

12 Archaeology, Architectural and Cultural Heritage

12.1 Introduction

This chapter of the EIAR assesses the potential for archaeological, architectural and cultural heritage effects from the construction and operation of the proposed Site Sustainability Project, herein referred to as the proposed development, as detailed in **Chapter 4 Description of the Proposed Development** and **Chapter 5 Construction Activities** of this EIAR and shown on **Figures 12.1-12.6**.

This chapter initially sets out the methodology followed (**Section 12.2**), describes the receiving environment (**Section 12.3**), and summarises the main characteristics of the proposed development which are of relevance for archaeological, architectural and cultural heritage (**Section 12.4**). The likely significant effects of the proposed development on archaeological, architectural and cultural heritage are described (**Section 12.5**), measures are proposed to mitigate likely significant effects (**Section 12.6**), and cumulative effects (**Section 12.7**) and residual effects (**Section 12.8**) are described. The chapter concludes with a reference section (**Section 12.9**).

Some terms used in this report are explained hereunder.

12.1.1 Archaeological Heritage

Archaeological heritage can be described as the study of past human societies through their material remains and artefactual assemblages. The Valetta Treaty (or the European Convention on the Protection of the Archaeological Heritage, 1992) defines archaeological heritage as “all remains and objects and any other traces of humankind from past times” this includes “structures, constructions, groups of buildings, developed sites, moveable objects, monuments of other kinds as well as their context, whether situated on land or under water”.

12.1.2 Architectural Heritage

Architectural heritage is defined in the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999 as structures and buildings together with their settings and attendant grounds, fixtures and fittings, groups of such structures and buildings, and sites, which are of architectural, historic, archaeological, artistic, cultural, scientific, social or technical interest.

12.1.3 Cultural Heritage

Cultural Heritage is an expression of the ways of living developed by a community and passed on from generation to generation, including customs, practices, places, objects, artistic expressions and values.

Cultural Heritage is often expressed as either Intangible or Tangible Cultural Heritage (ICOMOS, 2002). Environmental Protection Agency Guidelines (2003), define cultural heritage as including archaeological heritage, architecture, history, landscape and garden design, folklore and tradition, geological features, language and dialect, religion, settlements, inland waterways (rivers), and place names.

12.1.4 Study Area

In order to undertake a comprehensive assessment of the archaeological, architectural and cultural heritage environment, a study area within approximately 1.5km radius of the proposed development site including the proposed development site was examined (**Figure 12.1; Section 12.3.1**).

12.2 Assessment Methodology

12.2.1 General

The methodology used to complete this chapter of the EIAR comprised the following:

- A review of the relevant legislation and guidelines;
- A desktop assessment of the proposed development site and study area;
- A walkover survey of the proposed development site;
- An evaluation of the likely significant effects of the proposed development on the archaeological, architectural and cultural heritage of the proposed development site and study area; and
- Proposed mitigation measures to be undertaken to prevent or reduce any potential effects on the archaeological, architectural and cultural heritage.

12.2.2 Guidance and Legislation

In Ireland, the primary means of protecting archaeology, architectural and cultural heritage assets are the National Monument (Amendments) Acts 1930 to 2004, the Heritage Act 1995, the relevant provisions of the National Cultural Institutions Act 1997, the Architectural Heritage (National Inventory) and Historic Monuments (Misc. Provisions) Act 1999 and the Local Government (Planning and Development) Act 2000, as amended. Policies for both the archaeological and architectural heritage are set out in a series of specific published guidelines. This chapter is prepared having regard to the following guidelines:

- Guidelines on the information to be contained in Environmental Effect Statements, 2002 (Environmental Protection Agency) and Draft Revised Guidelines, 2017;
- Advice Notes on Current Practice in the Preparation of Environmental Effect Statements, 2003 (Environmental Protection Agency) and Draft Revised Advice Notes, 2015;

- Guidelines on the information to be contained in Environmental Effect Statements, 2003, EPA;
- Advice Notes on Current Practice (in preparation of Environmental Effect Statements), 2003, EPA;
- Framework & Principles for the Protection of the Archaeological Heritage, 1999 (Department of Arts, Heritage, Gaeltacht & the Islands);
- Policy & Guidelines on Archaeological Excavation, 1999 (Department of Arts, Heritage, Gaeltacht & the Islands);
- Architectural Heritage Protection, Guidelines for Planning Authorities, 2004. (Department of the Environment, Heritage and Local Government); and
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018).

Comprehensive guidelines on the treatment of the archaeological and architectural heritage during the planning and design of national road schemes were published by the National Roads Authority in 2005. These were also used as a guide in the compilation of this EIAR.

- Guidelines for the assessment of Archaeological Heritage Effects of National Road Schemes, 2005a (NRA).
- Guidelines for the assessment of Architectural Heritage Effects of National Road Schemes, 2005b (NRA).

12.2.3 Desktop Assessment

The desktop study provided an archaeological, architectural and cultural heritage overview of the proposed development site and study area and used the following sources.

12.2.3.1 Record of Monuments and Places (RMP)

This RMP was established under Section 12 (1) of the National Monuments (Amendment) Act 1994.

It lists all monuments and places believed to be of archaeological importance in the County. The numbering system consists of two parts: the first part is the county code (ME for Meath) followed by the Ordnance Survey map number (six-inch to the mile scale); the second part is the number of a circle surrounding the site on the RMP map, e.g. ME027-109 refers to circle 109 on OS sheet 027 for County Meath. The circle is intended to show the recorded monument or place and is sometimes referred to as the Zone of Archaeological Potential or Zone of Notification; the circle does not define the exact extent of the monument or place.

The diameter of the circle can vary depending on the size and shape of the site but it averages out at approximately 180m. The RMP for County Meath was published in 1996.

There are no RMP sites within the proposed development site. There are a number of RMP sites within the study area. Refer to **Section 12.3** below for further details.

12.2.3.2 Sites and Monuments Record (SMR) Database of the Archaeological Survey of Ireland at the National Monuments Service (NMS)

The purpose of the Archaeological Survey of Ireland (ASI) is to compile a base-line inventory of the known archaeological monuments in the State. The archive and database resulting from the survey are continually updated. Archaeological sites which are added to the database are proposed to be included in the next published edition of the RMP and will then be afforded its protection. Sites previously listed in the RMP which, following investigation, are now considered to be of no archaeological potential are de-listed from the database and generally described as redundant records. This database, complete with maps is now available for consultation via the NMS website at www.archaeology.ie.

There are no SMR sites within the proposed development site. There are a number of SMR sites within the study area. Refer to **Section 12.3** below for further details.

12.2.3.3 Archaeological Inventory

The inventories for each county are follow-ons by the ASI to the RMPs. They give a written description of each archaeological site in the county. The Archaeological Inventory of County Meath (Moore, M.J., 1987) was published in 1987.

12.2.3.4 Files of the NMS, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs (DAHRRGA)

The National Monuments Service (NMS) was consulted to retrieve information on lists of RMP sites that have been afforded added protection such as;

- National Monuments in the ownership or guardianship of the state – None in the study area;
- Monuments subject to Preservation Orders and Temporary Preservation Orders – None in the study area; and
- Monuments listed in the Register of Historic Monuments – None in the study area.

12.2.3.5 The National Museum of Ireland Archives

These files were consulted for townlands within the study area. The topographical files contain the reports, including correspondence, present location and occasionally, illustrations of archaeological material recovered throughout the country.

There are a number of stray finds within the study area. Refer to **Section 12.3** below for further details.

12.2.3.6 County Development Plan for Meath (2013-2019)

The Meath County Development Plan (CDP) (2013-2019) outlines Meath County Council's objectives with regard to the preservation of the archaeological, architectural and cultural heritage of the County. The Council recognises that the archaeological heritage of an area '*..includes monuments, sites, and objects whether situated on land or under water. In this respect, Meath has a significant archaeological heritage, which includes the UNESCO World Heritage Site of Brú na Bóinne...Through policies contained in this Development Plan, they seek to ensure the effective protection, conservation and enhancement of archaeological sites, monuments and their settings*'.

The CDP outlines the Council's objectives regarding the protection of the archaeological heritage, including the protection of monuments listed in the SMR and RMP, by preservation in situ, or at a minimum preservation by record. It aims to protect important archaeological landscapes from inappropriate development and will encourage the appropriate maintenance of the county's archaeological heritage in accordance with conservation principles and best practice guidelines.

Development in the immediate vicinity of a recorded monument will be sensitively sited and designed to ensure it does not detract from a monument and, where upstanding remains exist, a visual impact assessment may be required.

The guidance of the National Museum of Ireland (NMI) will be sought in the event that an archaeological object is discovered while the NMS will be contacted in the event of the discovery of an unrecorded archaeological site. The RMP will be made available to the public in the Planning Office and a link will be maintained on the Meath website to maintain access to the on-line edition of same.

The rich and varied architectural heritage of the County is protected through the inclusion of buildings in the Record of Protected Structures (RPS), as required in the Planning and Development Act 2000 (Part IV).

It is an objective of Meath County Council to '*protect all structures (or, where appropriate, parts of structures) within the county which are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest and which are included in the Record of Protected Structures*

The objectives of the Council for the RPS include:

- The identification of structures for protection according to criteria set out in Architectural Heritage Protection – Guidelines for Planning Authorities (2004, 2011), as well as the extension of the RPS to form a comprehensive schedule for the County;
- The protection of structures and parts of structures, listed in the RPS, as well as their curtilage and attendant grounds;

- Ensuring that development proposals for protected structures are appropriate and of high quality;
- Ensuring best conservation practises are promoted; and
- Ensuring high quality architectural design of new development relating to or effecting on structures and their settings included in the RPS.

The National Inventory of Architectural Heritage (NIAH) for County Meath lists items of architectural importance in the County. The structures identified as being of international and national importance are included on the RPS. Other structures of regional importance were considered for inclusion in the Record. Meath County Council recognises the important contribution that all historic structures, including those not on the record, make to County Meath's heritage. The Council will seek to enhance all historic structures, features and landscapes not included in the RPS as well as non-structural elements such as designed gardens, garden features, masonry walls, railings, follies, gates, bridges and street furniture. This includes industrial heritage sites and structures. It is acknowledged in the CDP that the county '*contains significant stretches of both operational and derelict waterways, railway structures, mills, lime kilns and milestones*'.

The CDP recognises the importance of historic designed landscapes which consist of private gardens, public parks, and the gardens and landscapes associated with country houses and demesnes. The NIAH have identified approximately 300 such sites in County Meath.

The importance of vernacular architecture as the expression of the culture of a community built with local materials by local people is recognised. It is a policy of Meath County Council to '*encourage the retention, sympathetic maintenance, and appropriate re-use of the vernacular heritage of Meath, in both the towns and rural areas of the County, including the retention of the original fabric, such as windows, renders, shop fronts, gates, yards, boundary walls and other significant features where possible*'. The Council will encourage the appropriate re-use of traditional farm buildings in preference to their replacement.

There are no protected structures within the proposed development site or within the 1.5km Study Area.

12.2.3.7 National Architectural Inventory of Architectural Heritage

The National Inventory of Architecture in Ireland (NIAH) was set up under the Convention for the Protection of the Architectural Heritage of Europe or the Granada Convention of 1985.

It was established on a statutory basis under Section 2 of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999.

The work of the NIAH involves identifying and recording the architectural heritage of Ireland, from 1700 to the present day, in a systematic and consistent manner.

It is divided into two parts; The Building Survey and Historic Garden Survey (www.buildingsofireland.ie). The main function of both is to identify and evaluate the State's architectural heritage in a uniform and consistent manner, so as to aid to its protection and conservation. The NIAH carried out a survey of the buildings of County Meath in 2004 with the exception of Navan Town which was published in 2003.

Under Section 53 of the Planning and Development Act 2000, as amended, all structures considered of regional, national or international importance within the survey are recommended for inclusion in the RPS by the Minister for Arts Heritage and the Gaeltacht. If this is not adopted by the local authority, the reasons must be communicated to the Department. The Building and Historic Garden Survey for County Meath is available online.

There are no buildings included in the Inventory within the proposed development site or within the 1.5km Study Area.

12.2.3.8 Database of Irish Excavation Reports

This website¹ provides a database of summary accounts of archaeological excavations and investigations undertaken in Ireland between 1970 and 2020. Until 2010, these accounts were also published in book form. The database was queried for any investigations undertaken in the proposed development site and Study Area.

A number of archaeological investigations were undertaken within the Indaver site and in the surrounding area. Archaeological monitoring was carried out on a 15m wide corridor for a new gas pipeline from the south of Drogheda to the outskirts of Navan. Part of this pipeline extended through the proposed development site and no archaeological finds or features were identified (Clinton, 1999). Other archaeological investigations undertaken within the Indaver site and in the surrounding area are detailed in **Section 12.3** below and reproduced in full in **Appendix 12.2** of **Volume 3** in this EIAR.

12.2.3.9 Site-specific publications

All available published information on the study area was consulted. This included historical journals, local history publications etc., all of which are listed in **Section 12.9**.

12.2.3.10 Previous Archaeological Assessments

Previous archaeological assessments undertaken within the proposed development site include the following;

2006 – EIS to assess the potential for cultural heritage effects from the construction of the waste to energy facility at Indaver Meath.

¹ Access at www.excavations.ie

The EIS, comprising a desktop study and field inspection of the 25 acre site, did not identify evidence of archaeological activity within the proposed development site but did identify the potential for uncovering subsurface archaeological finds or features during construction (Archaeological Development Services Ltd. 2006). This EIS (2006) was submitted under EPA IE licence application W0167-02 and available from the EPA IE licence database².

2009 - Following on from the EIS and in compliance with Condition 10 of the grant of planning (Planning Ref. SA/60050), archaeological monitoring of topsoil stripping was undertaken over a period of five months from September 2008 to February 2009 (Leahy, 2009). A total of five features of archaeological potential were identified; two isolated pits and a cluster of three pits. Three of the features were archaeological and charcoal from these features was submitted for dating. The results of dating indicated that the features were late Neolithic and Middle Bronze Age (*ibid.*). In conclusion, the author noted '*All archaeological features on this site have been fully resolved and the remainder of the site was devoid of any archaeological remains. It is therefore deemed that no further onsite archaeological work is necessary in relation to this development*'. However, '*should the areas under the high voltage power line, over the gas main or under the berms ever be the subject of further development, involving subsurface disturbance, it is recommended that these works be carried out under archaeological supervision*'.

2012 – EIS³ to assess the potential cultural heritage effects (if any) of proposed amendments to the Indaver Meath facility (ABP Pl. Ref No. PL17.PA0026). The proposed amendments did not result in any additional areas of the site being disturbed. Construction activity was associated with the pre-treatment plant which was built adjacent to the main process building on previously disturbed ground. The EIS concluded that the proposed amendments would not impact on the archaeological and cultural heritage environment (White Young Green, 2012). The report also concluded that any future topsoil stripping of any undisturbed areas at the site should be monitored by a suitably qualified archaeologist as required by Condition 10 of the original grant of planning in 2008 (Planning Ref. SA/60050).

12.2.3.11 Cartographic Sources

The following maps were consulted:

- The Down Survey Parish and Barony maps (1654-1659) (**Figure 12.2; Section 12.3.5;**
- Ordnance Survey 6-inch maps: the two editions of the 6-inch to one mile scale maps were consulted, the first edition published in 1841-1842, the second edition published in 1909 onto which the RMP was superimposed in 1996. The 25-inch to one mile scale map, from which the second edition 6-inch map was derived in 1909 was also consulted. Refer to **Figures 12.3 and 12.4; Section 12.3.6.**

² EPA Industrial Emissions Licence W0167-02, available to view from: <http://www.epa.ie/terminalfour/ippc/index.jsp>

³ EIS available to view from <http://www.carranstownamendments.ie>

12.2.3.12 Aerial Photographs

Ordnance Survey of Ireland online aerial photographs (dated 1995, 2000, 2005-2012 and 2017) from GeoHive⁴ (OSI) and Google maps online aerial photographs are available for viewing (www.google.ie). **Refer to Figures 12.5 and 12.6; Section 12.3.6.** These were examined to identify any previously unrecorded features of archaeological/cultural heritage significance that may only be visible from the air. No archaeological features were apparent on the photographs.

12.2.3.13 Consultation

Consultation was held with Loreto Guinan, Heritage Officer with Meath County Council on the 27th of February 2020.

12.2.3.14 Site Inspection

The primary purpose of a site inspection is to assess the physical environment in which the proposed development will take place and identify any possible features of cultural heritage significance which have not been previously recorded. Current land use, local topography and environmental conditions are assessed to gain an overall picture of the area. An inspection of the proposed development site was carried out on the 7th of October 2019 (**Refer to Plates 1- 13; Appendix 12.1, Volume 3** of this EIAR).

The proposed development site comprises an established industrial facility which includes upstanding buildings, hard surface yards, carparking and internal road network. The proposed development will comprise the addition of structures, car parking and upgrades to allow for its expansion. A contractor's compound and facilities will also be established on the site. The majority of proposed works are on previously developed land i.e. the ground has previously been disturbed. The remaining works proposed are on Indaver land which has not been previously developed i.e. undisturbed land.

These proposed works and areas of the site to be developed are described in detail in **Chapters 4 *Description of the Proposed Development* and 5 *Construction Activities*** of EIAR.

12.2.4 Impact Assessment Methodology

Impacts of the proposed development are assessed in accordance with EPA *Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (EPA Draft 2017).

⁴ GeoHive, available at: <http://map.geohive.ie/mapviewer.html>

12.3 Receiving Environment

12.3.1 Introduction

The proposed development site lies within the existing Indaver waste to energy site which received planning permission in 2007 (Pl. Ref. 17.219721) with construction of the facility completed in 2011, refer to **Figure 4.1** in **Chapter 4**. The Indaver facility is located along the R152 approximately 2.7km northeast of the Historic Town of Duleek (CO027-038) in County Meath and 4.5km to the southwest of the Historic Town of Drogheda (which straddles both counties Meath and Louth). The site is in the townland of Carranstown, in the parish of Duleek of barony of Lower Duleek.

The nearest extant settlement to the proposed development site is the Historic Town of Duleek (ME027-038), located 2.5km to the southwest on the banks of the River Nanny. The name Duleek is derived from the old Irish word for stone church, ‘Damliac’ and it is thought that the earliest stone church in Ireland was established here by St. Patrick (Bradley, 1985). Important archaeological sites within the village include the remains of a round tower (ME027-038009), two high crosses (ME027-038004 and ME027-038005), St. Cianán’s parish church (ME027-038013) built *c.* 1816 and developed on the site of the early church (ME027-038003).

The following overview is a chronological account of the archaeological, architectural and cultural heritage of the study area.

There are no recorded archaeological monuments listed in the RMP for Co Meath or in the SMR database of the ASI within the proposed development site. The closest known recorded monuments to the proposed development site are a ringfort (ME027-109) in Carranstown, an embanked enclosure (ME027-078) in Carranstown/Caulstown and an enclosure (ME027-078001) and a redundant record (ME027-079) in Caulstown situated between 150m and 210m to the southeast. Sites previously listed in the RMP which, following investigation, are now considered to be of no archaeological potential are de-listed from the database and generally described as redundant records. In total, there are 17 recorded archaeological sites included in the RMP and SMR database within the 1.5km study area (**Figure 12.1** and **Table 12.1** below).

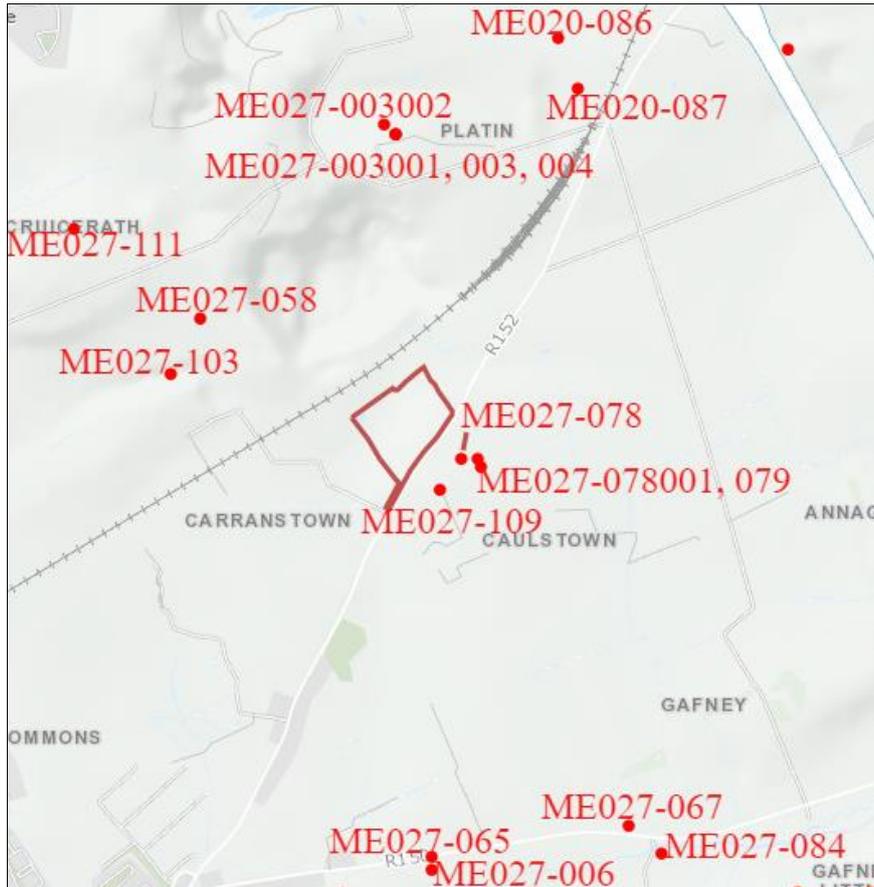


Figure 12.1: Extract from OS map showing existing Indaver site boundary (where proposed development will be located) in red with RMP detail within the 1.5km Study Area www.archaeology.ie

Table 12.1: Archaeological sites included in the RMP and SMR database within a 1.5km radius of the proposed development site

| RMP | Site Type | Townland | Distance |
|--------------|---------------------|---------------------------|-------------|
| ME020-086 | Enclosure | Platin | 1.4km to NE |
| ME020-087 | Enclosure | Platin | 1.3km to NE |
| ME027-003001 | Church | Platin | 1km to N |
| ME027-003002 | Castle unclassified | Platin | 1km to N |
| ME027-003003 | Cross | Platin | 1km to N |
| ME027-003004 | Cross | Platin | 1km to N |
| ME027-006 | Souterrain | Bellewstown | 1.5km to SW |
| ME027-058 | Fulacht fia | Carranstown | 745m to NW |
| ME027-065 | Enclosure | Bellewstown | 1.4km to SW |
| ME027-067 | Enclosure | Bellewstown | 1.6km to S |
| ME027-078 | Embanked enclosure | Carranstown/ Caulstown | 130m to SE |
| ME027-078001 | Enclosure | Caulstown | 180m to SE |

| RMP | Site Type | Townland | Distance |
|-----------|------------------|---------------------------|-------------|
| ME027-079 | Redundant Record | Carranstown/ Caulstown | 210m to SE |
| ME027-084 | Burial Ground | Bellewstown | 1.6km to SE |
| ME027-103 | Fulacht fia | Carranstown | 750m to NW |
| ME027-109 | Ringfort | Carranstown | 135m to S |
| ME027-111 | Ringfort | Cruicerath | 1.4km to NW |

The archaeological timescale can be divided into two major periods, each with a number of sub-sections:

- 1. The prehistoric period:** Mesolithic - (*circa* 7000 to 4000 BC); Neolithic - (*circa* 4000 to 2400 BC); Bronze Age (*circa* 2400 to 500 BC) – Iron Age (*circa* 500 BC to AD 400)
- 2. The medieval period:** Early medieval 5th – 12th century; high medieval 12th century – *circa* 1400; late medieval *circa* 1400 – 16th century.

12.3.2 Mesolithic and Neolithic

The earliest evidence for human colonisation and settlement in Ireland can be dated to 7000 BC, the Mesolithic Period. The people of this era were hunter-gatherers, entirely dependent on what food could be obtained through hunting and gathering, amongst other things, edible plants and shellfish. The transition of these early settlers from hunter/gatherers to a farming way of life in the Neolithic Period brought about more permanent settlements and a more complex and structured social hierarchy. There are no known archaeological sites dating to the Mesolithic Period within the Study Area. The general lack of sites does not, however, mean that such early settlement and occupation were unknown to the region.

Within the proposed development five features were identified during archaeological monitoring in 2008-2009, three of which were archaeological and were fully resolved through excavation. Charcoal samples dated one pit to the beginning of the Late Neolithic period, the second pit to the Late Neolithic and the third pit to the Middle Bronze Age (Leahy, 2009 and **Appendix 12.2**). One of the excavated features produced lithic material and the Neolithic date from this feature may allow the other lithic artefacts, recovered from the topsoil, to also be assigned to this period (*ibid*). It was concluded that despite the lack of diagnostic artefacts the material is indicative of activity in the area in either the Neolithic or Bronze Ages (*ibid*).

Archaeological monitoring and excavations undertaken at a proposed westward extension of Platin Quarry to the north of the proposed development site has revealed a number of archaeological features over the years. In 2004, four charcoal spreads and a curvilinear feature were excavated and produced prehistoric pottery and worked flint. The curvilinear ditch contained bone, pottery, flint and a possible amber bead within its fills (O’Carroll, 2004 and **Appendix 12.2**).

In 2001, a roughly rectangular Neolithic house (8m N-S x 6m) was excavated in the townland of Platin c. 1.2km to the northeast of the proposed development site (Moore, 2001). While outside the Study Area, excavations at Platin Promontory Fort (ME020-014), c. 2km to the northeast have established human activity on the summit from the Early Neolithic to the Middle Bronze Age (Seaver, 2000).

The UNESCO World Heritage Site of Brú na Bóinne which means the ‘palace’ or the ‘mansion’ of the Boyne is situated approximately 5km to the northwest of the proposed development site. This prehistoric landscape within the bend of the River Boyne is dominated by three large passage tombs; Newgrange, Knowth and Dowth which date to the Neolithic Period. In 2018, a programme of aerial reconnaissance was carried out by the NMS over the World Heritage Site. The near-drought conditions of that summer provided clarity of detail on the known monuments and uncovered numerous additional archaeological sites, many of which have been classified as enclosures, defined by banks and ditches. The survey has transformed the overall archaeological appreciation of this Neolithic ritual landscape on the Newgrange floodplain (Condit. T. and Keegan, M. et al. 2018).

12.3.3 Bronze Age and Iron Age

The Irish Bronze Age is characterised by the introduction of metallurgy to the Island of Ireland. The earliest recorded archaeological sites in the study area date to the Bronze Age in the form of two fulachtaí fia, (ME027-058 and ME027-103), both in Carranstown. Fulachtaí fia, which have been interpreted as cooking places, bathing places or steam baths are the most common type of prehistoric site in the country. The two fulachtaí fia in Carranstown were identified during pre-development testing and were excavated in advance of a western extension of Platin Quarry, located just 300m to the northwest of the Indaver facility in 2003 (Dehaene, 2002, 2003 and **Appendix 12.2**). Two of the excavated pit features within the proposed development site contained burnt and heat shattered stone, the type that is usually associated with fulachtaí fia. The excavator concluded that while the pits were isolated and did not contain associated features or mounds of burnt stone, it may be that they represent the employment of this technology on a very limited basis with each pit functioning as a trough but on a very small scale (Leahy, 2009). The pits within the proposed development site, according to the excavator, most probably represent the remains of activity related to the fulachtaí fia excavated in Platin Quarry (*ibid*). Hence the pits within the proposed development site ‘are aspects and evidence of the wider use of the landscape outside the more easily recognised sites that result from more intensive activity’ (*ibid*).

Archaeological testing was undertaken as part of a request for further information from Meath County Council for a proposed substation and power plant across the R152 to the south of the proposed development site in March 2019. The testing was undertaken to the immediate east of an embanked enclosure (ME027-078) and three localised spreads of heat-fractured stone were identified (McCarthy, M. 2019). To the north of the proposed development site in Carranstown, fourteen archaeological features (12 large post-holes and 2 pits) were identified.

The post-holes were arranged in a sub-circular shape and produced a large assemblage of prehistoric pottery (293 sherds) of possible Bronze Age date and a small assemblage of worked flint artefacts (Stirland, 2017 and **Appendix 12.2**).

Stray finds have been found in the townlands of Cruicerath to the northwest and Newtown to the west. A bronze pin (NMI reg. 1933:580) was found in a quarry at Cruicerath and a battle axe and hammer (NMI reg. L1934:7-8) were found near White Rock in Newtown. In Bellewstown, to the southwest of the proposed development site, a small/miniature cast bronze palstave/axe (Length 8.7cm; Width across the blade 3.08cm; Height 2.18cm at stop ridge) was found on Bellewstown Hill (NMI 2018:195).

Outside the Study Area, excavations at Platin Promontory Fort (ME020-014), have established human activity on the summit dating to the Early and Middle Bronze Age (Seaver, 2000).

12.3.4 Early Medieval Period

This period in Ireland is characterised by the influx and influence of Christianity, which had become widely established by the 6th century AD. Monasteries became a focal point for the lay communities of this period who were spread throughout the countryside in settlements such as ringforts/raths, crannogs and simple huts. In Duleek, c. 2.5km to the southwest, the stone church of St. Cianán (ME027-038003) was established within a large ecclesiastical enclosure (ME027-038019). Tirechan's Life of St. Patrick and the Annals of Ulster for the year AD724 make reference to a stone church in Duleek (Edwards, 1990). The present-day concentric street patterns of Duleek town follow the original circular shape of the ecclesiastical enclosure (dims. c. 325m N-S; 380m E-W) that was such a distinctive feature of the early monastic sites. According to Swan (1983) the ecclesiastical enclosure '*has become fossilised in the street system*'.

Recorded archaeological sites dating to this period within the Study Area include two ringforts (ME027-109 and ME027-111) in Carranstown and Cruicerath respectively, and a souterrain (ME027-006) in Bellewstown. Ringforts (also known by the names rath, lios, cathair or caiseal/cashel) are defended farmsteads and are the most characteristic monument of the Early Medieval Period. Their main phase of construction and occupation dates from the beginning of the 7th century AD to the end of the 9th century. They are generally circular or oval in plan, defined by an earthen bank with an external ditch or fosse. Larger ringforts with double defences (bi-vallate) and triple defences (tri-vallate) are generally interpreted as higher status sites and these can be particularly associated with specialised craft working. The sub-surface remains of circular dwelling houses and associated outbuildings are frequently revealed within ringforts during excavation. Some ringforts have associated souterrains (underground chambers connected by narrow creepways) as defensive features which may have also been used for storage. Others have associated corn-drying kilns and sometimes external structures.

The most common site type in the area with six examples, is the enclosure, with two in Platin (ME020-086 and ME020-087), two in Bellewstown (ME027-065 and ME027-067), one (ME027-078) in Carranstown/Caulstown and one (ME027-078001) in Caulstown.

The term enclosure is applied to archaeological sites, which cannot be definitively classified. Very often these enclosures are ringforts or cashels, which fall beyond the accepted size range for these monuments (i.e. less than 20 m or more than 60 m in diameter). Sometimes they can be of indeterminate shape and may date to as early as the Bronze Age or as recently as the last century, when they were used as animal shelters.

There is no above ground evidence for the ringfort in Carranstown, which is evident as a cropmark visible on aerial images (Digital map 2018). The site is described on the ASI database as a circular area (int. diam. c. 45m; ext. diam. c. 52m) that is defined by a single fosse feature (Wth. c. 3-4m) with a wide entrance gap (Wth. c. 8m). The ringfort is located c. 140m to the southwest of an embanked enclosure (ME027-078) which was identified by a LiDAR survey in 2018. It is described on the ASI database as a large circular enclosure (int. diam. c. 120m; ext. diam. c. 200m) defined by a broad bank feature (Wth. C. 30-40m). According to the ASI database, a gradiometry survey also carried out in 2018, identified a probable enclosure (ME027-078001) inside the perimeter of this larger embanked enclosure. The ringfort in Cruicerath consists of a circular enclosure (diam. 35m) defined by a single fosse feature. The levelled site was identified as a cropmark from an aerial survey conducted by Bluesky International during the drought conditions of June 2018 (ASI Database).

12.3.5 High Medieval and Late Medieval Periods

There is one recorded site dating to this period within the Study Area, an unclassified castle (ME027-003002) in the townland of Platin. The majority of castles in Ireland can be broadly classified into two groups; the early castles of the late twelfth and thirteenth centuries and the tower houses of the fifteenth to seventeenth centuries. The castle in Platin is no longer extant and cannot be classified to a precise timeframe. According to the Civil Survey (1656-8) Nicholas Darcy of Platen owned over 600 acres including a castle (Moore, 1987). The castle was replaced by a three-storey, nine-bay fronted red brick house in c. 1700, which was demolished in c. 1950 (Bence-Jones, 1988). The house is variously named 'Platin House' on the OS 1st edition map (1841-42) and 'Platin Hall' on the later 2nd edition OS map (1909). Lewis (1837) describes the house as the seat of R. Reeves and a 'spacious mansion situated in a richly planted demesne'. Platen House is depicted on the Down Survey Parish Map (1654-1659) to the north of Carranstown townland which is spelt 'Curranstonne' and the town of 'Droghedagh' depicted to the northeast (**Figure 12.2**)

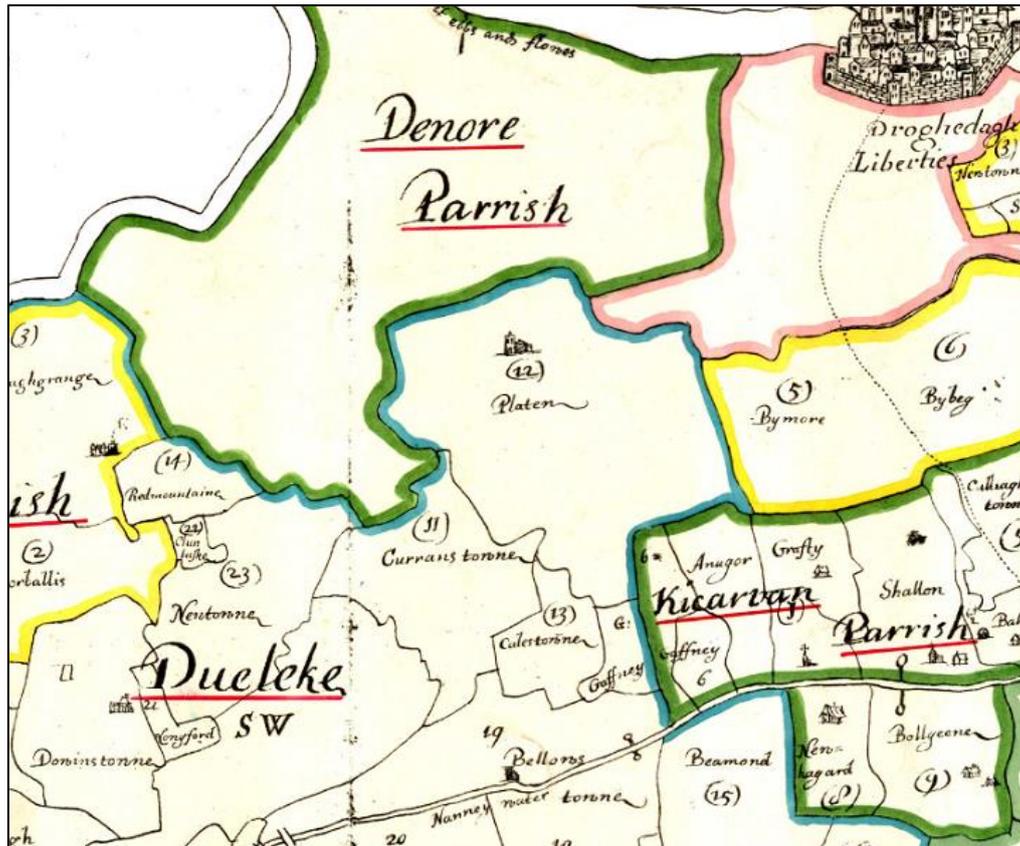


Figure 12.2: Extract from Down Survey Parish and Barony map (1654-1659)

The Battle of the Boyne between the Williamite forces of Protestant King William III and Jacobite forces of Catholic King James II was fought across the River Boyne approximately 5km to the north of the proposed development site. The site of the battle (ME020-025001) is shown on the ASI database as being on the bend of the River Boyne close to Oldbridge Obelisk and extending over the townlands of Ardagh, Glebe (Slane Upper Barony), Oldbridge, Rathmullan and Sheephouse. The Williamite encampment (LH024-009) was situated in the townland of Tullyallen in County Louth to the north of the river, while the Jacobite encampment was on Donore Hill near Donore Church to the south of the river. All of the fighting took place on the south side of the river where approximately 1,500 soldiers were killed and the battle ended in victory for King William (www.battleoftheboyne.ie). The Williamites again defeated the Jacobites at the decisive battle of Aughrim in county Galway a year later, finally bringing the war to an end with the signing of the treaty of Limerick.

In 2003, the westward extension of Platin Quarry to the north of the proposed development site, produced ten features which in turn produced approximately 530 sherds of medieval pottery, dating to the 13th/14th centuries. Initial analysis of the site show similarities with other medieval rural settlement sites (Dehaene, 2003 and **Appendix 12.2**). In 2017 three archaeological features were identified in the townland of Carranstown to the north of the proposed development site. A narrow shallow linear area (20m in length) was excavated and a large assemblage of medieval pottery (147 sherds) ranging in date from the 12th and 13th centuries (Stirland, 2017 and **Appendix 12.2**).

12.3.6 Post Medieval Period

The church at Platin (ME027-003001), dating to the 16th century, lies *c.* 30m to the south of the former Platin Hall country house and probably functioned as an estate or private chapel. There is a limestone cross (ME027-003003), decorated with foliage and figure sculpture and dating to *c.* 1480-1500, cemented into the east window of the church. A second disc-headed cross (ME027-003004) also in the church dates to the 17th century (King, 1984). There is one burial ground (ME027-084) in the Study Area in Bellewstown. According to the ASI database there is a tradition that it marks the resting place of two Cromwellian soldiers who occupied Bellewstown Castle (ME027-083), during the siege of Drogheda in 1649. The burial site is marked by two stones in the middle of a field some 500m to the northeast of the castle. According to the ASI database, historical records show that Bellewstown Castle was occupied by Cromwellian troops.

The proposed development site was previously a green field site in agricultural land. Cartographic sources indicate the site of the Indaver complex and the surrounding landscape was under agricultural use since the mid-19th century.

The 1841-42 6-inch OS map, (**Figure 12.3**) and the 25-inch map of 1897-1904 (**Figure 12.4**) (from which the second edition of the 6-inch map was derived) show the proposed development site as reasonably sized, rectangular fields in a rural environment.

The 1st edition Ordnance Survey (OS) map of 1842 (**Figure 12.3**) depicts the proposed development site as consisting of two large rectangular-shaped fields and the southern end of a third field. There are no structures depicted in these fields. The only change to the proposed development on the later 2nd edition OS map of 1906 is the insertion of a field boundary running north to south through the southernmost field. As with the earlier OS map edition, there are no structures depicted within the proposed development site (**Figure 12.4**). The most obvious change to the surrounding area is the development of the Oldcastle Branch of the Great Northern Railway Ireland which runs east to west a short distance (*c.* 110m) to the north of the proposed development site.

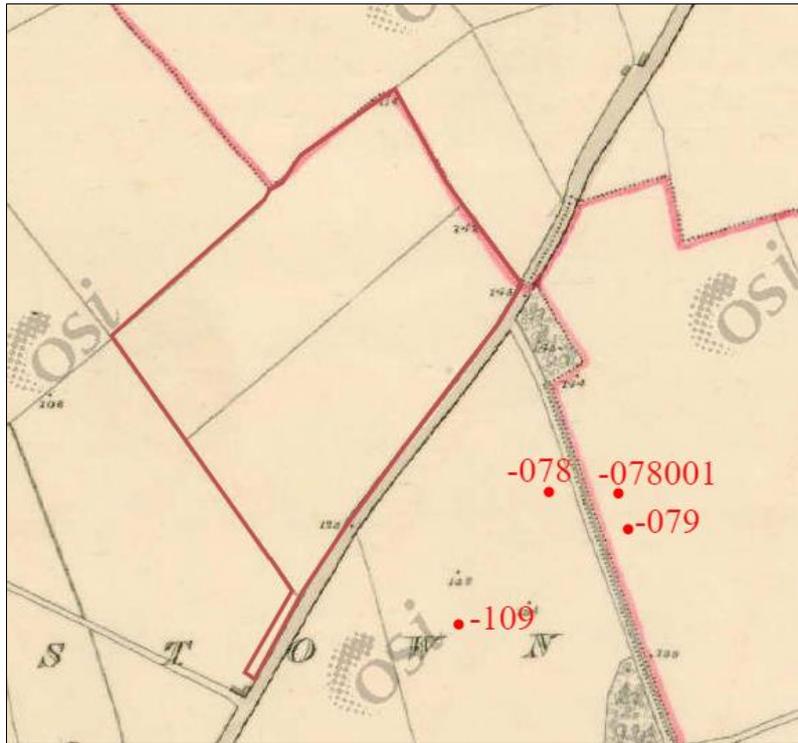


Figure 12.3: Extract from 6-inch OS map (1841-42) showing Indaver site boundary where proposed development will be located outlined in red with RMP detail (to be pre-fixed with ME027) www.archaeology.ie

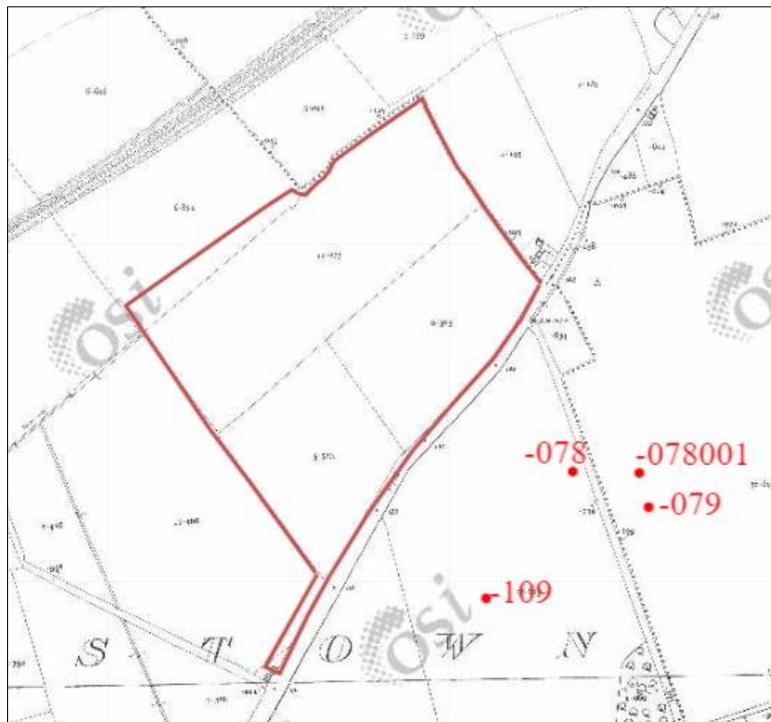


Figure 12.4: Extract from 25-inch OS map (1909) showing Indaver site boundary where proposed development will be located outlined in red, with RMP detail (to be prefixed with ME027) www.archaeology.ie

The proposed development site is depicted as greenfield in 1995 and 2000 while the majority of the site is stripped of topsoil and under development in 2005-2012 (**Figure 12.5**). The latest aerial photograph (2017) depicts the current Indaver facility (**Figure 12.6**).

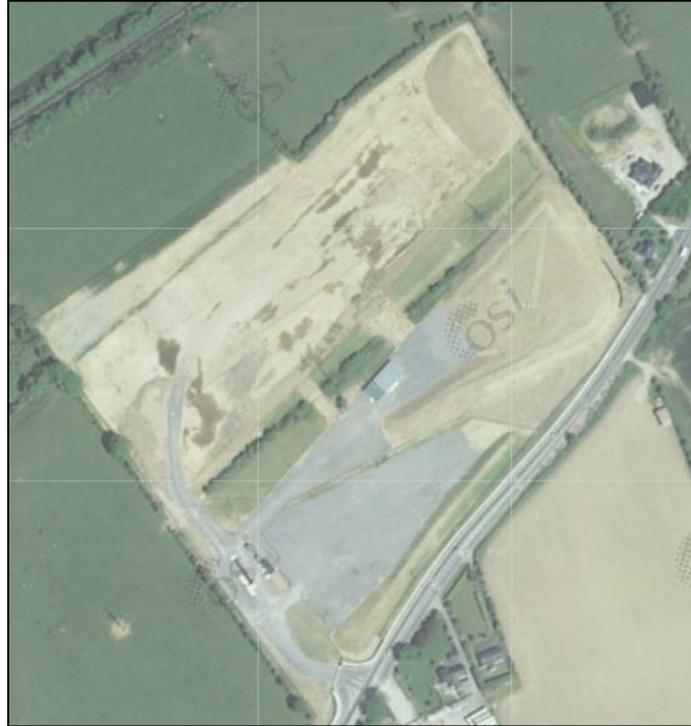


Figure 12.5: Extract from OS aerial photograph (2005-2012) www.geohive.ie



Figure 12.6: Extract from OS aerial photograph (c. 2017) www.geohive.ie

The Meath County Development Plan (2013-2019) does not list any protected structures within the proposed development site or within the 1.5km Study Area. Similarly, there are no structures listed in the NIAH within the proposed development site or within the 1.5km Study Area. The nearest protected structures to the proposed development lie within the Historic Town of Duleek (ME027-038) located 2.5km to the southwest. There are no architectural conservation areas (ACAs) in the Study Area or larger environs. The closest ACA's to the proposed development site would be those around Slane village and Slane Castle Demesne, c. 10km to the northwest.

The Historic Town of Duleek (ME027-038) contains thirteen Protected Structures listed in Appendix 8 of the Meath County Development Plan (2013 - 2019). The structures include churches such as St. Kienan's Church of Ireland (RPS 206) dating to 1816 and St. Cianan's Roman Catholic Church (RPS 213) dating to 1812, some early houses such as Duleek Country House (RPS 203) dating to 1750 and Connell's House (RPS 208) dating to 1690, the Old Nanny Bridge (RPS 216) dating to 1587, and a wayside cross (RPS 202) dating to 1690, erected by Dame Jenet Dowdall to commemorate her two husbands.

12.4 Characteristics of the Proposed Development

The proposed development site comprises an established industrial facility which includes upstanding buildings, hard surface yards, carparking and an internal road network. The proposed development will comprise of main development elements and miscellaneous site upgrades to allow for its expansion. These development elements are numbered Areas 1-18 on **Figure 4.4** in **Chapter 4**. For full details on the proposed development and construction activities refer to **Chapters 4** and **5** of this EIAR.

An inspection of the proposed development site was carried out on the 7th of October 2019, refer to **Plates 1-13; Appendix 12.1** and the following observations were made;

12.4.1 Main Development Areas

12.4.1.1 Bottom Ash Storage Building Area 1(B)

This is a grassed landscaped/bermed area. It lies to the east of an existing percolation area and to the west of an established berm (**Plate 1**). Archaeological monitoring was undertaken in most of this area, except under the berm during ground reduction in 2008-2009 and no finds or features of archaeological significance were revealed (Leahy, 2009).

12.4.1.2 Concrete yard area and Tanker/Truck Container Parking Area 2 (C)

This area is partially a hard surface tarmac area and partially bermed/landscaped. It lies adjacent to the west of an established berm (**Plate 2**).

Archaeological monitoring was undertaken in most of this area, except under the berm, during ground reduction in 2008-2009 and no finds or features of archaeological significance were revealed (Leahy, 2009).

12.4.1.3 Warehouse, Workshop and ERT Building Areas 4 and 5 (D)

This is hard surface area of chip and tar and hardcore material. It lies adjacent to the east of the existing maintenance building and to the north and west of an established berm (**Plate 3**). Archaeological monitoring was undertaken here during ground reduction in 2008-2009 and no finds or features of archaeological significance were revealed (Leahy, 2009).

12.4.1.4 Proposed Tank Farm Area 8 (A)

This is a grassed landscaped area adjacent to the west of an existing Air Cooled Condenser (**Plate 4**) and **Figure 4.4** in **Chapter 4**. Archaeological monitoring was undertaken here during ground reduction in 2008-2009 and no finds or features of archaeological significance were revealed (Leahy, 2009).

12.4.1.5 Existing Berm (Area E)

The berm lies to the east of a large hard surface area of chip and tar Area 15 (F). It is landscaped and colonised by established vegetation (**Plate 5**).

12.4.1.6 Office Rebuild Area 14 (G) and Proposed Hydrogen Generation Unit Area 15(F)

This is a large hard surface area of chip and tar with a modular office building standing in one section. An established berm lies to the east and south, while a fenced off exclusion area under overhead powerlines lies to the north (**Plates 6 and 7**). Archaeological monitoring was undertaken here during ground reduction in 2008-2009 and a single archaeological feature (pit) was identified. The feature was fully resolved by archaeological excavation and a charcoal sample taken produced a Late Neolithic date. No other finds or features of archaeological significance were revealed (Leahy, 2009).

12.4.1.7 Alteration to existing carpark Area 18 (H)

This is an established hard surface carpark area (**Plate 8**). Archaeological monitoring was undertaken here during ground reduction in 2008-2009 and no finds or features of archaeological significance were revealed (Leahy, 2009).

12.4.2 Miscellaneous site upgrades

Ancillary development works include the following;

- Area 3 – Canopy Maintenance Bay
- Area 6 – Cast Concrete hardstand
- Area 7 – Tarmac area for truck reversing

- Area 9 – Tanker unloading area (**Plate 9**)
- Area 10 – Road widening
- Area 11 – Concrete yard widening
- Area 12 – Truck Layby (**Plate 10**)
- Area 13 – Concrete Footpath and Stairs (**Plate 11**)
- Area 16 – Access Road
- Area 17 – Contractors laydown area: This will be located to the east of the established carpark and south of the fenced off line of the underground gas main. This is a mixture of hard surface and landscaped area currently in use as an overflow truck park (**Plates 12 and 13**).

Archaeological monitoring was undertaken in all of these areas with the exception of Area 13 during ground reduction in 2008-2009 and no finds or features of archaeological significance were revealed (Leahy, 2009). Area 13 lies under the high voltage power line that runs roughly east to west across the centre of the site. With the exception of two crossing points, this area was not stripped of topsoil.

12.5 Likely Significant Effects

The likely significant effects of the proposed development on the archaeological, architectural and cultural heritage landscape are assessed with reference to the Draft EPA Guidance⁵ (2017, p.50) *Description of Effects*.

The proposed development works will require ground disturbance and preparation works. This construction work would have a significant effect on any potential archaeological material that may survive below the ground surface.

12.5.1 Archaeology

Archaeological monitoring of topsoil stripping was undertaken within the proposed development site over a period of five months from September 2008 to February 2009 (Leahy, 2009). Three archaeological features were identified and were fully resolved by archaeological excavation. At that time, the author noted that the remainder of the site was devoid of any archaeological remains and no further onsite archaeological work was necessary. The report outlined three areas which would require archaeological supervision if disturbed by future development as follows;

- Area of ground under the high voltage power line
- Area of ground over the gas main
- Area of ground under the berms

Limited sections of two of these areas will be impacted by the proposed development as follows;

⁵ Available here: <https://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf>

12.5.1.1 Area of ground under the high voltage power line

It is proposed to construct a concrete footpath and stairs under the overhead powerline to provide a personnel access route from the process building to the proposed office building, hydrogen generation building and the contractors compound (refer to Area 13 in **Figure 4.4, Chapter 4**). The footpath and stairs is one of a series of miscellaneous site upgrades to improve the general workings of the site.

Construction of this footpath will require the removal of topsoil which would impact on any potential subsurface archaeological remains. During archaeological monitoring in 2008-2009 a single archaeological feature (pit) was identified c. 15m to the south of this proposed footpath. The pit feature was fully resolved by archaeological excavation and a charcoal sample taken produced a Late Neolithic date. No other finds or features of archaeological significance were revealed in the surrounding area.

Given the limited area of ground to be disturbed (path measurements approximately 50m in length x 2m in width), the impact of construction of the footpath is assessed as slight.

12.5.1.2 Area of ground under the berms

It is proposed to construct a bottom ash storage building and a large concrete yard at the northeast of the development site. The building (Area 1) will be 60m by 25m in plan and the concrete yard (Area 2) will be 35m by 55m in plan.

The majority of ground in the area of the proposed building and yard was archaeologically monitored during topsoil stripping in 2009 and no finds or features of archaeological significance were revealed (Leahy, 2009). The closest archaeological feature identified at that time to the berm was a pit situated over 200m to the southwest. Construction works will require the excavation of the berm and the removal of topsoil underneath. This excavation would impact on any potential subsurface archaeological remains. Given that no archaeological finds or features were found in proximity of the berm in 2009, the overall impact is assessed as slight.

The majority of the proposed development lies within the footprint of ground which has already been archaeologically resolved. Therefore, no likely significant effects on the archaeological environment are foreseen in Areas 3-12 and in Areas 14-18 which comprise the majority of the development elements. Two areas of the proposed development; under the overhead power line (Area 13) in roughly the centre of the site and under the berm (Areas 1 and 2) at the northeast of the site may impact on previously unknown archaeological finds or features. Where extensive earthmoving is involved there is always the possibility that hitherto unknown subsurface archaeological material will be uncovered.

The physical impact of the current Indaver facility on the World Heritage Site of Brú na Bóinne was considered in the 2006 EIS. The EIS concluded *‘The facility is a minimum of 3km from the river valley and approximately 5km from the boundary of the World Heritage Site, sufficiently distant so as to render any*

archaeological impacts not significant'. Similarly, the UNESCO-ICOMOS monitoring mission which reported on the Indaver site in 2004, *'found no grounds for believing that the construction of the proposed incinerator itself would have a direct impact on the outstanding universal value of the World heritage site'* (UNESCO-ICOMOS, 2004).

12.5.2 Architecture

The Meath County Development Plan (2013-2019) and the NIAH do not list any protected structures or features of architectural merit within the proposed development site or within the 1.5km study area. Therefore, no significant effects on the architectural environment are predicted.

12.5.3 Visual Effects

The 2006 EIS submitted for the initial construction of the Indaver facility addressed the following impacts on the World Heritage Site of Brú Na Boinne;

Visual Effects: The assessment concluded *'the mass of Redmountain will mask the development from almost all of the core area of the World Heritage Site. The stack however will be visible from Dowth but not from Newgrange or Knowth. Therefore, while there will be some visual impact on the World Heritage Site this impact will be minimum particularly when compared to the nearby cement factory'*. The UNESCO-ICOMOS (2004) concurred with this conclusion stating that *'while the construction of the incinerator stack will be a visual intrusion, the mission considers that it would have a minimum impact on the world Heritage site compared with the existing cement factory nearby'*. The proposed development does not include any structures at the height of the stack (79m) already present on the site.

Section 13.5.3 of Chapter 13 Landscape and Visual of this EIAR assessed the potential impacts of the proposed development on views from Brú na Bóinne. The three Protected Views and Prospects listed in Meath County Development Plan from the three main passage tombs of Dowth (View 88), Newgrange (View 87) and Knowth (View 59) were assessed. The report concluded that the relatively small scale of the built elements that comprise the proposed development will have no perceptible visual impact on views from the World Heritage Site.

Vapours from the stack: Potential impacts on the unique winter solstice event at Newgrange Passage tomb were considered in the 2006 EIS. This is when the rising sun on a number of days around December 21st shines directly into the burial chamber within the tomb. The 2006 EIS stated *'examination of the cartographic evidence shows that the development will be sited some considerable distance, c.3km to the east of the point on the Newgrange horizon, where the sun rises on the 22nd. As far as the events at Newgrange are concerned the entire development will be completely masked by Redmountain ridge'*.

A report entitled *'Assessment Of Air Quality Impact Of Carranstown Waste Management Facility At Brú Na Boinne'* was completed by AWN in March 2004.

A summary of the findings of this report were presented in Appendix 16.2 of the 2006 EIS and concluded that the impact of air emissions from the Indaver facility on the Brú na Bóinne site would be insignificant.

Chapter 8 Air Quality of this EIAR assessing Air Quality confirms that the *'increase in waste tonnage proposed will not cause a significant impact to the ambient air quality'*. Therefore there is no significant change in the emissions from the initial Indaver development as modelled in 2009/2012 (as per the current IE licence W0167-03) and the current proposed development.

The 2006 EIS assessed the visual impact of the development of the Indaver facility of the site of the Battle of the Boyne. The site of the Battle (ME020-025001) is shown on the ASI database as being on the bend of the River Boyne close to Oldbridge Obelisk and extending over the townlands of Ardagh, Glebe (Slane Upper Barony), Oldbridge, Rathmullan and Sheephouse. The EIS concluded that although the stack would be seen from some of these extended areas of the battlefield, the impact will not be significant.

In addition, the UNESCO ICOMOS mission report⁶ (2004) concluded that the construction of the incinerator *'would not appear to preclude any possible interpretation of the course of the Battle'*.

Finally, impacts on the ecclesiastical centre of Duleek, situated c. 2.5km to the west of the proposed development, were addressed. The EIS (2006) concluded that the construction of the Indaver facility will not impact on the village and its archaeological heritage.

12.5.4 'Do-Nothing' Effects

If development does not proceed the existing landscape will remain in its current condition with potential archaeological finds or features beneath areas of previously unstripped ground under the berm at the northeast in Areas 1 and 2 and under the overhead power line in Area 13.

12.5.5 Construction Phase

All of the development areas 3-12 and areas 14-18 lie within the footprint of ground which has already been archaeologically resolved. Therefore, no significant effects on the archaeological, architectural and cultural heritage environment are foreseen during the construction phase for the majority of the development.

It is possible that hitherto unknown archaeological finds or features may be present under the overhead power line in Area 13 and under the berm in Areas 1 and 2. The potential impact of construction works in these areas has been assessed as slight given that no archaeological finds or features were found in proximity to Areas 1 and 2 and given the limited area of ground to be disturbed in Area 13.

⁶ Available from: <http://whc.unesco.org/archive/2004/mis-659-2004.pdf>

12.5.6 Operational Phase

No significant archaeological, architectural or cultural heritage effects are predicted during the operational phase of the proposed development.

12.6 Mitigation Measures and Monitoring

There will be no impact on the archaeological, architectural and cultural heritage environment for the bulk of the development on the site in areas 3-12 and 14-18. Hence, no archaeological mitigation measures are required for these development areas.

During construction archaeological monitoring will be carried out on areas of ground disturbance under the berm in Areas 1 and 2 and under the overhead powerline in Area 13. In the event of archaeological material being uncovered such material will be preserved *in situ*, where possible or preserved by record. Preservation *in situ* will require the relocation of the element of the development beyond the area of archaeological sensitivity.

Preservation by record will require the excavation of the archaeological material and such material will be fully resolved to professional standards of archaeological practice (*Policy Guidelines on Archaeological Excavation*⁷ – Department of Arts, Heritage, Gaeltacht and the Islands, 1999). This work will be funded by the developer.

Mitigation measures are not required for the operational stage.

12.7 Cumulative Effects

Chapter 18 *Cumulative Effects, Other Effects and Interactions* of this EIAR considers the likely significant effects that may arise during construction and operation of the proposed development.

No significant cumulative effects on the archaeological, architectural or cultural heritage are predicted as the majority of the proposed development lies within the footprint of ground which has already been archaeologically resolved and has been subjected to extensive ground reduction and subsequent development. The overall impact of ground works on the small remaining areas of unstripped ground under the overhead power line Area 13 and under the berms in Areas 1 and 2 has been assessed as slight.

Chapter 18 *Cumulative Effects, Other Effects and Interactions* of this EIAR also considers whether any of the proposed and/or recently approved schemes in the local area have a potential to exacerbate (i.e. alter the significance of) effects associated with the proposed development. Proposed and/or recently approved projects include the following;

⁷ Department of Arts, Heritage, Gaeltacht and the Islands (1999) Policy Guidelines on Archaeological Excavation, <https://www.archaeology.ie/sites/default/files/media/publications/excavation-policy-and-guidelines.pdf>

- Irish Cement Limited (Planning Ref: LB150375) - Cement Silo;
- Irish Cement Limited (Planning Ref: PL17 .PA0050) - Alternative fuels and raw materials;
- SSE Generation Ireland Ltd. (Planning Ref: PL17.303678) - 110kV transmission substation;
- Highfield Solar Ltd., (Planning Ref: PL17.248146) - Solar farm;
- Highfield Solar Ltd., (Planning Ref: PL17 .303568) - Electrical substation (110kV).

When the predicted impact of the proposed development at Indaver is combined with each of the approved projects individually, no significant negative direct nor indirect cumulative effects are predicted on the overall archaeological landscape.

Construction work for the proposed and/or recently approved projects will require some degree of ground works which may impact on hitherto unknown subsurface archaeological finds or features. The combination of these various projects may have a cumulative effect on the archaeological landscape in the vicinity of the Indaver development site and in the wider area.

The more extensive the area of ground to be disturbed, the greater the risk of negatively impacting on potential subsurface archaeological finds or features. If such features are preserved by record they will be permanently removed from the archaeological landscape.

12.8 Residual Effects

The bulk of the current development proposal lies within the footprint of ground which has already been archaeologically resolved, thereby negating the presence of any further archaeological finds or features on the majority of the site. There will be no likely significant residual effects on the archaeological and cultural heritage environment on the majority of the development site.

It is possible that archaeological finds or features may be present under the overhead power line Area 13 and under the berms in Areas 1 and 2. In the event of archaeological material being uncovered in these areas, such material will be preserved *in situ*, where possible or preserved by record.

The Meath County Development Plan (2013-2019) and National Inventory of Architectural Heritage (NIAH) do not list any protected structures or features of architectural merit within the proposed development site. There will be no likely significant residual effects on the architectural heritage associated with the proposed development.

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