

Appendix 14. Cultural Heritage

14.1 Photographic Record

14.2 Geophysical Survey

14.3 ASI Inventory

14.4 Database of Excavations

14.5 Test Trenching

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14.1 Photographic Record

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Photographic record

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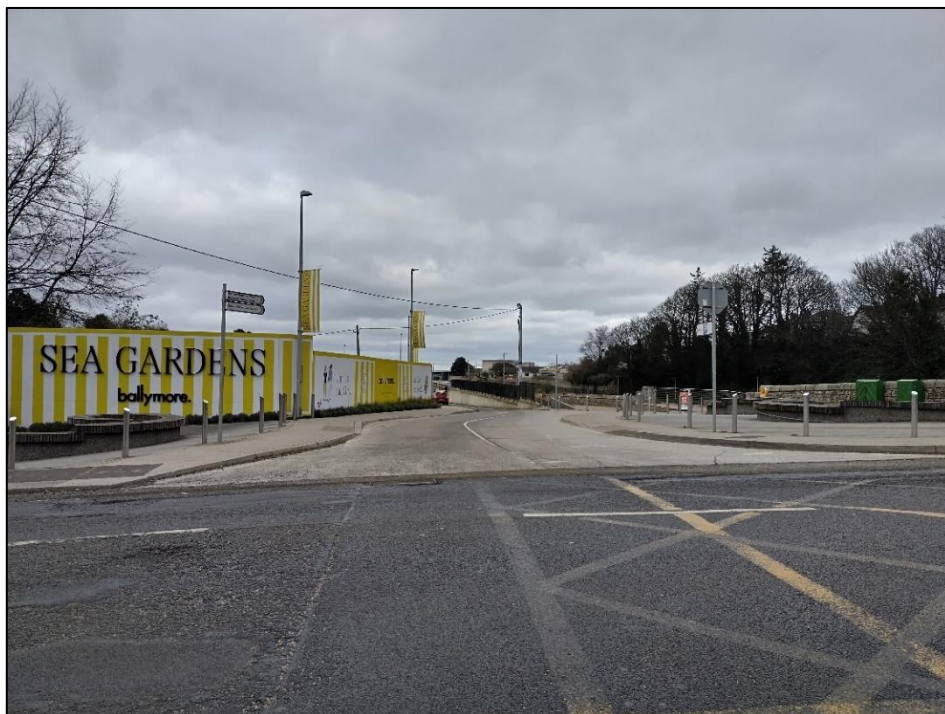


Plate 1: View of entrance to proposed development from Dublin Road, facing northeast



Plate 2: View from proposed entrance towards Bridge (NIAH ref. 16301267), Courthouse (RPS ref. B46, NIAH ref. 16301263), Postbox (RPS ref. B44-B) and Church (RPS ref. B49, NIAH ref. 16301290, SMR WI004-001004-), facing south



Plate 3: View of southern boundary adjacent to Dargle River, facing northeast



Plate 4: View of south-eastern portion of development lands, facing southwest



Plate 5: View of north-eastern portion of development site, facing southeast



Plate 6: View of south-eastern portion of development lands, facing northeast



Plate 7: View of centre of development lands, facing southwest



Plate 8: View of northeast portion of development lands, facing southwest



Plate 9: View of western portion of development site, facing south



Plate 10: View of western portion of development site, facing west

14.2 Geophysical Survey

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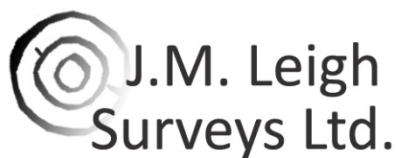
GEOPHYSICAL SURVEY REPORT

Sea Gardens,
Ravenswell,
Bray,
County Wicklow

Licence Number: 24R0160

Date:
04/03/2024

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GEOPHYSICAL SURVEY SUMMARY SHEET
SEA GARDENS, RAVENSWELL, BRAY, COUNTY WICKLOW

Site Name	Sea Gardens	JML Ref No.	24010
Townland	Ravenswell	Licence No.	24R0160
County	County Wicklow	Licence Holder	Joanna Leigh
ITM (centre)	E726420, N719200	Purpose	Pre-planning investigation
Client	John Cronin & Associates	Reference No.	NA

Ground Conditions

Three areas were highlighted for survey. Two areas (Areas 1&2) were within the compound of an active construction site, and the other area (Area 3) was in a field adjacent to the development. The areas all comprised of short grass. Spoil heaps and a construction walkway prevented some survey in Areas 1 and 2, and a large spoil heap was located in the western extent of Area 3.

Survey Type

Detailed gradiometer survey totalling c.0.5 hectares.

Summary of Results

In Area 2, there are parallel linear trends indicative of ploughing activity. It is possible that this may represent ridge and furrow cultivation activity, although this is speculative.

Isolated responses in Areas 1 and 2 may represent pit-type features. However, there is no clear archaeological pattern and these may equally result from more recent ground disturbance. An archaeological interpretation is cautious.

A linear negative response in Area 3 is indicative of a modern service pipe. To the south of this is a parallel linear response. Although it is possible that this represents a short linear ditched feature, interpretation is cautious. There are no further responses of interest, and this may equally represent more recent ground disturbance.

Fieldwork Dates

23rd February 2024

Report Date

04/03/2024

Report Author

Joanna Leigh

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**Consent to use a Detection Device
National Monuments Acts (1930-2004)**

Consent Number	24R0160
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Application having been duly made to me by	Joanna Leigh
Of	J.M. Leigh Surveys Ltd. 124 Oaklawn West Leixlip Co. Kildare
For a consent to use a specified detection device	Bartington GRAD601 dual Sensor
at the site known as	Co. Wicklow RAVENSWELL BRAY.
Being part of the townland	RAVENSWELL
In or under the portion of land owned by	BALLYMORE GROUP
Of	One Royal Canal Ave Spindrift Ave, Royal Canal Park Dublin
In county of	Co. Wicklow

The Minister for Housing, Local Government and Heritage, in accordance with the conditions of Section 2 of the National Monuments (Amendment) Act, 1987, as amended, and subject to the conditions overleaf, does hereby issue his consent, to the applicant, to carry out the specified works, during a period of **4** weeks, commencing on the **15/02/2024** and to use a detection device, for the purpose specified.

Duration of licence: **15/02/2024** to **15/03/2024**

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Sea Gardens, Bray, County Wicklow

RECEIVED: 24/03/2023

1 Introduction

- 1.1 A geophysical survey has been conducted by J. M. Leigh Surveys Ltd. at a site in the townland of Ravenswell, Bray, County Wicklow. This survey forms part of a wider archaeological study by John Cronin & Associates, on behalf of Ballymore Group. This is a pre-planning site investigation.
- 1.2 The application area comprises of three distinct areas (Areas 1-3) to the north of Bray town. The lands were previously part of Ravenswell Golf Course. Ravenswell Primary School is to the immediate north of the site. Figure 1 presents the site and survey location at a scale of 1:3,000.
- 1.3 There are no recorded monuments within the application area. A recorded Castle – Tower house (RMP WI004-001006) is located to the south of the site boundary.
- 1.4 The main aim of the survey was to identify any geophysical responses that may represent unknown archaeological features within the application areas. A detailed gradiometer survey was conducted under licence 24R0160, issued by the Department of Housing, Local Government and Heritage.

2 Survey ground conditions and further information

- 2.1 Areas 1 & 2 are located within the compound of a current construction site. Although away from the ongoing development, spoil heaps and a construction pedestrian access way prevented some survey.
- 2.2 Area 3 is located in a field adjacent to the current development site. A large spoil heap here prevented some survey. Tall metal fencing encompasses the field and some magnetic disturbance from this was noted.

3 Survey Methodology

- 3.1 Data was collected with a Bartington Grad 601-2 instrument. This is a specifically designed gradiometer for use in archaeological prospection. The gradiometer operates with a dual sensor capacity making survey fast and effective.
- 3.2 The instrument is calibrated in the field to ensure a constant high quality of data. Extremely sensitive, these instruments can detect variations in soil magnetism to 0.01nT, affording diverse application throughout a variety of archaeological, soil morphological and geological conditions.

- 3.3 All data was collected in 'zigzag' traverses. Grid orientation was positioned to facilitate data collection in each area. Data was collected with a sample interval of 0.25m and a traverse interval of 1m. The survey grid was set out using a GPS VRS unit. Survey tie-in information is available upon request.

4 Data display

- 4.1 A summary greyscale image of Areas 1 & 2 is presented in Figure 2, at a scale of 1:1,250. An accompanying interpretation diagram is presented in Figure 3, also at a scale of 1:1,250.
- 4.2 The summary greyscale image and interpretation drawing for Area 3 is presented in Figure 4, also at a scale of 1:1,250.
- 4.3 Numbers in parentheses in the text refer to specific responses highlighted in the interpretation diagrams.
- 4.4 Isolated ferrous responses in the gradiometer data highlighted in the interpretation diagram most likely represent modern ferrous litter and debris and are not of archaeological interest. These are not discussed in the text unless considered relevant.
- 4.5 The raw gradiometer data is presented in archive format in Appendix A1.01. The raw data is displayed as a greyscale image and xy-trace plot, both at a scale of 1:500. The archive plots are used to aid interpretation of the results and are for reference only. The archive plots are available as PDF images upon request.
- 4.6 The display formats referred to above and the interpretation categories are discussed in the summary technical information section at the end of this report.

5 Survey Results

Areas 1 and 2 (Figures 2 & 3)

- 5.1 Multiple parallel linear trends (1) are evident in Area 1. These are indicative of ploughing activity. It is possible that ridge and furrow cultivation is represented here.
- 5.2 Two clusters of ferrous responses (2) appear orientated with the ploughing trends. Although these ferrous responses are most likely modern in origin, former field divisions may be represented here.
- 5.3 Isolated responses (3) in Area 1 have no clear pattern. Although it is possible that these represent pit-type features, interpretation is cautious. These may equally represent more deeply buried ferrous debris.
- 5.4 In Area 2, there are two broad responses (4). It is possible that these represent large pit-type features. However, they may equally result from more recent ground disturbance. An archaeological interpretation is cautious.

Area 3 (Figure 4)

- 5.5 A linear negative response (5) runs through the data. It is speculated that this represents a modern services pipe.
- 5.6 To the south of (5) there is a short linear response (6). It is possible that this may represent a short linear ditched feature. However, this appears parallel with the service pipe and there are no further responses of interest here. Response (6) may equally result from more recent ground disturbance. An archaeological interpretation tentative.
- 5.7 Elsewhere in the Area 3, modern ferrous responses and magnetic disturbance are evident. These suggest more recent activity within this field.

6 Conclusion

- 6.1 In Area 2, there are multiple parallel linear trends. These are indicative of ploughing activity. It is possible that ridge and furrow cultivation is represented here. However, this is speculative and the ploughing may be more recent in origin.
- 6.2 Isolated responses in Areas 1 and 2 are of unclear origin. Although it is possible that isolated pit-type features are represented here, these responses may equally result from more recent ground disturbance. There is no clear archaeological pattern.
- 6.3 Area 3 is dominated by modern ferrous responses and magnetic disturbance. A negative linear response runs through the data set and most likely represents a modern service pipe.
- 6.4 A short linear response in Area 3 appears parallel to the service pipe. Although it is possible that a short ditched feature is represented here, there are no further responses of interest, and this may equally result from more recent ground disturbance.
- 6.5 Consultation with a licensed archaeologist and with the Department of Housing, Local Government and Heritage is recommended to establish if any additional archaeological works are required.

7 Technical Information Section

Instrumentation & Methodology

Detailed Gradiometer Survey

Detailed gradiometer survey can either be targeted across a specific area of interest or conducted as a blanket survey across an entire application area, often as a standalone methodology.

Sampling methodologies can vary but a typical survey is conducted with a sample interval of 0.25m and a traverse interval of 1m. This allows detection of potential archaeological responses. Data is collected in grids measuring 40m x 40m, with the data displayed accordingly. A more detailed survey methodology may be applied where archaeological remains are thought likely. This can sometimes produce results with a more detailed resolution. A survey with a grid size of 20m x 20m and a traverse interval of 0.5m will provide a data set with high resolution.



Bartington GRAD 601-2

The Bartington Grad 601-2 instrument is a specifically designed gradiometer for use in archaeological prospection. The gradiometer operates with a dual sensor capacity making survey very fast and effective. The sensors have a separation of 1m allowing greater sensitivity.

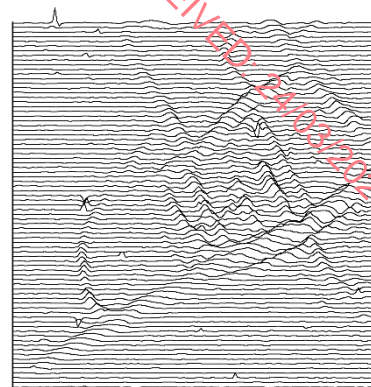


Frequent realignment of the instruments and zero drift correction ensure a constant high quality of data. Extremely sensitive, these instruments can detect variations in soil magnetism to 0.1nT, affording diverse application throughout a variety of archaeological, soil morphological and geological conditions.

Gradiometer Data Display & Presentation

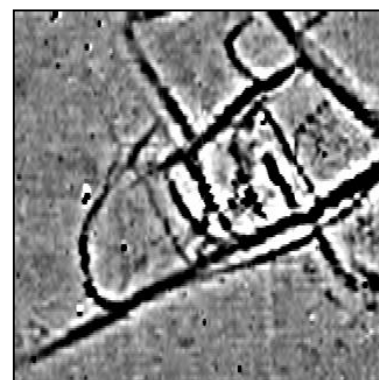
XY Trace

The data are presented as a series of linear traces, enabling a semi-profile display of the respective anomalies along the X and Y-axes. This display option is essential for distinguishing between modern ferrous materials (buried metal debris) and potential archaeological responses. The XY trace plot provides a linear display of the magnitude of the response within a given data set.



Greyscale*

As with dot density plots, the greyscale format assigns a cell to each datum according to its location on the grid. The display of each data point is conducted at very fine increments, allowing the full range of values to be displayed within the given data set. This display method also enables the identification of discrete responses that may be at the limits of instrument detection. In the summary diagrams processed, interpolated data is presented. Raw un-interpolated data is presented in the archive drawings along with the xy-trace plots.



Interpretation

An interpretation of the data is made using many of the plots presented in the final report, in addition to examination of the raw and processed data. The project managers' knowledge and experience allow a detailed interpretation of the survey results with respect to archaeological potential.



**XY Trace and raw greyscale plots are presented in archive form for display of the raw survey data. Summary greyscale images of the interpolated data are included for presentation purposes and to assist interpretation. The archive plots are provided as PDF images upon request.*

Glossary of Interpretation Terms

Categories of responses may vary for different data sets. The list below are the most used categories for describing geophysical responses, as presented in the summary interpretation diagrams.

Archaeology

This category refers to responses which are interpreted as of clear archaeological potential and are supported by further archaeological evidence such as aerial photography or excavation. The term is generally associated with significant concentrations of former settlement, such as ditched enclosures, pits, and associated features.

? Archaeology

This term corresponds to anomalies that display typical archaeological patterns where no record of comparative archaeological evidence is available. In some cases, it may prove difficult to distinguish between these and evidence of more recent activity also visible in the data.

Area of Increased Magnetic Response

These responses often lack any distinctive archaeological form, and it is therefore difficult to assign any specific interpretation. The resulting responses are site specific, possibly associated with concentrations of archaeological debris or more recent disturbance to underlying archaeological features.

Trend

This category refers to low-level magnetic responses barely visible above the magnetic background of the soil. Interpretation is tentative, as these anomalies are often at the limits of instrument detection.

Ploughing/Ridge & Furrow

Visible as a series of linear responses, these anomalies equate with recent or archaeological cultivation activity.

? Natural

A broad response resulting from localised natural variations in the magnetic background of the subsoil; presenting as broad amorphous responses most likely resulting from geological features.

Ferrous Response

These anomalies exhibit a typically strong magnetic response, often referred to as 'iron spikes,' and are the result of modern metal debris located within the topsoil.

Area of Magnetic Disturbance

This term refers to large-scale magnetic interference from existing services or structures. The extent of this interference may in some cases obscure anomalies of potential archaeological interest.

Bibliography

European Archaeological Council (EAC) (2016) '*Guidelines for the use of Geophysics in Archaeology*' by Armin Schmidt, Paul Linford, Neil Linford, Andrew David, Chris Gaffney, Apostolos Sarris, and Jörg Fassbinder.

English Heritage (2008) '*Geophysical guidelines: Geophysical Survey in Archaeological Field Evaluation*.' Second Edition.

Gaffney, C. Gater, J. & Ovenden, S. (2006) '*The use of Geophysical Techniques in Archaeological Evaluations*.' IFA Paper No. 6.

Gaffney, C & Gater, J (2003). '*Revealing the buried past: Geophysics for Archaeologists*.' Tempus Publishing Limited.

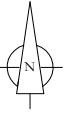
National Soil Survey of Ireland (1980) *General soil map second edition (1:575,000)*. An Foras Taluntais.

List of Figures

Figure	Description	Scale
Figure 1	Site & Survey Location Diagram	1:3,000
Figure 2	Areas 1&2: Summary Greyscale Image	1:1,250
Figure 3	Areas 1&2: Summary Interpretation Diagram	1:1,250
Figure 4	Area 3: Greyscale Image & Interpretation	1:1,250

Archive Data Supplied as a PDF Upon Request

A1.01	Raw data XY-Trace plot & greyscale image	1:500
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Application Area



Detailed
Gradiometer Survey

0 metres 120

Client:

John Cronin & Associates

Project:

Geophysical Survey
Sea Gardens, Bray,
County Wicklow

Title:

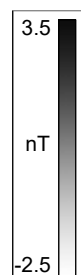
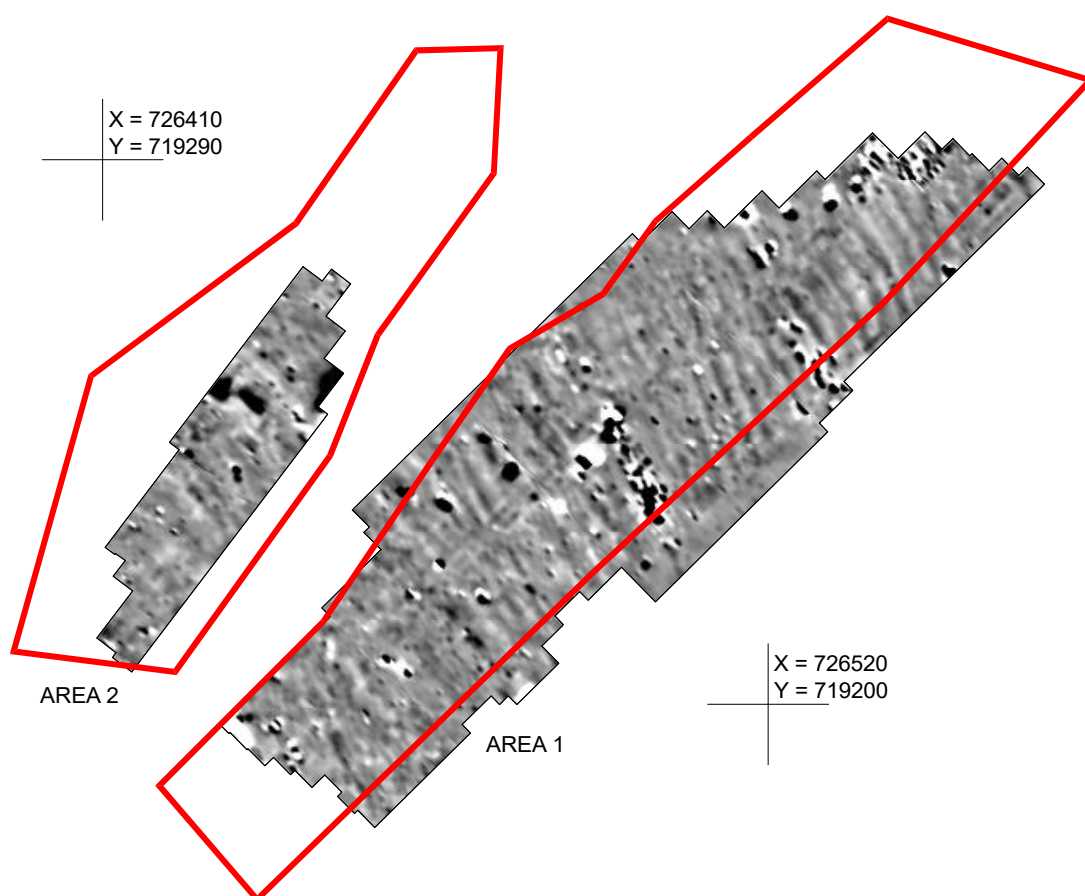
Site & Survey Location

 **J.M. Leigh
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www.jmlsurveys.com

Scale @ A4: 1:3,000
Figure: 1
Licence No.: 24R0160
Issue Date: 04.03.2024



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Application Area

0 metres 50

Client:
John Cronin & Associates

Project:
Geophysical Survey
Sea Gardens, Bray,
County Wicklow

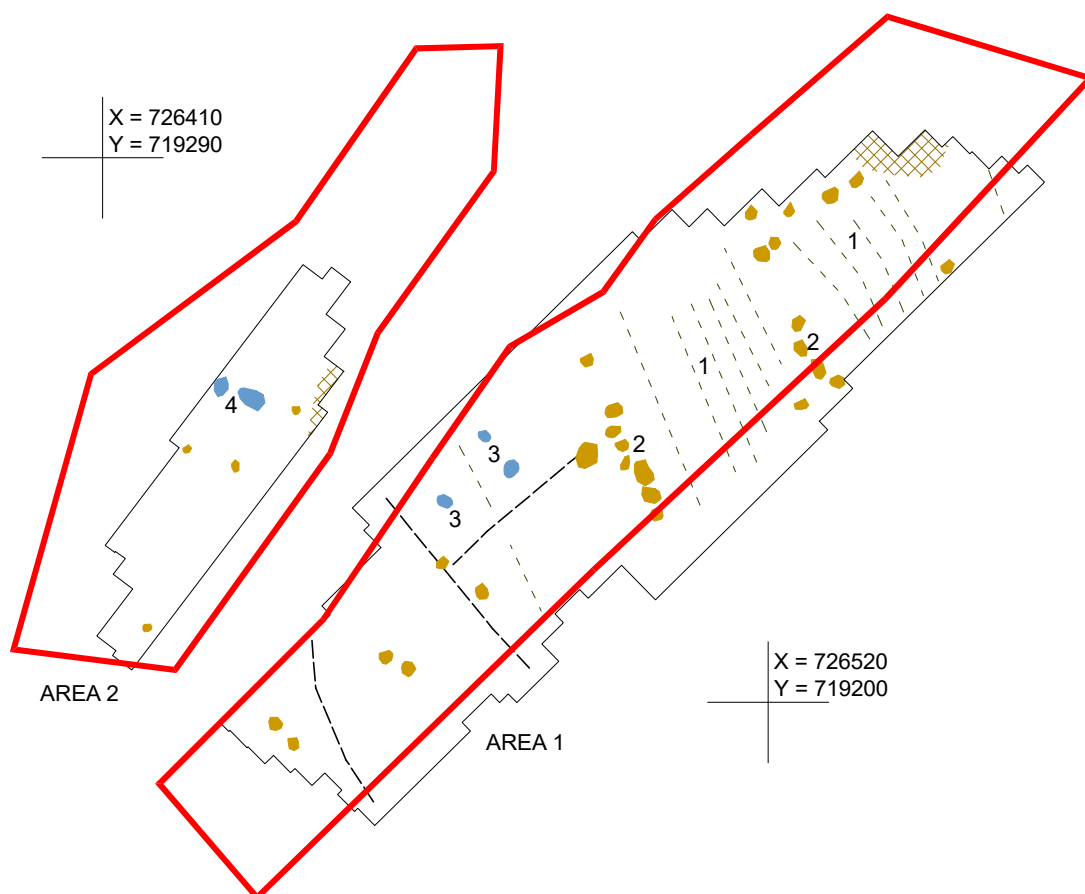
Title:
Areas 1&2:
Summary Greyscale Image

 **J.M. Leigh
Surveys Ltd.**
www.jmlsurveys.com

Scale @ A4: 1:1,250
Figure: 2
Licence No.: 24R0160
Issue Date: 04.03.2024



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Application Area

0 metres 50



?Archaeology



Trend



Ploughing



Modern ferrous



Modern magnetic disturbance

Client:

John Cronin & Associates

Project:

Geophysical Survey
Sea Gardens, Bray,
County Wicklow

Title:

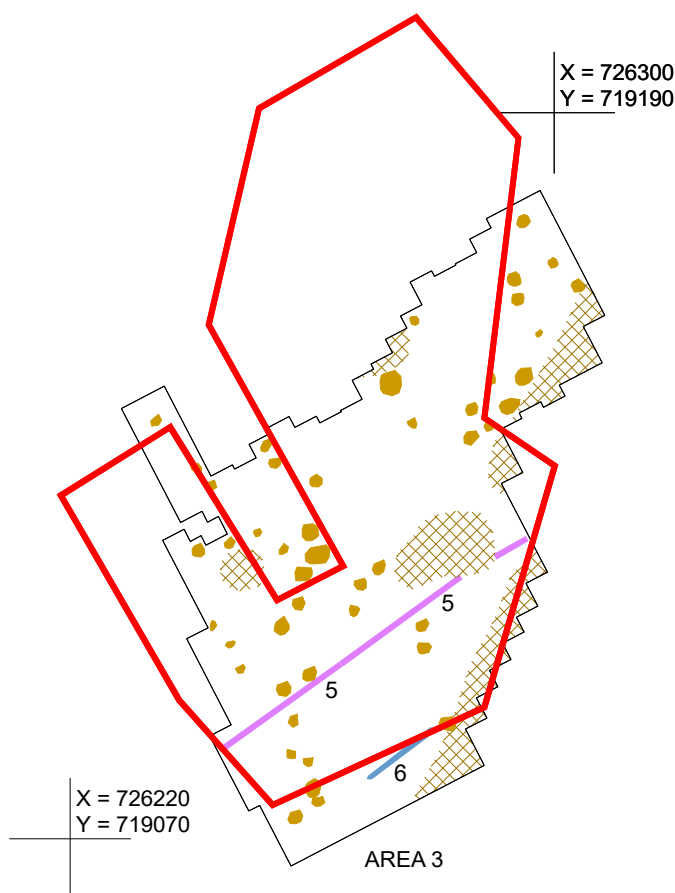
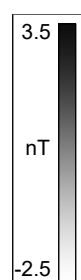
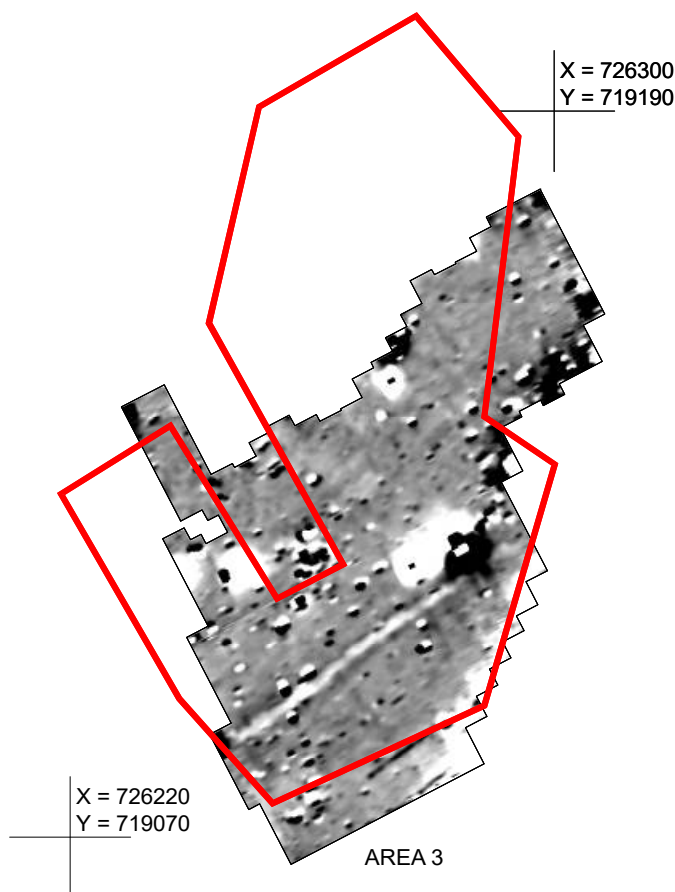
Areas 1&2:
Summary Interpretation

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Scale @ A4: 1:1,250
Figure: 3
Licence No.: 24R0160
Issue Date: 04.03.2024



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 Application Area

0 metres 50



?Archaeology



Negative response -
?Pipe



Modern ferrous



Modern magnetic
disturbance

Client:
John Cronin & Associates

Project:
Geophysical Survey
Sea Gardens, Bray,
County Wicklow

Title:
Area 3:
Summary Grayscale Image &
Interpretation

 **J.M. Leigh
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Scale @ A4: 1:1,250
Figure: 4
Licence No.: 24R0160
Issue Date: 29.02.2024

14.3 ASI Inventory

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Archaeological Inventory

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DU026-124----/WI004-005----

Class: Linear Earthwork

Townland: Ravenswell/Cork Great

Scheduled for inclusion in the next revision of the RMP: Yes

Description: A continuous curving section of flat-topped bank (L 150m; Wth at top 1.60m; Wth at base 10m; H.0.80m) which runs on a NNE - WSW axis. It follows the line of the county boundary and is in flat coastal terrain with view onto the Sugarloaf Mountain to the S. Some mature Sycamores grow along the side. Possibly part of the Pale Ditch. (pers. comm. Rob Goodbody; SMR file DU026-124----). Archaeological test trenching was carried out on a section of this ditch in 2002 (Excavation Licence 02E1717), the results suggested that it had been levelled in the area tested during the construction of the golf course (Gowan 2004, 533). Archaeological monitoring, carried out as part of the Shanganagh and Bray main drainage scheme in 2005 (Excavation Licence 02E1717 ext.), uncovered a low much-degraded bank (Wth 5.5m; H c. 0.3m) and a ditch (Wth 2.5m; D 0.6m) alongside it to the S (Moriarty 2005, 417).

Rob Goodbody (pers. comm.) has identified a section of bank running through Bray Golf Course which may be part of the Pale Ditch. It follows the line of the county boundary and is in flat coastal terrain with views onto the Sugarloaf Mountain in the South. It is a continuous curving section of bank (L 150m) which runs on a NNE -WSW axis. It comprises a splayed, flat-topped bank (Wth at top 1.60m; Wth at base 10m; H.0.80m) and some mature Sycamores grow along the side.

WIO04-001----

Class: Historic Town

Townland: Bray, Little Bray and Ravenswell

Scheduled for inclusion in the next revision of the RMP: Yes

Description: The town of Bray is situated on the Dargle River and is divided into Little Bray to the N and Great Bray to the S. The manor of Bray was granted to Walter de Ridelesford before 1176 and was resigned to the Crown in 1280. The first reference to a burgage is c. 1225 when de Ridelesford granted a burgage 'opposite my castle beyond the river' to St Mary's Abbey, Dublin. A mill stood below the castle (WI004-001003-) and a number of Roman burials were discovered near the seafront (WI004-004----). (Scott 1913; Davies 1986, 22; Bradley and King 1989, 12-17).

WI004-001001-

Class: Cross Slab (find spot)

Townland: Bray

Scheduled for inclusion in the next revision of the RMP: Yes

Description: A cross inscribed slab was found at this location, now in the National Museum of Ireland (NMI Register 1965:50).

WI004-001003-

Class: Castle - unclassified

Townland: Bray

Scheduled for inclusion in the next revision of the RMP: Yes

Description: Shown as a tower house in the 17th century and possibly the site of an Anglo-Norman castle known to have been erected before 1225 by Walter de Ridelesford. The site is distinguished only by a marked curve in the road at this point. (Price 1957, 334; Davies 1986, 22).

WI004-001004-

Class: Church

Townland: Bray

Scheduled for inclusion in the next revision of the RMP: Yes

Description: Situated on level ground. The present 19th-century parish church, now in commercial use, may stand on the site of an early wooden church called the 'Dearteach' or 'oak house' in several Anglo-Norman documents (Brooks 1951-2, 122) and a subsequent Norman foundation. The present church may incorporate portions of one erected in 1609 although nothing visible survives. Two 17th-century graveslabs (Richard Whichil ob. 1697, Robert Burfield ob. 1700) are located to the S of the church. It was part of the medieval borough of Bray (WI004-001----). (Lewis 1837, vol. 1, 222; Price 1957, 334-5)



WI004-001006-

Class: Castle – tower house

Townland: Little Bray

Scheduled for inclusion in the next revision of the RMP: Yes

Description: 'Castle' indicated on the First ed. OS 6-inch map. No visible trace survives and the site now forms part of the road. (Scott 1913, 162-4)

WI004-002----

Class: Martello Tower

Townland: Bray

Scheduled for inclusion in the next revision of the RMP: Yes

Description: Described by the National Inventory of Architectural heritage as follows:

'Detached multiple-bay two-storey former Martello tower, built 1804-5, and now in use as a private residence. The building is constructed in coursed granite. The circular tower comprises of a high battered granite wall with small plain defensive openings. It is now surmounted by a glazed "drum" with a glazed conical roof. The tower overlooks the shoreline and site on a bailey-like artificial mound which is contained by a battered stone wall.'

RMP: WI004-002001-

Class: Battery

Townland: BRAY

Description: Martello Tower and Battery No. 2 (Kerrigan 1995, 170). Martello Tower (WI004-002----) described by the National Inventory of Architectural Heritage [NIAH] as follows: 'Detached multiple-bay two-storey former Martello tower, built 1804-5, and now in use as a private residence. The building is constructed in coursed granite. The circular tower comprises of a high battered granite wall with small plain defensive openings. It is now surmounted by a glazed "drum" with a glazed conical roof. The tower overlooks the shoreline and site on a bailey-like artificial mound which is contained by a battered stone wall.'

<http://www.buildingsofireland.ie/niah/search.jsp?type=record&county=WI&no=16301084#> [Accessed 29 January 2013]

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14.4 Database of Excavations

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Excavation summaries

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Site Name	Licence No.	Summary
Ravenswell, Bray Commons (Co. Wicklow), Cork Great (Co. Dublin)	22E0552	A programme of archaeological monitoring of topsoil stripping was undertaken at a development at Ravenswell and Cork Great, Bray Co Wicklow and Dublin. The site has previously been subject to a geophysical survey and targeted testing programme (Detection Licence Ref. 20R02014, Excavation license no. 20E0482). The site is bisected by linear earthwork (WI004-005/DU026-124) which has been demonstrated to be a late 19th- early or early 20th-century landscape feature (Licence no. 20E0482). No archaeology was found.
Ravenswell, Bray Commons (Co. Wicklow), Cork Great (Co. Dublin)	20E0482	During archaeological testing of a proposed development site at Ravenswell and Bray Commons, County Wicklow and Cork Great, County Dublin, ten linear test trenches, totalling 650m in length, were excavated across the 7.3ha site. The testing programme sought to investigate a number of areas of limited archaeological potential which were identified during a recent geophysical survey (20R02014) undertaken within the subject lands, as well as the alignment of a recorded linear earthwork (WI005-005—/DU026-124—), previously postulated to represent a portion of the 'Pale' ditch, which extends across the subject lands in a general east to west alignment. The licensed use of a metal-detector was incorporated into the test trenching investigations to assist in artefact retrieval (Detection Device Licence ref. 20R0179). No potential archaeological features or artefacts were uncovered in any of the excavated test trenches. Manual investigation of the linear earthwork revealed it to be a late 19th- or early 20th-century landscape feature and not a section of the 'Pale' ditch as had been previously postulated. The stratigraphy encountered in both sections suggests that the landscape feature was formed by the demolition of the upper courses of a boundary wall. The rubble from this wall was primarily heaped on the northern face of the wall where the terrain slightly dips and was subsequently infilled to create a rampart to the elevated terrain to the south. In turn, the lower course of the wall could now function as a retaining wall allowing for additional dumped material to be spread out on top of the rampart to create a flat-topped earthwork. The ditch cut appears contemporary with the construction of the monument and was only present on the northern side of the wall. Likewise, its basal fills also contained late 19th-/early 20th-century glass and ceramic sherds. In summation, the archaeological evidence, in conjunction with the cartographic evidence and previous archaeological investigations, suggests that the linear earthwork was constructed in the late 19th early 20th century.
Ravenswell, Bray, Wicklow	16E0340	Monitoring of groundworks was carried out at the site of the proposed St Philomena's School and Coláiste Ráithín, on a green-field site in Bray, Co. Wicklow. No archaeological material was recorded in the course of monitoring.
Ravenswell, Bray, Wicklow	14E0225	Test trenching was carried out at the site of the proposed St Philomena's School and Coláiste Ráithín, on a 3.9 ha green-field site in Bray, Co. Wicklow. Five test trenches totalling 250m were excavated within the site following a geophysical survey. Trench locations were targeted on the supposed location of a Pale Boundary Ditch which was also located in the course of a geophysical survey. Testing revealed the ditch as a 19th-century feature. 19th-century glass and pottery finds were uncovered at the base of the trenches across the ditch. Subsoil varied between a compact orange, brown stony clay and natural gravel. Topsoil was consistently deep across the majority of the site, ranging from 0.28-0.35m deep. There were no archaeological features recorded in the course of testing.
Ravenswell/Cork Great/Cork Little/	11E0304	Monitoring was carried out as part of the construction of a 6km pipeline and 5,000m3 storm-water storage tank as part of the Shanganagh-Bray Main Drainage Scheme. The pipeline wayleave was 14m wide and ran through the townlands of Ravenswell, Cork



Site Name	Licence No.	Summary
Shanganagh, Dublin		Great, Cork Little and Shanganagh. The work was carried out for Roadbridge on behalf of Dun Laoghaire–Rathdown County Council. No features of archaeological potential were discovered during the course of the works.
Shanganagh/ Cork Little/Cork Great/Little Bray/Bray Commons, Dublin	05E0392	Monitoring of geotechnical investigations in advance of the Shanganagh Bray main drainage scheme was carried out in March and April 2005. A preliminary assessment found that the proposed scheme runs through an area of archaeological importance, with a number of monuments recorded in the vicinity. While only one known monument, a linear earthwork thought to be part of the Pale ditch, will be directly impacted on by the scheme, it will skirt the constraint ring of SMR 26:68, an abbey church and graveyard site, and traverse a number of areas of archaeological potential; no trial pits were excavated at the archaeological monuments. A total of 37 trial pits were monitored. They varied in size from 2–3m long and 1–1.2m wide. For the purpose of the geotechnical investigations, the trial pits were excavated to a depth of up to 4m into the natural subsoil. No features of archaeological significance were discovered. Monitoring of the pipe trench will be carried out in 2006.
Bray, Wicklow	05E0392 EXT.	Monitoring was undertaken as part of the Shanganagh Bray main drainage scheme (Contract 1), which involves the expansion and replacement of the existing treatment plant in order to improve the seawater quality of the Shankill area. In addition, a network of pipes stretching from Bray to Shankill will be laid to feed the upgraded plant. A small area of the Old Bray Golf Course at Ravenswell Road, beside the rail line and the River Dargle, was stripped of topsoil to facilitate the erection of a works compound. The soil-strip was monitored, and no archaeology was observed.
Corke Great, Dublin	04E0354	Testing was undertaken across the line of a possible linear earthwork which runs through the lands of the present Bray Golf Links. The feature consists of a low bank (max. dimensions c. 3.5m wide by c. 0.3m high), which is barely discernible in places and is more readily identified by a line of relatively mature trees which grow along its length. The OS 6-inch map of 1840 indicates that the feature
Corke Abbey, Bray	02E1717	<p>One test-trench was opened in November 2002 on the grounds of Bray Golf Club, north of Bray town. The area under investigation is recorded in the SMR as part of the Pale boundary, SMR 26:124, although this identification is not supported by the historical evidence, which points to a possible association with Corke Abbey and to lands outside the Pale and held by the Crown that were leased in the 15th and 16th centuries to the Harrolde and Walshe families, the latter of which held extensive lands in south Dublin incorporating Carrickmines (L. Simpson, pers. comm.). The levelled boundary runs from the railway line north-eastward across part of the golf-course. The remains consist of a linear, flat-topped, tree-lined bank with shallow depressions on either side. The south-western end is the best-preserved section of this feature; the north-eastern end is barely detectable on the ground and is almost level.</p> <p>A section of the proposed Shanganagh and Bray Main Drainage Scheme wayleave passes through the eastern limit of the Pale boundary, at its most poorly preserved point. The excavation focused particularly on assessing the impact of the creation of haul roads during the laying of a new sewer.</p> <p>The test-trench was 14.2m long, 1m wide and 0.8–1m in maximum depth. The cross-sections exposed the levelled and reworked remains of the boundary bank but no evidence of well-defined ditch cuts on either side of the levelled bank. There is a possibility, therefore, that the remains of a ditch or ditches exist below the level excavated. All of the material exposed either was sterile or had modern inclusions as a consequence of golf-course development. A full topographical survey and terrain modelling of the levelled bank through the area of the proposed wayleave and for a distance of 20m beyond it were undertaken as mitigation. Trench excavation for pipe laying will be monitored during the construction phase, although it may not reach a level at which greater definition will be gained</p>

Site Name	Licence No.	Summary
Corke Great, Bray, Wicklow	01E0220	Testing took place in advance of construction in March 2001. Five test-trenches were excavated across the development area. One ditch was noted in Trench 2. No artefacts were recovered from it to suggest a date.
Bray Little/ Ravenswell/ Bray Commons/ Killarney/Bray, Wicklow	12R0053	A wade survey and a magnetometry survey by hand-held metal detection were carried out at the site out along a 4km stretch of the River Dargle at Bray, Co. Wicklow. The work was carried out in advance of a flood defence scheme that includes widening and deepening of the river channel. Where possible, metal detector hits were examined and logged. These were logged with a high frequency at over 1 per square metre. A large number of the hits were visible and consisted of modern dumped material. No archaeologically significant material was encountered.
Bray Little/ Ravenswell/ Bray Commons/ Killarney/Bray, Wicklow	12E0123	<p>Monitoring is being undertaken for a flood defence scheme on 4km of the Dargle River. This works include widening and deepening the river and including a new culvert at Bray Bridge. Works uncovered a number of features at Bray Bridge.</p> <p>The earliest bridge recorded in Bray in 1666 crossing the River Dargle was replaced by a four-arch bridge in 1736. This bridge collapsed in a storm and was replaced by another four-arch bridge in 1741. The current bridge was constructed in the middle of the 19th century. Two buttresses of the earlier bridge are visible at low tide under the southern arches of the existing bridges; these will be excavated in the summer of 2013.</p> <p>Underneath the existing bridge an earlier stone structure was uncovered; this was an amalgam of the 1736 and the 1741 bridges. The eastern section of the bridge consisted of two parallel walls in-filled with sand and gravel. This was part of the 1736 bridge. The second wall at the west was constructed in 1741; it was a large wall with a culvert. A cobblestone surface was also uncovered in places. To the west of the stone bridge on the Lower Dargle Road, a section of an earlier wooden bridge was uncovered. This was uncovered within what was the river bed. The bridge consisted of a large base plate (T101) with three upright timbers inserted into it (T102, T103 and T104). Two timbers were initially visible crossing horizontally but these collapsed upon exposure. The timbers appear to have been laid directly onto the river bed. There was no evidence of an excavated trench. The base plate was orientated south-west to north-east. The base plate was 6.9m in length, 0.42m in width and was 0.25m thick. At the south-west it was partially damaged by the insertion of metal piles. Three sub-rectangular mortice joints and a cross-shaped double mortice were recorded in the timber. The rectangular mortises were cut through the timber to support the upright timbers. These measured 0.3m x 0.2m on average. The upright timbers or "tenons" were cut for insertion into the timber. This method of using mortise and tenon joints creates a very strong joint.</p> <p>An interesting double cross-shaped mortise joint contained two through mortises, at the north. This would have held an upright timber and contained the remains of a wooden wedge. The second mortise may have been a splayed joint. These can often be held in place with a brace but this was not visible. A timber was recovered (not in context) which would have been placed in this joint and splayed towards the south. This would have given extra support to the upper level of the bridge. The tenon was held in place using a wooden wedge, the remains of which were removed.</p> <p>Analysis of the timbers by Ellen O'Carroll has show that the larger timbers are oak and the timber wedges are alder and holly. Dendrochronology dates for T101 indicate a felling date range of AD1116 ± 9 years or later. The date for T102 is AD1100 ± 9 years or later, or after AD1100. This would indicate a late 12th century or early 13th-century date for the bridge.</p> <p>Further works will be undertaken during 2013 within the river bed and further remains of this bridge may be uncovered.</p>
Bray Little, Bray, Wicklow	130121	A flood defence scheme is being undertaken along 4km of the River Dargle. This work includes widening and deepening the river and including a new culvert at Bray Bridge. As part of the E.I.S. for the works two arches of an earlier bridge were recorded within

Site Name	Licence No.	Summary
		<p>the arches of the existing bridge over the Dargle in the centre of the town. It was recommended that these be excavated.</p> <p>The earliest bridge recorded in Bray in 1666 crossing the River Dargle was replaced by a four-arch bridge in 1736. This bridge collapsed in a storm and was replaced by another four-arch bridge in 1741. The current bridge was constructed in the middle of the 19th century. Two buttresses of the earlier bridge are visible at low tide under the southern arches of the existing bridge a third arch was uncovered as a result of excavation under the northern arch. All these features and associated works were fully excavated.</p> <p>Under the arch of the bridge at the northern bank of the river a buttress of a bridge was uncovered (Area A). This was surrounded by a thick layer of concrete up to 1.2m in depth which had been poured into the area after Hurricane Charlie (1986), to secure the existing bridge. This layer was removed by a rock breaker. The main section of the feature was random rubble walling with a lime mortar. Ashler walling was visible at the south and east. This consisted of large limestone blocks held together with a lime mortar. At the north this had been removed during the construction of the existing bridge. When the stone was removed a wooden raft, foundation was uncovered. This consisted of seven interlocking timbers. Only two wooden dowels were recorded, the timbers were laid into notches in the base timbers. This would have formed a stable layer in clay base of the bridge and avoided subsidence.</p> <p>The buttress under the central northern arch of the bridge was also surrounded by a thick layer of concrete (Area B). This buttress was visible at low tide. The main section of the feature was random rubble walling with a lime mortar. Ashler walling surrounded the feature on all sides. This consisted of limestone blocks held together with a lime mortar; the blocks were narrow and may have been added to finish the bridge as a cladding rather than for strength as in the previous buttress. When the stone was removed a wooden raft, foundation was uncovered. This consisted of one timber at the centre and a large number of wooden stakes. These were concentrated at the west and north with some also visible at the east. The highest concentration of the stakes was at the apex of the buttress, this is the area with the fastest flow of water and the greatest possibility of erosion of the bridge. This timber frame is quite different from the foundation layer in Area A.</p> <p>The southern arch of the bridge contained a buttress also visible at low tide. This was surrounded by sand and silt from the river. The main section of the feature was random rubble walling with a lime mortar. Ashler walling was visible at the south, east and north. This consisted of large limestone blocks held together with a lime mortar. The buttress was on a foundation layer of stone. This feature was truncated at the west by earlier works in the river. Unlike the other two buttresses there was no timber foundation in this area. This arch is out of the main flow of the river and is only used during high tides or periods of flooding.</p> <p>The stone bridge exposed as part of the works appears to be an amalgam of two earlier bridges on the site, the 1736 bridge and the 1741 bridge. The buttress in the northern arch (Area A) is of a different construction than the two others that were recorded. It has larger dimensions; the limestone blocks are larger and the foundation layer is of a different construction. This feature was reused as part of the 1741 bridge. The buttresses in the remaining areas are of a similar size and the materials used are of similar dimensions. The buttress in Area B was laid on a foundation of wooden piles. This was concentrated at the west of the pier. There was no wooden foundation of the buttress in Area C, at the southern extent of the bridge, and this arch is drier.</p>

14.5 Test Trenching

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Archaeological testing report

Proposed residential development, Sea Gardens, Phase 2, Ravenswell and Bray Commons, County Wicklow



Excavation Licence Number: 24E0428

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Core data

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Project type	Test trenching
Archaeologist	Camilla Brännström
Excavation Licence	24E0428
Townland	Ravenswell and Bray Commons
Town	Bray
County	Wicklow
OS Sheet	WI005
ITM	726365, 719150
Description of subject site	The subject site is located within the townlands of Ravenswell and Bray Commons, on the northern side of Bray town, County Wicklow. The proposed development area comprises 9.37 ha (gross) of brownfield and greenfield areas. The application area has been landscaped as a golf club since the late 19 th century and is characterised by short grass with scrub, rough grass and mature trees in places. The centre of the site is currently occupied by a temporary construction compound and car park.
Summary of findings	<p>13no. archaeological test trenches, measuring 450 linear metres, were excavated within available greenfield areas of the subject site. Three of the test trenches targeted geophysical anomalies identified during a previous geophysical survey (licence no. 24R0160). This programme of pre-development testing was undertaken in relation to an application for planning permission at the site for the construction of a housing development.</p> <p>One archaeological feature, a burnt spread, was uncovered within Trench 5. No archaeological features were identified in any of the other trenches.</p>

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1. Introduction

John Cronin & Associates were commissioned to undertake a programme of licenced archaeological testing to assess the archaeological impact of a proposed housing development known as Sea Gardens, Phase 2, Ravenswell and Bray Commons, County Wicklow (**Figure 1**).

Pre-planning consultation with the Development Applications Unit in relation to the proposed development returned a recommendation for a detailed and field-based archaeological impact assessment, comprising a programme of licensed geophysical survey and archaeological testing, to be carried out and included as part of the EIAR.

The archaeological testing was carried out on 16 – 18 April 2024 under Excavation Licence no. 24E0428. The archaeological testing programme targeted potential archaeological features identified from a geophysical survey (Detection Licence Ref. 24R0160) undertaken in February 2024 and also included a number of general trenches within the proposed development footprint. A total of 13 test trenches with a combined length of 450m were excavated across the site. One test trench (T3) was omitted from the testing due to several underground services being detected within it. Test trench 2 was also adjusted slightly to avoid an underground electric cable but this did not impact on the archaeological assessment. Test trench 5 was shortened slightly to avoid an existing footpath. One archaeological feature, a burnt spread, was identified in Trench 5. No other archaeology was found.

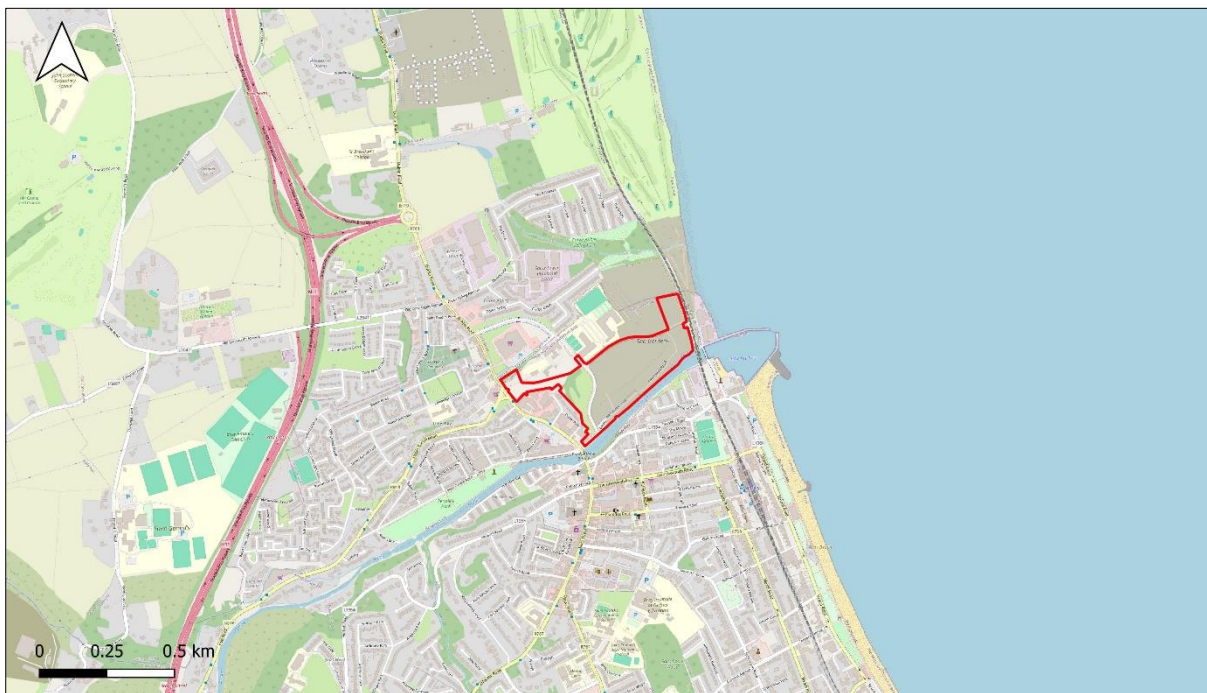


Figure 1: General location of development site (red line) (Source: OpenStreetMap)

Section 2 of this report provides archaeological context for the general area within 500m of the proposed development. **Section 3** summarises the results of the archaeological test trenching, while **Section 4** details the preliminary conclusions arising from the site investigations. One archaeological feature, a burnt spread, was uncovered within Trench 5.

2. Context

Location

The development site is located in the townlands of Ravenswell and Bray Commons, County Wicklow on the northern side of Bray town. The total development area comprises c. 10ha of brownfield and greenfield areas. The application area has been landscaped as a golf club since the late nineteenth century and is characterised by short grass with scrub, rough vegetation and mature trees in places. The centre of the site is currently occupied by a temporary construction compound and car park while the northern portion has been used to stockpile soil. A recently constructed road orientated north-south separates the western portion of this site from the remainder of the Phase 2 lands. The southeast margin of the site, which is bounded by the River Dargle, is occupied by a car park and access road (now closed) (**Figure 2**).



Figure 2: Detailed location of development site (red line) (Source: Government of Ireland)

There are no archaeological sites recorded within the boundary of the development. There are a total of 12 sites recorded within 500m of the proposed development, one of which is a redundant record (**Table 1** and **Figure 3**). The area of archaeological potential associated with the historic town of Bray (WI004-001---) encroaches slightly on the western margin of the development. A linear earthwork (WI005-005--- / DU026-124---) recorded c. 60m to the north of the development boundary was formerly thought to represent a section of the Pale ditch, however recent archaeological investigations associated with Phase 1 of the Sea Gardens development has shown that it is, in fact, a 19th or early 20th century landscape feature.

The discovery of a number of Romano-British burials (WI004-004----) in the shoreline area now occupied by Esplanade Terrace within Bray town (WI004-001----) to the south demonstrates that cross-sea contacts with Britain existed within the wider area during the 2nd century AD. In the period prior to the Anglo-Norman invasion, the area was shared between Domnall MacCilla Mo-Cholmoc, and the offspring of the Dublin Ostmen Thorkill (Davies 1998). Following the arrival of the Anglo-Normans, the manor of Bre was granted by the Earl of Pembroke, then Lord Deputy, to Walter de Ridlesford in 1173 who shortly afterwards built a motte earthwork castle (WI004-001003-) in the area. The former 19th century parish church (WI004-001004-) in Bray is believed to have been built on the foundations of an earlier church, described in Anglo-Norman documents as made of oak.

The study area surrounding the proposed development site contains the recorded location of a levelled tower-house (WI004-001006-) located c. 400m to the west and a cross inscribed slab (WI004-001001-) found at a property on Dublin Road c. 100m to the east of the development area which is now in the National Museum (NMI reg. 1965:50). The 500m study area surrounding the proposed development site contains two Martello towers (DU026-070---- and WI004-002---) and a church and graveyard (DU026-068001-/02-) belonging to Corke Abbey which date to the post-medieval period. The former grounds of Corke Abbey also contains a holy well (DU026-069---) of unknown date.

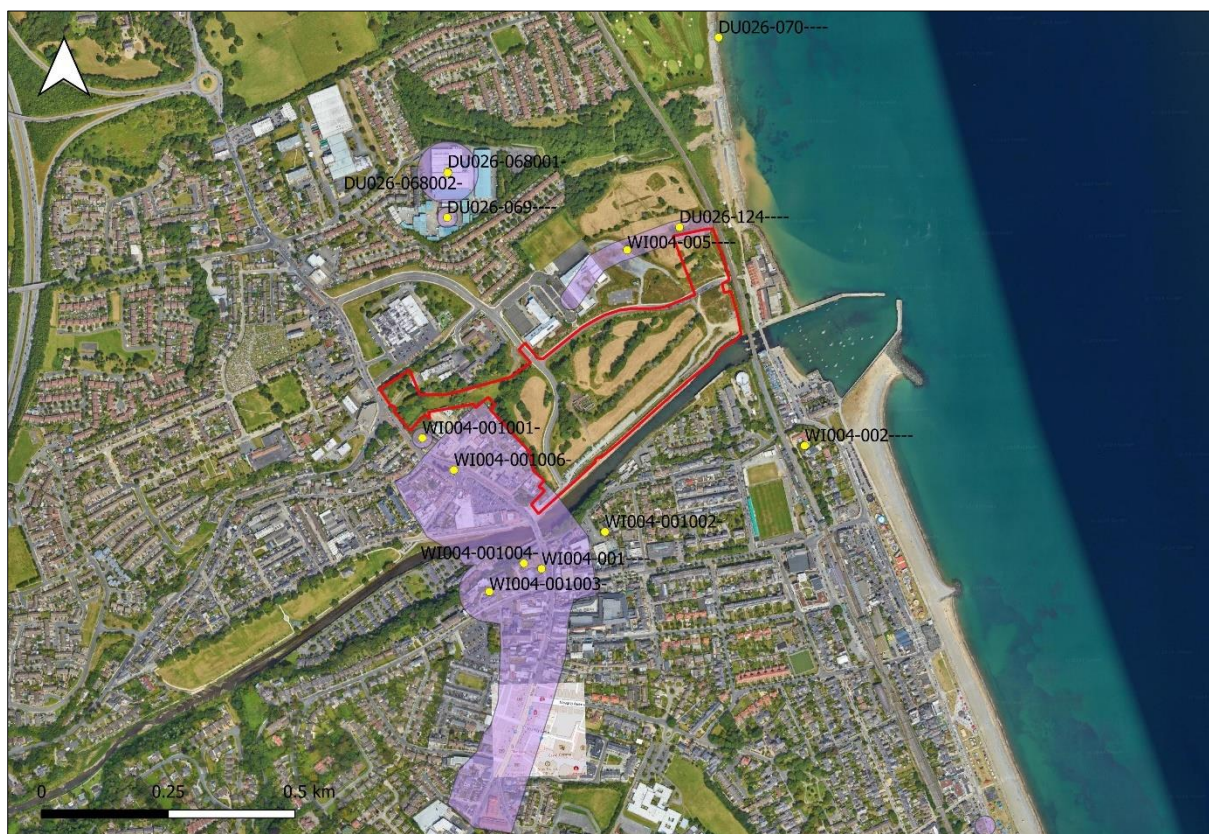


Figure 3: Recorded archaeological sites within 500m of the boundary of the development site
(Source: Government of Ireland)



Figure 4: Showing the area of archaeological potential of the historic town of Bray (WI004-001----) (purple) extending within the boundary of the development site (Source: Government of Ireland)

Table 1: Recorded archaeological sites within 500m of the proposed development boundary

Monument no.	Classification	Townland	ITM (E, N)
DU026-068001-	Church	Cork Great	726103, 719600
DU026-068002-	Graveyard	Cork Great	726103, 719598
DU026-069----	Ritual site - holy well	Cork Great	726102, 719510
DU026-070----	Martello tower	Cork Great	726637, 719865
DU026-124----	Linear earthwork	Cork Great	726560, 719491
WI004-001----	Historic town	Bray, Ravenswell, Little Bray	726288, 718817
WI004-001001-	Cross-slab	Bray	726053, 719075
WI004-001002-	Redundant record	Bray	726413, 718890
WI004-001003-	Castle - unclassified	Bray	726185, 718772
WI004-001004-	Church	Bray	726253, 718828
WI004-001006-	Castle - tower house	Little Bray	726115, 719012
WI004-002----	Martello tower	Bray	726807, 719060
WI004-005----	Linear earthwork	Ravenswell	726457, 719446

Topographical files

Consultation of the Topographical Files archive in the National Museum of Ireland revealed one sherd of medieval glazed pottery (NMI reg. no. 2005:5) found in the townland of Cork Great and a stone mortar (NMI reg. no. 1932:6580) recorded from the townland of Little Bray.

Archaeological excavations

A review of the Excavations Database 1969 – 2023 (www.excavations.ie) has revealed that a number of archaeological investigations have been undertaken within the study area including programmes of advance test trenching and construction phase monitoring undertaken along sections of the linear earthwork (WI004-005---/DU026-124---) to the north of this development. The published Excavation Database summaries of the investigations undertaken within the reviewed study area are contained in **Appendix 1** of this report and a summary of relevant examples follows hereafter.

A programme of targeted archaeological test trenching and a metal detection survey (Excavation Licence Ref. 20E0482, Detection Licence Ref. 20R0179) was carried out within the Phase 1 lands to the north of the subject site in 2020. The archaeological test trenching comprised 10 linear test trenches, totalling 650m in length. The testing programme sought to investigate a number of areas of limited archaeological potential which were identified during a geophysical survey (20R02014) as well as the alignment of a recorded linear earthwork (WI005-005--- / DU026-124---), believed to represent a portion of the 'Pale' ditch. No potential archaeological features were uncovered in any of the excavated test trenches. Hand excavated trenches across the recorded linear earthwork confirmed it to be a late 19th early or early 20th century landscape feature and not a section of the 'Pale' ditch as previously suggested. Subsequent monitoring of topsoil removal during the construction phase did not uncover any archaeological features (22E0552).

The excavation of a test trench across the earthwork within the former golf course in advance of a drainage scheme in 2002 (Excavation Licence Ref. 02E1717) revealed no trace of a ditch and only uncovered modern inclusions which the excavator interpreted as the result of recent disturbance (**Appendix 1**). Subsequent monitoring of the drainage scheme revealed a 2.5m wide by 0.6m deep ditch associated with the earthwork which contained modern inclusions (Excavation Licence Ref. 02E1717ext.). The excavator suggested that it might represent a medieval feature that was cleaned out and reused as a field drain at a much later date. A 2004 programme of test trenching across the earthwork found no evidence for a ditch and the low bank was found to overlie 18th/19th century inclusions (Excavation Licence Ref. 04E0354). The excavator concluded that the earthwork was a late 18th- or early 19th-century landscape feature associated with the former Ravenswell House (**Appendix 1**).

A programme of advance test trenching and subsequent archaeological monitoring was also undertaken along the line of the earthwork at the location of St Philomena's School and Coláiste Ráithín to the north of the subject site. Testing across the linear earthwork revealed 19th century inclusions at the base of an associated ditch. The excavator concluded that the earthwork feature was 19th century in date (Excavation Licence Ref. 14E0225). Nothing of archaeological significance was subsequently identified during archaeological monitoring of the construction of the school development. In addition, monitoring of additional works as part of the Shanganagh-Bray main drainage scheme within the former golf-course (Excavation Licence Ref. 05E0392 ext.) revealed nothing of archaeological significance (**Appendix 1**).

A programme of archaeological monitoring (12E0123) was also undertaken for a 4km long flood defence scheme on the Dargle River. The flood defence works include widening and deepening of the river and included the construction of a new culvert at Bray Bridge at the western boundary of the proposed development. Monitoring identified earlier elements of Bray Bridge, including

the remains of a wooden bridge to the west of the stone bridge on the Lower Dargle Road which was dated to the late 12th or early 13th century (**Appendix 1**).

Cartographic review

The cartographic sources examined for the study area include the 17th-century Down Survey map (**Figure 5**), the first edition of the 6-inch (1:10,560 or 6-inch to 1 mile scale) Ordnance Survey (OS) maps (1842) (**Figure 6**), from here on referred to as the 'first edition 6-inch OS map', the 25-inch OS map (1:2500 scale)(surveyed and published 1909) (**Figure 7**) and modern aerial maps (**Figure 8**).

The Down Survey Map records Bray on the Barony of Rathdowne map, which depicts the general area of the subject site without visible structures. The parish map depicts a tower house (W1004-001006-) on the boundary between the townlands of Little Bray and Bray Commons (**Figure 5**). The early- 19th-century first edition OS map depicts the subject site as primarily located within enclosed agricultural land associated with Ravenswell House which is depicted to the north. A tree-lined footpath and boundaries traverse/enclose the field systems and one rectangular structure is noted on northern bank of the River Dargle. Significantly, the river and its floodplain occupies the southeast portion of the development area (location of a two hectare park and undercroft car park as part of the current development proposal) (**Figure 6**). The 25-inch map (1909) records the majority of the development area as located within Bray golf course, first established in 1897. A club house is shown within the central portion of the site. The river has been re-routed immediately to the south of the development area and a road, labelled Ravenswell Road, has been constructed on reclaimed land along the northern bank of the river (**Figure 7**). Modern aerial imagery suggests that the southern and southeast margin of the site has previously been developed as part of the River Dargle flood relief works in the 2000s (**Figure 8**).

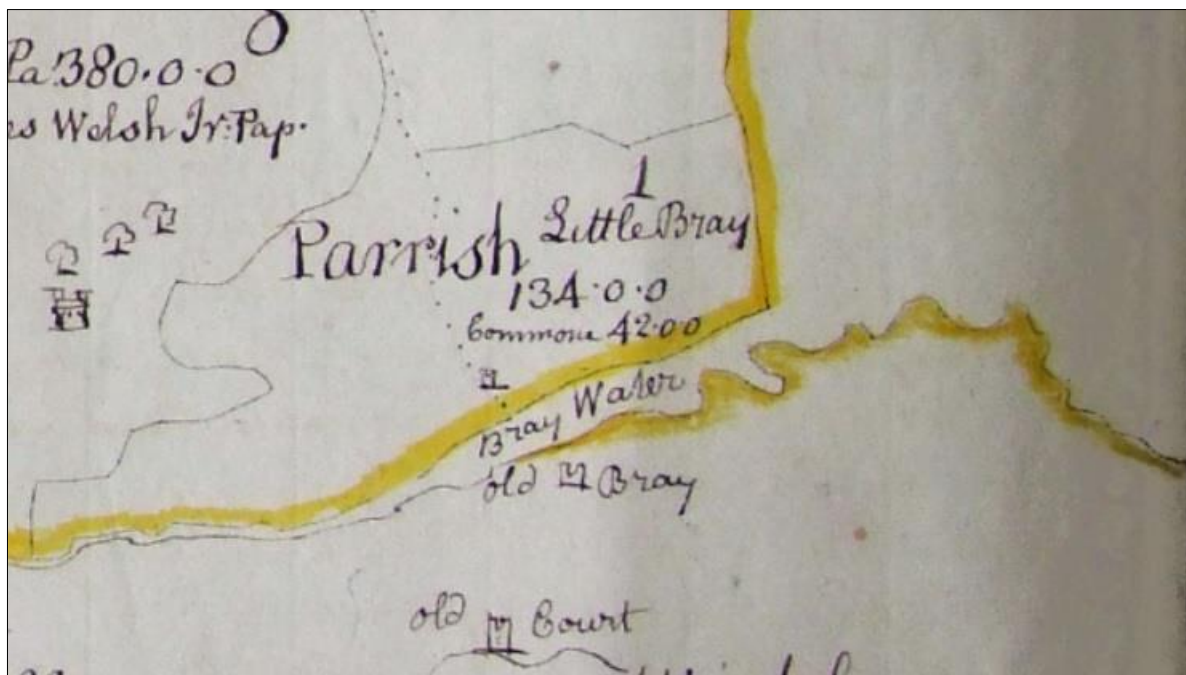


Figure 5: Extract from 17th-century Down Survey (Source: Trinity College Dublin)

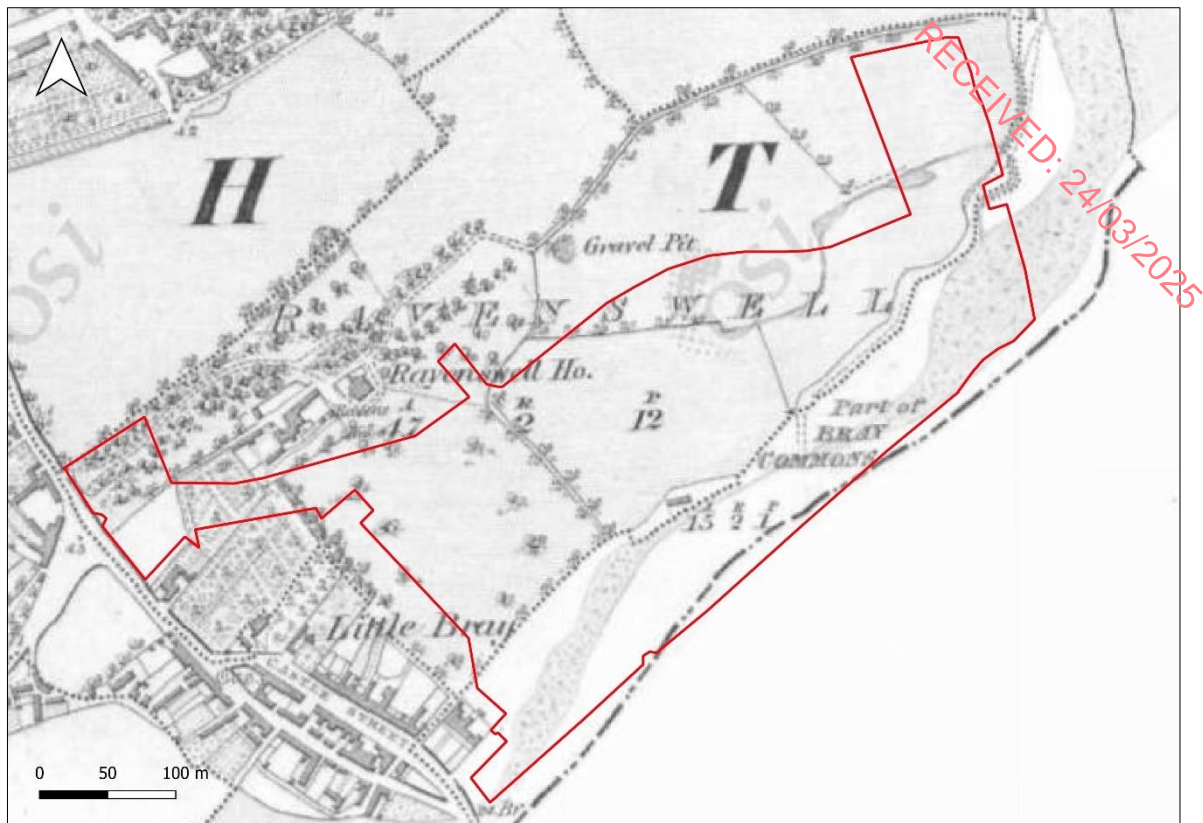


Figure 6: Extract from first edition 6-inch OS map (1842) showing the development boundary in red
(Source: Government of Ireland)

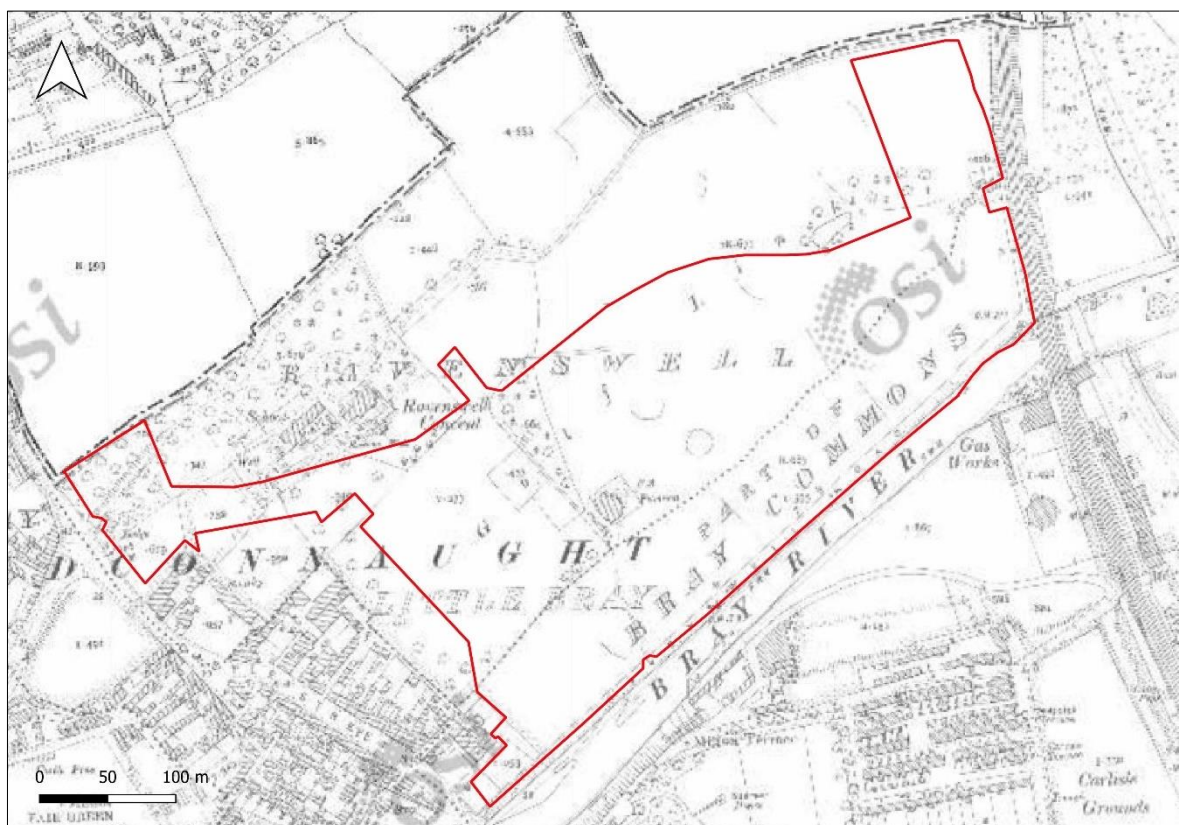


Figure 7: Extract from 25-inch OS map (1909) showing the development boundary in red
(Source: Government of Ireland)



Figure 8: Aerial image recording land use within site during River Dargle flood relief works (c. 2017)
(Source: Government of Ireland)

3. Archaeological test trenching

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Overview

The programme of archaeological test trenching described in this report was carried out under Excavation Licence 24E0428 between 16 and 18 April 2024. 13no. linear test trenches (T1, T2, T4 – T13) with a combined length of 450m were excavated under archaeological supervision within the boundaries of the proposed development site (**Figure 9-11**). Trench 3 was not excavated as a cat scan survey indicated several buried services within this area. A c. 5m long portion at the centre of Trench 2 was also left unexcavated in order to avoid a buried electricity cable. Please note that Table 2 of the method statement stated incorrect trench lengths for T5, T8 and T9, these should read 18m, 15m and 20m respectively. Trench 5 was shortened slightly to avoid an existing footpath. All three trenches targeted geophysical anomalies.

All trenches were excavated using a tracked 360° mechanical excavator fitted with a toothless grading bucket and operating under strict supervision by the licensee. One archaeological feature, a burnt spread with a minimum length of 4.6m, and minimum width of 1.8m was identified within Trench 5 at the location of an anomaly identified from the geophysical survey. The centre point of the exposed portion of this feature is 726433.0, 719251.0 (ITM). No other archaeology was found in any of the other trenches. All trenches were backfilled with the excavated material and surfaces re-instated following the completion of works.



Figure 9: Location of test trenches

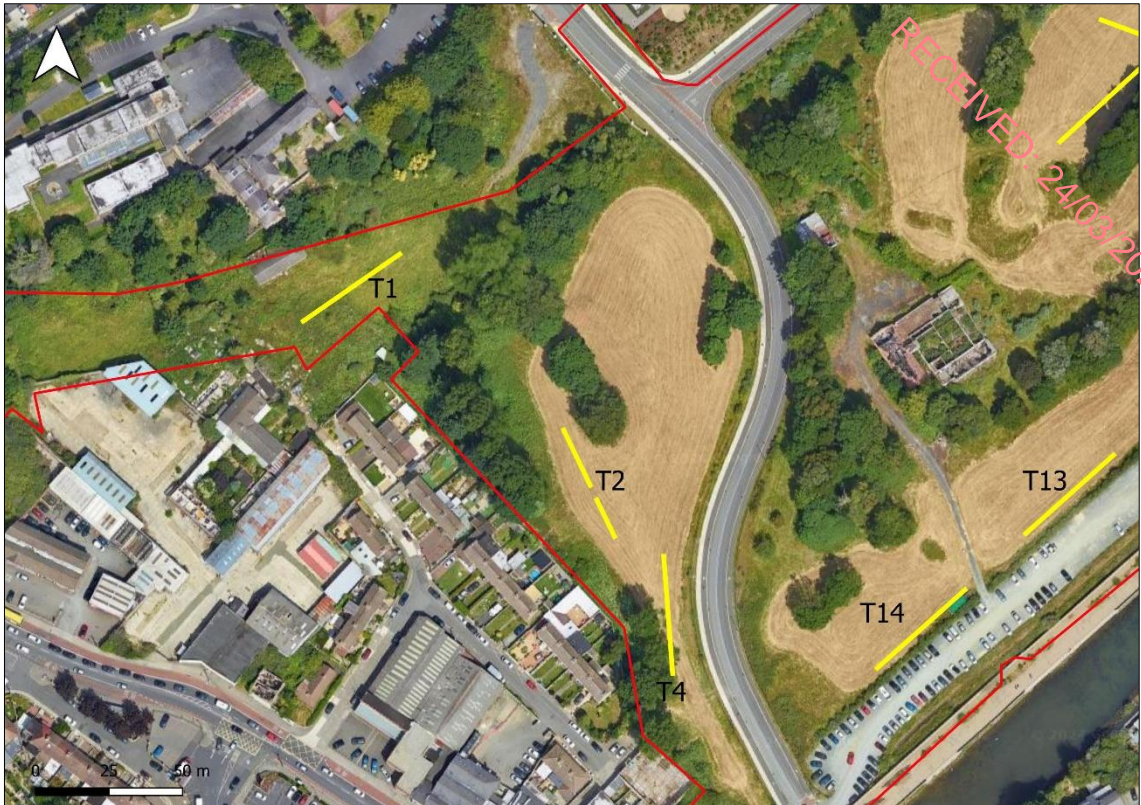


Figure 10: Location of test trenches 1, 2, 4



Figure 11: Location of test trenches 5-14

Table 2: Trench details. See **Figure 9, 10 and 11** for trench locations

Trench	Dimensions (m)	Orientation
1	40 x 1.8	NE-SW
2	40 x 1.8	NNE-SSW
4	40 x 1.8	N-S
5	15 x 1.8	WNW-ESE
6	40 x 1.8	NE-SW
7	40 x 1.8	NE-SW
8	15 x 1.8	NW-SE
9	20 x 1.8	NW-SE
10	40 x 1.8	NE-SW
11	40 x 1.8	NE-SW
12	40 x 1.8	NE-SW
13	40 x 1.8	NE-SW
14	40 x 1.8	NE-SW

Trench descriptions

Trench ID	T1
Dimensions	W: 1.8m L: 40m D:0.8-1.0m
Orientation	NE-SW
ITM Co-ords	726156.9/719150.8, 726189.83/719173.53
Description	Test trench 1 (T1) was excavated to a maximum depth of 1.0m below the existing surface level. The trench was excavated through a 0.8-1.0m thick layer of topsoil consisting of medium brown sandy silt which contained frequent modern waste (bits of metal, plastic, stones, slate, redbrick and clear glass fragments). A c. 5m long and min. 1.8m wide pit with buried modern waste was noted at the north-western end of the trench. The topsoil overlay a loose light brownish yellow sand subsoil. Occasional pockets of fine water-rolled gravel were noted within the subsoil. No archaeology was identified in this trench. Plates 1, 2

Trench ID	T2
Dimensions	W: 1.8m L: 35m D:1.0-1.1m
Orientation	NNE-SSW
ITM Co-ords	726245.65, 719070.56 / 726262.93, 719077.46
Description	Test trench 2 (T2) was excavated to a maximum depth of 1.1m below the existing surface level. The trench was excavated through a 1.0-1.1m thick layer of topsoil consisting of medium brown sandy silt. The topsoil overlay a loose light brownish yellow sand subsoil. A c. 5m long section at the middle of the trench was not excavated in order to avoid a buried electricity cable. No archaeology was identified in this trench. Plates 3, 4

Trench ID	T4
Dimensions	W: 1.8m L: 40m D:0.7-1.2m
Orientation	N-S
ITM Co-ords	726279.64, 719070.56 / 726282.68, 719030.70
Description	Test trench 4 (T4) was excavated to a maximum depth of 1.2m below the existing surface level. The ground level had been artificially reduced at its southern end. The trench was excavated through a 0.7-1.2m thick layer of topsoil consisting of medium brown sandy silt. The topsoil overlay a loose light brownish yellow sand subsoil. Two parallel lines of crushed red brick, c. 0.3m wide and 0.2m deep, orientated east-west, and set c. 10m apart, were noted within the upper layer of the topsoil. These are interpreted as features associated with the golf course. No archaeology was identified in this trench. Plates 5 – 7

Trench ID	T5
Dimensions	W: 1.8m L: 15m D:0.5-1.1m
Orientation	WNW-ESE
ITM Co-ords	726445.41, 719247.03 / 726431.25, 719251.82
Description	Test trench 5 (T5) was excavated to a maximum depth of 1.1m below the existing surface level. The trench was excavated through a 0.5-1.1m thick layer of topsoil consisting of medium brown sandy silt. The topsoil overlay a loose light brownish yellow sand subsoil. A burnt spread consisting of a black, charcoal rich, sandy silt with frequent heat shattered stones, was uncovered at its northern end. The spread extended beyond the trench to the northwest, east and west but its extent could not be established due to an existing footpath and stockpiled soil in this area. The burnt spread measured c. 4.6m west-northwest/east-southeast and had a minimum width of 1.8m. It was located c. 0.3m below the ground surface. Plates 8 – 10

Trench ID	T6
Dimensions	W: 1.8m L: 40m D:0.7-1.2m
Orientation	NE-SW
ITM Co-ords	726444.08, 719238.77 / 726414.46, 719211.71
Description	Test trench 6 (T6) was excavated to a maximum depth of 1.2m below the existing surface level. The trench was excavated through a 0.7-1.2m thick layer of topsoil consisting of medium brown sandy silt. The topsoil overlay a loose light brownish yellow sand subsoil with some root disturbance. No archaeology was found in this trench Plates 11 – 12

Trench ID	T7
Dimensions	W: 1.8m L: 40m D:1.0-1.2m
Orientation	NE-SW
ITM Co-ords	726475.89, 719215.70 / 726442.94, 719193.22
Description	Test trench 7 (T7) was excavated to a maximum depth of 1.2m below the existing surface level. The trench was excavated through a 0.1-0.2m thick layer of mid grey sandy silt topsoil overlaying a 0.8-0.9m thick layer of reddish brown silty sand. The subsoil consisted of a light brownish grey sand subsoil. No archaeology was found in this trench Plates 13 – 14

Trench ID	T8
Dimensions	W: 1.8m L: 15m D:1.2m
Orientation	NW-SE
ITM Co-ords	726462.97, 719235.56 / 726475.22, 719226.45
Description	Test trench 8 (T8) was excavated to a maximum depth of 1.2m below the existing surface level. The topsoil consisted of a mid brown clayey silt. Subsoil was not encountered, the trench was not excavated beyond 1.2m due to health and safety reasons. No archaeology was found in this trench Plates 15 – 16

Trench ID	T9
Dimensions	W: 1.8m L: 20m D:1.1-1.2m
Orientation	NW-SE
ITM Co-ords	726470.95, 719246.86 / 726482.91, 719231.67
Description	Test trench 9 (T9) was excavated to a maximum depth of 1.2m below the existing surface level. The trench, which targeted a geophysical anomaly interpreted as a possible pit, was excavated through a 1.1-1.2m thick layer of topsoil consisting of medium brown sandy silt with occasional burnt roots. The topsoil overlay a loose light brownish yellow sand subsoil. No archaeology was found in this trench Plates 17, 18

Trench ID	T10
Dimensions	W: 1.8m L: 40m D:0.9-1.0m
Orientation	NE-SW
ITM Co-ords	726495.73, 719248.93 / 726528.77, 719271.81
Description	Test trench 10 (T10) was excavated to a maximum depth of 1.0m below the existing surface level. The trench was excavated through a 0.10-0.2m thick layer of mid grey sandy silt which overlay a 0.8m thick mid reddish brown silty sand topsoil. The topsoil overlay a loose light brownish grey sand subsoil with frequent inclusions of dark brown 'iron pan'. No archaeology was found in this trench Plates 19, 20

Trench ID	T11
Dimensions	W: 1.8m L: 40m D:0.6-1.0m
Orientation	NE-SW
ITM Co-ords	726567.84, 719218.50 / 726537.17, 719192.96
Description	Test trench 11 (T11) was excavated to a maximum depth of 1.0m below the existing surface level. The trench was excavated through a 0.6-1.0m thick layer of topsoil consisting of medium brown sandy silt. The topsoil overlay a light yellowish brown sandy silt subsoil. No archaeology was identified in this trench. Plates 21, 22

Trench ID	T12
Dimensions	W: 1.8m L: 40m D:0.8-1.1m
Orientation	NE-SW
ITM Co-ords	726522.36, 719182.14 / 726492.69, 719155.48
Description	Test trench 12 (T12) was excavated to a maximum depth of 1.1m below the existing surface level. The trench was excavated through a 0.8-1.1m thick layer of topsoil consisting of medium brown sandy silt. The upper level of the topsoil

	included concentrations of demolition rubble in the form of undressed natural stones, lime mortar, fragments of slate, red brick. The topsoil overlaid grey river gravel and coarse sand with water rolled pebbles. No archaeology was identified in this trench. Plates 23, 24
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Trench ID	T13
Dimensions	W: 1.8m L: 40m D:0.9-1.1m
Orientation	NE-SW
ITM Co-ords	726432.83, 719104.88 / 726402.83, 719078.48
Description	Test trench 13 (T13) was excavated to a maximum depth of 1.1m below the existing surface level. The trench was excavated through a 0.9-1.1m thick layer of topsoil consisting of medium brown sandy silt. The topsoil overlaid grey river gravel and coarse sand with water rolled pebbles. No archaeology was identified in this trench. Plates 25, 26

Trench ID	T14
Dimensions	W: 1.8m L: 40m D:0.5-0.6m
Orientation	NE-SW
ITM Co-ords	726382.23, 719059.45 / 726352.32, 719032.77
Description	Test trench 14 (T14) was excavated to a maximum depth of 0.6m below the existing surface level. The trench was excavated through a 0.2-0.25m thick layer of topsoil consisting of medium brown sandy silt which overlaid a 0.3-0.35m thick layer of yellowish brown silt mixed with hardcore fill, likely originating from the construction of the adjacent car park. The topsoil overlaid grey river gravel. No archaeology was identified in this trench. Plates 27, 28

4. Conclusions and recommendations

Conclusions

A programme of archaeological test trenching comprising 13 individual trenches was carried out at the site of a proposed development at Ravenswell and Bray Commons, Bray, County Wicklow between 16 and 18 April 2024. Natural subsoil was identified at a depth of 0.5 to 1.2m. One archaeological feature, a burnt spread, was uncovered in Trench 5 during the test trench excavations. While no other archaeological feature was uncovered within the other trenches, the development site does retain a moderate archaeological potential and a programme of archaeological monitoring of site development works is warranted.

Recommendations

The discovery of an archaeological feature, a burnt spread, within the subject site during the test trenching will require a programme of archaeological mitigation. The proposed development in its current form will have a direct negative impact on this feature. While preservation *in situ* is the preferred option, the proposed method of mitigation for this feature is preservation by record (full archaeological excavation and recording).

In the first instance a buffer zone of 20m centred on the newly discovered feature in Trench 5 will be implemented. No groundworks or movement of stockpiled soil must take place within this zone without archaeological consultation. Pedestrian traffic along the footpath can continue as before.

Furthermore, it is recommended that a larger area around the feature is stripped of topsoil in order to find its full extent and any potential associated features, prior to any development work being undertaken at this site. The stripped area will include at least 10m of clearance from the outermost archaeological feature to the edge of the excavation. The supervised topsoil stripping will be undertaken under licence using a mechanical excavator fitted with a toothless bucket which will remove the topsoil down to the uppermost archaeological layer or the surface of natural subsoil in areas where no archaeological material is present. A systematic programme of manual archaeological excavation of all revealed features of archaeological potential will then be carried out in accordance with the method statement submitted to and approved by the National Monuments Service (NMS).

Following the completion of excavations, a post-excavation phase of works, involving analysis, reporting and dissemination to the relevant authorities will be undertaken off site. The level of the post-excavation analysis and reporting will be commensurate with the level of archaeology excavated on site.

It is also recommended that all other topsoil stripping, including site investigation works, within the proposed development site are subject to licensed archaeological monitoring.

It should be noted that the above recommendations are subject to the approval of the National Monuments Service and the Planning Authority.

5. References

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Appendix 1: Excavation Summaries

Site Name	Licence No.	Summary
Ravenswell, Bray Commons (Co. Wicklow), Cork Great (Co. Dublin)	22E0552	A programme of archaeological monitoring of topsoil stripping was undertaken at a development at Ravenswell and Cork Great, Bray Co Wicklow and Dublin. The site has previously been subject to a geophysical survey and targeted testing programme (Detection Licence Ref. 20R02014, Excavation license no. 20E0482). The site is bisected by linear earthwork (WI004-005/DU026-124) which has been demonstrated to be a late 19th- early or early 20th-century landscape feature (Licence no. 20E0482). No archaeology was found.
Ravenswell, Bray Commons (Co. Wicklow), Cork Great (Co. Dublin)	20E0482	During archaeological testing of a proposed development site at Ravenswell and Bray Commons, County Wicklow and Cork Great, County Dublin, ten linear test trenches, totalling 650m in length, were excavated across the 7.3ha site. The testing programme sought to investigate a number of areas of limited archaeological potential which were identified during a recent geophysical survey (20R02014) undertaken within the subject lands, as well as the alignment of a recorded linear earthwork (WI005-005—/DU026-124—), previously postulated to represent a portion of the 'Pale' ditch, which extends across the subject lands in a general east to west alignment. The licensed use of a metal-detector was incorporated into the test trenching investigations to assist in artefact retrieval (Detection Device Licence ref. 20R0179). No potential archaeological features or artefacts were uncovered in any of the excavated test trenches. Manual investigation of the linear earthwork revealed it to be a late 19th- or early 20th-century landscape feature and not a section of the 'Pale' ditch as had been previously postulated. The stratigraphy encountered in both sections suggests that the landscape feature was formed by the demolition of the upper courses of a boundary wall. The rubble from this wall was primarily heaped on the northern face of the wall where the terrain slightly dips and was subsequently infilled to create a rampart to the elevated terrain to the south. In turn, the lower course of the wall could now function as a retaining wall allowing for additional dumped material to be spread out on top of the rampart to create a flat-topped earthwork. The ditch cut appears contemporary with the construction of the monument and was only present on the northern side of the wall. Likewise, its basal fills also contained late 19th-/early 20th-century glass and ceramic sherds. In summation, the archaeological evidence, in conjunction with the cartographic evidence and previous archaeological investigations, suggests that the linear earthwork was constructed in the late 19th early 20th century.
Ravenswell, Bray, Wicklow	16E0340	Monitoring of groundworks was carried out at the site of the proposed St Philomena's School and Coláiste Ráithín, on a green-field site in Bray, Co. Wicklow. No archaeological material was recorded in the course of monitoring.

Site Name	Licence No.	Summary
Ravenswell, Bray, Wicklow	14E0225	Test trenching was carried out at the site of the proposed St Philomena's School and Coláiste Ráithín, on a 3.9 ha green-field site in Bray, Co. Wicklow. Five test trenches totalling 250m were excavated within the site following a geophysical survey. Trench locations were targeted on the supposed location of a Pale Boundary Ditch which was also located in the course of a geophysical survey. Testing revealed the ditch as a 19th-century feature. 19th-century glass and pottery finds were uncovered at the base of the trenches across the ditch. Subsoil varied between a compact orange, brown stony clay and natural gravel. Topsoil was consistently deep across the majority of the site, ranging from 0.28-0.35m deep. There were no archaeological features recorded in the course of testing.
Ravenswell/Cork Great/Cork Little/Shanganagh, Dublin	11E0304	Monitoring was carried out as part of the construction of a 6km pipeline and 5,000m ³ storm-water storage tank as part of the Shanganagh-Bray Main Drainage Scheme. The pipeline wayleave was 14m wide and ran through the townlands of Ravenswell, Cork Great, Cork Little and Shanganagh. The work was carried out for Roadbridge on behalf of Dun Laoghaire-Rathdown County Council. No features of archaeological potential were discovered during the course of the works.
Shanganagh/Cork Little/Cork Great/Little Bray/Bray Commons, Dublin	05E0392	Monitoring of geotechnical investigations in advance of the Shanganagh Bray main drainage scheme was carried out in March and April 2005. A preliminary assessment found that the proposed scheme runs through an area of archaeological importance, with a number of monuments recorded in the vicinity. While only one known monument, a linear earthwork thought to be part of the Pale ditch, will be directly impacted on by the scheme, it will skirt the constraint ring of SMR 26:68, an abbey church and graveyard site, and traverse a number of areas of archaeological potential; no trial pits were excavated at the archaeological monuments. A total of 37 trial pits were monitored. They varied in size from 2–3m long and 1–1.2m wide. For the purpose of the geotechnical investigations, the trial pits were excavated to a depth of up to 4m into the natural subsoil. No features of archaeological significance were discovered. Monitoring of the pipe trench will be carried out in 2006.
Bray, Wicklow	05E0392 EXT.	Monitoring was undertaken as part of the Shanganagh Bray main drainage scheme (Contract 1), which involves the expansion and replacement of the existing treatment plant in order to improve the seawater quality of the Shankill area. In addition, a network of pipes stretching from Bray to Shankill will be laid to feed the upgraded plant. A small area of the Old Bray Golf Course at Ravenswell Road, beside the rail line and the River Dargle, was stripped of topsoil to facilitate the erection of a works compound. The soil-strip was monitored, and no archaeology was observed.
Corke Great, Dublin	04E0354	Testing was undertaken across the line of a possible linear earthwork which runs through the lands of the present Bray Golf Links. The feature consists of a low bank (max. dimensions c. 3.5m wide by c. 0.3m high),

Site Name	Licence No.	Summary
		which is barely discernible in places and is more readily identified by a line of relatively mature trees which grow along its length. The OS 6-inch map of 1840 indicates that the feature
Corke Abbey, Bray	02E1717	<p>One test-trench was opened in November 2002 on the grounds of Bray Golf Club, north of Bray town. The area under investigation is recorded in the SMR as part of the Pale boundary, SMR 26:124, although this identification is not supported by the historical evidence, which points to a possible association with Corke Abbey and to lands outside the Pale and held by the Crown that were leased in the 15th and 16th centuries to the Harrolde and Walshe families, the latter of which held extensive lands in south Dublin incorporating Carrickmines (L. Simpson, pers. comm.). The levelled boundary runs from the railway line north-eastward across part of the golf-course. The remains consist of a linear, flat-topped, tree-lined bank with shallow depressions on either side. The south-western end is the best-preserved section of this feature; the north-eastern end is barely detectable on the ground and is almost level.</p> <p>A section of the proposed Shanganagh and Bray Main Drainage Scheme wayleave passes through the eastern limit of the Pale boundary, at its most poorly preserved point. The excavation focused particularly on assessing the impact of the creation of haul roads during the laying of a new sewer. The test-trench was 14.2m long, 1m wide and 0.8–1m in maximum depth. The cross-sections exposed the levelled and reworked remains of the boundary bank but no evidence of well-defined ditch cuts on either side of the levelled bank. There is a possibility, therefore, that the remains of a ditch or ditches exist below the level excavated. All of the material exposed either was sterile or had modern inclusions as a consequence of golf-course development. A full topographical survey and terrain modelling of the levelled bank through the area of the proposed wayleave and for a distance of 20m beyond it were undertaken as mitigation. Trench excavation for pipe laying will be monitored during the construction phase, although it may not reach a level at which greater definition will be gained</p>
Corke Great, Bray, Wicklow	01E0220	Testing took place in advance of construction in March 2001. Five test-trenches were excavated across the development area. One ditch was noted in Trench 2. No artefacts were recovered from it to suggest a date.
Bray Little/ Ravenswell/ Bray Commons/ Killarney/Bray, Wicklow	12R0053	A wade survey and a magnetometry survey by hand-held metal detection were carried out at the site out along a 4km stretch of the River Dargle at Bray, Co. Wicklow. The work was carried out in advance of a flood defence scheme that includes widening and deepening of the river channel. Where possible, metal detector hits were examined and logged. These were logged with a high frequency at over 1 per square metre. A large number of the hits were visible and consisted of modern dumped material. No archaeologically significant material was encountered.
Bray Little/ Ravenswell/	12E0123	Monitoring is being undertaken for a flood defence scheme on 4km of the Dargle River. This works include widening and deepening the river

Site Name	Licence No.	Summary
Bray Commons/ Killarney/Bray , Wicklow		<p>and including a new culvert at Bray Bridge. Works uncovered a number of features at Bray Bridge.</p> <p>The earliest bridge recorded in Bray in 1666 crossing the River Dargle was replaced by a four-arch bridge in 1736. This bridge collapsed in a storm and was replaced by another four-arch bridge in 1741. The current bridge was constructed in the middle of the 19th century. Two buttresses of the earlier bridge are visible at low tide under the southern arches of the existing bridges; these will be excavated in the summer of 2013.</p> <p>Underneath the existing bridge an earlier stone structure was uncovered; this was an amalgam of the 1736 and the 1741 bridges. The eastern section of the bridge consisted of two parallel walls in-filled with sand and gravel. This was part of the 1736 bridge. The second wall at the west was constructed in 1741; it was a large wall with a culvert. A cobblestone surface was also uncovered in places. To the west of the stone bridge on the Lower Dargle Road, a section of an earlier wooden bridge was uncovered. This was uncovered within what was the river bed. The bridge consisted of a large base plate (T101) with three upright timbers inserted into it (T102, T103 and T104). Two timbers were initially visible crossing horizontally but these collapsed upon exposure. The timbers appear to have been laid directly onto the river bed. There was no evidence of an excavated trench. The base plate was orientated south-west to north-east. The base plate was 6.9m in length, 0.42m in width and was 0.25m thick. At the south-west it was partially damaged by the insertion of metal piles. Three sub-rectangular mortice joints and a cross-shaped double mortice were recorded in the timber. The rectangular mortises were cut through the timber to support the upright timbers. These measured 0.3m x 0.2m on average. The upright timbers or "tenons" were cut for insertion into the timber. This method of using mortise and tenon joints creates a very strong joint.</p> <p>An interesting double cross-shaped mortise joint contained two through mortises, at the north. This would have held an upright timber and contained the remains of a wooden wedge. The second mortise may have been a splayed joint. These can often be held in place with a brace but this was not visible. A timber was recovered (not in context) which would have been placed in this joint and splayed towards the south. This would have given extra support to the upper level of the bridge. The tenon was held in place using a wooden wedge, the remains of which were removed.</p> <p>Analysis of the timbers by Ellen O'Carroll has show that the larger timbers are oak and the timber wedges are alder and holly. Dendrochronology dates for T101 indicate a felling date range of AD1116 ± 9 years or later. The date for T102 is AD1100 ± 9 years or later, or after AD1100. This would indicate a late 12th century or early 13th-century date for the bridge. Further works will be undertaken during 2013 within the river bed and further remains of this bridge may be uncovered.</p>
Bray Little, Bray, Wicklow	130121	<p>A flood defence scheme is being undertaken along 4km of the River Dargle. This work includes widening and deepening the river and including a new</p>

Site Name	Licence No.	Summary
		<p>culvert at Bray Bridge. As part of the E.I.S. for the works two arches of an earlier bridge were recorded within the arches of the existing bridge over the Dargle in the centre of the town. It was recommended that these be excavated.</p> <p>The earliest bridge recorded in Bray in 1666 crossing the River Dargle was replaced by a four-arch bridge in 1736. This bridge collapsed in a storm and was replaced by another four-arch bridge in 1741. The current bridge was constructed in the middle of the 19th century. Two buttresses of the earlier bridge are visible at low tide under the southern arches of the existing bridge a third arch was uncovered as a result of excavation under the northern arch. All these features and associated works were fully excavated.</p> <p>Under the arch of the bridge at the northern bank of the river a buttress of a bridge was uncovered (Area A). This was surrounded by a thick layer of concrete up to 1.2m in depth which had been poured into the area after Hurricane Charlie (1986), to secure the existing bridge. This layer was removed by a rock breaker. The main section of the feature was random rubble walling with a lime mortar. Ashler walling was visible at the south and east. This consisted of large limestone blocks held together with a lime mortar. At the north this had been removed during the construction of the existing bridge. When the stone was removed a wooden raft, foundation was uncovered. This consisted of seven interlocking timbers. Only two wooden dowels were recorded, the timbers were laid into notches in the base timbers. This would have formed a stable layer in clay base of the bridge and avoided subsidence.</p> <p>The buttress under the central northern arch of the bridge was also surrounded by a thick layer of concrete (Area B). This buttress was visible at low tide. The main section of the feature was random rubble walling with a lime mortar. Ashler walling surrounded the feature on all sides. This consisted of limestone blocks held together with a lime mortar; the blocks were narrow and may have been added to finish the bridge as a cladding rather than for strength as in the previous buttress. When the stone was removed a wooden raft, foundation was uncovered. This consisted of one timber at the centre and a large number of wooden stakes. These were concentrated at the west and north with some also visible at the east. The highest concentration of the stakes was at the apex of the buttress, this is the area with the fastest flow of water and the greatest possibility of erosion of the bridge. This timber frame is quite different from the foundation layer in Area A.</p> <p>The southern arch of the bridge contained a buttress also visible at low tide. This was surrounded by sand and silt from the river. The main section of the feature was random rubble walling with a lime mortar. Ashler walling was visible at the south, east and north. This consisted of large limestone blocks held together with a lime mortar. The buttress was on a foundation layer of stone. This feature was truncated at the west by earlier works in the river. Unlike the other two buttresses</p>

Site Name	Licence No.	Summary
		<p>there was no timber foundation in this area. This arch is out of the main flow of the river and is only used during high tides or periods of flooding. The stone bridge exposed as part of the works appears to be an amalgam of two earlier bridges on the site, the 1736 bridge and the 1741 bridge. The buttress in the northern arch (Area A) is of a different construction than the two others that were recorded. It has larger dimensions; the limestone blocks are larger and the foundation layer is of a different construction. This feature was reused as part of the 1741 bridge. The buttresses in the remaining areas are of a similar size and the materials used are of similar dimensions. The buttress in Area B was laid on a foundation of wooden piles. This was concentrated at the west of the pier. There was no wooden foundation of the buttress in Area C, at the southern extent of the bridge, and this arch is drier.</p>

Appendix 2: Photographic record



Plate 1: Trench 1 facing southwest



Plate 2: Trench 1 facing northeast



Plate 3: Showing northern half of Trench 2 facing north-northeast



Plate 4: Showing southern half of Trench 2 facing south-southwest



Plate 5: Trench 4 facing south



Plate 6: Trench 4 facing north



Plate 7: Showing line of bricks in topsoil Trench 4 facing east



Plate 8: Trench 5 facing west-northwest



Plate 9: Trench 5 facing east-southeast, showing burnt spread in foreground



Plate 10: Showing burnt spread in Trench 5, facing west-northwest



Plate 11: Trench 6 facing southwest



Plate 12: Trench 6 facing northeast



Plate 13: Trench 7 facing southwest



Plate 14: Trench 7 facing northeast



Plate 15: Trench 8 facing southeast



Plate 16: Trench 8 facing northwest



Plate 17: Trench 9 facing northwest



Plate 18: Trench 9 facing southeast



Plate 19: Trench 10 facing southwest



Plate 20: Trench 10 facing northeast



Plate 21: Trench 11 facing northeast



Plate 22: Trench 11 facing southwest



Plate 23: Trench 12 facing northeast



Plate 24: Trench 12 facing southwest



Plate 25: Trench 13 facing southwest



Plate 26: Trench 13 facing northeast



Plate 27: Trench 14 facing southwest



Plate 28: Trench 14 facing northeast