

12 ARCHAEOLOGY AND CULTURAL HERITAGE

12.1 Introduction

This archaeological and cultural heritage chapter was prepared by Tobar Archaeological Services. It presents the results of an archaeological and cultural heritage impact assessment prepared as part of the Environmental Impact Assessment Report for the Proposed Project. The Proposed Project comprises a Solar Farm and Substation and Grid Connection in Timahoe North bog, Co. Kildare. The site of the Proposed Project comprises areas of cutover raised bog in the ownership of Bord na Móna which was previously commercially worked.

The purpose of this chapter is to assess the potential effects of the Proposed Project on the surrounding archaeological, architectural and cultural heritage landscape. The assessment is based on both a desktop review of the available cultural heritage and archaeological data and a comprehensive programme of field survey of the study area. An assessment of potential effects is presented and a number of mitigation measures are recommended where appropriate. The impact of the Proposed Project on the setting of Cultural Heritage Assets is also assessed.

12.1.1 Proposed Project

12.1.1.1 Solar Farm

The Proposed Project comprises a large scale solar PV farm with an export capacity of approximately 70 Megawatts (MW). It will consist of a solar photovoltaic array and associated infrastructure, a battery storage compound, inverters, access roads and parking, site compounds and security fencing, amenity trails and landscaping, peat and subsoil storage areas (repositories), site drainage and all associated works

The layout of all the above components was designed sympathetically to the known cultural heritage features in the area. Every effort was made to ensure that the Proposed Project would have the minimum impact possible by placing solar arrays and other infrastructure in areas which have no above ground and/or known sub-surface archaeological/architectural/cultural heritage features. A full description of the Proposed Project is provided in Chapter 4 of this EIAR.

12.1.1.2 Substation and Grid Connection Route

The Proposed Project will also include the construction of a 110 kV substation within the site. It is then envisaged to connect from this substation to the Derryiron-Maynooth 110 kV overhead line that traverses the southern section of the Timahoe North site.

Further details are provided in Chapter 4 of the EIAR.

12.1.2 Statement of Authority of Tobar Archaeological Services

This section of the EIAR has been prepared by Miriam Carroll and Annette Quinn of Tobar Archaeological Services. Miriam and Annette both graduated from University College Cork in 1998 with a Masters degree in Methods and Techniques in Irish Archaeology. Both directors are licensed by the Department of Culture, Heritage and the Gaeltacht to carry out excavations and are members of the Institute of Archaeologists of Ireland. Annette Quinn and Miriam Carroll have been working in the field of archaeology since 1994 and have undertaken numerous projects for both the private and public sectors including excavations, site assessments (EIS/EIAR) and

surveys. They are competent experts for the purposes of the preparation of this chapter of the EIA.

12.1.3 Legislation and Guidelines

12.1.3.1 Current Legislation

Archaeological monuments are safeguarded through national and international policy, which is designed to secure the protection of the cultural heritage resource. This is undertaken in accordance with the provisions of the European Convention on the Protection of the Archaeological Heritage (Valletta Convention). This was ratified by Ireland in 1997.

Both the National Monuments Acts 1930 to 2004 and relevant provisions of the National Cultural Institutions Act 1997 are the primary means of ensuring protection of archaeological monuments, the latter of which includes all man-made structures of whatever form or date. There are a number of provisions under the National Monuments Acts which ensure protection of the archaeological resource. These include the Register of Historic Monuments (1997 Act) which means that any interference to a monument is illegal under that Act. All registered monuments are included on the Record of Monuments and Places (RMP).

The RMP was established under Section 12 (1) of the National Monuments (Amendment) Act 1994 and consists of a list of known archaeological monuments and accompanying maps. The Record of Monuments and Places affords some protection to the monuments entered therein. Section 12 (3) of the National Monuments (Amendment) Act, 1994 states that any person proposing to carry out work at or in relation to a recorded monument must give notice in writing to the Minister (Arts, Heritage, Regional, Rural and Gaeltacht Affairs) and shall not commence the work for a period of two months after having given the notice. All proposed works, therefore, within or around any archaeological monument are subject to statutory protection and legislation (National Monuments Acts 1930-2004).

Under the Heritage Act 1995 (as amended) (also referred to as the Heritage Council Acts 1995 and 2018) architectural heritage is defined to include *'all structures, buildings, traditional and designed, and groups of buildings including street-scapes and urban vistas, which are of historical, archaeological, artistic, engineering, scientific, social or technical interest, together with their setting, attendant grounds, fixtures, fittings and contents...'*. A heritage building is also defined to include *'any building, or part thereof, which is of significance because of its intrinsic architectural or artistic quality or its setting or because of its association with the commercial, cultural, economic, industrial, military, political, social or religious history of the place where it is situated or of the country or generally'*.

12.1.3.2 Granada Convention

The Council of Europe, in Article 2 of the 1985 Convention for the Protection of the Architectural Heritage of Europe (Granada Convention), states that *'for the purpose of precise identification of the monuments, groups of structures and sites to be protected, each member State will undertake to maintain inventories of that architectural heritage'*. The Granada Convention emphasises the importance of inventories in underpinning conservation policies.

The National Inventory of Architectural Heritage (NIAH) was established in 1990 to fulfil Ireland's obligations under the Granada Convention, through the establishment and

maintenance of a central record, documenting and evaluating the architectural heritage of Ireland. Article 1 of the Granada Convention establishes the parameters of this work by defining *'architectural heritage'* under three broad categories of Monument, Groups of Buildings, and Sites:

- Monument: all buildings and structures of conspicuous historical, archaeological, artistic, scientific, social or technical interest, including their fixtures and fittings;
- Group of buildings: homogeneous groups of urban or rural buildings conspicuous for their historical, archaeological, artistic, scientific, social or technical interest, which are sufficiently coherent to form topographically definable units;
- Sites: the combined works of man and nature, being areas which are partially built upon and sufficiently distinctive and homogenous to be topographically definable, and are of conspicuous historical, archaeological, artistic, scientific, social or technical interest.

The Council of Europe's definition of architectural heritage allows for the inclusion of structures, groups of structures and sites which are considered to be of significance in their own right, or which are of significance in their local context and environment. The NIAH believes it is important to consider the architectural heritage as encompassing a wide variety of structures and sites as diverse as post boxes, grand country houses, mill complexes and vernacular farmhouses.

12.1.3.3 Statutory Consultation

A number of statutory bodies including the Development Applications Unit (DAU) of the Department of Culture, Heritage and the Gaeltacht were consulted as part of the scoping consultation outlined in Chapter 2, Section 2.5. No comments in relation to archaeology or cultural heritage were received from the DAU in response to the consultation. The Irish Peatlands Conservation Council (IPCC) were also consulted. Their response, received on the 21st May 2018, noted that Timahoe Bog is located in *'a rich archaeological complex'* and recommended archaeological investigation and monitoring during construction. Following consultation with Kildare County Council on 11th October 2017, the following heritage items were required to be addressed in any assessment; archaeological impact assessment, impact on designated sites, visual impact on RMPs and Protected Structures, decommissioning and any relevant mitigation and management.

All issues relating to archaeology and cultural heritage raised as a result of the consultation process have been address in this assessment.

12.1.3.4 Kildare County Development Plan 2017- 2023

The Kildare County Development Plan (CDP) 2017-2023 outlines a number of policies and objectives relating to archaeology and built heritage (see below). The principal aim of Chapter 12 of the development plan is to *'To protect, conserve and manage the archaeological and architectural heritage of the county and to encourage sensitive sustainable development so as to ensure its survival and maintenance for future generations.'* Given the extensive list of policies and objectives outlined in the CDP only a relevant sample are reproduced here.

Protected Structures

The CDP states that the county has a wealth of structures of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. Such features are contained in the Record of Protected Structures (RPS).

Development Plan objectives relating to Protected Structures include:

PSO 1 Review and amend on an ongoing basis the Record of Protected Structures and make additions, deletions and corrections as appropriate over the period of this Plan.

PSO 2 Prepare a Buildings at Risk Register to prevent the endangerment of Protected Structures, historic or vernacular buildings.

PSO 6 Ensure that in the event of a planning application being granted for development within the curtilage of a protected structure, the proposed works to the protected structure should occur in the first phase of the development to prevent endangerment, abandonment and dereliction of the structure.

PSO 8 Carry out an audit and assess the condition of all protected structures within the Council's ownership and devise a management plan for these structures.

Vernacular Architecture

Vernacular architecture is generally classified as the homes and workplaces of the general population built by local people using local materials. This is in contrast to formal architecture, such as the grand estate houses of the gentry, churches and public buildings, which were often designed by architects or engineers. The majority of vernacular buildings are domestic dwellings. Examples of other structures that may fall into this category include shops, outbuildings, mills, limekilns, farmsteads, forges, gates and gate piers. Policies in relation to vernacular architecture include:

VA 1 Encourage the protection, retention, appreciation and appropriate revitalization of the vernacular heritage of the county.

VA 2 Resist the demolition of vernacular architecture, in particular thatched cottages and farmhouses and to encourage their sensitive reuse having regard to the intrinsic character of the structure.

VA 4 Preserve the character and setting (e.g. gates, gate piers, courtyards etc.) of vernacular buildings where deemed appropriate by the planning authority.

Archaeological Heritage

Archaeological heritage includes structures, groups of buildings, developed sites, all recorded monuments as well as their contexts, and moveable objects. There is an abundant and diverse archaeological heritage within the county, monuments and artefacts that represent all periods.

Development Plan policies relating to archaeological heritage include:

AH 1 Manage development in a manner that protects and conserves the archaeological heritage of the county, avoids adverse impacts on sites, monuments, features or objects of significant historical or archaeological interest and secures the preservation in-situ or by record of all sites and features of historical and archaeological interest. The Council will favour preservation in – situ in accordance with the recommendation

of the Framework and Principals for the Protection of Archaeological Heritage (1999) or any superseding national policy.

AH 2 Have regard to the Record of Monuments and Places (RMP), the Urban Archaeological Survey and archaeological sites identified subsequent to the publication of the RMP when assessing planning applications for development. No development shall be permitted in the vicinity of a recorded feature, where it detracts from the setting of the feature or which is injurious to its cultural or educational value.

AH 3 Secure the preservation (in-situ or by record) of all sites, monuments and features of significant historical or archaeological interest, included in the Record of Monuments and Places and their settings, in accordance with the recommendations of the Framework and Principles for the Protection of Archaeological Heritage, DAHG (1999), or any superseding national policy document.

AH 4 Ensure that development in the vicinity of a site of archaeological interest is not detrimental to the character of the archaeological site or its setting by reason of its location, scale, bulk or detailing and to ensure that such proposed developments are subject to an archaeological assessment. Such an assessment will seek to ensure that the development can be sited and designed in such a way as to avoid impacting on archaeological heritage that is of significant interest including previously unknown sites, features and objects.

World Heritage

The CDP outlines the State's commitment to the identification, protection, conservation, presentation and transmission of its World Heritage Sites to future generations in accordance with Article 4 of the World Heritage Convention. A Tentative List is an inventory of those properties which a country intends to consider for nomination to the World Heritage List. The new Tentative List was approved by the Minister for Arts, Heritage and the Gaeltacht and submitted to UNESCO in March 2010.

One site in Kildare, Dún Ailinne outside Kilcullen, has been included on the Tentative List as part of a larger assembly of sites i.e. The Royal Sites of Ireland, which include Cashel, Dún Ailinne, Hill of Uisneach, Rathcroghan Complex, the Tara Complex and Eamhain Mhacha.

Objectives in relation to World Heritage sites include:

A0 5 Recognise the potential World Heritage Site in Kildare on the UNESCO Tentative List – Ireland-2010 and support the nomination of Dún Ailinne to World Heritage status.

12.1.4 Site Location and Topography

The Proposed Project is located in north County Kildare, approximately 6.5km (kilometres) north of the village of Allenwood, 6km east of Carbury and 3km south of Johnstownbridge. The site is accessed from the south via the Derrymahon-Drehid local road L-5025, which adjoins the R402 Regional Road to the west of the site (Figure 12.1).

Timahoe raised bog, within which the Proposed Project is located, extends across the townlands of Mulgeeth, Ballynamullagh, Drehid, Timahoe East, Mucklon, Kilmurry (Carbury By) and Killyon in north County Kildare. The bog which is now out of production forms part of the Allen group of Bord na Móna bogs. The Proposed Project is located within the above townlands. Drehid Waste Management Facility (DWMF) is situated in the southern portion of Timahoe Bog.

The area in which the Proposed Project is located now comprises cut-over raised bog which is no longer in production. Consequently significant portions of the site are overgrown with grass, heather and scrub. Large drains still extend through the bog in a north-west south-east direction, although the majority are now colonised with vegetation. The bog is under the ownership of Bord na Móna and was used primarily for the industrial exploitation of peat. Industrial production ceased in the 1990s, although small scale turf on the spread production continues at the margins of the commercially cutover bog, in particular at the south-west and east. During peat production the site was serviced by a railway system, the embankment and rails of which are visible and continue to act as a means of access despite being disused and overgrown.

The proposed Substation and Grid Connection route are also located within the same parcel of land and were examined and assessed as part of the EIAR.

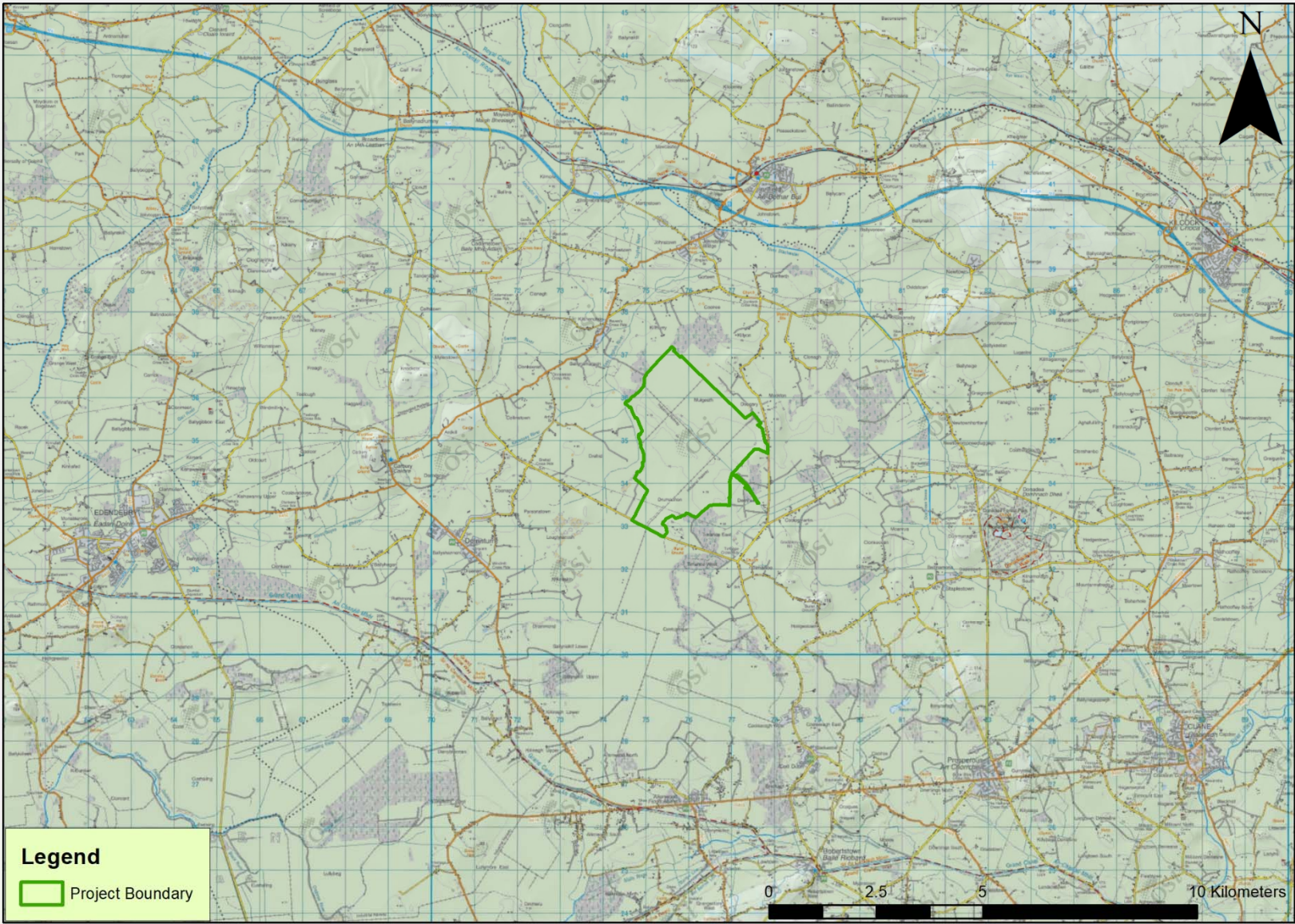


Figure 12.1: Site location map.

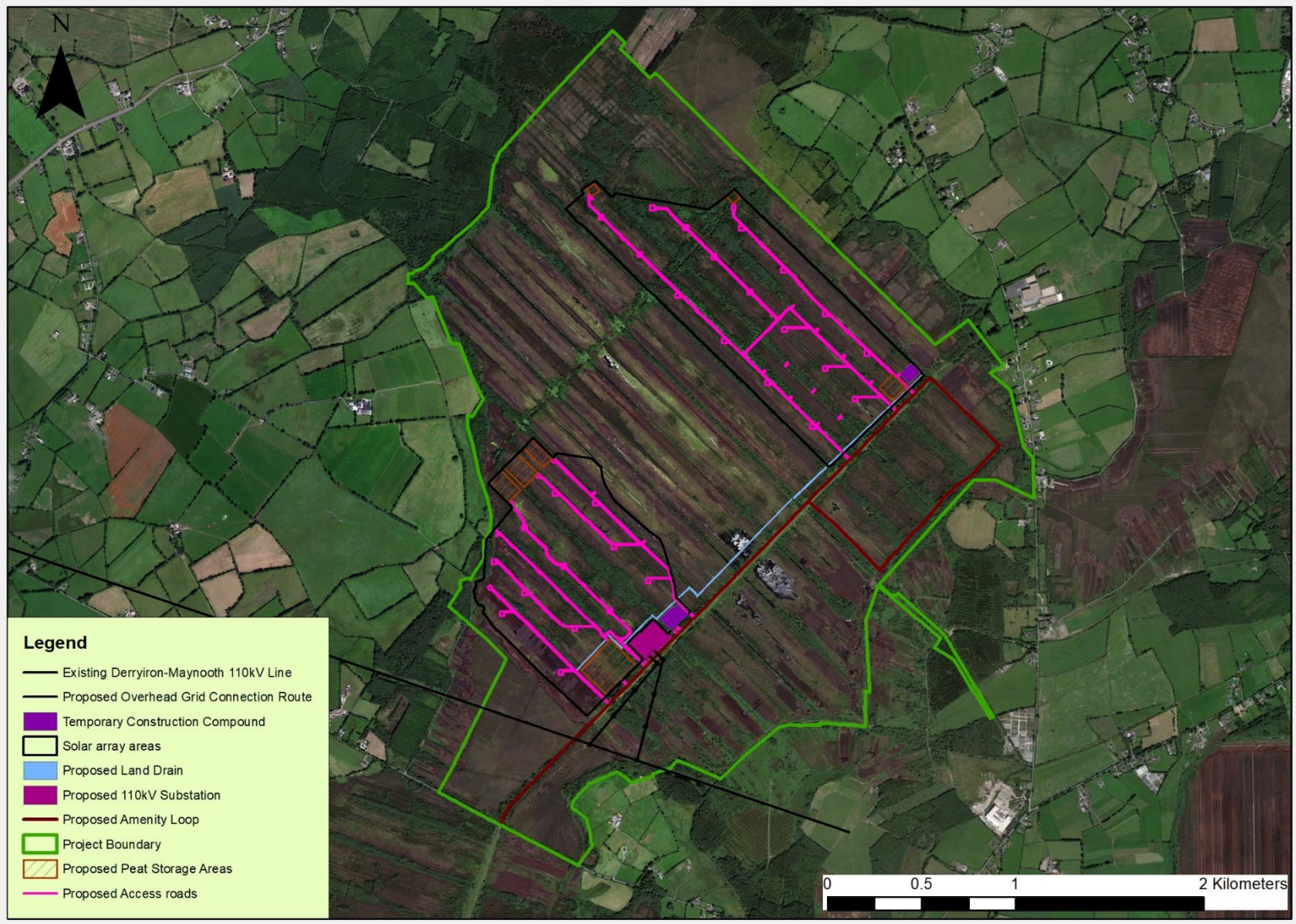


Figure 12.2: Proposed Project layout

12.2 Methodology

The assessment of the archaeology, architecture and cultural heritage of the Proposed Project included GIS mapping, desk-based research followed by field inspection. A desk-based study of the Proposed Project was initially undertaken in order to assess the archaeological, architectural and cultural heritage potential of the area and to identify constraints or features of archaeological/cultural heritage significance. Field inspection was undertaken in June and July 2018 to determine if previously unrecorded archaeological/architectural or cultural heritage features were located in the area of the proposed Solar Farm or the proposed Substation and Grid Connection and to assess any potential effects on known or previously unrecorded sites or monuments. Table 12.1 below outlines the heritage sites considered in this assessment within the relevant distance from the Proposed Project.

Table 12.1 Heritage sites considered according to Sensitivity

Heritage Site Type	Distance Considered
UNESCO World Heritage Sites (including tentative sites)	25km
National Monuments (State Ownership and Preservation Order Sites)	10km
Recorded Monuments, RPS	2km
NIAH and Historic Gardens	2km NIAH and Gardens
Undesignated sites, if relevant	Within or adjacent to the Project Boundary

12.2.1 Geographical Information Systems

Geographic Information System (GIS) is a computer database which captures, stores, analyses, manages and presents data that is linked to location. GIS is geographic information systems which includes mapping software and its application with remote sensing, land surveying, aerial photography, mathematics, photogrammetry, geography and tools that can be implemented with GIS software. GIS was used to manage the datasets relevant to the archaeological and architectural heritage assessment and for the creation of all the maps in this section of the report. This involved the overlaying of the relevant archaeological and architectural datasets on georeferenced aerial photographs and road maps (ESRI), where available. The integration of this spatial information allows for the accurate measurement of distances of a project from archaeological and cultural heritage sites and the extraction of information on 'monument types' from the datasets. Areas of archaeological or architectural sensitivity may then be highlighted in order to mitigate the potential negative effects of the development on archaeological, architectural and cultural heritage.

12.2.2 Desktop Assessment

A primary cartographic source and base-line data for the archaeological assessment was the consultation of the Sites and Monuments Record (SMR) and RMP for County Kildare. All known recorded archaeological monuments are indicated on 6 inch Ordnance Survey (OS) maps and are listed in aforementioned records. The 1st (1840s) and 2nd (1900s) edition OS maps for the area were also consulted.

The following sources were consulted for this assessment report:

- The Record of Monuments and Places
- National Monuments in State Care, Co. Kildare
- The Topographical Files of the National Museum of Ireland, including the Bogs Database
- First edition Ordnance Survey maps (OSI.ie)
- Second edition Ordnance Survey maps (OSI.ie)
- Third edition Ordnance Survey Map (Record of Monuments and Places for County Kildare)
- Down Survey maps for County Kildare (www.downsurvey.tcd.ie)
- Aerial photographs (copyright of Ordnance Survey Ireland (OSI.ie))
- Excavations Database
- Kildare County Development Plan 2017-2023, Kildare County Council
- National Inventory of Architectural Heritage (NIAH)
- Any relevant archaeological surveys or assessments

12.2.2.1 Record of Monuments and Places

A primary cartographic source and base-line data for the assessment was the consultation of the SMR and RMP for County Kildare. All known recorded archaeological monuments are indicated on 6 inch Ordnance Survey (OS) maps and are listed in these records. The SMR/RMP is not a complete record of all monuments as newly discovered sites may not appear in the list or accompanying maps. In conjunction with the consultation of the SMR and RMP, the electronic database of recorded monuments and SMRs which may be accessed at www.webgis.archaeology.ie/historicenvironment was consulted.

12.2.2.2 Cartographic Sources and Aerial Photography

The 1st and 2nd edition OS maps for the area were consulted, where available, as was OSI aerial photography on OSI.ie. The 17th century Down Survey maps for the area were also consulted at www.downsurvey.tcd.ie.

12.2.2.3 Topographical Files - National Museum of Ireland

Details relating to finds of archaeological material and monuments in numerous townlands in the country are contained in the topographical files held in the National Museum of Ireland. In order to establish if any new or previously unrecorded finds had been recovered from the study area these files were consulted for every townland within and adjacent to the latter. As part of this process, the bogs database was also consulted, being of particular relevance for objects recovered from the surrounding raised bog.

12.2.2.4 Archaeological Inventory Series

Further information on archaeological sites may be obtained in the published County Archaeological Inventory series prepared by the Department of Culture, Heritage and the Gaeltacht. The archaeological inventories present summarised information on sites listed in the SMR/RMP and include detail such as the size and location of particular monuments as well as any associated folklore or local information pertaining to each site. The inventories, however, do not account for all sites or items of cultural heritage interest which are as yet undiscovered.

12.2.2.5 Kildare County Development Plan 2017-2023

The County Development Plan (2017-2023) was consulted for the schedule of buildings (Record of Protected Structures) and items of cultural, historical or archaeological

interest which may be affected by the Proposed Project. The townlands within and surrounding the study area were entered into the list of protected structures in the development plan to assess the proximity and potential effect of the Proposed Project on such structures. The development plan also outlines policies and objectives relating to the protection of the archaeological, historical and architectural heritage landscape of County Kildare. The dataset for the Kildare Record of Protected Structures was obtained from Kildare County Council and added to the base mapping for the development in order to accurately assess any potential effects on such structures.

12.2.2.6 Excavations Database

The Excavations Database is an annual account of all excavations carried out under license. The database is available on line at www.excavations.ie and includes excavations from 1985 to 2018. This database was consulted as part of the desktop research for this assessment to establish if any archaeological excavations had been carried out within or near to the area of the Proposed Project.

12.2.2.7 National Inventory of Architectural Heritage

This source lists some of the architecturally significant buildings and items of cultural heritage and is compiled on a county by county basis by the Department of Culture, Heritage and the Gaeltacht. The NIAH database was consulted for all townlands within and adjacent to the Proposed Project. The NIAH survey for Kildare has been published and was downloaded on to the base mapping for the Proposed Project (www.buildingsofireland.ie). The NIAH is a state initiative under the administration of the Department of Culture, Heritage and the Gaeltacht and established on a statutory basis under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999.

The purpose of the NIAH is to identify, record, and evaluate the post-1700 architectural heritage of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage. NIAH surveys provide the basis for the recommendations of the Minister for the Arts, Heritage, Regional, Rural and Gaeltacht Affairs to the planning authorities for the inclusion of particular structures in their Record of Protected Structures (RPS). The published surveys are a source of information on the selected structures for relevant planning authorities. They are also a research and educational resource. It is hoped that the work of the NIAH will increase public awareness and appreciation of Ireland's architectural heritage.

12.2.3 Fieldwork

The Proposed Project area was inspected by Tobar Archaeological Services over a number of days in June and July 2018. The inspection consisted of an extensive walkover examination of the Proposed Project area and an assessment of any nearby recorded monuments, architectural, built or cultural heritage items, where accessible. A full photographic record of the site was made. The site description and photographic record is presented in Appendix 12.1.

12.2.3.1 Limitations Associated with Fieldwork

No significant limitations were encountered during field survey and all areas of the Proposed Project were available for walk-over. Dense scrub and heather cover are present within portions of the Project Boundary as the bog is no longer under production. In this regard, the surfaces of the peat fields are largely colonised with vegetation (grass, heather and scrub). Similarly, the existing drain network within the bog has also been colonised with vegetation with the result that the vast majority of drain faces/sections are not possible to visually inspect.

12.2.4 Assessment of Likely Significant Effects

The likely effects on the existing archaeological and cultural heritage environment are assessed using the criteria as set out in the Draft Revised Guidelines on the Information to be Contained in Environmental Impact Statements Environmental Protection Agency (2017). See Chapter 1, Table 1.2 for Impact Terminology.

12.3 Description of Existing Environment

12.3.1 Archaeological Heritage

For the purposes of this report, archaeological heritage includes

- UNESCO World Heritage Sites
- National Monuments (Ownership, Guardianship and Preservation Orders)
- Recorded archaeological monuments listed in the RMP/SMR
- Newly discovered archaeological sites
- Sites recorded in the Excavations Database

12.3.1.1 Solar Farm

The Solar Farm is taken to include the following elements, all of which are considered in this assessment: solar photovoltaic array and associated infrastructure to include a battery storage facility, inverters, access roads and parking, site compounds and security fencing, amenity trails and landscaping, peat and material storage areas, site drainage and all associated works.

The existing environment as described below is assessed the context of all Solar Farm elements and the Project Boundary.

12.3.1.1.1 UNESCO World Heritage Sites (and those on tentative List)

No monuments on the WHS list and tentative list are located within 25km of the proposed Solar Farm (<http://www.worldheritageireland.ie/tentative-list/>).

12.3.1.1.2 National Monuments

The term 'national monument' as defined in Section 2 of the National Monuments Acts 1930 to 2004 means a monument '*the preservation of which is a matter of national importance by reason of the historical, architectural, traditional, artistic or archaeological interest attaching thereto*'. National monuments in State care include those which are in the ownership or guardianship of the Minister for Arts, Heritage and the Gaeltacht. Section 5 of the National Monuments Act (1930) allows owners of other national monuments to appoint the Minister for the Arts, Heritage and the Gaeltacht or the relevant local authority as guardian of such monuments, subject to their consent. This means in effect that while the property of such a monument remains vested in the owner, its maintenance and upkeep are the responsibility of the State. Monuments are also protected by preservation orders.

As these monuments are categorised as being of National Importance, national monuments within 10km of the proposed Solar Farm were assessed for effect on visual setting.

No National Monuments are located on or within close proximity to the proposed Solar Farm. In addition, no National Monuments are located within 10km of same. The nearest National Monuments comprise National Monument No. 629, Grange Castle

and National Monument No. 404 Rathcoffey Castle located 12.4km and 11.4km from the Project Boundary, respectively (Figure 12.3).

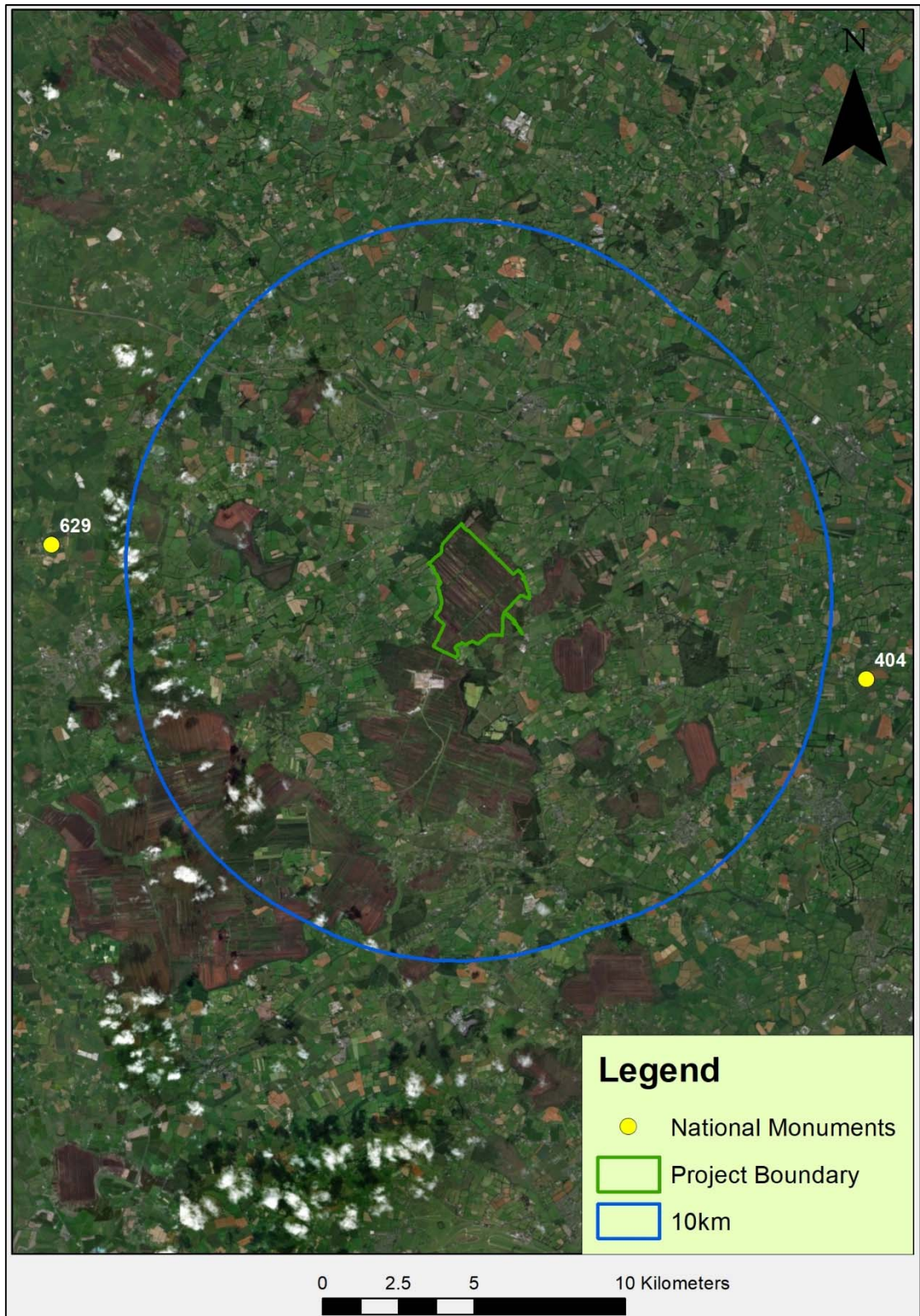


Figure 12.3: Nearest National Monuments to Project Boundary - in excess of 10km.

12.3.1.1.3 Recorded Archaeological Monuments located within the Project Boundary

One recorded monument KD008-025 is located within the Project Boundary. The monument comprises a 'Road – unclassified togher' and is described in the Historic Environment Viewer (www.webgis.archaeology.ie/historicenvironment) as follows:

KD008-025----

Class: Road - unclassified togher

Townland: DREHID

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

Description: A scatter of broken and displaced timbers was noted in the N face of an old turf-bank and apparently extended into an area of uncut peat (SMR file). It may have run for c. 2,200m from dry ground in Drehid townland at NW, across the bog to Drumachon 'island' in Timahoe East townland to the SE.

The site of this monument was visited as part of the walk-over survey for this assessment. The area is now overgrown with grass and scrub and no surface trace of the monument was apparent. As outlined above, the bog is no longer in production and consequently field surfaces, drain sections or uncut peat banks are now much overgrown. It is not certain, therefore, how much, if any of the monument survives, its form or orientation. In order to ensure that direct or indirect impacts to this monument do not occur, it has been designed out of the proposed solar array layout, and while it is located within the Project Boundary no works will be located at or in close proximity to the monument (Figure 12.4). Mitigation measures in relation to this recorded monument are outlined in section 12.4.

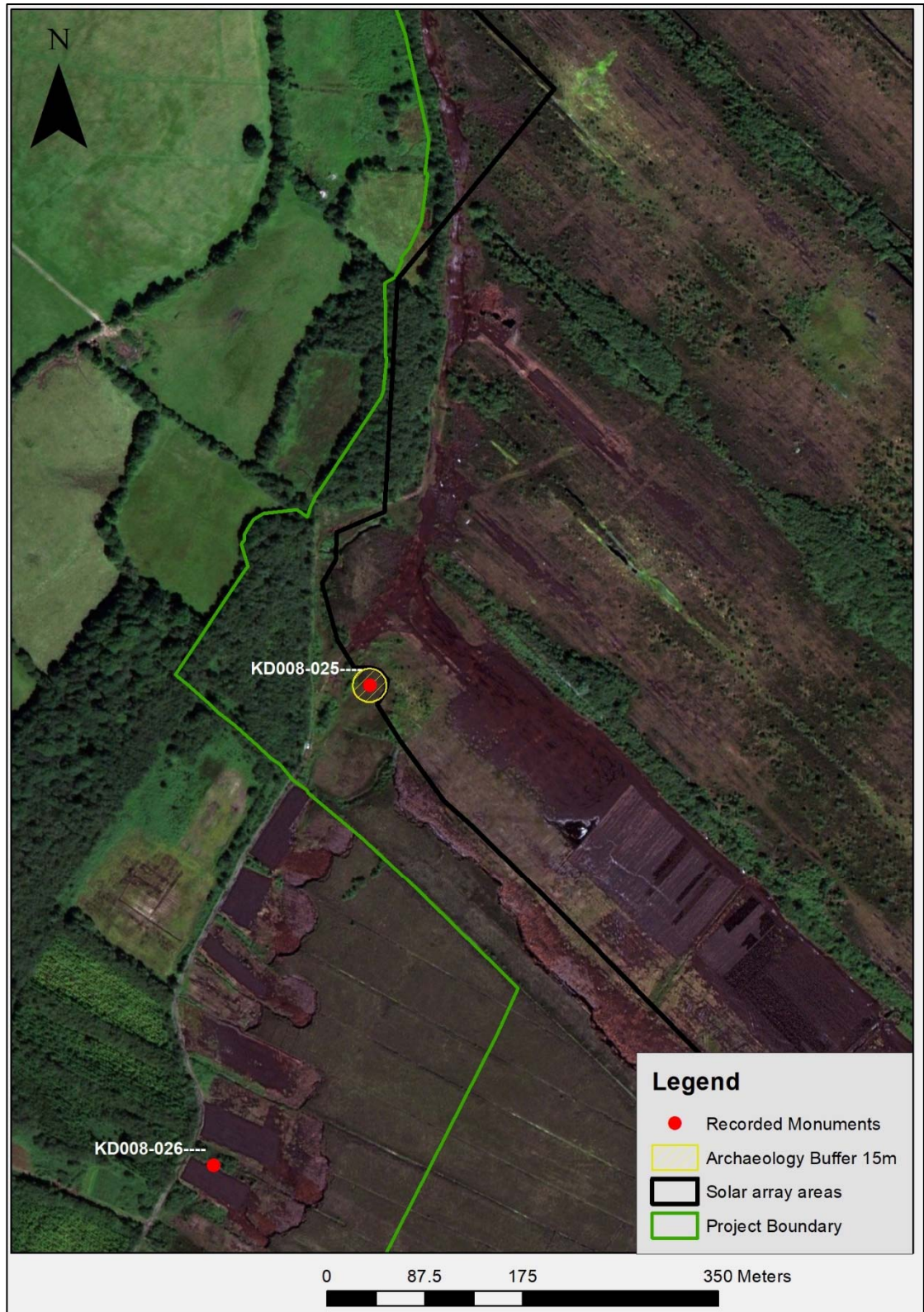


Figure 12.4: RMP KD008-025 within Project Boundary and associated buffer.

12.3.1.1.4 New Potential Archaeology and Sub-surface Archaeology

All areas proposed for development were examined by a walk-over survey. No intrusive investigation was undertaken and the survey was limited to a visual inspection only. No new potential archaeological features were noted within the Project Boundary. It

should be noted, however, that bogs (both upland blanket peat and raised bogs) are regarded as areas of archaeological potential in terms of the occurrence of both monuments and artefacts within and below the peat. In this regard while no new monuments were identified during the field inspection for this assessment, the potential still exists for the uncovering of sub-surface remains or artefacts during the installation phase of the Proposed Project. This potential effect is mitigated against (see below).

It should also be noted that archaeological monitoring of site investigation trial pits within the Project Boundary were monitored by Tobar Archaeological Services in July 2017. A total of 96 pits were excavated and in only three of these were timbers with archaeological potential noted. Given the small portions of the timbers exposed within each pit it was not possible to state with certainty if they belonged to a larger timber structure or indeed if they were archaeological in nature.

12.3.1.1.5 Recorded Archaeological Monuments within 2km of the Project Boundary

For purposes of assessing effects on the setting of recorded monuments in the vicinity of the Solar Farm, all RMP sites within 2km are included here. This was calculated using GIS and is based on the distance of RMPs to the Project Boundary. The density of monuments within 2km is relatively low (32 monuments), however, many are located within 200-400m of the Project Boundary (Figure 12.5). The 32 monuments include KD008-025 which is situated inside the Project Boundary and is described above.

The monuments are listed in Table 12.2 with the distance of the monument to the Project Boundary. It should be noted that the majority of monuments (17) comprise peatland structures such as toghers which are unlikely to have any above-ground expression and are not readily identifiable in the landscape.

Table 12.2: RMPs within 2km of the Project Boundary

SMRS	ITM E	ITM N	Description	Townland	Distance to Project boundary (M)
KD004-007--	675759	738884	Ritual site - holy well	GORTEEN (Dunfiarth ED)	1679
KD004-008--	676191	738195	Ringfort - rath	COOLREE (Dunfiarth ED)	1169
KD004-009--	676282	738207	Ringfort - rath	COOLREE (Dunfiarth ED)	1231
KD004-010--	676644	736956	Habitation site	MUCKLON	579
KD004-011--	676444	736786	Ringfort - rath	MULGEETH	317
KD008-010--	673095	736253	Ringfort - rath	BALLYNAMULLAGH	1410
KD008-011001-	674173	736132	Ringfort - rath	DREHID	359
KD008-024--	673129	734517	Moated site	DREHID	1592
KD008-025--	674854	734147	Road - unclassified togher	DREHID	107
KD008-026--	674714	733717	Road - unclassified togher	DREHID	174

KD008-027--	674515	733477	Road - unclassified togher	DREHID	245
KD008-029001-	674413	732430	Road - class 1 togher	LOUGHNACUSH, PARSONSTOWN (Windmill Cross ED), TIMAHOE WEST	753
KD008-030--	674393	732452	Road - class 1 togher	KILKEASKIN, LOUGHNACUSH, TIMAHOE WEST	743
KD008-036--	674995	732799	Road - class 2 togher	TIMAHOE WEST	156
KD009-034--	675021	732518	Structure - peatland	TIMAHOE WEST	394
KD008-037002-	674982	732531	Road - class 2 togher	TIMAHOE WEST	400
KD009-035--	675033	732500	Structure - peatland	TIMAHOE WEST	404
KD008-038--	674709	731748	Road - unclassified togher	COOLCARRIGAN	1220
KD009-001--	677719	735690	Ringfort - unclassified	MULGEETH	226
KD009-006001-	675852	732564	Children's burial ground	TIMAHOE WEST	520
KD009-006--	675852	732564	Road - road/trackway	TIMAHOE WEST	520
KD009-007--	678124	732727	Enclosure	COOLOGMARTIN	1003
KD009-008001-	677383	732132	Church	TIMAHOE EAST	1439
KD009-009--	677329	731983	Castle - unclassified	TIMAHOE WEST	1590
KD009-027--	675050	732504	Structure - peatland	TIMAHOE WEST	392
KD009-028--	675338	732041	Structure - peatland	TIMAHOE WEST	741
KD009-029--	675133	731916	Road - unclassified togher	COOLCARRIGAN, TIMAHOE WEST	896
KD009-030--	675054	732493	Structure - peatland	TIMAHOE WEST	400
KD008-039--	674668	733311	Road - gravel/stone trackway - peatland	DREHID	33
KD008-011002-	674164	736124	Souterrain	DREHID	362
KD009-008002-	677386	732118	Graveyard	TIMAHOE EAST	1453
KD008-043--	674933	732805	Structure - peatland	TIMAHOE WEST	179

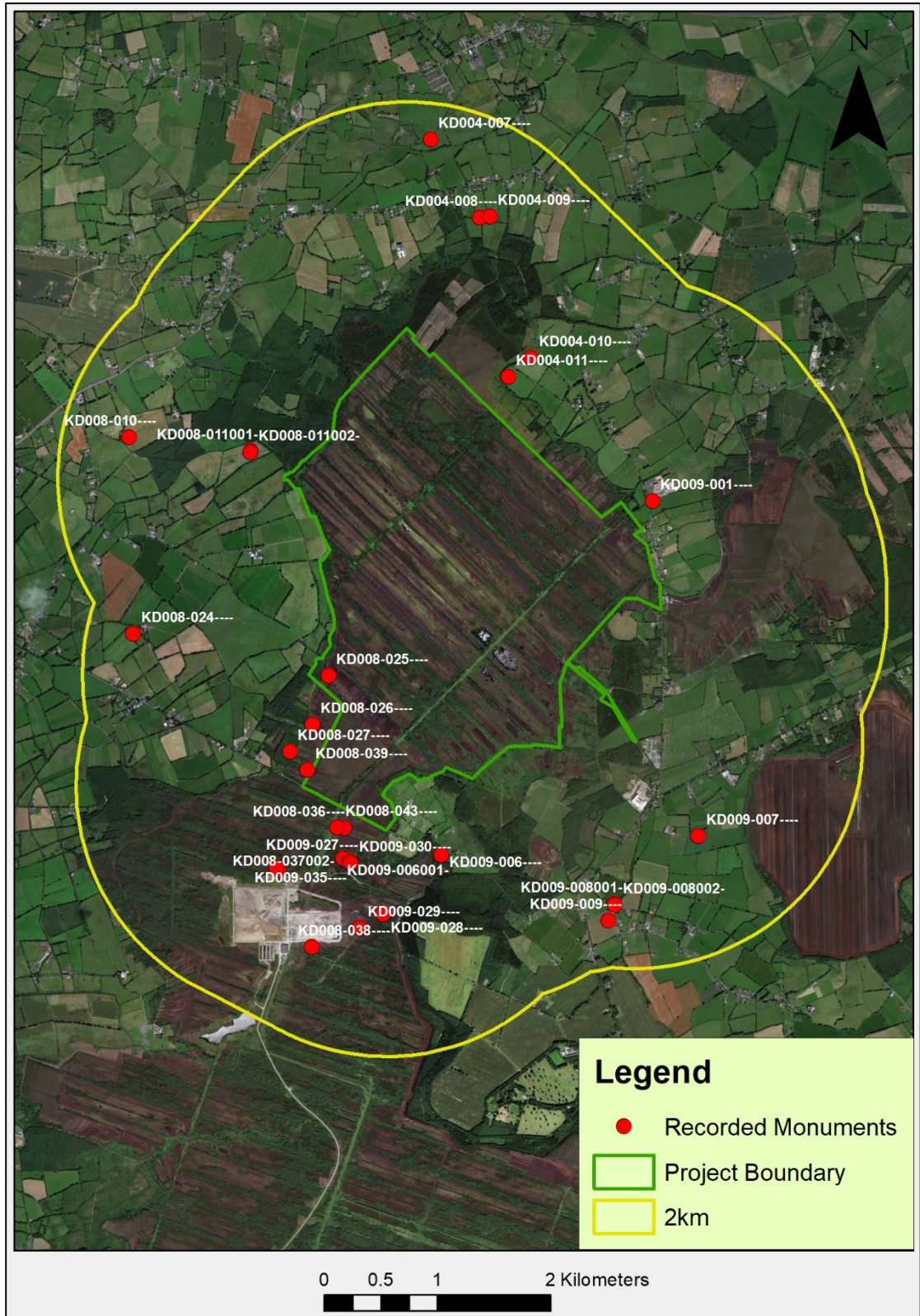


Figure 12.5: RMPs within 2km of the Project Boundary.

The Prehistoric Period

Peatland Structures and Toghers

Seventeen of the 32 monuments within 2km of the Project Boundary comprise peatland structures or toghers (either classified or unclassified). The majority are located within Timahoe Bog, predominantly to the south or south-west of the Project Boundary in the townlands of Timahoe West, Drehid and Coolcarrigan. The nearest of such monuments to the Proposed Project are KD008-026, KD008-027, KD008-039, KD008-036 and KD008-043 which are located between 33m and 245m outside the Project Boundary. The nearest of these, KD008-039, is described on the Historic Environment Viewer as follows:

KD008-039----

Class: Road - gravel/stone trackway - peatland

Townland: DREHID

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

Description: Towards the W edge of 'Timahoe Bog'. Visible as a thin layer (T 0.2-0.25m) of grey, stony marl overlying a thinner layer (T 0.08-0.12m) of compacted vegetation in the N face of a turf bank, 0.8m below the present, heather-clad bog surface, and traceable for a length of 10m on an ENE-WSW orientation. The Irish Archaeological Wetland Unit (UCD) subsequently visited (26 March 2004) and recorded four separate archaeological horizons with natural peat above and below. The lower peat horizon was fen (min D. 0.95m) which was unusual and suggested either an early date for the site or a late transition from fen to raised bog peats in the area. All four phases were present through the entire longitudinal exposure, however, Phase 1 was not evident in the partial transverse section at the NE end. This may indicate that either Phase 1 was narrower than subsequent phases or that there was some divergence in the lines of construction. The site is covered by a poorly humified Sphagnum peat representing a developed raised bog environment.

Classification of Toghers

Road - class 1 togher

A peatland trackway/causeway constructed of wood and intended to traverse a bog which have a known orientation. In most instances they comprise substantial timber planks and have good structural definition. They may have several phases of construction indicative of long-term use and reuse. These may date from the Neolithic (c. 4000-2400 BC) to the medieval period (5th-16th centuries AD).

Road - class 2 togher

A length of peatland trackway, constructed of wood, believed to be over 15m in length. They have a clear orientation and good structural definition. Class 2 Toghers may date from the Neolithic (c. 4000-2400 BC) to the medieval period (5th-16th centuries AD).

Road - class 3 togher

A short stretch of peatland trackway, constructed of wood, up to 15m in length with a discernible orientation. It may not be possible to trace them beyond a single sighting. They have evidence of deliberate structure and are interpreted as laid down to cross a small area of bog. Such sites may date from the Neolithic (c. 4000-2400 BC) to the medieval period (5th-16th centuries AD).

Toghers are monument types typically found in peat bogs of the Midlands and comprised a means of crossing or accessing the bog in ancient times. They come in a variety of forms as defined above (Classes 1-3). Unclassified toghers are peatland trackways/causeways constructed of wood that cannot be classified as a class 1, class

2 or class 3 due to its form or lack of surviving evidence. These may date from the Neolithic (c. 4000-2400 BC) to the medieval period (5th-16th centuries AD).

Monuments such as toghers testify to the archaeological potential of peatlands in general and to those surrounding the Proposed Project.

The Early Medieval Period

Ringforts and Enclosures

Ringforts and enclosures constitute seven of the 32 monuments within 2km of the Project Boundary. Enclosures may represent the remains of ringforts but may not retain enough features to classify them as such or fall outside the acceptable size range for these monuments. Ringforts consist of a circular or roughly circular area enclosed by an earthen bank formed by material thrown up from the digging of a concentric ditch on its outside. Ringforts are usually enclosed by a single bank (univallate) while bivallate or trivallate ringforts i.e. those enclosed by double or triple rings of banks are less common. The number of banks and ditches enclosing these monuments are considered to reflect the status of the site, rather than the strengthening of its defences. Archaeological excavation has shown that the majority of ringforts functioned as enclosed farmsteads, built during the Early Christian period (5th – 9th century A.D.). Excavation within the interior of the monuments has traced the remains of circular and rectangular dwelling houses as well as smaller huts probably used to stall animals. The enclosing earthworks would also have protected domestic livestock from natural predators such as wolves and foxes.

Souterrains are frequently associated with ringforts. They consist of an underground structure with one or more chambers connected by narrow passages or creepways, usually constructed of drystone-walling with a lintelled roof over the passages and a corbelled roof over the chambers. Most souterrains appear to have been built in the early medieval period by ringfort inhabitants (c. 500 - 1000 AD) as a defensive feature and/or for storage. One souterrain is located within 2km of the Project Boundary.

Medieval Period

Castles

The site of a castle (KD009-009) is located c. 1.5km from the Project Boundary in the townland of Timahoe West. It no longer has any above ground trace and according to the Ordnance Survey letters the walls of the castle were '*entirely cleared away*'.

Moated Sites

One moated site (KD008-024) is located over 1.5km west of the Project Boundary in Drehid townland. The monuments are medieval settlements consisting of a square, rectangular or occasionally circular area, sometimes raised above the ground, enclosed by a wide, often water-filled, fosse, with or without an outer bank and with a wide causewayed entrance. They date to the late 13th/early 14th centuries and were primarily fortified residences/farmsteads of Anglo-Norman settlers though they were also built by Gaelic lords. The moated site at Drehid does not have any significant surviving above-ground remains and its interior was '*dug-out for yellow clay or daub for house building and was subsequently backfilled and reclaimed*'.

Habitation Site

A habitation site (KD004-010) is located to the north of the proposed Solar Farm, 578m outside the Project Boundary. It was detected through the discovery of two saddle-

querns and a sherd of medieval pottery in a field near a stream on the E edge of the Bog of Allen. There is no surface trace of any monument at this location, however.

Sites with religious or ritual association

Holy Wells

One holy well is located within 2km of the Project Boundary. These sites comprise a well or spring, though in some unusual cases a natural rock basin, which usually bears a saint's name and is often reputed to possess miraculous healing properties. Holy wells may have their origins in prehistory but are associated with devotions from the medieval period (5th-16th centuries AD) onwards.

Children's Burial Ground

A children's burial ground (KD009-006001) is located in Timahoe West townland, over 500m from the proposed Project Boundary. These monuments comprise an area of unconsecrated ground for the interment of unbaptised or stillborn children, often known under various Irish names: Cillín, Caldragh, Ceallúnach or Calluragh. The graves were generally marked by simple, low, upright stones or slabs almost invariably without any inscription or other carving. This burial practice may be medieval in origin and continued in Ireland until the 1960s.

Church and Graveyard

A church and graveyard (KD009-008001 and 002) are located over 1.4km from the Project Boundary in the townland of Timahoe East. The church is very ruinous and is described as '*a low, grassed-over stone wall core*'.

12.3.1.1.6 Archaeological Excavations Undertaken Within Vicinity of the Project Boundary

The database of licensed archaeological excavations carried out in Ireland was consulted for any relevant excavations which took place on or within the vicinity of the Proposed Project. In addition, an E.I.A.R and archaeological assessment carried out for an extension to the Drehid Waste Management Facility to the south was also consulted as it contains details on the re-cutting and inspection of drains under licence (Rooney 2016).

Some of the entries below relate to recorded monuments in Timahoe Bog, specifically entry '1986:34' which relates to RMP KD008-030 located to the north of the Drehid Waste Management Facility. Similarly, several entries relate to monitoring of ground works carried out as part of the development of the aforementioned facility. The majority of works carried out did not result in the discovery of any features or structures of archaeological significance. For ease of reference the entries are presented chronologically.

1986:34 - Timahoe West, Kildare

County: Kildare Site name: Timahoe West

Sites and Monuments Record No.: N/A Licence number: —

Author: Martin Munro, Palaeoecology Centre, Queen's University, Belfast

Site type: Trackway (together)

ITM: E 674635m, N 732527m

The site is in an area of a large bog where only a few narrow banks of raised bog peat survive after many years cutting by Bord na Mona. There are two distinct tracks in one of these banks: a flimsy path made of birch logs (discovered by D. Cummins, an amateur fieldwalker), and a substantial track built mainly of oak planks (part of which was excavated by E. Rynne in the 1960s). Both lie within or below a thin layer of

biophorum peat, and thus must be almost contemporary, but the place where they would have intersected has been cut away. Bord na Móna wanted to remove the remaining peat banks and agreed to fund a rescue excavation, which took place during four weeks of November 1986. Although the bank was only 10m wide, the birch track ran almost exactly parallel to it and was cut in several places by the face of the section. The excavation exposed two areas of it, one 35m long, the other 6m long, showing that it was built of logs laid end to end in an irregular pattern with, at most, four logs in any section of the track. They were under 2m long, without any signs of carpentry beyond a rough trimming of their ends. The track did not include brushwood or thin roundwood.

The oak track cut across the bank obliquely, so only 25m of it survived (although another fragment is preserved in a peat bank 200m away). Tree-ring dating showed that there were two phases: one at 1483 BC associated with thin longitudinal planks and possibly the lower part of a layer of roundwood 0.15m thick, the other at 1378 BC associated with the upper part of the roundwood layer, transversely laid logs and planks, and an upper covering of massive longitudinal oak planks and a yew log. Several planks had morticed ends, but there were no stakes in the holes.

2006:954 - Drehid Bog, Drehid, Kildare

County: Kildare Site name: Drehid Bog, Drehid

Sites and Monuments Record No.: - Licence number: 06E0746

Author: Sinclair Turrell and Rupert Flood, Archaeological Development Services Ltd, Windsor House, 11, Fairview Strand, Dublin 3.

Site type: No archaeological significance

ITM: E 673601m, N 734626m

Monitoring of peat stripping, associated with the first phase of the development of a waste management facility at Drehid Bog, was carried out on behalf of Bord na Móna from 14 August to 15 December 2006. This bog, also known as Timahoe West, forms part of the Allen group of bogs and is situated 9km east of Edenderry, between the Hill of Allen and Carbury Hill. In order to construct the 5km access road, an area of c. 200m by 400m was stripped down to the underlying gravel and stone. An area for the waste management plant, measuring 500m by 225m, was also stripped of peat. The peat throughout the bog was mainly a fibrous, poorly humified sphagnum peat with occasional tree roots. The maximum depth of peat was 3.5m, except in an area of virgin bog along the south-west edge where a depth of 7m was recorded. Nothing of archaeological interest was revealed during the monitoring.

2011:372 - DREHID BOG, TIMAHOE WEST, Kildare

County: Kildare Site name: DREHID BOG, TIMAHOE WEST

Sites and Monuments Record No.: N/A Licence number: 06E0746 ext.

Author: Sinclair Turrell

Site type: No archaeological significance

ITM: E 675858m, N 731989m

Monitoring of peat-stripping associated with the expansion of an existing waste management facility took place in Drehid Bog, Co. Offaly, between 8 and 19 August 2011. This latest phase of works was to facilitate the construction of a sixth waste reception cell (see Excavations 2006, no. 954, for a report on earlier works).

The development site consisted of a rectangular parcel of bog measuring approximately 180m east-west x 100m. It was bounded to the east by the Phase 5 waste reception cell, which was constructed in July 2010, and to the south by the Phase 3

waste reception cell, which was constructed, along with the Phase 4 cell, in March 2009.

The surface of the Phase 6 development area was overgrown with sedge, some dense birch scrub and heather. The first part of the groundworks consisted of removing the surface vegetation and trees with a mechanical excavator. The peat within the future waste cell was then stripped down to the underlying marl and stones.

Nothing of archaeological interest was found during the course of these groundworks.

Archaeological Development Services Ltd, The Print House, 22–23 South Cumberland Street, Dublin 2.

2013:078 - Drehid Bog, Timahoe West, Kildare

County: Kildare Site name: Drehid Bog, Timahoe West

Sites and Monuments Record No.: N/A Licence number: 06E0746

Author: Sinclair Turrell

Site type: —

ITM: E 674715m, N 731307m

Monitoring of peat stripping associated with the expansion of an existing waste management facility took place in Drehid Bog, Co. Kildare between 14 November 2012 and 8 February 2013. This latest phase of works was to facilitate the construction of a seventh waste reception cell. Nothing of archaeological interest was found during the course of these groundworks.

2013:080 - Timahoe West, Kildare

County: Kildare Site name: Timahoe West

Sites and Monuments Record No.: N/A Licence number: 13E0205

Author: Jane Whitaker

Site type: Non archaeological

ITM: E 674718m, N 731316m

Monitoring of peat stripping took place in Drehid Bog, Co. Kildare Land Fill Gas (LFG) compound within the waste management facility in the Bord na Móna bog at Drehid, Co. Kildare between 29 May and 7 June 2013. Seven phases of monitoring have previously been carried out by Archaeological Development Services Ltd at the adjoining Drehid landfill site under licence 06E0746 during the construction of the waste cells. This phase of the development involved the construction of a housing for gas turbines, an ESB substation and an associated access road. Nothing of archaeological interest was found during the course of these groundworks.

2014:298 - Timahoe, Drehid Bog, Kildare

County: Kildare Site name: Timahoe, Drehid Bog

Sites and Monuments Record No.: n/a Licence number: 06E0746 ext.

Author: Jane Whitaker

Site type: non archaeological

ITM: E 674718m, N 731316m

Archaeological monitoring of peat stripping was carried out at Drehid Waste Management Facility from 14 November 2013 to 28 May 2014 for the construction of Phase 9 and 10 waste cells and associated access road. The development area measured approximately 500m east-west x 180m with the access road running along the southern and eastern limits of the waste cells for a distance of c. 400m. Nothing of archaeological potential was identified during these works.

2016:641 - Coolcarrigan, Kildare

County: Kildare Site name: Coolcarrigan

Sites and Monuments Record No.: adjacent to KE008:038 Licence number:
16E0467

Author: Fiona Rooney

Site type: No archaeology found

ITM: E 674527m, N 731351m

An archaeological assessment was carried out at a proposed extension to the existing Drehid Waste Management facility in County Kildare. Monitoring of the clearance of existing drains formed part of the assessment. The proposed extension is located in the townland of Coolcarrigan immediately south of the existing Waste Management Facility and located within the Bord na Móna landholding at Drehid, County Kildare. No features and/or artefacts of archaeological significance were recorded during the course of the monitoring.

12.3.1.1.7 Previous Archaeological Work Carried out in the Vicinity

Work carried out outside the Project Boundary

As is evident from the Excavations Database entries above, both archaeological monitoring and excavation have been carried out in the vicinity of the proposed Project Boundary and consequently in the vicinity of the proposed Solar Farm since the 1980s up to 2017. The majority of the archaeological work undertaken pertains to monitoring of ground works associated with the Drehid Waste Management facility over a number of years and is summarised above. Archaeological survey of Timahoe Bog was also undertaken in the early 1990s with the resultant findings largely situated to the south of the Proposed Project near the Drehid Waste Management Facility. An archaeological assessment (Rooney 2016) carried out for an extension to the facility notes that *'a survey of the Timahoe Bog by the Irish Archaeological Wetland Unit in 1992 recorded ten trackway sites or possible sites. Two of these trackways were destroyed before they were plotted while three others were probably concerned with the recorded monuments KD009:018 and KD009:019. The trackways were predominantly recorded to the north and east of the existing waste management facility with one site identified in the northern section of the proposed landfill. This is recorded as a Togher 1m wide, 0.08m deep and 64m-72m long. The sites originally recorded by the Irish Archaeological Wetland Unit have, since 2010, been updated to the Sites and Monuments Record and the feature in the north of the development is recorded as KD008:038.'*

A summary of survey work carried out a group of bogs of which Timahoe is part notes previous surveys carried out in 1992 at Timahoe North and South with 4 and 13 sites identified therein, respectively. It also notes the archaeological potential of both as 'High'.

Work carried out inside the Project Boundary

Archaeological monitoring of site investigation trial pits within the proposed Project Boundary and consequently in the vicinity of the proposed Solar Farm was undertaken by Tobar Archaeological Services under licence 17E0321 in July 2017. The trial pits were excavated throughout the Proposed Project site (Figure 12.6). A total of 96 pits were excavated, the majority of which were located within cut-over bog. The vast majority of pits excavated did not contain any archaeological finds, features or structures. The stratigraphy varied in depth throughout the site but typically comprised 2-3 layers of fibrous peat overlying a grey natural subsoil. Throughout the site the basal layer of peat contained tree roots and trunks which would appear to represent trees

that were growing in the area prior to the formation of the raised bog. A total of three pits contained timbers which may have archaeological potential, although no definitive structures were identified. Given the small portions of the timbers exposed within each pit it was not possible to state with certainty if they belonged to a larger timber structure or indeed if they were archaeological in nature. In all cases the timbers were preserved in situ.

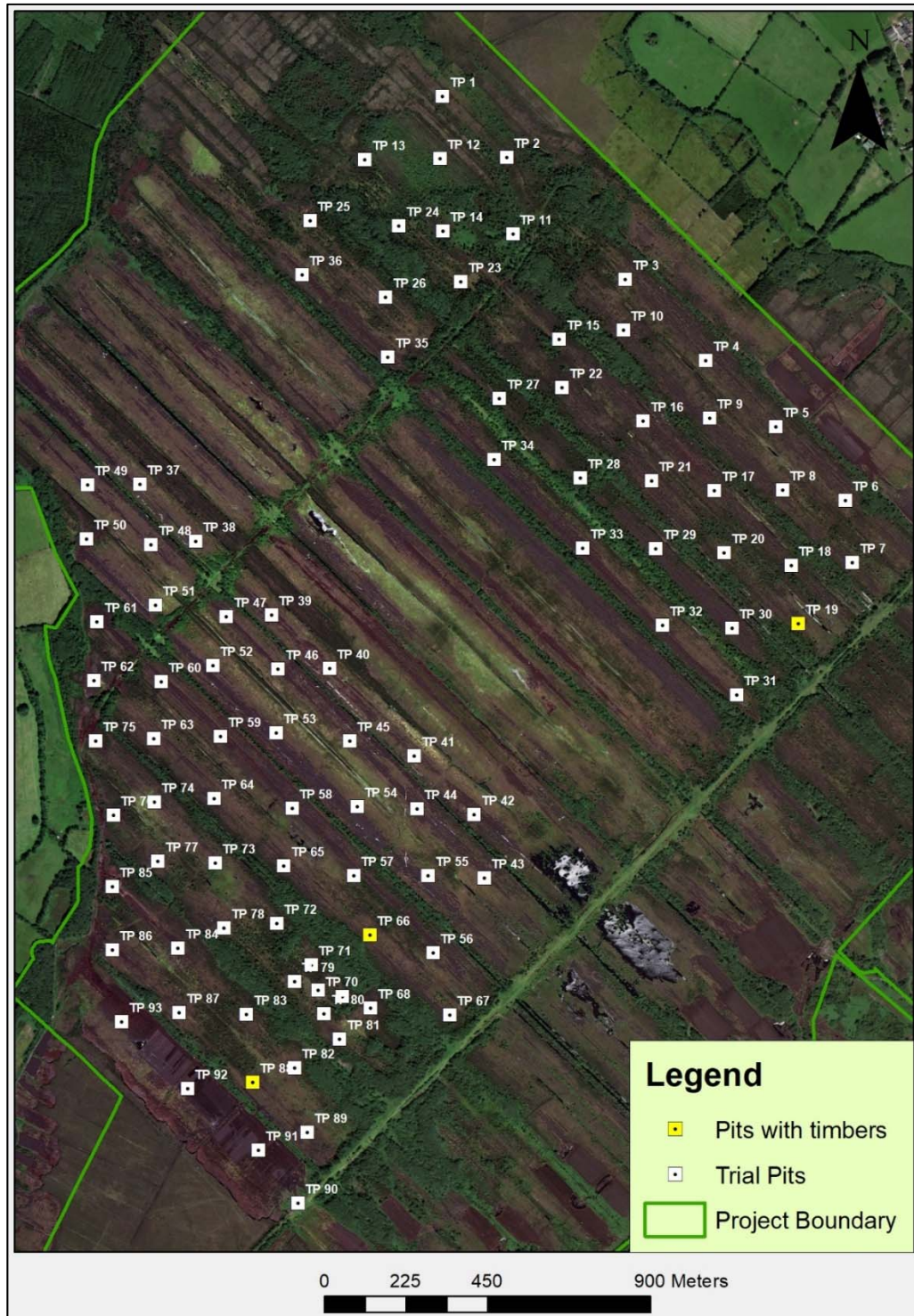


Figure 12.6: Layout of site investigation trial pits monitored within the Project Boundary in 2017.

12.3.1.1.8 Topographical Files of the National Museum

A search was carried out as part of this assessment of the National Museum of Ireland database including the Bogs Database for find spots within and adjacent to the Project Boundary. This was done to ascertain the artefact bearing potential of the Timahoe Bog and surrounding townlands.

The following find spots are recorded in the National Museum of Ireland for Drehid, Mulgeeth, Timahoe East and West townlands as well as the general find spot of Timahoe Bog.

Townland Drehid

Registration No. 1972:355 A&B

Find Type Bent wooden stake (in two parts)

Found 4ft deep in bog cutting

Townland Mulgeeth

Registration No. 1980:46

Find Type wooden object

Found in bog of unknown depth

Townland Timahoe East

Registration No. 1943:132

Find Type Portion of solid wooden wheel

Found Bog

Townland Timahoe East

Registration No. 1938:8560

Find Type Fragment of large stone axehead

Found

Townland Timahoe East

Registration No. 1943:286

Find Type Silver bracelet

Found Bog

Townland Timahoe East

Registration No. 1943:130-131

Find Type Wooden yoke and long perforated timber

Found Bog

Townland Timahoe East

Registration No. 1950:7

Find Type Iron axe

Found at depth of 6ft during cutting operations

Townland Timahoe Bog

Registration No.

Find Type Bog body –human forearm

Found in 1959 during hand-work operation

Townland Timahoe

Registration No. 1950:4a, 4b, 4c

Find Type 3 portions of wooden vessel

Found in bog at depth of 7ft.

Townland Timahoe (Derrymahon Bog)

Registration No. 1942:409

Find Type Wooden object

Found 3 ft. below bog

Townland Timahoe East or West

Registration No. 1978:3

Find Type Leather shoe

Found

Townland Timahoe

Registration No. 1941:1120

Find Type Bronze spearhead

Found

Townland Timahoe Bog, Timahoe West

Registration No. 1966:2

Find Type Flint arrowhead (barbed)

Found

Townland Timahoe West

Registration No. 1970:139

Find Type Rough out for two handled wooden vessels

Found

Townland Timahoe Bog

Registration No. -

Find Type Human skeletal remains

Found in area of Drummond or Ballynakill Lower Townland

12.3.1.2 Substation and Grid Connection

The Proposed Project will also include the construction of a 110 kV substation within the site. It is then envisaged to connect from this substation to the existing Derryiron-Maynooth 110 kV overhead line that traverses the southern section of the Timahoe North site. The approximate distance from the proposed substation location to the 110 kV line is 750 metres. It is envisaged that the proposed connection will require the construction of 4 No. angle masts at approximately 20-metre height (2 No. masts at the substation and 2 No. masts at the 110 kV line), which will be connected by two overhead lines supported by standard wooden polesets. The poles will measure approximately 18m in height and be spaced approximately every 200 metres.

The proposed Substation and Grid Connection were both assessed in terms of UNESCO World Heritage sites, National Monuments, Recorded Monuments and new potential sites (see below). Field survey of both the proposed substation location and the overhead grid connection to the existing Derryiron-Maynooth 110kV overhead line was also carried out.

12.3.1.2.1 UNESCO World Heritage Sites (and those on Tentative List)

No monuments on the WHS list and tentative list are located within 25km of the overall Project Boundary and therefore this is also the case for the proposed Substation and Grid Connection.

12.3.1.2.2 National Monuments

No National Monuments are located on or within close proximity to the proposed substation or grid connection. As per the overall Project Boundary, no National Monuments are located within 10km of the proposed substation or grid connection. The nearest National Monuments comprise those listed above in 12.3.1.1.2.

12.3.1.2.3 Recorded Archaeological Monuments

No recorded monuments are located on or in the immediate vicinity of the proposed Substation or Grid Connection. The nearest recorded monument to the proposed substation comprises KD008-025 (Road - unclassified togher) in Drehid townland, c. 800m to the WNW. The monument is described above in section 0. A visual inspection of the location of the monument was undertaken as part of the walk-over survey for this assessment. The area is now overgrown with grass and scrub and no surface trace of the monument was apparent. As outlined above, the bog is no longer in production and consequently field surfaces, drain sections or uncut peat banks are now much overgrown. Therefore it is not certain how much, if any, of the monument survives or what its form or orientation is.

The proposed grid connection will comprise an overhead line extending from the proposed substation to the existing 110kV overhead line to the south. No recorded monuments are located on or within close proximity to the proposed grid connection route. The nearest monument comprises KD008-036 (Road - class 2 togher) which is situated c. 758m to the south in Timahoe West townland. The monument is described on the Historic Environment Viewer (www.webgis.archaeology.ie/historicenvironment) as follows:

KD008-036----

Class: Road - class 2 togher

Townland: TIMAHOE WEST

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

Description: The site (L 115m; Wth 2.1m; min. D 0.2m) is orientated NW - SE and consists of a compact layer of longitudinal ash and oak roundwoods (diam. 0.08-0.16m) with occasional hazel brushwood rods (diam. 0.008-0.03m). Some of the roundwoods have been split in half. Pegs, worked into wedge and chisel points, secure the outer edges of the structure. In some areas the upper surface of the timbers are charred and some hazelnuts are present. Occasional pockets of sand occur within the site.

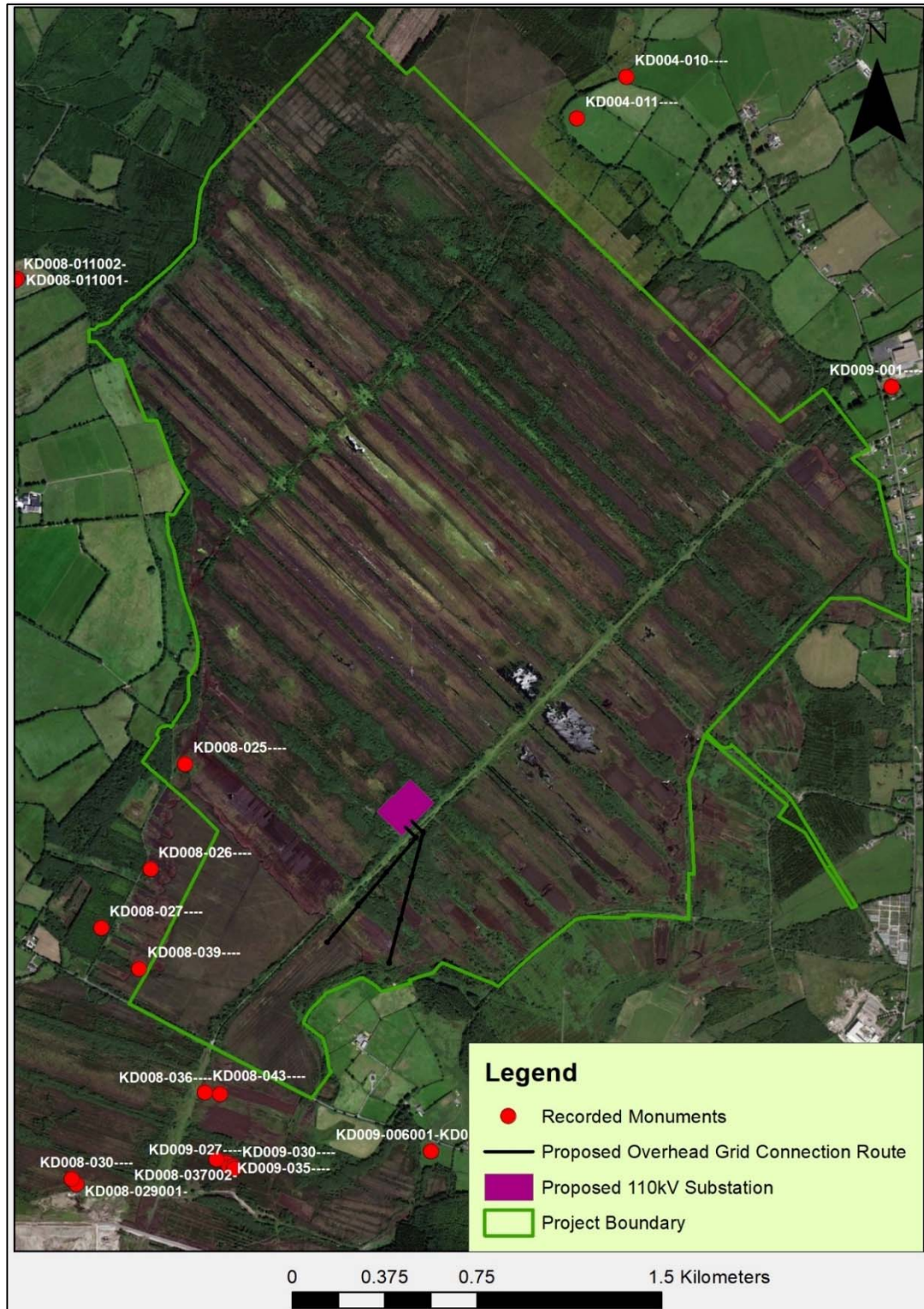


Figure 12.7: Proposed Substation and Grid Connection in relation to nearest recorded monuments.

12.3.1.2.4 New Potential Archaeology and Sub-Surface Archaeology

No new potential archaeological sites were noted in the area of the proposed substation or along the proposed grid connection route during the site walk-over. The substation area is currently under tree and scrub cover and no exposed bog surfaces or drain sections were visible therein.

The proposed grid connection extends through both cut-over bog and intervening bands of trees and scrub before joining the existing overhead line. No new potential archaeological sites were noted during the walk-over survey of this area. It should be noted, however, that as the bog is no longer under production exposed peat fields or drain sections are generally no longer visible having been largely colonised with vegetation since the bog went out of production over 20 years ago. The photographic record of both areas is presented in Appendix 12-1.

Bogs (both upland blanket peat and raised bogs) are regarded as areas of archaeological potential in terms of the occurrence of both monuments and artefacts within and below the peat. In this regard, while no new monuments were identified during the field inspection for this assessment, the potential still exists for the uncovering of sub-surface remains or artefacts during the construction phase of the Proposed Project.

12.3.1.2.5 Archaeological Excavations Undertaken Within Vicinity of the Proposed Substation and Grid Connection

The nearest archaeological excavations as summarised in the Excavations Database (www.excavations.ie) were largely undertaken to the south of the proposed Substation and Grid Connection route in the vicinity of the Drehid Waste Management Facility. Summaries of the relevant excavations are presented in 12.3.1.1.6 above and should be read in conjunction with this section of the assessment.

12.3.1.2.6 Previous Archaeological Work Carried out in the Vicinity

Archaeological monitoring of site investigation trial pits within the overall proposed Project Boundary and consequently in the vicinity of the proposed substation was undertaken by Tobar Archaeological Services under licence 17E0321 in July 2017 (see Appendix 12-2). A total of 96 pits were excavated, the majority of which were located within cut-over bog. The vast majority of pits excavated did not contain any archaeological finds, features or structures. A total of three pits contained timbers which may have archaeological potential, although no definitive structures were identified. Given the small portions of the timbers exposed within each pit it was not possible to state with certainty if they belonged to a larger timber structure or indeed if they were archaeological in nature. In all cases the timbers were preserved in situ.

12.3.1.2.7 Topographical Files of the National Museum

The find spots listed in the Topographical Files of the National Museum of Ireland largely pertain to finds recorded within the townlands of Drehid, Mulgeeth, Timahoe East and Timahoe West. Both the proposed Substation and Grid Connection are located in the townland of Timahoe East for which a number of find spots are recorded. The finds were registered with the Museum mainly in the 1940s and 1950s when the bog was under production. Details of the finds are presented in section 0 above.

12.3.2 Architectural and Cultural Heritage

For the purposes of this report, architectural heritage includes known (documented) and newly recorded features, if present.

- Record of Protected Structures (RPS)
- NIAH structures
- NIAH Garden Surveys
- Any other structures / features noted during field assessment
- Cultural heritage items (tangible assets) likely to be affected by the Proposed Project

12.3.2.1 Solar Farm

The existing environment as described below is assessed in the context of all Solar Farm elements and the Project Boundary.

12.3.2.1.1 Protected Structures

The digital dataset for the Kildare RPS was obtained from Kildare Co. Co. and was added to the base mapping in order to accurately assess any potential effects to same and to determine if any such structures were located in the immediate vicinity of the proposed Solar Farm.

No protected structures are located within the Project Boundary or in close proximity to same.

One Protected Structure (B04-05) is located within 2km of the Project Boundary and is listed in Table 12.3 below and shown in Figure 12.8.

Table 12.3: Protected structures within 2km of the Project Boundary

RPS Ref.	ITM E	ITM N	Townland	Name	Distance to Project Boundary (m)
B04-05	676192	738193	Coolree (Carbury BY)	Colree Fort	1167

This Protected Structure is also a recorded Monument (KD004-008), ringfort.

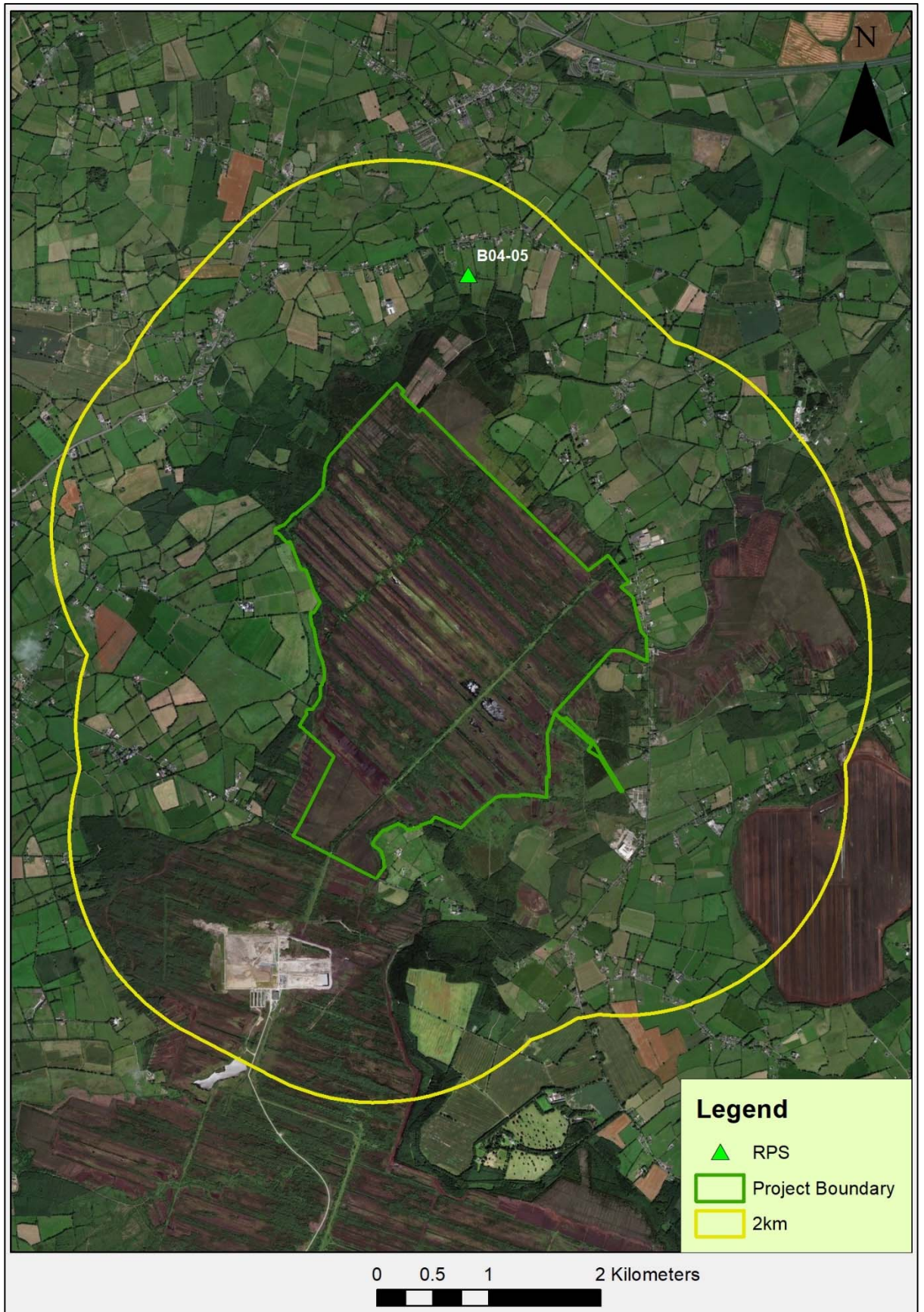


Figure 12.8: Protected Structures within 2km of the Project Boundary.

12.3.2.1.2 National Inventory of Architectural Heritage

No structures listed in the NIAH are located within the proposed Project Boundary.

One NIAH site is located within 2km of the Project Boundary and is listed below in Table 12.4 and shown in Figure 12.9.

Table 12.4: NIAH sites located within 2km of Project Boundary

NIAH Ref.	ITM E	ITM N	Townland	Classification	Distance to Project Boundary (m)
11900311	673810	673810	KILSHANCHOE	Bell tower/stand	1586

The NIAH structure comprises a bell stand and is described on the NIAH web site (www.buildingsofireland.ie) as follows:

Kilshanchoe Catholic Church, County Kildare

11900311



Reg. No.	11900311
Date	1860 - 1900
Previous Name	N/A
Townland	KILSHANCHOE
County	County Kildare
Coordinates	273875, 237651
Categories of Special Interest	ARTISTIC HISTORICAL SOCIAL TECHNICAL
Rating	Regional
Original Use	bell tower/stand
In Use As	bell tower/stand

Description

Freestanding cast-iron belfry, erected c.1880, comprising four pillars with fluting, acanthus leaf motif and foliate decoration having bell over.

Appraisal

This belfry (which is almost identical to the model at Castledermot; 11823032/KD-40-23-32) represents an example of the nineteenth-century movement towards mass-produced materials, and is therefore of technical merit. Although a functional device, the use of fluting and foliate decoration aspires to be aesthetically pleasing and is of artistic interest. The belfry comprises the final component of an earlier church on site and is therefore of social and historical importance. The bell is a rare survival, being manual where models elsewhere have been replaced in favour of modern electrical versions.

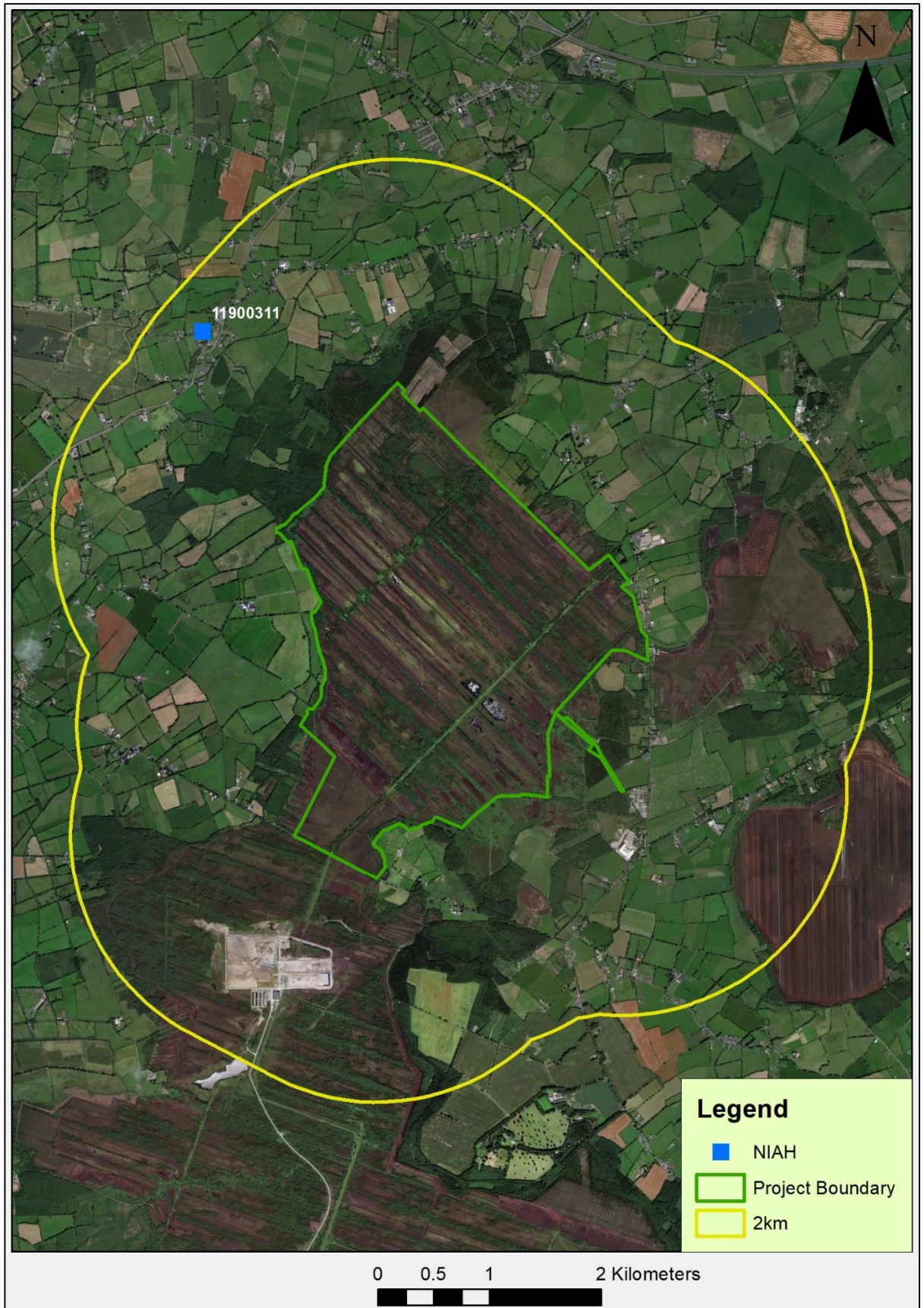


Figure 12.9: NIAH structures within 2km of the Project Boundary

12.3.2.1.3 NIAH Garden Survey

Kildare contains many Historic Gardens and Demesnes, which are characteristic of a particular period of settlement in the county. Many no longer have any visible surface trace while some are still extant with their associated houses. The objective of the NIAH garden survey is to begin a process of understanding the extent of Ireland's historic gardens and designed landscape. Sites were identified using the 1st edition Ordnance Survey maps. These were compared with current aerial photography to assess the level of survival and change. This assessment is not an indication of a site's heritage importance. Fieldwork is now in progress to compile more accurate data and site assessments. The results will be added to the NIAH website as this work progresses.

Various factors have contributed to many of the significant changes that have occurred to such gardens and demesnes. Changes in aesthetic values and the development and expansion of our cities and towns have played a part, however, the most significant are a direct result of 150 years of history, particularly changes in land ownership arising from the Encumbered Estates Act 1849 to the Land Acts of the late nineteenth and early twentieth centuries.

No historic gardens are located within 2km of the proposed Solar Farm. The nearest garden to the Project Boundary consists of Metcalf Park which is situated c. 2.2km to the north-east in the townland of Gorteen south of Johnstown Bridge (see Figure 12.10). The garden is associated with a well maintained Georgian House (NIAH Reg. 11801014). The survey of the house and gardens notes the following: *'Set attractively in mature landscaped grounds the house is complemented by a range of outbuildings to the south, which are in fair condition, together with a gate lodge and gateway (11801012, 18/KD-04-01-12, 18). The survival of this group is of social importance, representing an intact eighteenth-century farm, which contributed to the historical development of the village of Johnstown Bridge, whilst historically providing employment to the local community.'* (www.buildingsofireland.ie).



Figure 12.10: Nearest Historic Gardens to NE of proposed Solar Farm, in excess of 2km from Project Boundary.

12.3.2.1.4 Language and the Gaeltacht

The Project Boundary is not located within a designated Gaeltacht area, therefore there are no effects on language in this regard (Census 2011, Gaeltacht Areas).

12.3.2.1.5 Placename Evidence

Place names may be derived from geological, archaeological or topographical features within the landscape or may also have taken the name of an important or famous person who once lived in an area. Place name evidence can refer to archaeological monuments within the vicinity which may no longer be visible in the landscape or which are now only documented through local history or tradition. The database of Irish placenames, www.logainm.ie was consulted for the meaning of the placenames located within the Project Boundary and in the general surrounding environs. All information presented below is from www.logainm.ie unless otherwise stated.

Drehid – Derived from the Irish *Droichead* meaning 'bridge'. It would appear to have been recorded since 1600.

Ballynamullagh – No Irish name given for this placename which is recorded since the 16th century. A possible meaning of 'town of the curses or maledictions' is given by O'Donovan in the Ordnance Survey Parish Namebooks.

Kilmurry – No Irish name give. Also recorded since the 16th century. Possible meaning of Cill Mhuire, 'Mary's church' in OS Namebooks.

Mulgeeth – Recorded since the 17th century. Possible meaning of Mul gaoithe/ Mullach gaoithe, 'windy summit' provided in the OS Namebooks.

Mucklon – Derived from the Irish *Muc-cluain* which refers to the pasture or meadow of the pigs.

Timahoe East – Derived from the Irish *Tigh Mochua Thoir* which refers to the house of Cua (mo being a term of endearment). The placename is recorded since the 12th century. Usually such placenames refer to the church or house (Tigh) of a local saint.

Timahoe West – As above

12.3.2.1.6 Review of Cartographic Sources

A review of the available historic cartographic sources for the proposed Solar Farm area including the 17th Down Survey barony maps and the first (1840s) and second (1900s) edition OS maps was undertaken for any items of architectural or cultural heritage merit which may not appear in any records such as the NIAH or RPS.

12.3.2.1.6.1 Down Survey Maps

The Down Survey maps of Ireland are available to view at www.downsurvey.tcd.ie and were consulted as part of the desktop assessment. In March 1649, Westminster appointed Oliver Cromwell to lead an invasion of Ireland in order to crush all resistance to the new English Commonwealth and to avenge the alleged massacres of Protestant settlers in 1641-2. Irish land was also a valuable commodity, almost 70% of which was still held by Catholic landowners. Cromwell arrived in August, with 12,000 troops and a formidable train of siege artillery. Over the next four years his army defeated all military opposition in a series of bloody sieges and battles, which included the notorious massacres at Drogheda and Wexford in late 1649. By 1653, when the last formal surrenders of the war took place, the country had been devastated, the

population decimated, the economic infrastructure destroyed. The English had effectively created a blank slate in Ireland onto which they now sought to project a new plantation society. Following this and the passing of the Act of Settlement by the English parliament a Civil Survey, so called because it was ordered by the Civil Authority, was taken from 1654-6 in order to value the lands in Leinster, Munster, Ulster and Connaught. The Civil Survey is a collation of landowner records, standardized to townland level and was considered by many of the new owners to be inaccurate. The Down Survey, so called because a chain was laid down and a scale made, was therefore taken from 1656-8 under the direction of William Petty. The resulting maps, made at a scale of 40 perches to one inch (the modern equivalent of 1:50,000), were the first systematic mapping of a large area on such a scale attempted anywhere. The primary purpose of these maps was to record the boundaries of each townland and to calculate their areas with great precision. The maps are also rich in other detail showing churches, roads, rivers, castles, houses and fortifications.

The proposed Solar Farm is located over a number of townlands which are situated in two baronies; the barony of Clane and the barony of Carbury. Both barony maps are available on www.downsurvey.tcd.ie and were consulted. The townland of Drehid is located in the barony of Carbury and the parish of Ardkill. The barony map depicts the parish of 'Archill' and the townland of 'Dryett' but does not depict any features therein.

The townland of Timahoe East is located in the barony of Clane and parish of Timahoe. The parish of 'Timiocho' is depicted on the barony map with a church and castle indicated therein (Figure 12.11). The barony is also described as follows: 'The Barony of Clane In the County of Kildare. The land arable of ye aforesaid barony of Clane is good dry and fertile for Corne of all sortes. The pasturable ground is good for Cattle of all sortes and ye bog in som parts of the Barony is fitt for fireing. The River of Liffy is ye only River riseing out of or running through ye barony of Clane. There is in the aforesaid Barony of Clane soe Foords in the River of Liffy (viz) the foord of NEwtowne, the Foord of Caselekeely the foord of Cashunskealy, the ffoord of Aghglasshefae, Blackffoord and a Foord cald Aghvoddeveryren. There is in the said barony of Clane two mannors (vizt) the mannor of Clane and the Mannor of Tymachoe.'

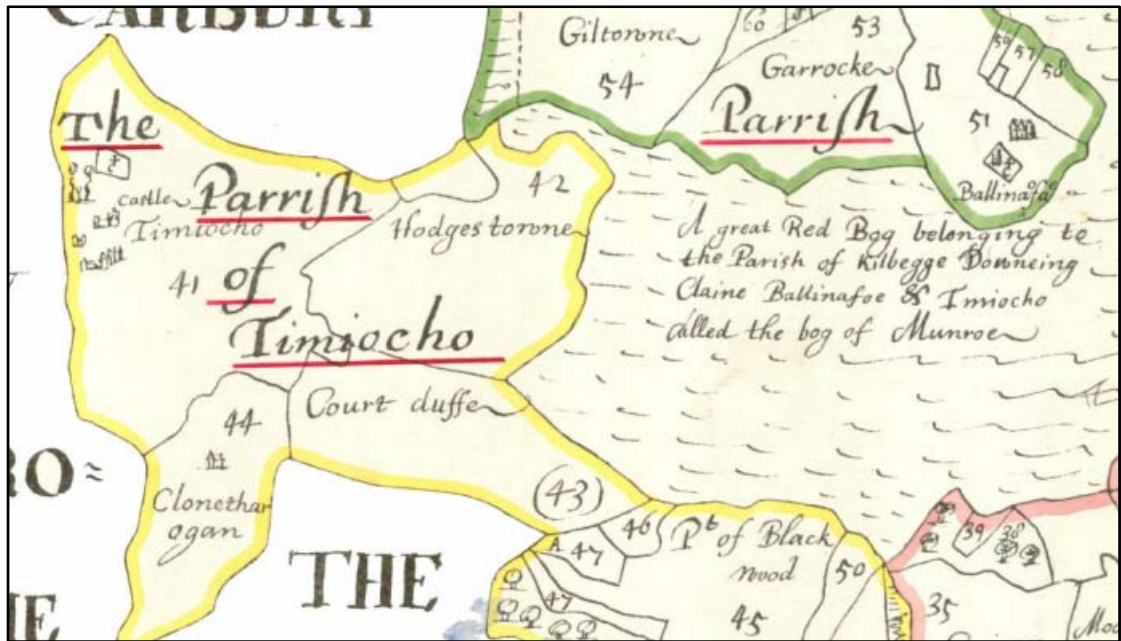


Figure 12.11: Extract from Down Survey barony map of Clane showing the parish of 'Timiocho'.

12.3.2.1.6.2 Other Available Historic Mapping

Between 1829 and 1842 Ordnance Survey Ireland completed the first ever large-scale survey of an entire country. Acclaimed for their accuracy, these maps are regarded by cartographers as amongst the finest ever produced. These maps are what is now called the 1st edition OS maps (6-inch scale) and were followed by the 2nd edition 25 inch scale maps in the early 1900s.

Both editions were consulted for any potential features of architectural or cultural heritage significance that may be indicated within the proposed Solar Farm, however, no such features are apparent on the OS maps.

Ireland's Valuation office conducted its first survey of property ownership in Ireland from 1848 to 1864. This survey became known as "Griffith's Valuation" after Richard Griffith who was the director of the office at that time. The survey was used to determine the amount of tax each person should pay towards the support of the poor within their poor law union. This involved determining the value of all privately held lands and buildings in rural as well as urban areas to figure the rate at which each unit of property could be rented year after year. The resulting survey was arranged by barony and civil parish with an index to the townlands appearing in each volume.

Richard Griffith was also one of the engineers appointed by the Bog Commissioners in 1810 to 'enquire and examine into the nature and extent of the several bogs in Ireland, and the practicability of draining and cultivating them; and the best means of effecting the same'. The purpose of the exercise was to determine if Ireland's bogs could be utilised for growing flax and hemp. For the bogs commissioners, Griffith first took on the great Bog of Allen, an area lying mainly in west Kildare and east King's County (Offaly), extending to over 70,000 statute acres. From his survey he produced a map of the bog of Allen which shows Timahoe Bog and the drains therein (see Figure 12.12).

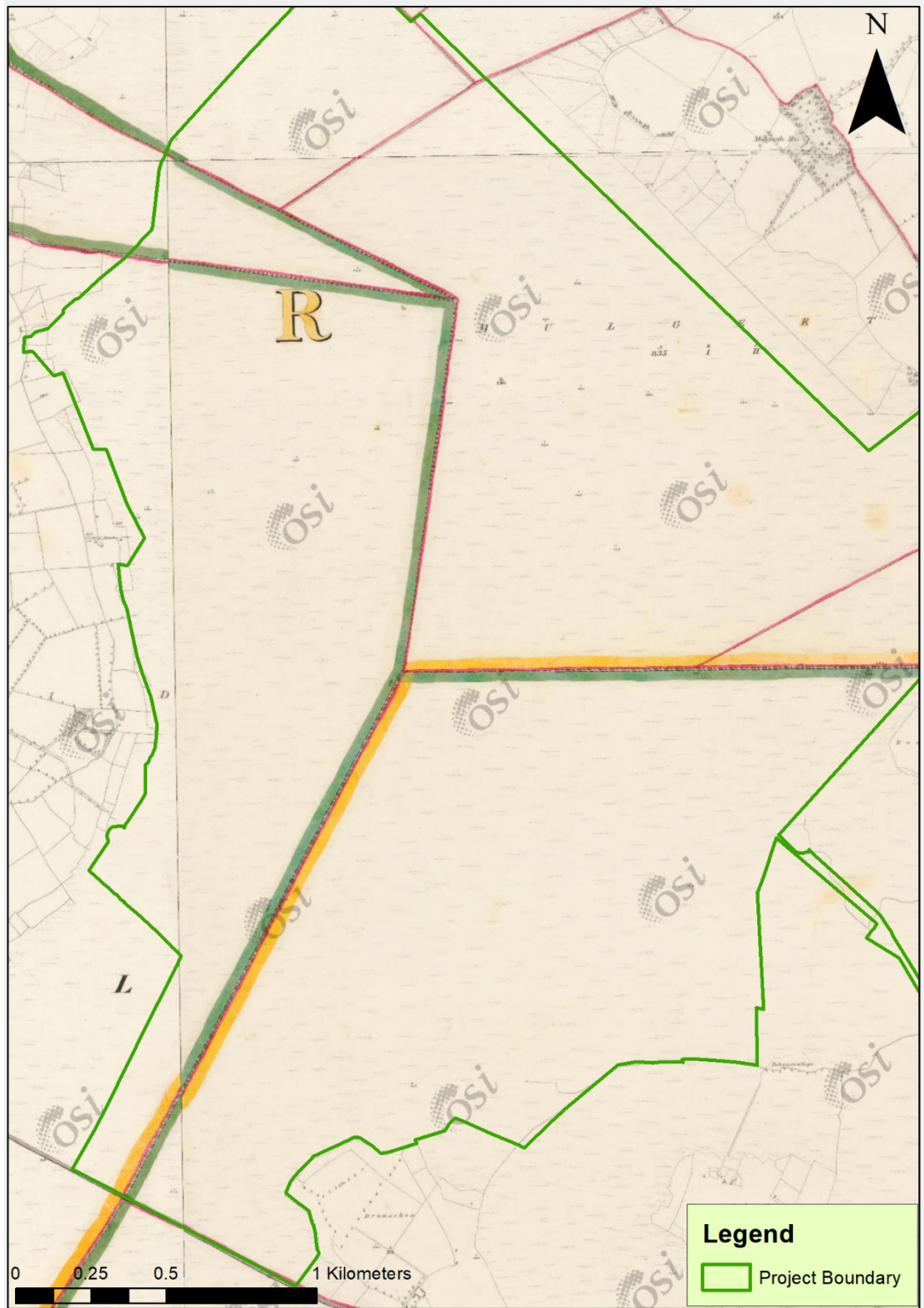


Figure 12.13: Project Boundary overlaid on 1st edition OS background.

12.3.2.2 Substation and Grid Connection

The Proposed Project will also include the construction of a 110 kV substation within the site. It is then envisaged to connect from this substation to the existing Derryiron-Maynooth 110 kV overhead line that traverses the southern section of the Timahoe North site. The approximate distance from the proposed substation location to the 110 kV line is 750 metres.

The proposed Substation and Grid Connection were both assessed in terms of Protected Structures, NIAH structures and Historic Gardens.

12.3.2.2.1 Record of Protected Structures

No Protected Structures are located in the vicinity of the proposed Substation and Grid Connection which are both located within the Project Boundary. The nearest Protected Structure to both the grid connection and the substation is Coolcarrigan Church (B09-11) located over 3.4km to the south-east of the proposed substation and 2.9km south-east of the proposed grid connection (Figure 12.14).

12.3.2.2.2 NIAH

No NIAH structures are located on or within the immediate vicinity of the proposed substation or grid connection. The nearest NIAH structure comprises the bell stand (Reg. 11900311) at Kilshancoe Catholic Church which is situated over 4km to the north-west in Kilshancoe townland. The structure is described above in section 12.3.2.1.2.



Figure 12.14: Nearest RPS structures to proposed Substation and Grid Connection.



Figure 12.15: Nearest NIAH structure (Reg. 11900311) to proposed Substation and Grid Connection.

12.3.2.2.3 NIAH Garden Survey

No historic gardens are located in the immediate vicinity of the proposed Substation or Grid Connection route. As per the proposed Solar Farm the nearest historic garden is Metcalf Park which is situated over 5km from the proposed Substation and Grid Connection. The garden is associated with a well maintained Georgian House (NIAH Reg. 11801014). The survey of the house and gardens notes the following: *'Set attractively in mature landscaped grounds the house is complemented by a range of outbuildings to the south, which are in fair condition, together with a gate lodge and gateway (11801012, 18/KD-04-01-12, 18). The survival of this group is of social importance, representing an intact eighteenth-century farm, which contributed to the historical development of the village of Johnstown Bridge, whilst historically providing employment to the local community.'* (www.buildingsofireland.ie).



Figure 12.16: Nearest Historic Gardens to the proposed Substation and Grid Connection.

12.3.2.2.4 Placename Evidence

The proposed Substation and Grid Connection are located within the townland of Timahoe East. The placenames database of Ireland (www.logainm.ie) was consulted for the townland meaning which is clearly associated with the church of a local saint situated further to the south-east.

Timahoe East – Derived from the Irish *Tigh Mochua Thoir* which refers to the house of Cua (mo being a term of endearment). The placename is recorded since the 12th century. Usually such placenames refer to the church or house (Tigh) of a local saint.

12.3.2.2.5 Review of Cartographic Sources

A review of the available historic cartographic sources for the proposed Substation and Grid Connection including the 17th Down Survey barony maps and the first (1840s) and second (1900s) edition OS maps was undertaken for any items of architectural or cultural heritage merit which may not appear in any records such as the NIAH or RPS. No such items are shown on the aforementioned maps in the area of the proposed substation or grid connection. See section 12.3.2.1.6 above for further detail on the historic maps of the area.

12.4 Likely Significant Effects and Associated Mitigation Measures

12.4.1 Do Nothing Scenario

If the Proposed Project was not developed, the site will continue to function as it does at present, with no changes made to the current land-use which includes regenerating woodland, cutover peat and turf cutting on the spread. The site is also used as an informal site for members of the public for walking.

12.4.2 Construction Phase (Direct Effects)

Direct effects refer to a 'physical effect' on a monument or site. The construction phase of the Proposed Project will involve earthmoving activities such as peat removal for compounds, inverters, cabling, security fencing, installation of the solar photovoltaic array (panels) and associated infrastructure as well as the construction of the Substation and Grid Connection. The potential effects on the known and potential archaeological, architectural and cultural heritage of the area are outlined below with the suggested mitigation measures.

12.4.2.1 Solar Farm

For purposes of assessing potential direct effects on archaeological, architectural and cultural heritage the Solar Farm is taken to include the following: solar photovoltaic array and associated infrastructure, inverters, battery storage, access roads and parking, site compounds and security fencing, amenity trails and landscaping, peat and material storage areas, site drainage and all associated works.

Ground disturbance in the form of peat removal will occur during the construction phase of many of the Proposed Project elements listed above. It is noted, however, that proposed access tracks will be largely floated which will minimize ground disturbance associated with this aspect of the Proposed Project. In certain instances, excavation of proposed roads may also be required. Other ground disturbance will be required for cabling (excavation of trenches), drainage and the installation of the solar arrays (piling).

12.4.2.1.1 UNESCO World Heritage Sites

No UNESCO World Heritage Sites are located on or within the immediate vicinity of the proposed Solar Farm.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.2.1.2 National Monuments

No National Monuments are located on or within the immediate vicinity of the proposed Solar Farm.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.2.1.3 Recorded Monuments

One recorded monument KD008-025 is located within the Project Boundary in the vicinity of the Solar Farm. It comprises an unclassified togher (road) and is situated immediately south-west of the south-westernmost parcel of solar arrays. The monument does not currently have any surface expression and detail pertaining to its survival beneath the surface of the peat is unknown. Potential direct effects to this monument through the tracking of machinery and ground disturbance are possible during the construction phase of the Proposed Project.

Pre-Mitigation Impact

Ground disturbance in the vicinity of this monument including the tracking of machinery and peat removal has the potential to permanently remove all or a portion of the togher KD008-025 resulting in a significant effect on the monument.

Proposed Mitigation Measures

The recorded monument KD008-025 has been excluded from the area of the solar arrays and associated security fencing. In order to ensure that the monument is adequately protected during the construction phase of the Proposed Project the following mitigation will be implemented.

- Establish a buffer zone around the recorded monument from which all ground works, tracking of machinery and storage or spoil or other materials will be excluded.
- Archaeological monitoring of ground works during the construction phase of the Proposed Project. The monitoring should be carried out under licence from the National Monuments Service of the Dept. of Culture, Heritage and the Gaeltacht and a report on the results shall be compiled and submitted to the relevant authorities on completion of the Proposed Project.

Residual Impact

Should no element of the recorded monument be uncovered during the construction phase of the Proposed Project the residual impact will be Imperceptible. If a portion of the monument is detected during monitoring it will be preserved by record (archaeologically excavated) and therefore permanently removed with a full record made of same. In this regard, the potential effect after the mitigation measures is likely to be not significant.

Residual Impact

None

Significance of Effects

Not Significant

12.4.2.1.4 New Potential Archaeology and Sub-surface Archaeology

No new archaeological sites were noted within the proposed Solar Farm during the site walk-over survey. Raised bogs are regarded as areas of archaeological potential, however, and unrecorded sub-surface sites and artefacts may be present within the area of the Solar Farm. It is possible that such sites/artefacts may be uncovered either within the peat and/or at the level of the underlying natural subsoil. The excavation of peat for the Solar Farm during the construction phase of the Proposed Project (e.g. for compounds, security fencing, cabling and drainage) may effect such sites/artefacts, if present.

Pre-Mitigation Impact

Should new sites/artefacts be present within the peat (currently not visible on the surface) the impact is likely to be significant, negative and permanent, i.e. the extraction of peat by machinery would permanently remove the sites/artefacts resulting in a loss of character, integrity and data about an archaeological site.

Proposed Mitigation Measures

- Archaeological monitoring of ground works during the construction phase of the Proposed Project. The monitoring should be carried out under licence from the National Monuments Service of the Dept. of Culture, Heritage and the Gaeltacht and a report on the results shall be compiled and submitted to the relevant authorities on completion of the Proposed Project.
- If an archaeological site/artefact is detected during monitoring it will be preserved by record (archaeologically excavated) and therefore permanently removed with a full record made of same. In this regard, the potential effect after the mitigation measures is likely to be not significant.

Residual Impact

None

Significance of Effects

Not Significant

12.4.2.1.5 Protected Structures

No Protected Structures are located on or within the immediate vicinity of the proposed Solar Farm.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.2.1.6 NIAH Structures and Gardens

No NIAH structures or Historic Gardens (as recorded in the NIAH Garden Survey) are located on or within the immediate vicinity of the proposed Solar Farm.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.2.2 Substation and Grid Connection

For purposes of assessing potential direct effects on archaeological, architectural and cultural heritage the Substation and Grid Connection is taken to comprise the following: a 110 kV substation within the site, and connection from this substation to the Derryiron-Maynooth 110 kV line. The approximate distance from the proposed substation location to the 110 kV line is 750 metres. It is envisaged that the proposed connection will require the construction of 4 No. angle masts at approximately 20-metre height (2 No. masts at the substation and 2 No. masts at the 110 kV line), which will be connected by two overhead lines supported by standard wooden polesets. The poles will measure approximately 18m in height and be spaced approximately every 200 metres.

Ground disturbance in the form of peat removal will occur during the construction phase of the Substation and Grid Connection.

12.4.2.2.1 UNESCO World Heritage Sites

No UNESCO World Heritage Sites are located on or within the immediate vicinity of the proposed Substation and Grid Connection.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.2.2.2 National Monuments

No National Monuments are located on or within the immediate vicinity of the proposed Substation and Grid Connection.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.2.2.3 Recorded Monuments

No recorded monuments are located on or in the immediate vicinity of the proposed substation or grid connection. The nearest recorded monument to the proposed substation comprises KD008-025 (Road - unclassified together) in Drehid townland, c. 800m to the WNW.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.2.2.4 New Potential Archaeology and Sub-surface Archaeology

No new archaeological sites were noted within the area of the proposed substation or grid connection during the site walk-over survey. Raised bogs are regarded as areas of archaeological potential, however, and unrecorded sub-surface sites and artefacts may be present within the area of either the substation or grid connection. It is possible that such sites/artefacts may be uncovered either within the peat and/or at the level of the underlying natural subsoil. The excavation of peat for the Substation and Grid Connection during the construction phase of the Proposed Project may affect such sites/artefacts, if present.

Pre-Mitigation Impact

Should new sites/artefacts be present within the peat (currently not visible on the surface) the impact is likely to be significant, negative and permanent, i.e. the extraction of peat by machinery would permanently remove the sites/artefacts resulting in a loss of character, integrity and data about an archaeological site.

Proposed Mitigation Measures

- Archaeological monitoring of ground works during the construction phase of the Proposed Project. The monitoring should be carried out under licence from the National Monuments Service of the Dept. of Culture, Heritage and the Gaeltacht and a report on the results shall be compiled and submitted to the relevant authorities on completion of the Proposed Project.
- If an archaeological site/artefact is detected during monitoring it will be preserved by record (archaeologically excavated) and therefore permanently removed with a full record made of same. In this regard, the potential effect after the mitigation measures is likely to be not significant.

Residual Impact

None

Significance of Effects

Not Significant

12.4.2.2.5 Protected Structures

No Protected Structures are located on or within the immediate vicinity of the proposed Substation and Grid Connection.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.2.2.6 NIAH Structures and Gardens

No NIAH structures or Historic Gardens (as recorded in the NIAH Garden Survey) are located on or within the immediate vicinity of the proposed substation or grid connection.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.3 Construction Phase (Indirect Effects)

No indirect effects will occur at the construction phase of the Proposed Project (Solar Farm, Substation and Grid Connection). All indirect effects are likely to occur at the Operational Phase of the Proposed Project (see section 12.4.5).

12.4.4 Operational Phase (Direct effects)

Any likely direct effects will occur at the construction phase of the Proposed Project (see section 12.4.2).

12.4.5 Operational Phase (Indirect Effects)

Indirect impacts are where a feature or site of archaeological, architectural heritage merit or their setting is located in close proximity to a Proposed Project. Indirect impacts here are mainly concerned with impacts on setting.

Impacts on settings of sites may arise when a development is proposed immediately adjacent to a recorded monument or cluster of monuments, Protected Structure or its associated curtilage. While the Proposed Project may not physically impact on a site, it may alter the setting of a monument, group of monuments or structure. There is no standardised industry-wide approach for assessing the degree of impact to the setting of a monument. For purposes of assessing visual impact on setting, the uniqueness of the monuments, the potential interrelationships of monuments, the inter-visibility of monuments, visual dominance and whether a setting is altered or unaltered can be used to assess impact.

Potential impact to the visual amenity of a site or area and the significance of same is dependent on a number of factors regarding the sensitivity of the location or ‘receptor’ and the scale or magnitude of the Proposed Project. Similarly, the extent of the development and its duration and reversibility should all be considered (*Guidelines for Landscape and Visual Impact Assessment 3rd edition – Consultation Draft*, Landscape Institute, 2013).

12.4.5.1 Solar Farm

12.4.5.1.1 UNESCO World Heritage Sites

No UNESCO World Heritage Sites are located on or within the immediate vicinity of the proposed Solar Farm or within 25km of same. No indirect (visual) effects on this resource will therefore occur.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.5.1.2 National Monuments

No National Monuments are located on or within the immediate vicinity of the proposed Solar Farm. No National Monuments are located within 10km of same therefore no indirect effects are identified.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.5.1.3 Recorded Monuments Within the Solar Farm

One recorded monument KD008-025 is located within the Project Boundary, in the vicinity of the Solar Farm. It comprises an unclassified togher (road) and is situated immediately south-west of the south-westernmost parcel of solar arrays. The monument does not currently have any surface expression and is situated in an overgrown area of cut-over bog. While the monument is not visible the installation of solar arrays and associated security fencing a short distance to the ENE of the monument will result in a change to the setting of this site. As the monument has no surface expression its visual dominance in the landscape may be regarded as low. While a change to its setting is acknowledged the significance of the effects of the Solar Farm on the monument is slight-not significant.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Slight-Not Significant

12.4.5.1.4 Recorded Monuments Within 2km of the Solar Farm

The density of monuments within 2km of the proposed Solar Farm is relatively low (32 monuments), however, many are located within 200-400m of the Project Boundary. In terms of indirect (visual) effects, however, it is worth noting that 17 of the monuments comprise peatland structures such as toghers which are unlikely to have any above-ground expression and are not readily identifiable or visible in the landscape. When assessing indirect effects on such monuments the scale and dominance of the proposed Solar Farm is considered. While the Solar Farm is relatively large in scale, the physical dominance of the solar arrays in the landscape may be regarded as low (solar array measures maximum 3m in height). Combined with this is the presence of existing natural screening in the form of boundaries and tree-lines surrounding the Project Boundary as well as the predominantly flat topography of the proposed Solar Farm. The topography as well as the existing screening will effectively limit any views of the Solar Farm from surrounding archaeological monuments or the nearest public access point to same. The installation of the proposed Solar Farm will result in a change to the wider setting of recorded monuments within 2km of the Proposed Project, however, this is regarded as imperceptible.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.5.1.5 New Potential Archaeology and Sub-surface Archaeology

No new archaeological sites were noted within the proposed Solar Farm during the walk-over survey. As previously outlined, however, bogs are regarded as areas of archaeological potential and sub-surface sites/artefacts may exist within the peat which are as yet undiscovered. Such sites and monuments, should they exist, currently have no above-ground expression. Potential indirect (visual) effects on such monuments as a result of the proposed Solar Farm is therefore regarded as not significant.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Not significant

12.4.5.1.6 Protected Structures

No Protected Structures are located on or in the immediate vicinity of the proposed Solar Farm. The nearest Protected Structure is situated over 1km from the Project Boundary and comprises a ringfort which is also a recorded monument (KD004-008). When assessing indirect effects on such structures the scale and dominance of the proposed Solar Farm is considered. While the Solar Farm is relatively large in scale, the physical dominance of the solar arrays in the landscape may be regarded as low (solar array measures maximum 3m in height). Combined with this is the presence of existing natural screening in the form of boundaries and tree-lines surrounding the Project Boundary as well as the predominantly flat topography of the proposed Solar Farm. The topography as well as the existing screening will effectively limit any views of the Solar Farm from Protected Structures in the surrounding wider landscape. Potential indirect (visual) effects on such structures as a result of the proposed Solar Farm is therefore regarded as imperceptible.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.5.1.7 NIAH Structures and Gardens

No NIAH structures or Historic Gardens (as recorded in the NIAH Garden Survey) are located on or within the immediate vicinity of the proposed Solar Farm. One NIAH site (Reg. 11900311) (bell stand) is situated within 2km of Project Boundary. No Historic gardens are located within 2km of the proposed Solar Farm. The nearest garden to the Project Boundary consists of Metcalf Park which is situated c. 2.2km to the north-east in the townland of Gorteen south of Johnstown Bridge.

When assessing indirect effects on such structures the scale and dominance of the proposed Solar Farm is considered. While the Solar Farm is relatively large in scale, the physical dominance of the solar arrays in the landscape may be regarded as low (solar array measures maximum 3m in height). Combined with this is the presence of existing natural screening in the form of boundaries and tree-lines surrounding the Project Boundary as well as the predominantly flat topography of the proposed Solar Farm. The topography as well as the existing screening will effectively limit any views of the Solar Farm from NIAH sites and gardens in the surrounding wider landscape. Potential indirect (visual) effects on such structures/sites as a result of the proposed Solar Farm is therefore regarded as imperceptible.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.5.2 Substation and Grid Connection

12.4.5.2.1 UNESCO World Heritage Sites

No UNESCO World Heritage Sites are located on or within the immediate vicinity of the proposed substation or grid connection. No such sites are located within 25km of the Substation and Grid Connection therefore no indirect (visual) effects on this resource will occur.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.5.2.2 National Monuments

No National Monuments are located on or within the immediate vicinity of the proposed substation or grid connection. No National Monuments are located within 10km of same therefore no indirect effects are identified.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.5.2.3 Recorded Monuments

No recorded monuments are located on or in the immediate vicinity of the proposed substation or grid connection. The nearest recorded monument to the proposed substation comprises KD008-025 (Road - unclassified togher) in Drehid townland, c. 800m to the WNW. The monument does not currently have any surface expression and is situated in an overgrown area of cut-over bog. While the monument is not visible the construction of the substation to the NE of the monument will result in a change to the wider setting of this site. As the monument has no surface expression its visual dominance in the landscape may be regarded as low. While a change to its setting is acknowledged, the significance of the effects of the substation on the monument is slight-not significant.

Similarly, the nearest recorded monument to the proposed overhead line grid connection comprises KD008-036 (Road - class 2 togher) which is situated c. 758m to the south in Timahoe West townland. The monument does not currently have any surface expression and is not readily visible in the landscape. While the monument is not visible the construction of the grid connection will result in a change to the wider setting of this site. As the monument has no surface expression its visual dominance in the landscape may be regarded as low. While a change to its setting is acknowledged, the significance of the effects of the grid connection on the monument is slight-not significant.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Slight-Not Significant

12.4.5.2.4 New Potential Archaeology and Sub-surface Archaeology

No new archaeological sites were noted within the area of the substation or grid connection during the walk-over survey. As previously outlined, however, bogs are

regarded as areas of archaeological potential and sub-surface sites/artefacts may exist within the peat which are as yet undiscovered. Such sites and monuments, should they exist, currently have no above-ground expression. Potential indirect (visual) effects on such monuments as a result of the proposed Substation and Grid Connection is therefore regarded as not significant.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Not significant

12.4.5.2.5 Protected Structures

No Protected Structures are located on or in the immediate vicinity of the proposed substation or grid connection. The nearest Protected Structure to both the grid connection and the substation is Coolcarrigan Church (B09-11) located over 3.4km to the south-east of the proposed substation and 2.9km south-east of the proposed grid connection. When assessing indirect effects on such structures the scale and dominance of the proposed Substation and Grid Connection is considered. The physical dominance of the Substation and Grid Connection in the landscape may be regarded as low-medium, however, the presence of existing natural screening in the form of boundaries and tree-lines surrounding the Project Boundary as well as the predominantly flat topography of the area will effectively limit views of the Substation and Grid Connection from Protected Structures in the surrounding wider landscape. Potential indirect (visual) effects on such structures as a result of the proposed Substation and Grid Connection is therefore regarded as imperceptible.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.5.2.6 NIAH Structures and Gardens

No NIAH structures or Historic Gardens (as recorded in the NIAH Garden Survey) are located on or within the immediate vicinity of the proposed Substation and Grid Connection. The nearest NIAH structure comprises the bell stand (Reg. 11900311) at Kilshanchoe Catholic Church which is situated over 4km to the north-west in Kilshanchoe townland. As per the proposed Solar Farm the nearest historic garden is Metcalf Park which is situated over 5km from the proposed Substation and Grid Connection.

When assessing indirect effects on such structures the scale and dominance of the proposed Substation and Grid Connection is considered as well as the distance between the latter and the NIAH sites/gardens. The physical dominance of the Substation and Grid Connection in the landscape may be regarded as low-medium, however, the presence of existing natural screening in the form of boundaries and tree-lines surrounding the Project Boundary as well as the predominantly flat topography of the area will effectively limit views of the Substation and Grid Connection from Protected Structures in the surrounding wider landscape. Potential indirect (visual) effects on such structures as a result of the proposed Substation and Grid Connection is therefore regarded as imperceptible.

Pre-Mitigation Impact

None

Proposed Mitigation Measures

None

Residual Impact

None

Significance of Effects

Imperceptible

12.4.6 Cumulative Effects

Cumulative effect is defined as *'The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects'* (Draft Revised Guidelines on the Information to be Contained in Environmental Impact Statements Environmental Protection Agency (2017, 54). It is also defined as *'impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project'* (EC 1999). Cumulative impacts encompass the combined effects of multiple developments or activities on a range of receptors. In this case the receptors are the archaeological monuments and architectural/cultural heritage sites in the immediate vicinity of the Proposed Project. Cumulative Impacts at the Construction and Operational Stage of the Proposed Project are considered.

In this regard in order to assess overall cumulative effects on archaeology and cultural heritage the Proposed Project (i.e. Solar Farm and Substation and Grid Connection) is considered in the context of other developments namely;

- Turf cutting within the Proposed Project site
- Drehid Waste Management Facility (DWMF)
- Proposed and permitted nearby solar projects
 - Ovidstown Solar Farm (PL. Ref. 1894)
 - Hortland Solar Farm (PL. Ref. 171494)
 - Power Capital Renewable Energy Limited Solar Farm (PL. Ref. 161265)

No significant direct or indirect impacts to the archaeological, architectural or cultural heritage resource as a result of the Proposed Project have been identified through this assessment process. Any potential direct impacts to recorded monuments or potential sub-surface sites/artefacts have been mitigated against through the appropriate mitigation of archaeological monitoring during the construction stage of the

development. Archaeological monitoring was also implemented for the nearby Drehid Waste Management Facility and no direct impacts to the archaeological resource occurred as a result of that project.

The proposed expansion of the DWMF was also considered in the cumulative assessment. If the facility is consented, mitigation measures, included as part of the application, allows for archaeological monitoring during the construction stage of the project. Once the proposed mitigation is implemented, the cumulative impacts as a result of this development are likely to be imperceptible.

Some commercial third party turf cutting takes place within the Proposed Project site. This cutting is limited to a number of areas within the site but is taking place within an area of archaeological potential. Potential direct impacts to sub-surface archaeological sites and artefacts as a result of this activity are possible. Should the Proposed Project proceed, turf cutting will cease and so there will be no cumulative effects.

Archaeological and cultural heritage assessments for the aforementioned proposed and permitted solar farms located to the north-east of the Proposed Project did not identify any potential significant direct impacts to the archaeological and cultural heritage resource, finding no or negligible impacts.

When the Proposed Project is considered with the above projects and the proposed mitigation measures are implemented, no cumulative increase to potential direct impacts is identified.

When considering potential cumulative indirect impacts, again no significant indirect impacts have been identified arising from the Proposed Project or the other projects listed above. The Drehid Waste Management Facility is the nearest of these projects. It has limited visibility from the Proposed Project site and while it is visible from the existing site entrance, it is not readily apparent from within the Proposed Project site, due to topography and the presence of natural existing screening. When considered cumulatively with the DWMF and the proposed and permitted solar farms, no cumulative increase to indirect impacts is identified.

The proposed Solar Farm is also considered in conjunction with the proposed Substation and Grid Connection. No significant direct or indirect impacts to the archaeological, architectural or cultural heritage resource as a result of the proposed Solar Farm or Substation and Grid Connection have been identified through this assessment process. Any potential direct impacts to recorded monuments or potential sub-surface sites/artefacts has been mitigated against through the appropriate mitigation of archaeological monitoring during the construction stage of the development. In this regard no cumulative impacts are identified when considering the Solar Farm and the Substation and Grid Connection together.

12.4.7 Decommissioning Phase

There will be no significant potential effects on the archaeological, architectural and cultural heritage environment during the decommissioning of the Proposed Project. Any potential direct impacts will already have been resolved through mitigation measures and the established access tracks will be used for the removal of the built features of the Proposed Project.

12.5 Summary

This report comprises an assessment of the potential impact and effects of a proposed Solar Farm, Substation and Grid Connection at Timahoe North Bog, Co. Kildare. The potential impacts on the surrounding archaeological, architectural and cultural heritage landscape were assessed. The assessment was based on desktop research, GIS analysis, and field survey. While no new archaeological sites were noted during field survey raised bogs such as that at Timahoe are considered areas of archaeological potential. One recorded monument is located within the Project Boundary, although it is excluded from the area of the solar arrays mitigation measures in the form of a buffer zone and archaeological monitoring are recommended.

Where potential effects on as yet unknown sub-surface features within the bog have been identified, appropriate mitigation measures have been recommended in order to minimise any such impacts. Recommended mitigation includes archaeological monitoring during the construction stage of the Project. The predicted residual effects as a result of the Proposed Project are likely to be not significant-imperceptible once the recommended mitigation measures have been implemented.

Indirect impacts or effects on setting on the archaeological, architectural and cultural heritage resource were also assessed. No significant indirect effects as a result of the Proposed Project have been identified. An assessment of cumulative impacts with regard to other existing and proposed projects was also undertaken and this was not found to increase as a result of the Proposed Project.