate the presence of a possible north south wall and former surface or floor with further structural remains or debris extending to the west. A possible east west wall and other debris were also located in the western part of the surveyed area.
- 4.1.3 Ground make-up was observed along the northern edge of the circular herb garden and deeper complex reflections could indicate structural debris, although deeper ground make-up or former garden features should also be considered. Within the herb garden there is some evidence for a possible east west feature crossing beneath two of the narrow paths.
- 4.1.4 The general ground profile across the site indicates that the path material and garden topsoil extends to a depth of approximately 0.6m – 0.8m and with the exception of shallow drainage and/or services it contains no significant anomalies. Below this depth GPR reflections appear significantly more variable and features or layers considered archaeologically significant seem to occur mainly at a depth of 0.8m.

## 5 REFERENCES

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## Appendix A – digital archive

Archaeological Surveys Ltd hold the primary digital archive at offices in Wiltshire (see inside cover for address). Data are backed-up onto an on-site data storage drive and at the earliest opportunity data are copied to CD ROM for storage on-site and off-site. Surveys are reported on in hardcopy using A4 for text and A3 for plots (all plots are scaled for A3). The distribution of both hardcopy report and digital data is considered the responsibility of the Client unless explicitly stated in the survey Brief, Written Scheme of Investigation or other contractual agreement.

This report has been prepared using the following software on a Windows XP platform:

- Reflex v8 (GPR data analysis)
- ProgeCAD Professional 2020 (report plots),
- LibreOffice.org 7.0.2.2 Writer (document text),
- PDF Creator version 0.9 (PDF archive)



## Historic England Geophysical Survey Summary Questionnaire

### Survey Details

**Name of Site:** Abbey House Gardens

**County:** Wiltshire

**NGR Grid Reference** (Centre of survey to nearest 100m): ST 93402 87371

Start Date: 22/2/21

End Date:22/2/21

**Geology at site** (Drift and Solid): Cornbrash

### **Known archaeological Sites/Monuments covered by the survey**

(Scheduled Monument No. or National Archaeological Record No. if known)

Benedictine Monastery known as Malmesbury Abbey (List entry no: 1010136)

### **Archaeological Sites/Monument types detected by survey**

(Type and Period if known. "?" where any doubt).

Medieval structure

**Surveyor** (Organisation, if applicable, otherwise individual responsible for the survey):

David Sabin

**Name of Client, if any:** Martin Leay Associates



**Purpose of Survey:**

To identify anomalies of archaeological potential ahead of proposed development

**Location of:**

**a) Primary archive, i.e. raw data, electronic archive etc:** Archaeological Surveys Ltd, 1 West Nolands, Nolands Road, Yatesbury, Calne, SN11 8YD

**b) Full Report:** As above

**Technical Details**

(Please fill out a separate sheet for each survey technique used)

**Type of Survey** (Use term from attached list or specify other): Ground Penetrating Radar

**Area Surveyed, if applicable** (In hectares to one decimal place):

0.02

**Traverse Separation, if regular:**

0.25m

**Reading/Sample Interval:**

0.0295m

**Type, Make and model of Instrumentation:**

Utsi Electronics Groundvue 3A 400MHz antenna

**Land use at the time of the survey** (Use term/terms from the attached list or specify other): Garden

**Geophysical Survey  
Abbey House Gardens  
Malmesbury  
Wiltshire**

**Map of survey area**



Survey location



● Survey location

Site centred on OS NGR  
ST 93402 87371

SCALE 1:25 000



SCALE TRUE AT A3

**Geophysical Survey  
Abbey House Gardens  
Malmesbury  
Wiltshire**

**Referencing information**

Area 1 (slight adjustment to base plan)  
A - B = 3m  
A - C = 2.8m  
A is in centre of line D - E  
A - B is parallel to F - G at 2m separation

Area 2  
H - I = 1.5m  
H - I is parallel to F - G at 2m separation  
H - A = 7.25m

Area 3  
J - K = 2.25m  
A - L = 12.3m  
A - G is parallel to F - G at 2m separation

Area 4  
O - P = 1.25m  
M - O = 0.5m  
M & N are bed corners (exterior)

Area 5  
T - U = 0.75m  
Q - T = 0.5m  
Q - R is perpendicular to line Q - S  
Q is bed corner (exterior)

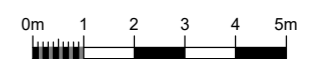
Area 6  
X - Y = 2.5m  
V - X = 3m  
X - Y is extension of edge of bed V - W

Areas 7 - 9 referenced to OSGB36 using GNSS and OSTN02.

All survey traverses are collected parallel from baseline. Antenna frequency = 400MHz.

- Referencing position on topographic features and survey baselines
- Survey start position

**SCALE 1:150**

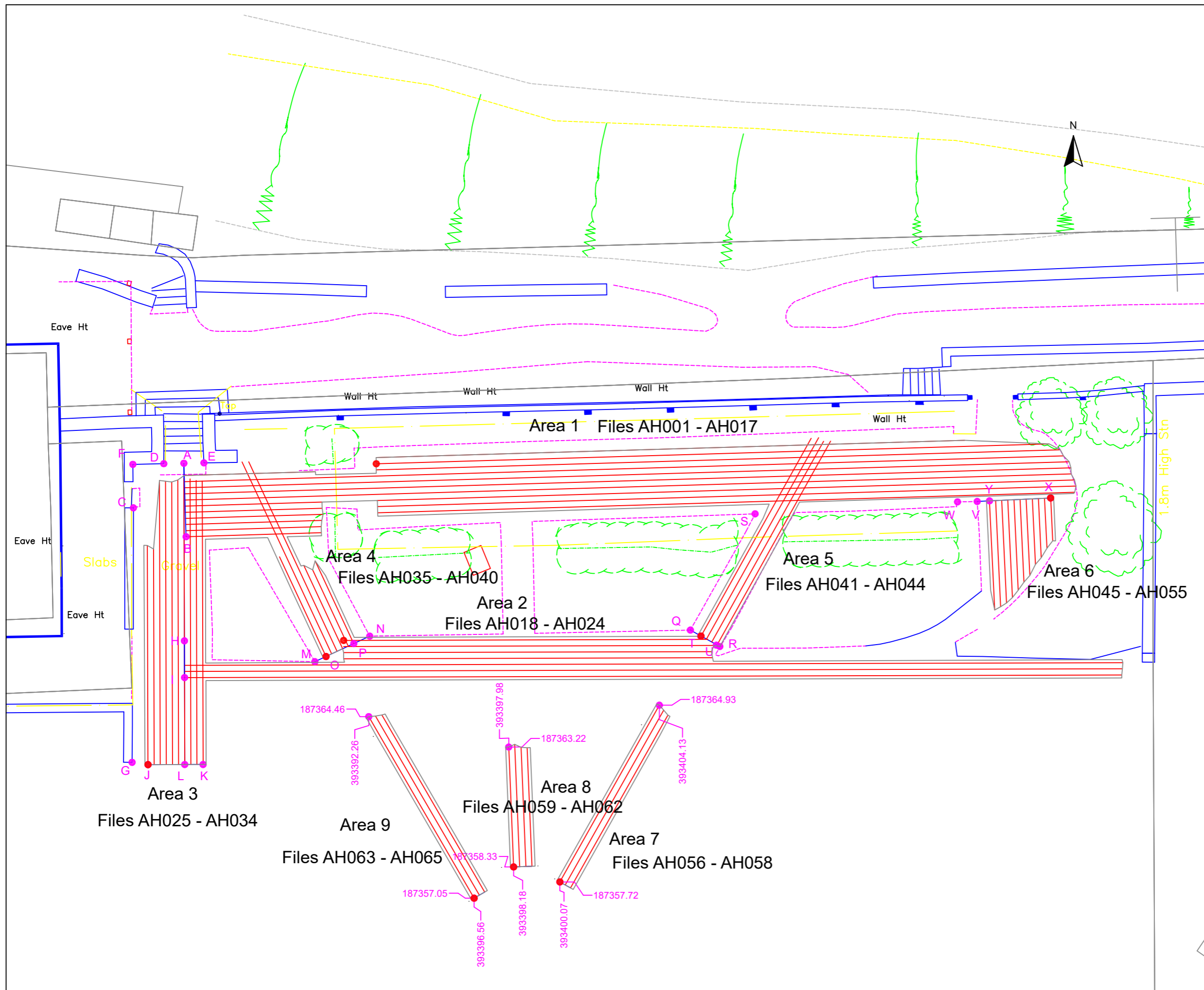


SCALE TRUE AT AS

DRAWN BY  
DJS

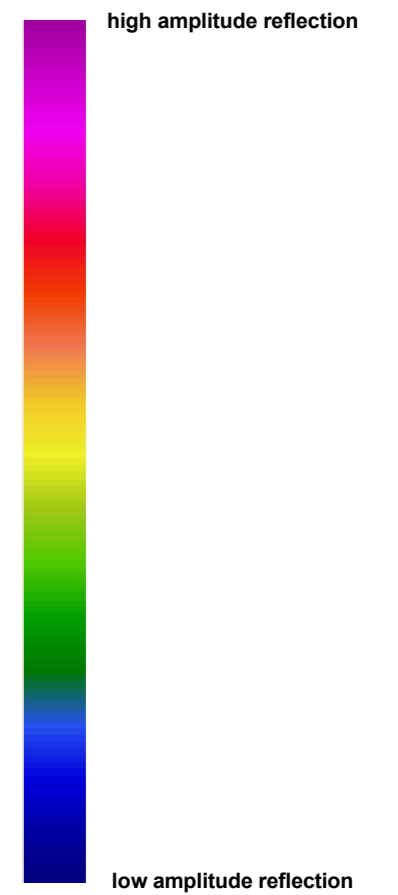
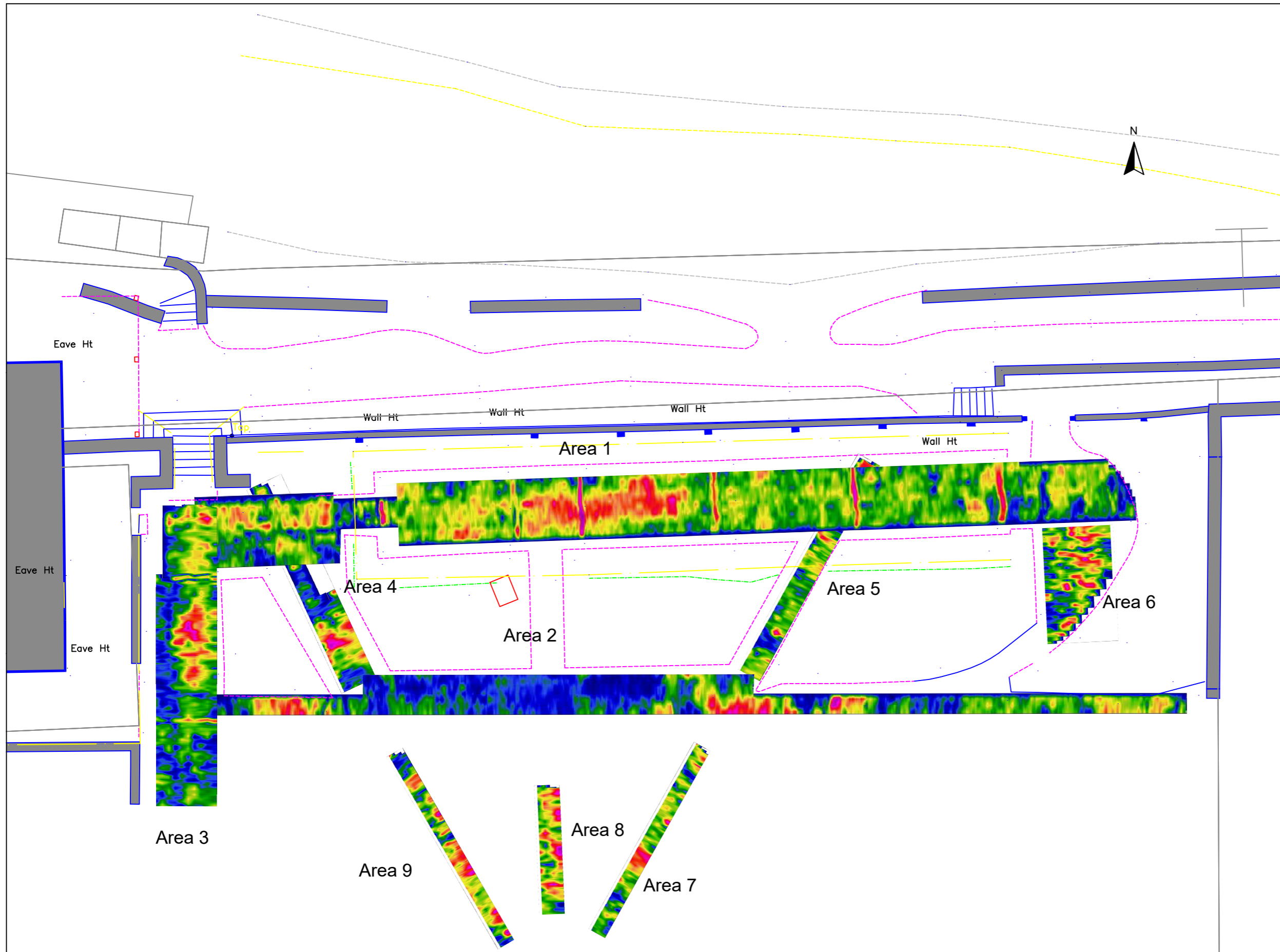
CHECKED BY  
KTD

FIG 02



Geophysical Survey  
Abbey House Gardens  
Malmesbury  
Wiltshire

Ground penetrating radar  
time slice at 5ns  
(approximately 0.2m deep)



SCALE 1:150

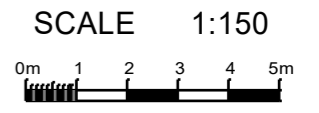
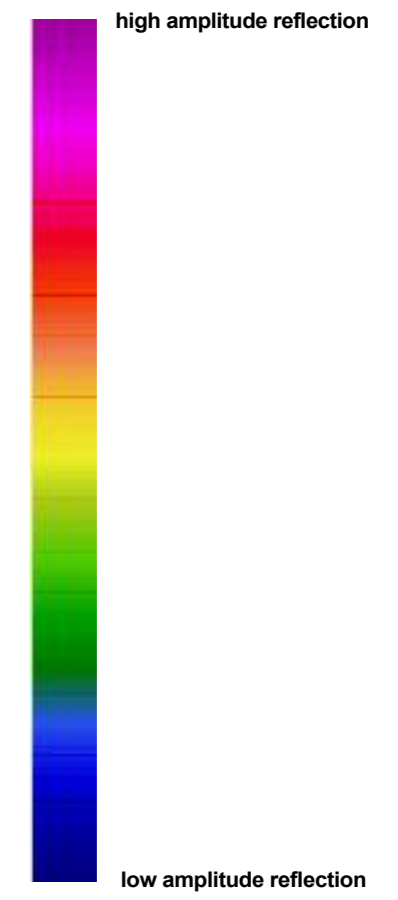
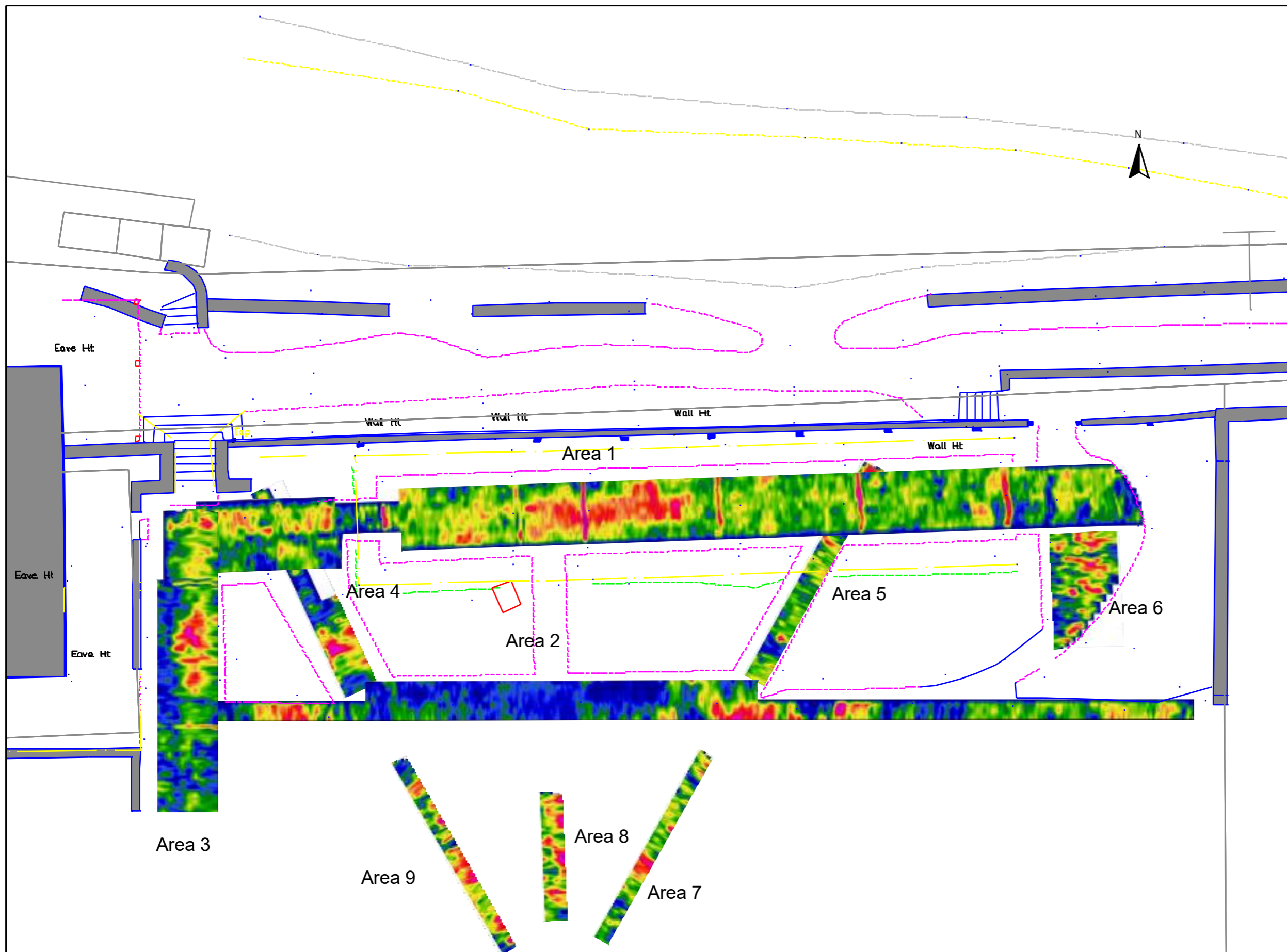


SCALE TRUE AT A3



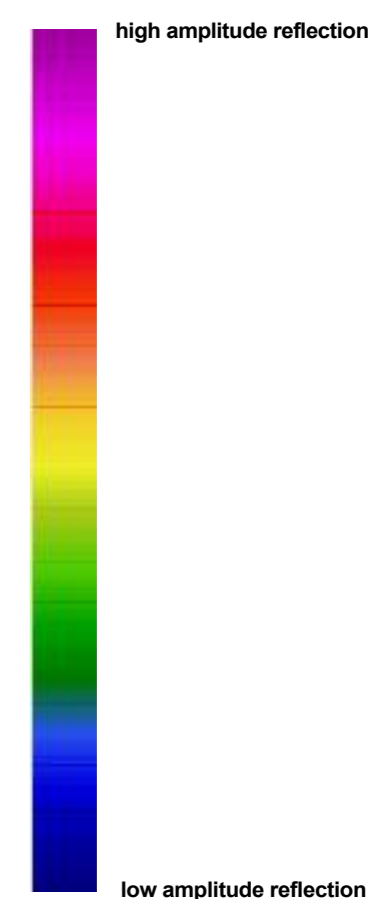
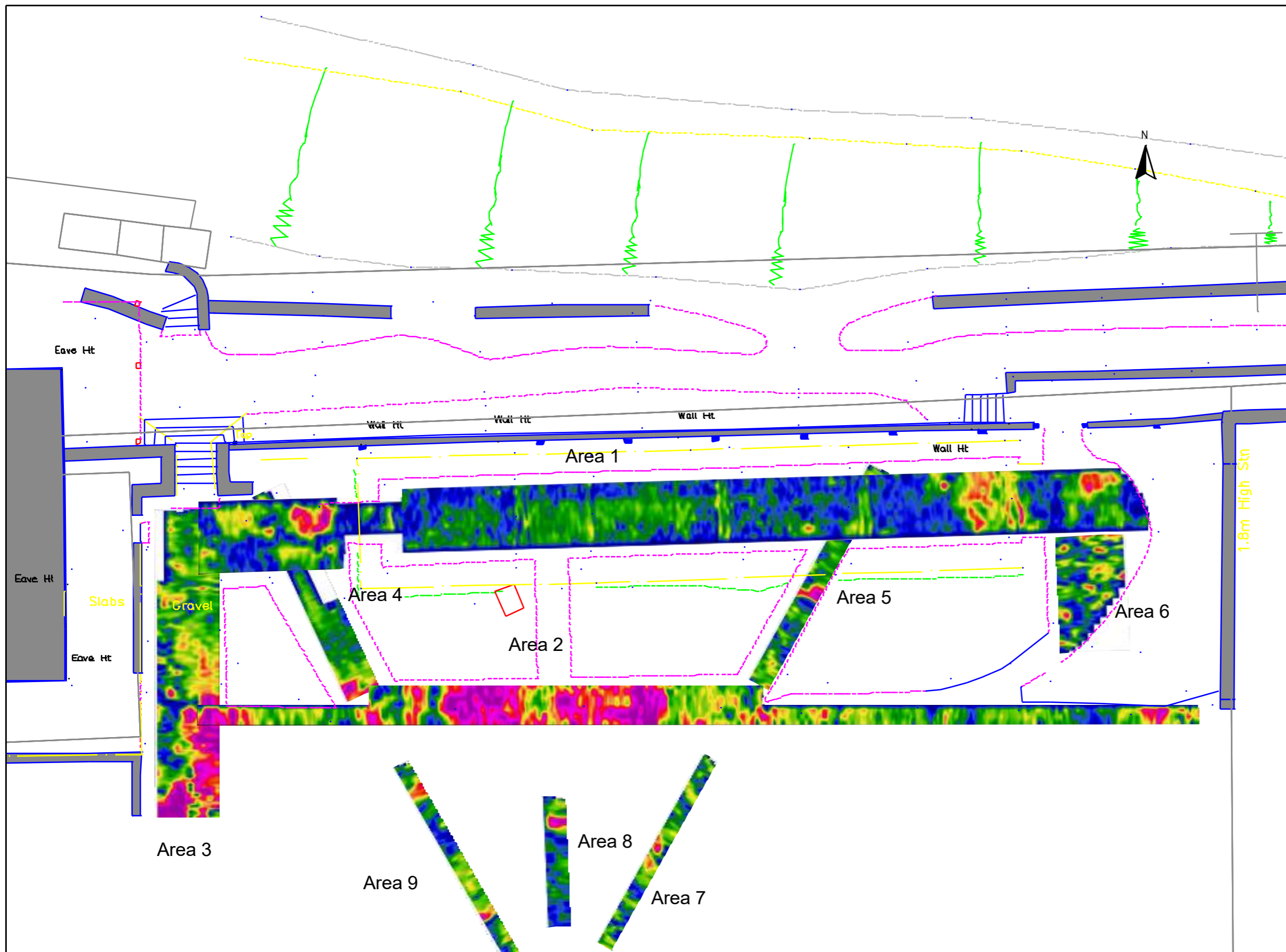
Geophysical Survey  
Abbey House Gardens  
Malmesbury  
Wiltshire

Ground penetrating radar  
time slice at 5ns  
(approximately 0.2m deep)



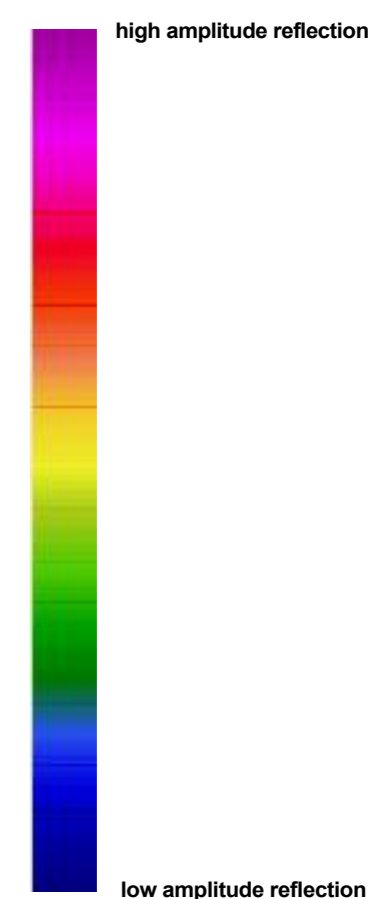
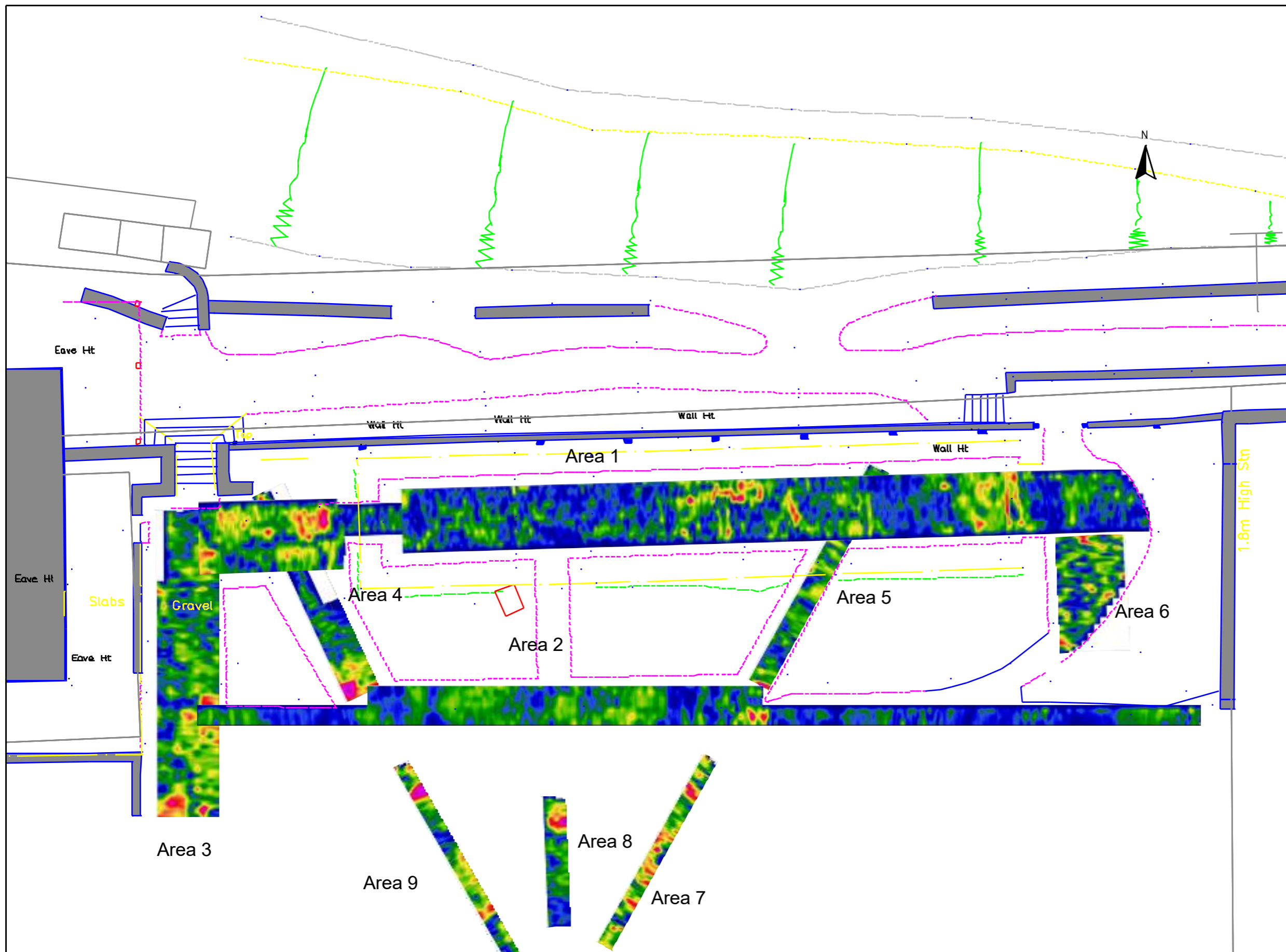
Geophysical Survey  
Abbey House Gardens  
Malmesbury  
Wiltshire

Ground penetrating radar  
time slice at 10ns  
(approximately 0.4m deep)



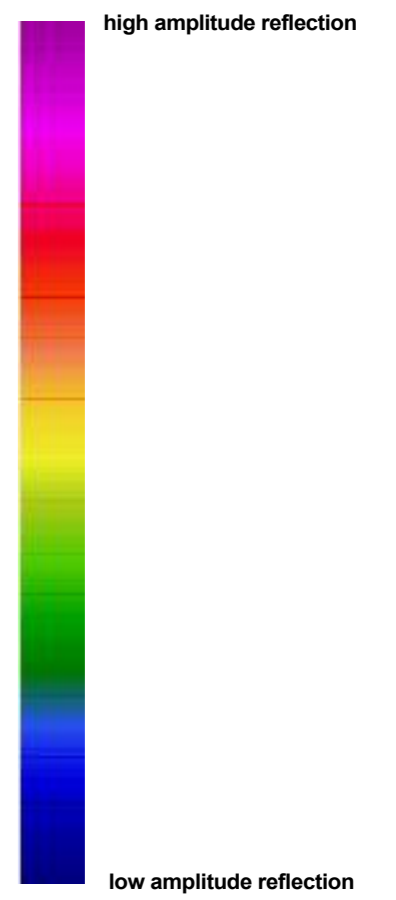
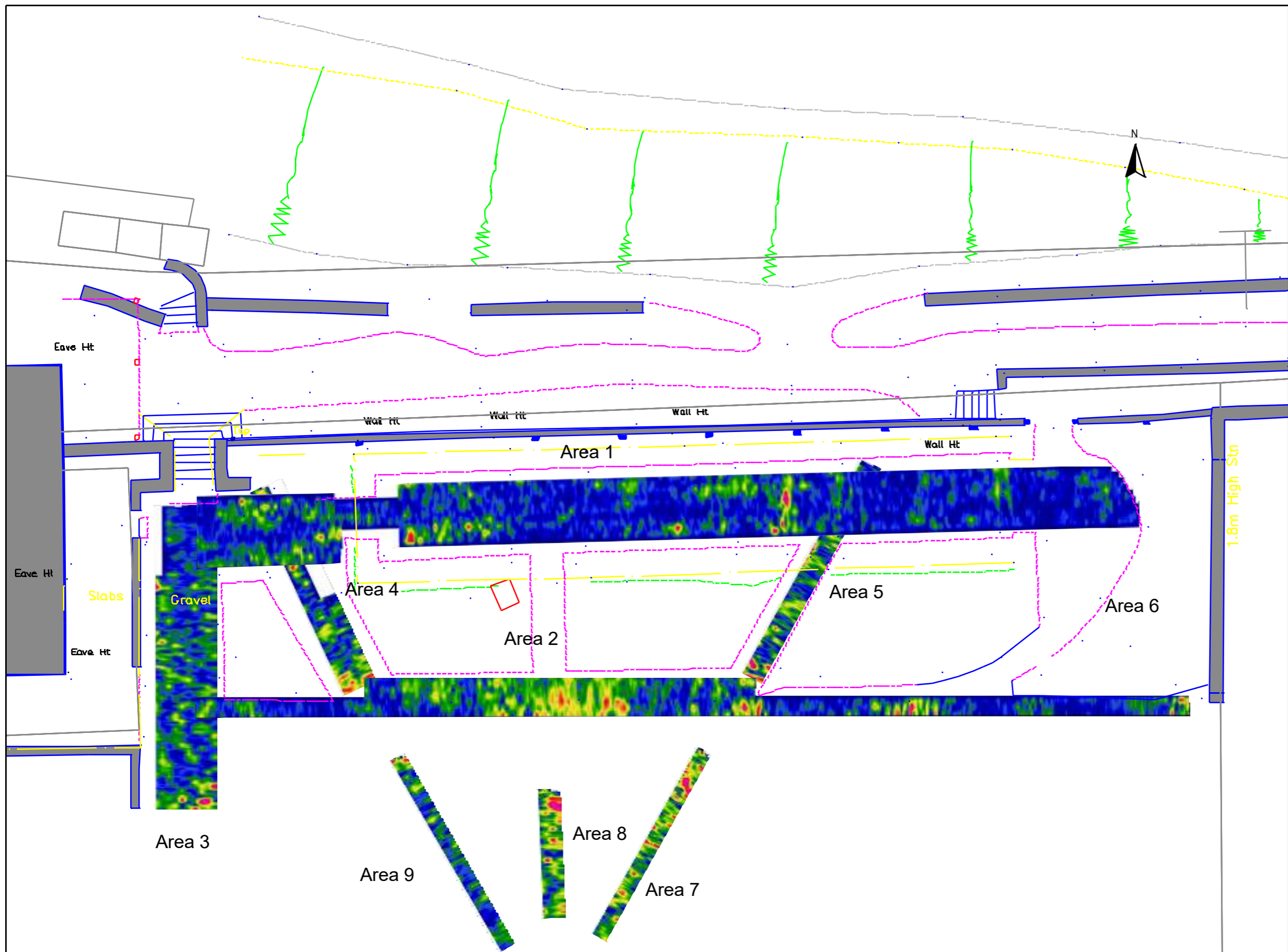
Geophysical Survey  
Abbey House Gardens  
Malmesbury  
Wiltshire

Ground penetrating radar  
time slice at 15ns  
(approximately 0.6m deep)

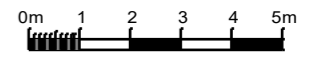


Geophysical Survey  
Abbey House Gardens  
Malmesbury  
Wiltshire

Ground penetrating radar  
time slice at 20ns  
(approximately 0.8m deep)

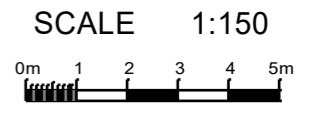
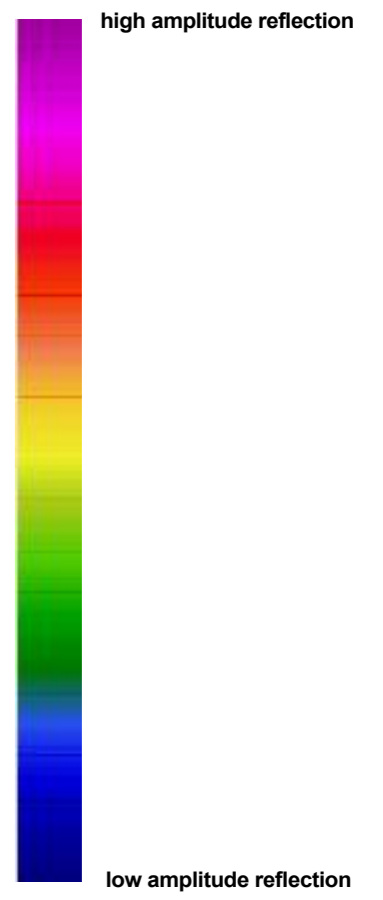
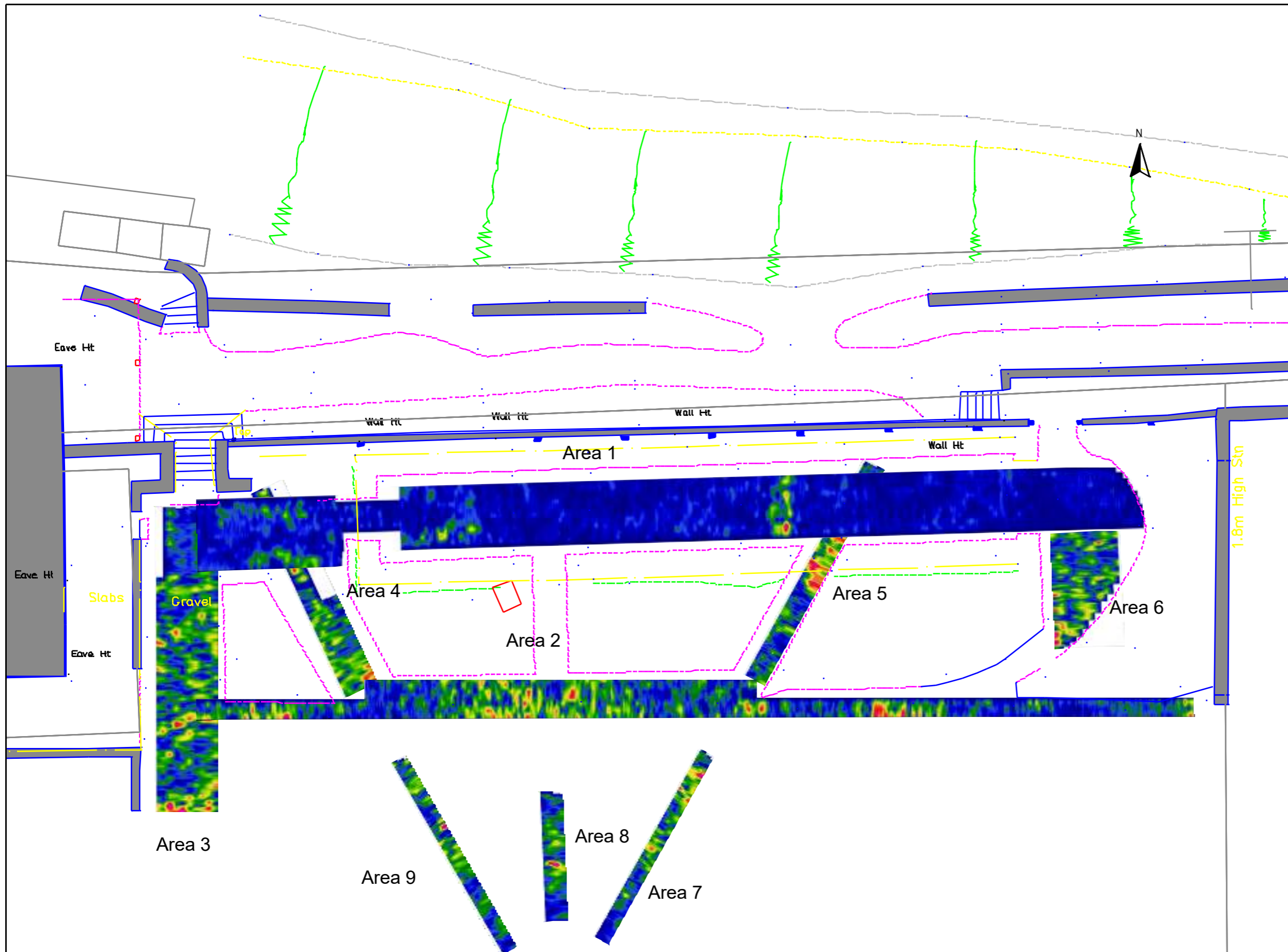


SCALE 1:150



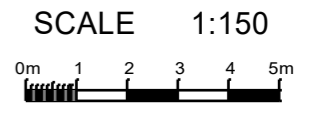
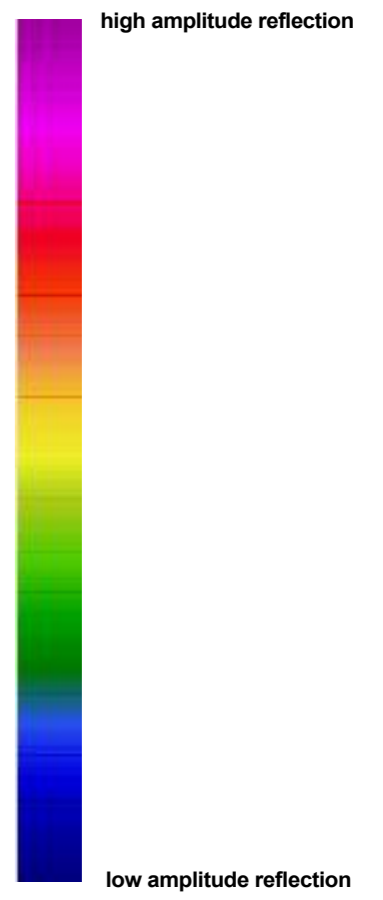
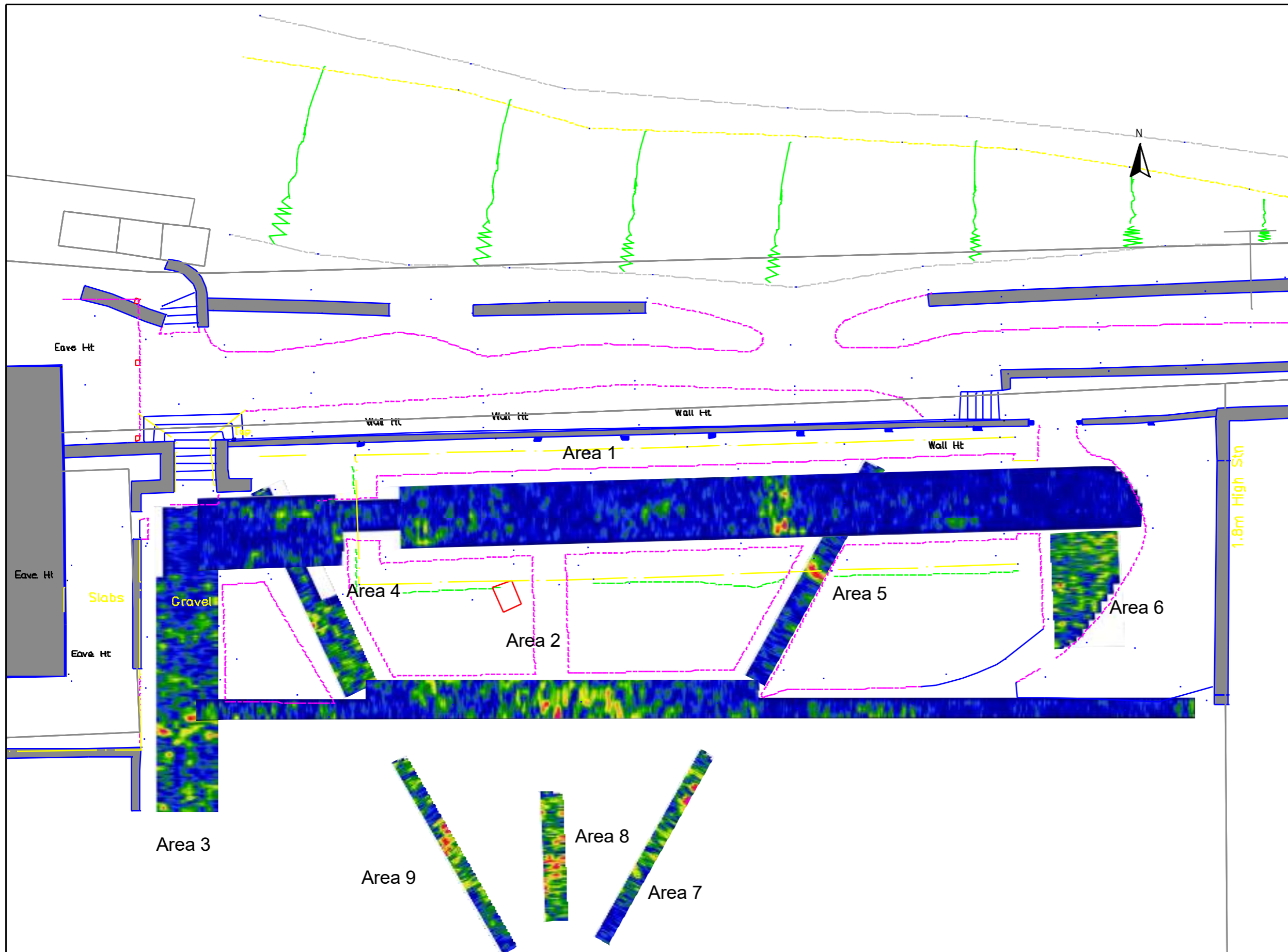
Geophysical Survey  
Abbey House Gardens  
Malmesbury  
Wiltshire

Ground penetrating radar  
time slice at 25ns  
(approximately 1m deep)



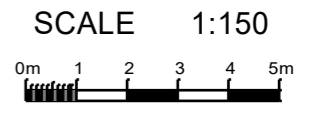
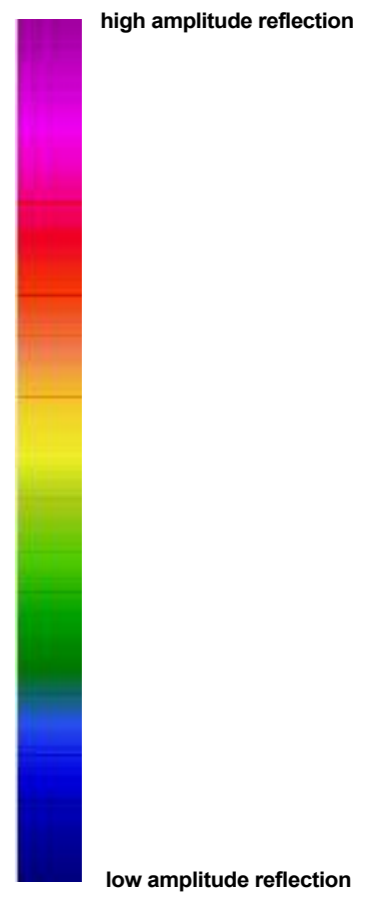
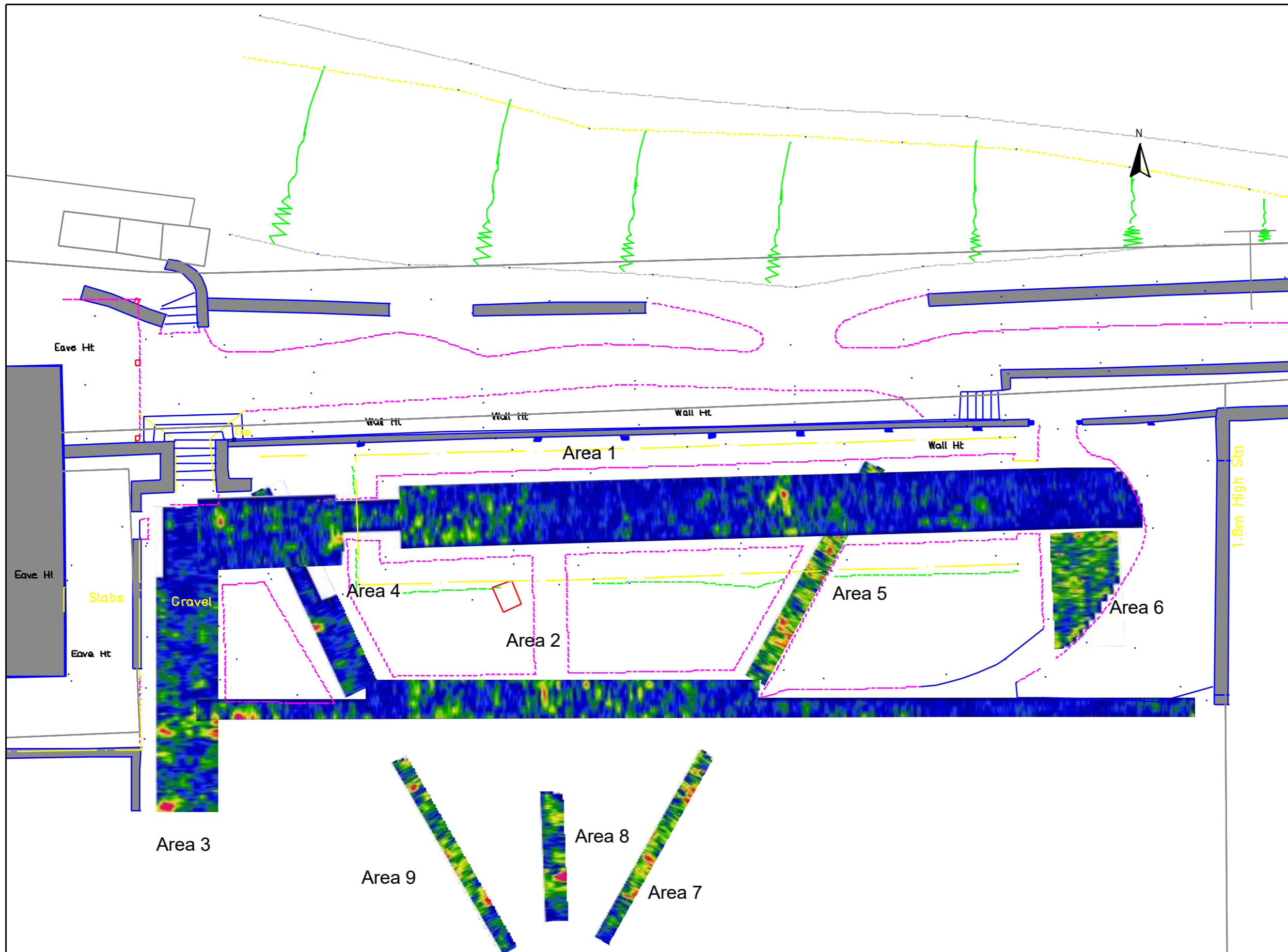
Geophysical Survey  
Abbey House Gardens  
Malmesbury  
Wiltshire

Ground penetrating radar  
time slice at 30ns  
(approximately 1.2m deep)



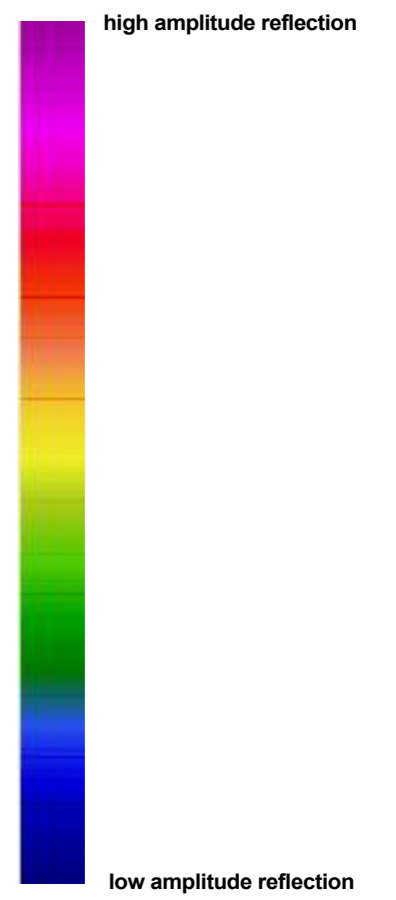
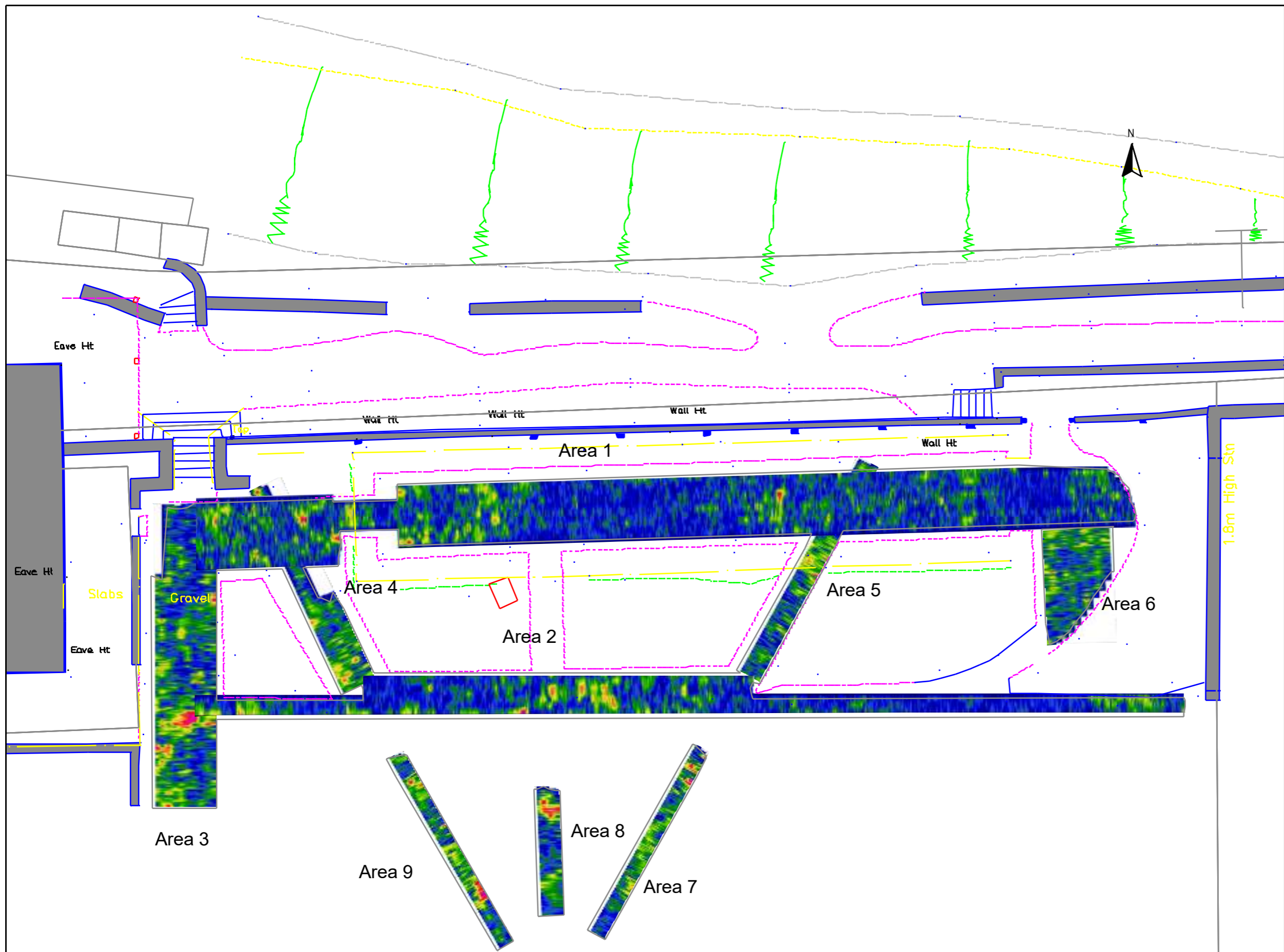
Geophysical Survey  
Abbey House Gardens  
Malmesbury  
Wiltshire

Ground penetrating radar  
time slice at 35ns  
(approximately 1.4m deep)

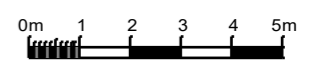


Geophysical Survey  
Abbey House Gardens  
Malmesbury  
Wiltshire

Ground penetrating radar  
time slice at 40ns  
(approximately 1.6m deep)



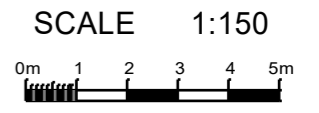
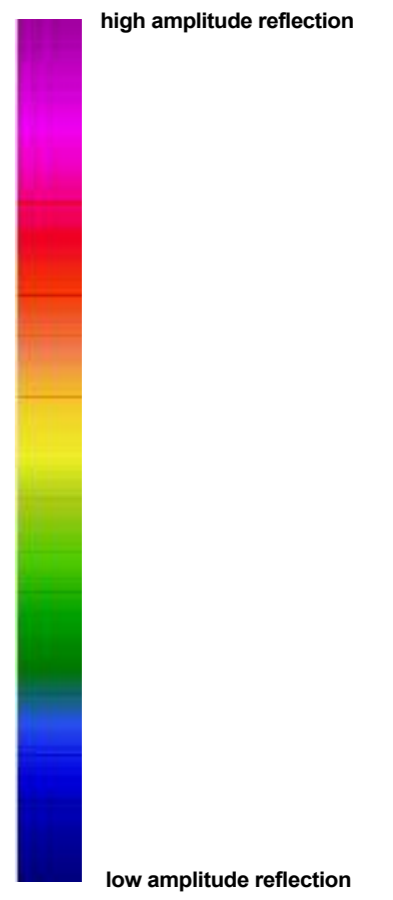
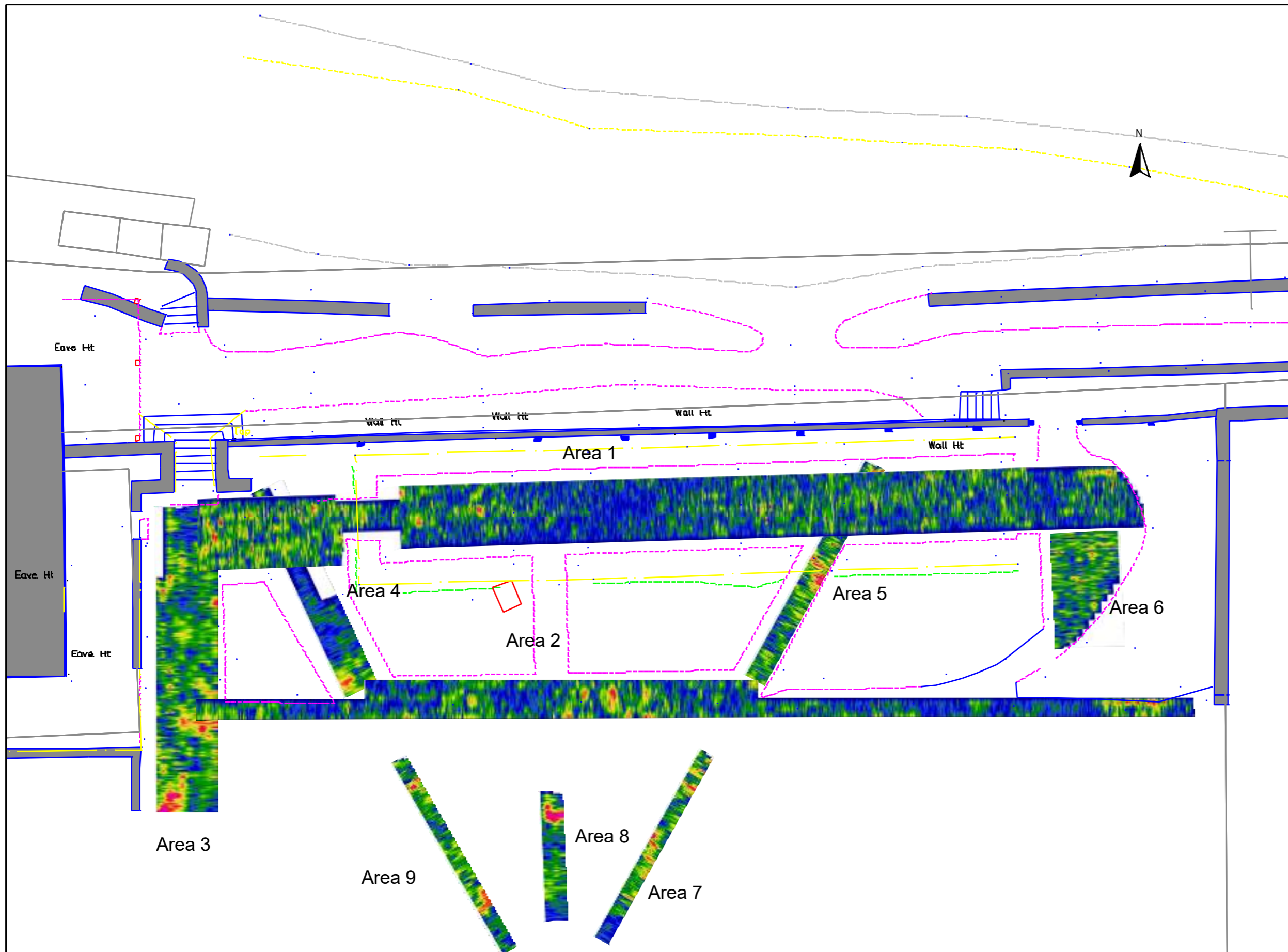
SCALE 1:150





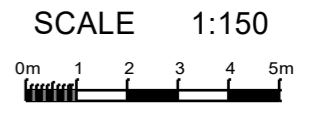
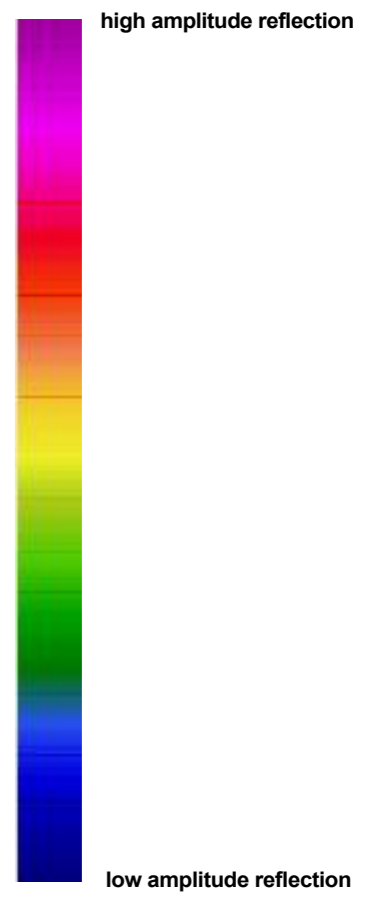
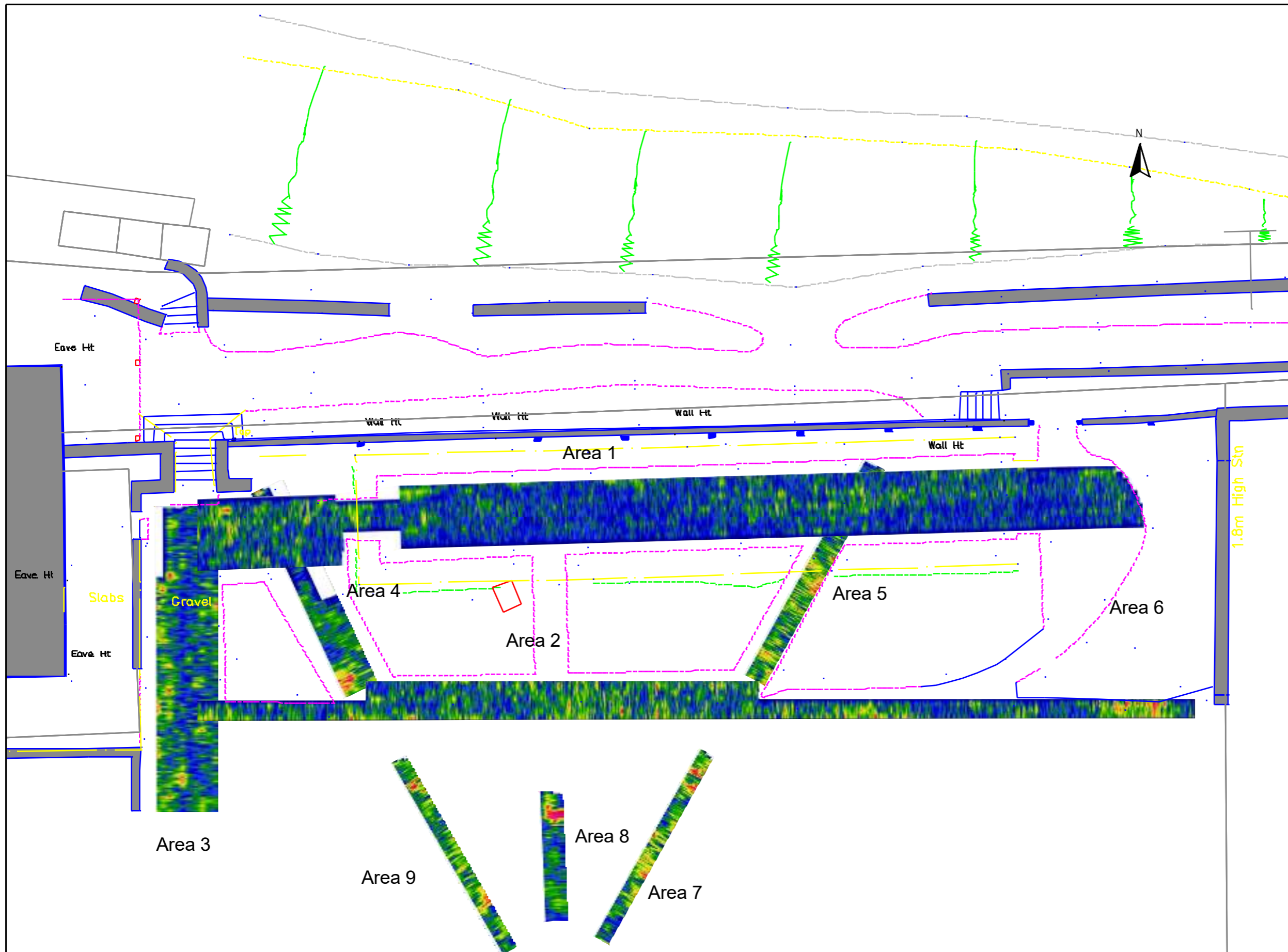
Geophysical Survey  
Abbey House Gardens  
Malmesbury  
Wiltshire

Ground penetrating radar  
time slice at 45ns  
(approximately 1.8m deep)



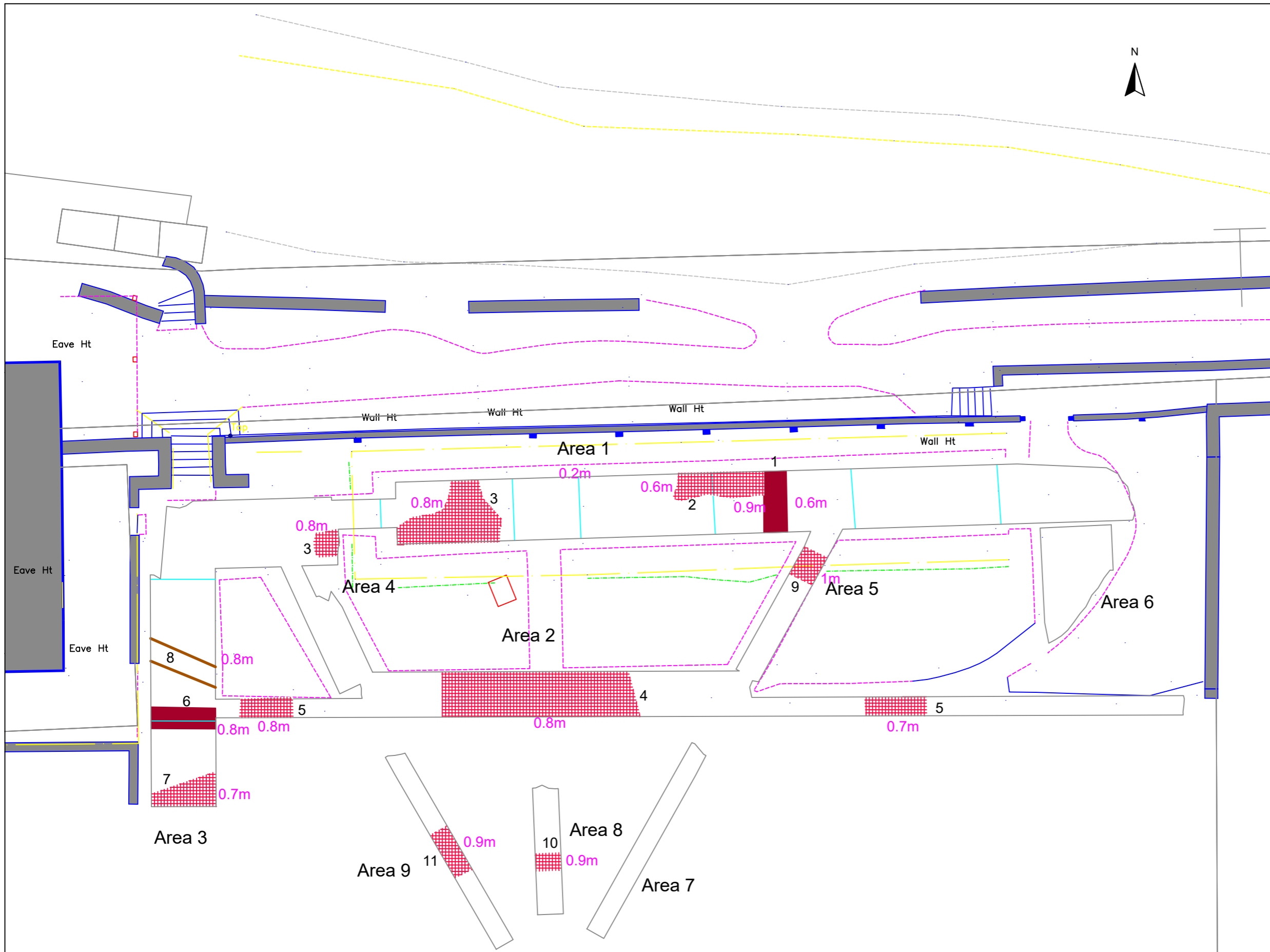
Geophysical Survey  
Abbey House Gardens  
Malmesbury  
Wiltshire

Ground penetrating radar  
time slice at 50ns  
(approximately 2m deep)



**Geophysical Survey  
Abbey House Gardens  
Malmesbury  
Wiltshire**

**Abstraction and interpretation of  
ground penetrating radar  
anomalies**



- Linear feature - possible structural remains of archaeological potential
- Linear feature of uncertain origin
- Linear feature - drain/service
- Planar and/or complex reflections - possible structural debris/layer of archaeological potential
- 0.9m Approximate depth to initial reflections associated with feature/layer
- 1** Anomaly/ feature/ layer number

SCALE 1:150



SCALE TRUE AT A3