



ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIA) FOR DERNACART WIND FARM

VOLUME 2 – MAIN EIA

CHAPTER 15 - ARCHAEOLOGY, ARCHITECTURAL AND CULTURAL HERITAGE

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TABLE OF CONTENTS

Page

15	ARCHAEOLOGY, ARCHITECTURAL AND CULTURAL HERITAGE	1
15.1	INTRODUCTION	1
15.2	PROPOSED DEVELOPMENT	1
15.3	LEGAL FRAMEWORK	1
15.3.1	<i>Archaeological Heritage</i>	2
15.3.2	<i>Architectural Heritage</i>	2
15.3.3	<i>EIA Legislative Framework</i>	3
15.4	METHODOLOGY	3
15.4.1	<i>EIA Council Directive 2014/52/EU</i>	4
15.4.2	<i>Desktop Study</i>	7
15.4.3	<i>Statutory Consultations</i>	8
15.5	RECEIVING ENVIRONMENT	8
15.5.1	<i>Tangible Archaeological & Historical Assets</i>	8
15.5.2	<i>Tangible Architectural Heritage Assets</i>	13
15.5.3	<i>Intangible Cultural Heritage Assets</i>	16
15.5.4	<i>Summary Desktop Research Conclusions</i>	17
15.5.5	<i>Field Survey Results</i>	17
15.6	IMPACT ASSESSMENT	20
15.6.1	<i>Construction Phase</i>	20
15.6.2	<i>Operational Phase</i>	22
15.6.3	<i>Cumulative Impacts</i>	22
15.7	MITIGATION MEASURES	23
15.7.1	<i>Construction Phase</i>	23
15.7.2	<i>Operational Phase</i>	25
15.8	RESIDUAL IMPACTS	26
15.9	MONITORING	26
15.10	REFERENCES	27

LIST OF APPENDICES

Appendix 1: Photographic Record

Appendix 2: Field Survey Record

LIST OF FIGURES

Page

FIGURE 15.1	RECORDED CULTURAL HERITAGE ASSETS WITHIN THE STUDY AREA	10
FIGURE 15.2	RECORDED CULTURAL HERITAGE ASSETS WITHIN 2KMS OF PROPOSED SITE PLANNING BOUNDARY	11
FIGURE 15.3:	EXTRACT FROM 6-INCH 1 ST EDITION OS MAP C. 1829-41 SHOWING PART OF THE GRAND . CANAL, SOUTH OF PORTARLINGTON OVERLAID WITH PROPOSED UGC ROUTE ALIGNMENT (BLACK DASHED LINE) (SOURCE: © ORDNANCE SURVEY IRELAND/GOVERNMENT OF IRELAND)	13
FIGURE 15.4	RECORDED CULTURAL HERITAGE ASSETS LOCATED WITHIN 100M OF PROPOSED UGC ROUTE. .	15

LIST OF TABLES

TABLE 15-1:	FACTORS FOR ASSESSING THE VALUE OF CULTURAL HERITAGE ASSETS (AFTER ICOMOS 2011)	5
TABLE 15-2:	SIGNIFICANCE OF EFFECTS (PER EPA DRAFT EIAR GUIDELINES 2017).....	6
TABLE 15-3:	SIGNIFICANCE OF EFFECTS MATRIX (AFTER EPA DRAFT EIAR GUIDELINES 2017).....	6
TABLE 15-4:	RECORDED ARCHAEOLOGICAL SITES WITHIN THE STUDY AREA.....	8
TABLE 15-5:	EXCAVATIONS WITHIN THE STUDY AREA	12
TABLE 15-6:	RECORDED ARCHITECTURAL HERITAGE STRUCTURES WITHIN THE STUDY AREA	14
TABLE 15-7:	TRANSLATION OF TOWNLAND NAMES WITHIN THE STUDY AREA (SOURCE: WWW.LOGANIM.IE)	16
TABLE 15-8:	CONSTRUCTION PHASE IMPACTS AND MITIGATION MEASURES.....	24

15 ARCHAEOLOGY, ARCHITECTURAL AND CULTURAL HERITAGE

15.1 Introduction

This chapter was prepared by Kate Robb BA MA Dip EIA/SEA Mgmt MIAI of John Cronin & Associates. Ms Robb is a qualified archaeologist (full member of Institute of Archaeologists of Ireland - IAI), with both primary Bachelor of Arts (Hons) (National University of Ireland, Galway, 1999) and post-graduate Master of Arts (Hons) (National University of Ireland, Galway, 2001) degree qualifications in archaeology as well as a post-graduate diploma qualification in EIA/SEA Management (University College Dublin, 2005). Ms Robb works with John Cronin & Associates (JCA) (practitioners in urban and building conservation, archaeology, planning and heritage management, established 2000) as Senior Archaeologist and EIA Consultant. Ms Robb has nineteen years' industry experience and has been involved in the preparation and production of Cultural Heritage EIAR for a wide range of large-scale projects (including infrastructural linear schemes), for both public and private developments.

UNESCO define the term 'Cultural Heritage' as encompassing several aspects of tangible assets (immovable: archaeological sites and monuments, architectural heritage buildings; movable: artefacts; and underwater: shipwrecks and ruins) and intangible assets (e.g. folklore, oral tradition and language).

This chapter assesses the impacts of the proposed development on the known and potential cultural heritage resource (archaeological monuments and artefacts (including underwater), architectural heritage, folklore and tradition) concerning the integrity, continuity and context of same for future generations. Furthermore, the chapter identifies appropriate mitigation strategies therein.

The recorded and potential cultural heritage resource within a study area, encompassing the proposed development site planning boundary and the lands extending for 2kms beyond same, along with the proposed alignment for the underground cable (UGC) route centred within a 100m wide corridor, was assessed in order to compile a comprehensive cultural heritage baseline and context.

15.2 Proposed Development

The proposed Dernacart Windfarm development, located c. 2.5kms north/north-west of Mountmellick, Co. Laois, consists of 8 no. turbine locations and associated hardstand areas along with a proposed temporary compound, sub-station, access routes and underground cable route (UGC) which extends for c. 15-16kms to connect with a proposed 110kV substation at Bracklone (separate planning application being progressed by separate applicant), at the eastern outskirts of Portarlinton. A full description of the proposed development is contained in Chapter 4.

15.3 Legal Framework

The management and protection of cultural heritage in Ireland is achieved through a framework of national laws and policies which are in accordance with the provisions of the Valetta Treaty (1995) (formally the *European Convention on the Protection of the Archaeological Heritage, 1992*) ratified by Ireland in 1997; the *European Convention on the Protection of Architectural Heritage* (Granada Convention, 1985), ratified by Ireland in 1997; and the *UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage, 2003*, ratified by Ireland in 2015.

The locations of World Heritage Sites (Ireland) and the Tentative List of World Heritage Sites submitted by the Irish State to UNESCO were reviewed and none are located within the environs of the proposed development.

The national legal statutes and guidelines relevant to this assessment include:

- National Monuments Act (1930) (and amendments in 1954, 1987, 1994 and 2004);
- Heritage Act (1995);
- National Cultural Institutions Act (1997);

- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act (1999);
- Planning and Development Act (2000);
- *Architectural Heritage Protection: Guidelines for Planning Authorities* (Department of Arts, Heritage, and the Gaeltacht, 2011); and
- *Framework and Principles for the Protection of the Archaeological Heritage* (Department of Arts, Heritage, Gaeltacht and the Islands, 1999)

15.3.1 Archaeological Heritage

The administration of national policy in relation to archaeological heritage management is the responsibility of the National Monuments Service (NMS) which is currently based in the Department of Culture, Heritage and the Gaeltacht. The National Monuments Act of 1930, and its Amendments, are the primary means of ensuring the satisfactory protection of the archaeological (including underwater) resource. They include a number of provisions that are applied to secure the protection of archaeological monuments. These include the designations of nationally significant sites as National Monuments, the Register of Historic Monuments, the Record of Monuments and Places, the Sites and Monuments Record, and the placing of Preservation Orders and Temporary Preservation Orders on endangered sites; as well as statutory protection of wrecks over 100 years old and underwater archaeological objects (irrespective of their age or location).

Section 2 of the National Monuments Act, 1930 defines a National Monument as 'a monument or the remains of a monument, the preservation of which is a matter of national importance'. The State may acquire or assume guardianship of examples through agreement with landowners or under compulsory orders. There are no National Monuments in ownership/guardianship located within the study area, however the Rock of Dunamais (RMP LA013-052--- & National Monument No. 615) is located c.14km southeast of the proposed development site boundary.

The National Monuments (Amendment) Act, 1994 made provision for the establishment of the Record of Monuments and Places (RMP) which comprises the known archaeological sites within the State. The RMP, which is based on the earlier Register of Historic Monuments (RHM) and Sites and Monuments Record (SMR), provides county-based lists of all recorded archaeological sites with accompanying maps. All RMP sites receive statutory protection under the National Monuments Act 1994 and the NMS must be given two months' notice in advance of any work proposed at their locations. There are no recorded archaeological sites within the proposed development site, whilst there are 3 no. examples within 2kms of the proposed site planning boundary which include two enclosures and a metalworking site. These recorded archaeological sites are listed in Table 15.4.

Diving or general interference with any wreck which is more than 100 years old or an archaeological object which is lying on, in or under the sea bed or on/in land covered by water is prohibited except in accordance with a licence issued by the Minister for Culture, Heritage and the Gaeltacht under Section 3 (5) of the National Monuments (Amendment) Act 1987. Furthermore a licence is also required to dive, survey or disturb any protected wreck or for any targeted searches for archaeological objects underwater (including metal detection survey).

The *Laois County Council Development Plan 2017-2023*¹ and *Offaly County Development Plan 2014-2020*² includes a range of policies and objectives in relation to the protection of the archaeological resource.

15.3.2 Architectural Heritage

Protection of architectural heritage is provided for through a range of legal instruments that include the *Heritage Act (1995)*, the *Architectural Heritage (National Inventory) & National Monuments (Misc. Provisions) Act (1999)*, and the *Planning and Development Act (2000)*.

¹ <https://laois.ie/departments/planning/development-plans/draft-laois-county-development-plan-2017-2023/>

² <https://www.offaly.ie/eng/Services/Planning/Development-Plans/County-Development-Plan-2014-2020/County%20Development%20Plan%202014-2020.html>

The Heritage Act (1995) (as amended) defines architectural heritage as including:

all structures, buildings, traditional and designed, and groups of buildings including streetscapes 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.

The National Inventory of Architectural Heritage (NIAH) was established under the *Architectural Heritage Act (1999)*, to record architectural heritage structures within the State and to advise local authorities in relation to structures of architectural heritage significance within their administrative areas. The conservation principles of care and protection of architectural heritage and the facilitation of the listing of significant buildings of architectural merit are set out in *Part IV of the Planning and Development Act (2000)*. This requires Local Authorities to maintain a Record of Protected Structures (RPS) of structures with special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest, to be included in City/County Development Plans. In addition, Local Authorities must provide for the preservation of townscapes etc. through designation of Architectural Conservation Areas (ACAs). Any changes that materially affect the character of a protected structure require planning permission.

There are no designated architectural heritage sites within the site planning boundary, although there are 4 no. protected structures located within 2kms of same. In addition, there are 5 no. architectural heritage features located within 100m of the proposed UGC route, four of which are listed on the RPS; and all are listed in the NIAH. The recorded sites include thatched cottages, bridges, a post-box, Church of Ireland (COI) church and houses. These recorded architectural heritage sites are listed in **Table 15-6**.

The historic towns of Mountmellick and Portarlinton are located c. 2.5km (from site planning boundary) and c. 1.2kms (from UGC alignment) respectively.

The *Laois County Council Development Plan 2017-2023*³ and *Offaly County Development Plan 2014-2020*⁴ present a number of policies and objectives to ensure the protection of the architectural heritage resource within the County.

15.3.3 EIA Legislative Framework

The EIA Directives (from 1985 to 2014) set out the requirement for an EIA in European law. This assessment has been prepared in accordance with EIA requirements of codified Council Directive 2011/92/EU as amended by EIA Council Directive 2014/52/EU, per current Planning Legislation, concerning EIA assessment: *Planning and Development Act, 2000 (as amended) (Part X)* and in *Part 10 of the Planning and Development Regulations, 2001 (as amended)*.

Ireland has transposed EU Directive 2014/52/EU by way of the *European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018* which came into operation on 1 September 2018. The Regulations provide for the transposition of the 2014 EIA Directive and give further effect to the 2011 EIA Directive by way of extensive amendments to existing planning law.

15.4 Methodology

Presented below is an outline of the criteria used to assess the nature of impacts on the known and potential elements of the cultural heritage resource (including underwater) within the study area. The study area pertaining to the proposed windfarm development is defined as follows: the area encompassing lands within the proposed site planning boundary and lands extending for 2km from same; and the proposed UGC route alignment centred on a 100m wide corridor area. The baseline information on this resource was established by a combination of desk-based research and a site inspection which were undertaken to identify features of cultural heritage significance likely to be affected by the proposed development.

³ <https://laois.ie/departments/planning/development-plans/draft-laois-county-development-plan-2017-2023/>

⁴ <https://www.offaly.ie/eng/Services/Planning/Development-Plans/County-Development-Plan-2014-2020/County%20Development%20Plan%202014-2020.html>

15.4.1 EIA Council Directive 2014/52/EU

The methodology used for this assessment is based on EPA (2003) *Advice Notes on Current Practice in the preparation of Environmental Impact Statements* and EPA (2002) *Guidelines on the Information to be contained in Environmental Impact Statements*. However more recent (draft) guidance methods have also been utilised per EPA (2015) *Draft Advice Notes for Preparing an EIS* and (2017) *Draft Guidelines for Information to be Contained in EIAR*, in accordance EIA requirements of codified EU Directive 2011/92/EU as amended by EU Directive 2014/52/EU, per current Planning Legislation, concerning EIA assessment: *Planning and Development Act, 2000 (as amended) (Part X)* and in *Part 10 of the Planning and Development Regulations, 2001 (as amended)*.

The following summation of the criteria applied to determine the nature of effects is provided in order to clearly and concisely outline the methodology specifically applied to the cultural heritage resource.

Assessment was achieved by a consideration of the **duration, quality, type, value and magnitude** of effect(s) on the cultural heritage resource:

Duration of Effect

The duration of effects is assessed based on the following criteria:

- Momentary (seconds to minutes)
- Brief < 1 day
- Temporary <1 year
- Short-term 1-7 years
- Medium Term 7-15 years
- Long Term 15-60 years
- Permanent > 60 years
- Reversible: Effects that can be undone, for example through remediation or restoration

Quality of Effect

The quality of an effect on the cultural heritage resource can be **positive, neutral or negative**.

- *Positive* – a change which improves the quality of the cultural heritage environment (e.g. increasing amenity value of a site in terms of managed access, signage, presentation etc. or high-quality conservation/restoration and re-use of an otherwise vulnerable derelict structure).
- *Neutral* – no change or effects that are imperceptible, within the normal bounds of variation for the cultural heritage environment.
- *Negative* – a change which reduces the quality of the cultural heritage resource (e.g. visual intrusion on the setting of an asset, physical intrusion on features/setting of a site etc.)

Type of Effect

The type of effect on the cultural heritage resource can be **direct, indirect or no predicted effect**.

- *Direct* – where a cultural heritage site is physically located within the footprint of the proposed development, which will result in its complete or partial removal.
- *Indirect* – where a cultural heritage site, or its setting, is located in close proximity to the footprint of the proposed development.
- *No predicted effect* – where the proposed development will not adversely or positively affect a cultural heritage site.

The **Significance of the Effect** is based on an assessment largely of the **Magnitude of the Impact** (graded from High to Negligible, based on a consideration of character, duration, probability and consequences) and the **Value** (graded from High to Negligible, based on a consideration of significance/sensitivity) of the heritage asset.

Magnitude of Impact (degree of change, incorporating any mitigation measures) can be negative or positive, and should be ranked without regard to the value of the asset according to the following scale: **High; Medium; Low and Negligible**.

The evaluation of the **Value** of a heritage asset is largely based on its significance criteria, and should not be considered definitive, but rather an indicator which contributes to a wider judgment based on the individual circumstances of each feature. Generally, the more criteria that are evident for a given asset, the higher in scale its respective Value shall be. Criteria considered in addition to any legal designations include the condition/preservation; documentary/historical significance; group value; rarity; visibility in the landscape; fragility/vulnerability and amenity value.

The **Value** of all known or potential assets that may be affected by the proposed project are ranked according to the following scale: **High; Medium; Low and Negligible**. The table below has been informed by the International Council on Monuments and Sites *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS 2011, 14-17).

Table 15-1: Factors for assessing the Value of Cultural Heritage Assets (after ICOMOS 2011⁵)

Value	Asset Type
Very High	<ul style="list-style-type: none"> World Heritage Sites (including Tentative List properties) Assets of acknowledged international importance, including buildings Assets that can contribute significantly to acknowledged international research objectives
High	<ul style="list-style-type: none"> Designated <i>National Monuments</i> (archaeological) Assets of significant quality and importance, including designated RMP sites Assets that can contribute significantly to acknowledged national research objectives Protected Structures/National NIAH Grade Buildings Conservation Areas containing significant buildings of importance, including group value Archaeological Landscapes with significant inter-group value
Medium	<ul style="list-style-type: none"> Assets of good quality and importance, including designated RMP sites Assets that can contribute significantly to acknowledged regional research objectives Regional Grade NIAH Buildings Other undesignated buildings that can be shown to have exceptional qualities in their fabric or historical associations Undesignated structures of potential national importance (archaeological, potential 'new sites') Conservation Areas containing buildings that contribute significantly to its historic character Historic townscape or built-up areas with important historic integrity in their buildings, or built settings (e.g. including street furniture and other structures)
Low	<ul style="list-style-type: none"> Designated and undesignated assets of local importance, including buildings Assets compromised by poor preservation and/or poor survival of contextual associations Assets of limited value, but with potential to contribute to local research objectives

⁵ This table is indicative only and to be used together with a consideration of the condition/preservation; documentary/historical significance; group value; rarity; visibility in the landscape; fragility/vulnerability and amenity value of the Cultural Heritage Asset itself on a case-by-case basis

Value	Asset Type
	<ul style="list-style-type: none"> Historic Townscape or built-up areas of limited historic integrity in their buildings, or built settings (e.g. including street furniture and other structures)
Negligible	<ul style="list-style-type: none"> Assets with very little or no surviving archaeological interest Buildings of no architectural or historical note; buildings of an intrusive character

The **Significance of Effect** can be described as **Profound, Very Significant, Significant, Moderate, Slight, Not Significant or Imperceptible**.

Table 15-2: Significance of Effects (per EPA Draft EIAR Guidelines 2017)

Significance	Description
Imperceptible	An effect capable of measurement but without significant consequences
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences
Slight	An effect which causes noticeable changes in the character of the environment but without affecting its sensitivities
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
Profound	An effect which obliterates sensitive characteristics

Table 15-3: Significance of Effects Matrix (after EPA Draft EIAR Guidelines 2017)

Magnitude of Impact	High	Not Significant/ Slight	Moderate/ Significant	Significant/ Very Significant	Very Significant/ Profound
	Medium	Not Significant	Slight	Moderate/ Significant	Significant/ Very significant
	Low	Not Significant/ Imperceptible	Slight/ Not Significant	Slight	Moderate
	Negligible	Imperceptible	Not Significant/ Imperceptible	Not Significant/ Slight	Slight
		Negligible	Low	Medium	High
	Value/Sensitivity of the Asset				

15.4.2 Desktop Study

The desktop study sought to identify all recorded archaeological, architectural and other cultural heritage sites within the study area as well as to identify any hitherto unrecorded features or areas of cultural heritage significance. The collated information has provided an insight into the historical development of the study area over time and assisted in an evaluation of the potential presence of unrecorded cultural heritage sites.

The *Sites and Monuments Record (SMR)* and the *Record of Monuments and Places (RMP)* for County Laois, both published by the Archaeological Survey of Ireland, were the principal sources consulted for identifying known archaeological sites. The *Record of Protected Structures (RPS)* and the *National Inventory of Architectural Heritage (NIAH)* were consulted to assess the designated architectural heritage resource.

The following presents an overview of the sources consulted as part of the desktop study:

- *Archaeological Inventory of County Laois*: This publication presents summary descriptions of the recorded archaeological sites within this area of the county. In addition, the current national database (online) resources pertaining to same were accessed: Historic Environment Map Viewer (www.archaeology.ie) and Heritage Maps (The Heritage Council) (www.heritagemaps.ie).
- *Laois County Development Plan 2017-2023 and Offaly County Development Plan 2014-2020*: these publications were extensively reviewed for the project assessment. They list the buildings and structures included in the Record of Protected Structures and it also presents the Council's policies and objectives designed for the protection of the archaeological and architectural heritage resources within each County.
- *UNESCO designated World Heritage Sites and Tentative List*: UNESCO seeks to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity. There are two world heritage sites in Ireland and a number of other significant sites are included in a Tentative List (2010) that has been put forward by Ireland for inclusion.
- *National Inventory of Architectural Heritage (NIAH)*: The NIAH provides a comprehensive catalogue of significant architectural heritage structures within Ireland. While inclusion in the inventory does not provide statutory protection to a structure it is used to advise local authorities on compilation of their Record of Protected Structures. Relevant current national datasets were accessed via www.buildingsofireland.ie
- *Database of Irish Excavation Reports*: This database contains summary accounts of all licensed archaeological excavations carried out in Ireland (North and South) from 1970 to 2018. The database entries for investigations carried out within townlands in the study area are provided below. Current data was accessed via www.excavations.ie
- *National Museum of Ireland (NMI) Findspots*: These findspot locations and brief summaries are mapped on the Heritage Council mapping portal (www.heritagemaps.ie).
- Historical publications and cartographic sources: various published and unpublished sources and historical maps were consulted. Extracts from historical maps and other figures are presented within the chapter and a list of consulted publications is provided in the references section.
- *Aerial Orthophotography*: available current local and national online aerial images of the proposed development site were consulted in order to determine if any traces of unrecorded, sub-surface archaeological sites were evident (www.archaeology.ie and www.heritagemaps.ie).
- *Placenames Database of Ireland*: this current online database (www.logainm.ie) provides a comprehensive management system for data, archival records and place names research conducted by the State.
- *Irish National Folklore Collection*: transcribed material from the National Folklore Collection archive has been digitised and published on www.duchas.ie, which also publishes relevant images the Photographic Collection. The foundational collection - the *Irish Folklore Commission Collection 1935-1970* - was inscribed into the *UNESCO Memory of the World Register (2017)* in recognition of its 'world significance' and 'outstanding universal value to culture'.

15.4.3 Statutory Consultations

Statutory consultation was carried out with the Development Applications Unit (DAU) of the Department of Culture, Heritage and the Gaeltacht during project scoping stage and due cognisance of the observations and recommendations therein has been undertaken during the compilation of the Cultural Heritage assessment. Assessment of likely impacts on the Cultural Heritage resource (incl. underwater) has been presented in section 15.6 and detailed mitigation measures in section 15.7.

15.5 Receiving Environment

The proposed windfarm site comprises a mix of improved and marginal pasture, forestry plantation and peatland, whilst the underground grid connection route extends across a landscape dominated by varying quality pasture, coniferous forestry plantations and suburban development, particularly at the eastern terminus where it connects with a proposed (separate application) Bracklone 110kV substation, on the eastern urban extent of Portarlinton.

The overall terrain within the proposed windfarm site is low-lying (below 80m OD), with the River Barrow extending c. 400m distant from the westerly site planning boundary and c. 825m from the south-westerly site planning boundary. There is an area known as 'The Ridge' outside the site planning boundary at the southwest which forms a small area of raised ground within the surrounding environs, along the Barrow river banks. The Bornass stream/Cottoner's Brook extends along the site planning boundary at the north-easternmost portion and feeds into the River Barrow beyond, to the southeast. The wider riverine environs also have several bridging points throughout the local road network as well as canal features associated with the former Mountmellick branch of the Grand Canal. There is an extensive area of peat harvesting to the northeast of the proposed development site boundary.

The soil profiles of the area consist of peat (predominantly within the proposed windfarm site) and fine loamy drift with limestones (predominantly along the UGC route). The underlying geology is composed of argillaceous dark grey bioclastic limestone and subsidiary shale in the wind farm area and a mix of pale grey massive limestone, limestone and calcareous shale, and dark grey argillaceous, chert limestone and shale along the UGC route.

15.5.1 Tangible Archaeological & Historical Assets

The following section presents brief summary details of the recorded archaeological sites located within the study area. Datasets have been interrogated and retrieved largely from State Body organisations and are considered accurate and current per publicly available information (Archaeological datasets Historic Map Viewer: Dept Culture, Heritage & Gaeltacht www.archaeology.ie; Excavation Reports www.excavations.ie, and National Museum of Ireland Findspot locations (www.heritagemaps.ie).

While there are no recorded archaeological sites located within the proposed windfarm development site, there are 3 no. recorded sites located within 1.5km of the site boundary and 100m of the UGC route (Table 5-4 and Figure 15-2).

Table 15-4: Recorded archaeological sites within the study area

Monument Ref.	Class	Townland	ITM	Distance from proposed development
OF033-012----	Enclosure	Barranaghs	646057, 710258	1,100m SE of north-eastern planning boundary and 830m SE of UGC route
LA003-006----	Enclosure	Garrymore	642899, 713471	1,095m N of north-western planning boundary

Monument Ref.	Class	Townland	ITM	Distance from proposed development
LA004-003----	Metalworking site	Townparks	645960, 709261	1,920m SE of southern planning boundary and 130m S of UGC route

It is also noted that a recorded findspot location of a medieval saddle quern is identified at Forest Lower townland, on the southern banks of Cottoner's Brook (ITM 645892, 710092), c. 760m east of the UGC route. The recorded enclosure at Barranaghs (OF033-12---) (see description below) is located on the opposite riverbank which may be indicative of association between both assets.

There are 2 no. recorded enclosures sites within the study area that may date to the early medieval period. This period began with the introduction of Christianity in Ireland and continued up to the arrival of the Anglo-Normans during the 12th-century (c. 400–1169 AD). The period saw the emergence of the first phases of urbanisation around the large monasteries and the Hiberno-Norse ports. However, the dominant settlement pattern of the period continued to be rural-based in sites such as ringforts, which comprise roughly circular enclosures delimited by roughly circular earthen banks formed of material thrown up from a concentric external ditch. Ringforts are one of the most numerous monuments in the Irish landscape and the early medieval terms for these sites – *ráth/líos/dun* still form some of the most common place-name elements in the country. Archaeological excavations indicate that the majority comprised enclosed farmsteads with internal timber buildings and were surrounded by associated field systems, stockades, barns, mills and drying-kilns.

The enclosure site OF033-012--- at Barranaghs (1,100m southeast of site planning boundary and 830m southeast of UGC route), is described in the *Archaeological Survey of Ireland* (ASI) records as: *Nothing to be seen except natural humps and hollows. Nothing of archaeological interest in area marked on 6-inch ordnance survey maps. Potential site identified from aerial photographs taken in 1973 (GSI N 408/9; N 207/8).* (Source Historic Map Viewer: www.archaeology.ie).

The enclosure site LA003-006--- at Garrymore (1,095m north of north-western site planning boundary) is described in the ASI records as: *Shown on 1841 edition of the OS 6-inch map as a circular enclosure (max. diam. c. 25m). No surface remains visible.* (Source Historic Map Viewer: www.archaeology.ie).

There is also a post-medieval industrial metalworking site LA004-003---, an ironworks established by Sir Charles Coote at Townparks (1,920m southeast of southern site planning boundary and 130m south of UGC route). The metalworking site is described in the ASI records as: *No surface evidence of any ironworking in field marked on OS 6-inch map, field in spring wheat when visited. Site of seventeenth century Ironworks set up by Sir Charles Coote located in fork between Owenass River and River Barrow (Feehan 1983, 338). The Mountrath works were located in the townland of Forest, south of the modern town, in the angle made by the Nore and Mountrath Rivers, this piece of land still bears the name of 'Forgeland' (Feehan 1983, 338).* (Source Historic Map Viewer: www.archaeology.ie)

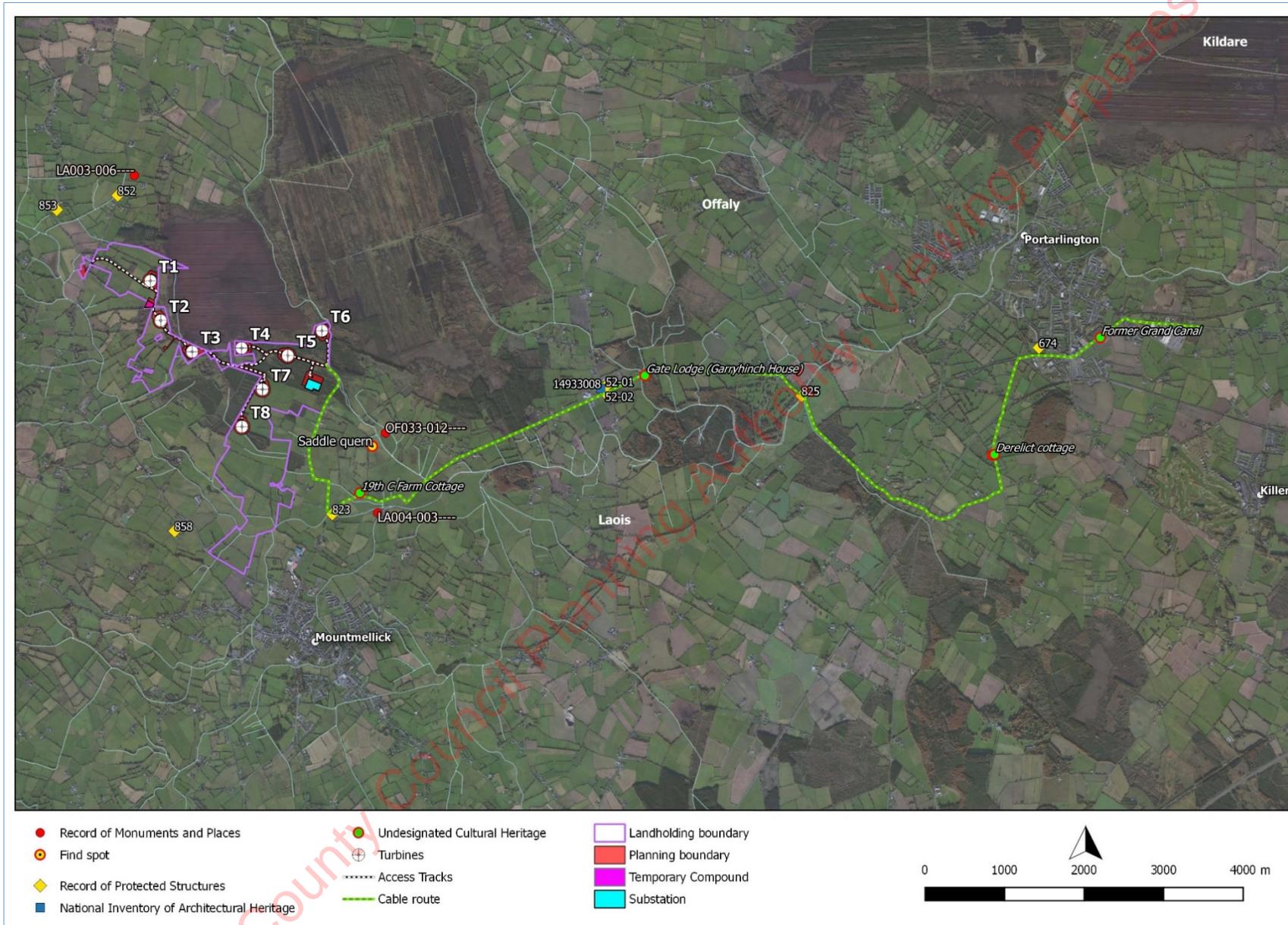


Figure 15.1 Recorded Cultural Heritage Assets within the study area

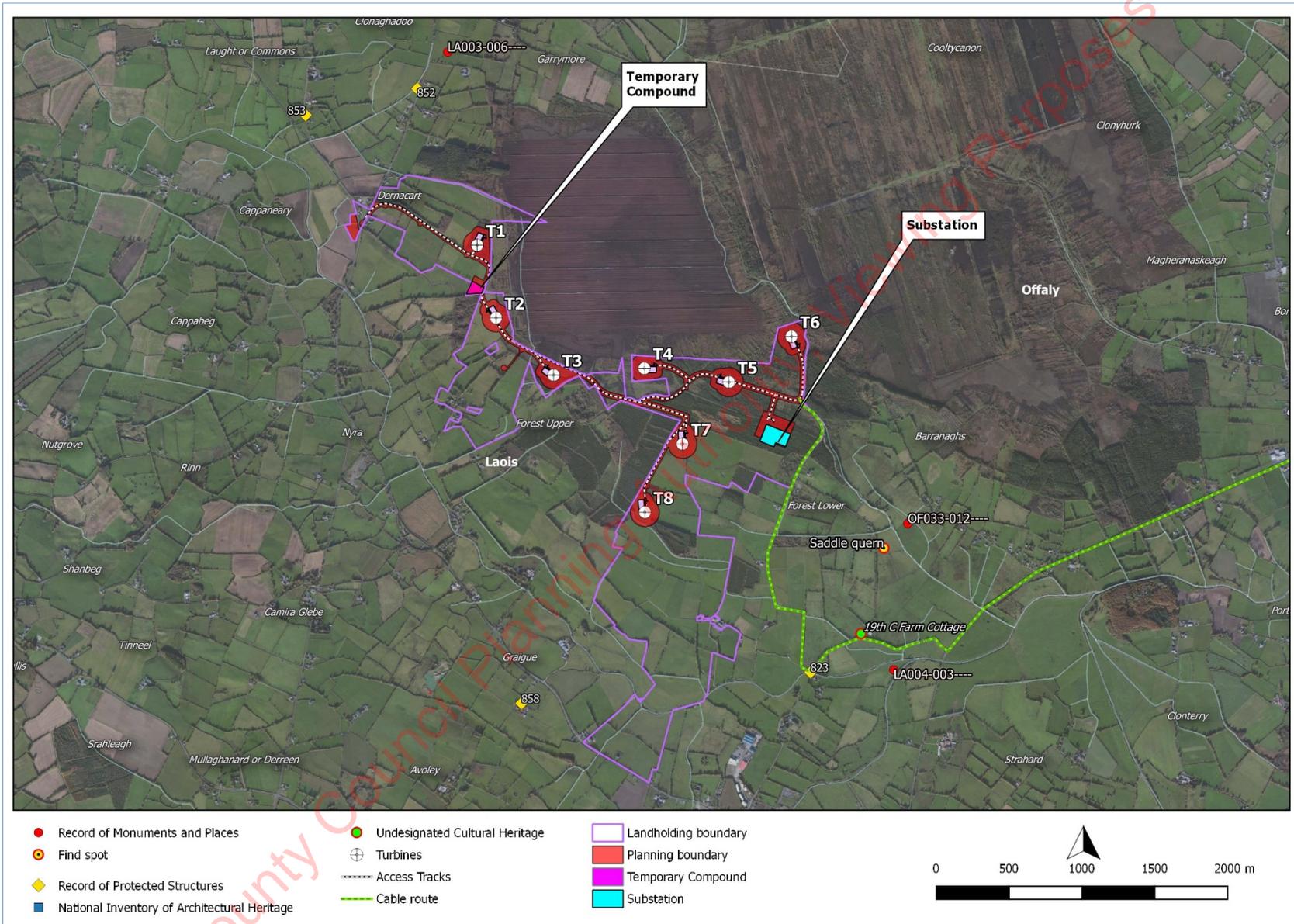


Figure 15.2 Recorded Cultural Heritage Assets within 2kms of proposed site planning boundary

15.5.1.1 Excavations Database

The Database entries for archaeological investigations carried out within the townlands that form part of the study area are provided in Table 15-5 below. None of the licenced investigations revealed anything of archaeological significance.

Table 15-5: Excavations within the Study Area

Location	Licence Ref	Summary
Cooltederry, Co. Laois	03E1413 Martin Byrne	Testing was undertaken at a proposed residential development site located in the townland of Cooltederry, Portarlinton. There is a postulated double motte-and-bailey site (SMR 5:4) in the adjacent field to the north-east of the site. It is illustrated on the 1839 OS 6-inch map, without descriptive text, but not on any subsequent editions. There are no visible surface indications of the monument. Five trenches were excavated by both machine and hand within the field adjacent to that in which the monuments are indicated. No features or finds of archaeological interest were uncovered. A low ridge which is bisected by the existing field boundary was found to be a natural feature.
Rathleash, Co. Laois	06E0162 John Purcell	Test-trenching was carried out as part of the planning schedule for a single-house development adjacent to a ringfort at Rathleash, Portarlinton. A series of trenches were excavated by mechanical digger at the house site, entrance and percolation area. No features or finds of archaeological significance were revealed.

15.5.1.2 Cartographic Sources

The detail on historic cartographic sources demonstrates the nature of past settlements and land use patterns in recent centuries and highlights the extent of modern developments and agricultural practices. This information can also aid in the identification of the location and extent of unrecorded or partially levelled features of archaeological or architectural heritage interest.

The cartographic sources examined for the study area comprised the first edition 6-inch OS map (1842) and the 25-inch second edition OS map (surveyed and published 1888-1913). Upon review it was noted that the proposed windfarm development site largely comprised extensive tracts of low-lying unenclosed marshy/bogland terrain; whilst areas to the west and south, adjacent the River Barrow riverbanks were improved and enclosed with several rural dwellings dispersed throughout. No unrecorded cultural heritage assets were noted within the proposed windfarm site.

The proposed route of the UGC extends along a portion of the (now infilled) Mountmellick branch of the Grand Canal (located at present-day Canal Rd) south/south east of the urban extents of Portarlinton, for c. 1.5km. The canal was infilled in 1970 (see **Figure 15-3**). The Mountmellick branch was built between 1827 and 1831, extending from the Barrow Line at Monasterevin via Portarlinton to Mount Mellick, and closed in 1960. Approximately 58% of the Mountmellick branch has been infilled since its closure (Laois Heritage Forum, 2008).

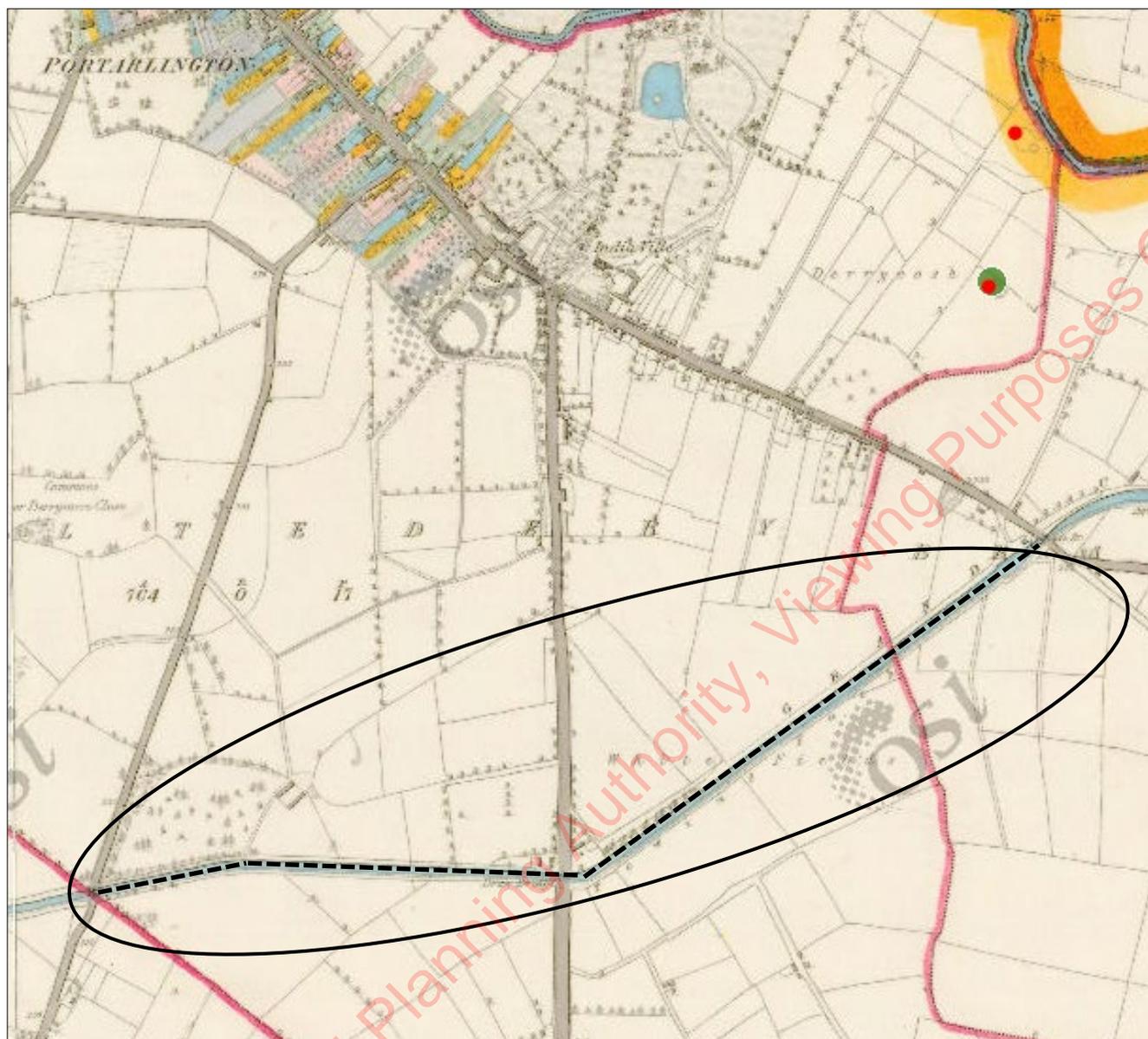


Figure 15.3: Extract from 6-inch 1st edition OS map c. 1829-41 showing part of the Grand Canal, south of Portarlington overlaid with proposed UGC route alignment (black dashed line) (Source: © Ordnance Survey Ireland/Government of Ireland)

15.5.1.3 Aerial Orthophotography

Various online aerial images of the proposed development site, including those published by OS Ireland, Google and Bing, were consulted as part of the assessment. These provide overviews of the site from the 1990s onwards. There were no traces of differential soil-marks or earthworks that may indicate the presence of sub-surface archaeological sites such as burnt spreads or levelled enclosures identified during a review of the aerial images of the proposed windfarm development site.

15.5.2 Tangible Architectural Heritage Assets

The following section presents brief summary details of the recorded architectural heritage sites located within the study area.

Datasets have been interrogated and retrieved largely from State Body organisations and are considered accurate and current per publicly available information (NIAH datasets Historic Map Viewer: Dept Culture, Heritage & Gaeltacht www.archaeology.ie; NIAH datasets www.buildingsofireland.ie and RPS in both the *Laois County Development Plan 2017-2023* and *Offaly County Development Plan 2014-2020*, and Heritage Council mapping www.heritagemaps.ie).

There are 9 no. recorded architectural heritage structures (recorded on the NIAH/RPS); located within the study area. Details of the recorded architectural heritage sites are provided in Table 15-6 below and illustrated in Figure 15-1 and Figure 15-4. The recorded sites include thatched cottages, bridges, a post-box, houses and a COI church.

Table 15-6: Recorded Architectural Heritage Structures within the Study Area

RPS	NIAH	Description	ITM	Distance from proposed development
853 (Laois)	-	Thatched House, Clonaghdoe, Mountmellick	641923, 713042	755m NW of planning boundary
852 (Laois)	-	Thatched House, Garrymore, Mountmellick	642690, 713221	822m NE of planning boundary
858 (Laois)	-	Thatched house, Graigue, Mountmellick	643405, 709034	1,463m SE of planning boundary
823 (Laois)	-	Bay Bridge, Forest Lower	645389, 709245	5m S of planning boundary
52-02 (Offaly)	14933009	Post-Box, Garryhinch Cross-Roads	648822, 710756	5m S of UGC route
-	14933008	Tudor Lodge, Garryhinch	648764, 710811	59m N of UGC route
52-01 (Offaly)	14933007	Cloneyhurke COI Church	648827, 710838	61m N of UGC route
825 (Laois) & 52-05 (Offaly)	14933012	Kilnahown Bridge	651291, 710721	0m of UGC route
674	12800554	Ballymorris House	654275, 711321	87m N of UGC route

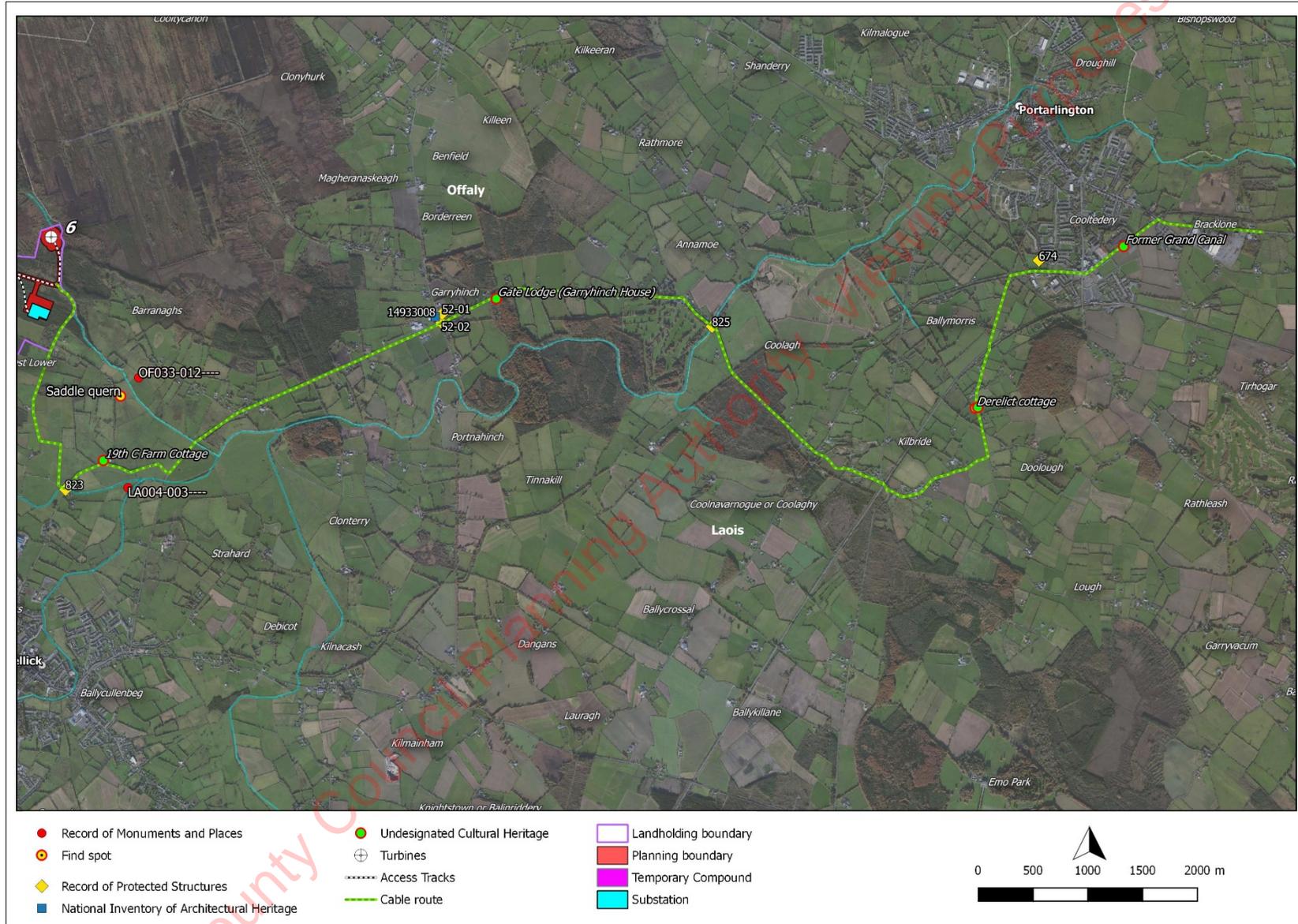


Figure 15.4 Recorded Cultural Heritage Assets located within 100m of proposed UGC route

15.5.3 Intangible Cultural Heritage Assets

The tangible cultural heritage resource refers to both designated and undesignated movable (e.g. artefacts) and immovable (e.g. monuments, sites, structures) assets. The intangible cultural heritage resource encompasses assets such as oral tradition, language, placenames and historical events. A review of townland names was undertaken for the study with a view to investigate intangible cultural heritage value relating to same.

15.5.3.1 Placename Evidence and Folklore

Townlands are the smallest unit of land division in the Irish landscape and many may preserve early Gaelic territorial boundaries that pre-date the Anglo-Norman conquest. The layout and nomenclature of the Irish townlands was recorded and standardised by the work of the Ordnance Survey in the 19th century. The Irish translations of the townland names often refer to natural topographical features, but name elements may also give an indication of the presence of past human activity within the townland. The translations of the townland names within the study area were sourced from www.logainm.ie and mainly record topographical features and associations with past landowners. Townland names of note include Kilbride (*Cill Bhríde*) which may infer a former 'Church of Bhríde' in the area; Cooltedery (*Cúil an tSúdaire*) 'corner of the tanner/cobbler' indicating the presence of leather-working in the area; Doolough (*An Dúleacht*) 'The Black Grave/monument' indicating a possible burial site in the area; and Rathleash (*Ráth Laoisigh*) 'Ringfort of the Laoisigh' which may infer the placename origin could be linked with a recorded ringfort in the townland. The proposed windfarm site is located within Dernacart, Forest Upper and Forest Lower townlands – all of which suggest that the low-lying area has been wooded/forested in the past. It is noted that the townland boundaries within the proposed windfarm have been removed/are not defined by a physical alignment.

Table 15-7: Translation of townland names within the Study Area (Source: www.loganim.ie)

Name	Irish	Logainm Translation	Indicative Potential
Dernacart	<i>Doire na Cairte</i>	Oak wood, grove, thicket	Landscape marker
Forest Upper	<i>An Fhoroais Uachtarach</i>	-	Landscape marker
Forest Lower	<i>An Fhoroais Íochtarach</i>	-	Landscape marker
Forest Lower	<i>An Fhoroais Íochtarach</i>	-	Landscape marker
Barranaghs	<i>Barr Eanach</i>	Top/high marsh	Landscape marker
Garryhinch	<i>Garraí Inse</i>	Garden island/river meadow	Landscape marker
Annamoe	<i>Áth na mBó</i>	Ford of the cow	Riverine pastoral farming environment
Coolnavarnogue and Coolaghy	<i>Cúil na bhFearnóg agus Cúil Achaidh</i>	Corner/nook of the alder and corner/nook of the field	Landscape marker
Kilbride	<i>Cill Bhríde</i>	Church of Bríde	Ecclesiastical associations: potential for medieval church site (none currently recorded from the townland)
Ballymorris	<i>Baile Mhuiris</i>	Town of Muiris	Possible establishment of an early settlement at this area by Muiris
Cooltedery	<i>Cúil an tSúdaire</i>	Corner/nook of the tanner/cobbler	Locational marker for a local district tanner and/or cobbler workshop
Bracklane	<i>An Bhreac Chluain</i>	Speckled meadow/pasture	Landscape marker

Name	Irish	Logainm Translation	Indicative Potential
Doolough	<i>An Dúleacht</i>	The black grave/monument	Possible burial association – none currently recorded from the townland
Rathleash	<i>Ráth Laoisigh</i>	Ringfort of the Laoisigh	An early medieval settlement site of the Laoisigh clan/kin. There is a recorded ringfort in this townland which may indicate the name origin of same
Tirhogar	<i>Tír Chóigir</i>	Land (of the five men?)	Unknown

15.5.4 Summary Desktop Research Conclusions

The proposed windfarm development is located within a low-lying, relatively flat area, north of the banks of the River Barrow. There is a small stream (Bornass/Cottoner's Brook) which extends along the north-easternmost are of the site planning boundary, whilst the wider riverine environs, beyond the site planning boundary, have several bridging points throughout to accommodate the local road networks. There are tracts of commercial forestry throughout the proposed windfarm site, whilst there is extensive peat harvesting area to the immediate north. There are 3 no. recorded archaeological sites (two enclosure sites and a metalworking site) within 2kms of the proposed windfarm site and within 100m of the proposed UGC route, although there is no extant surface trace of same. The area has been subject to extensive land improvement in the last century and it is possible that sites, such as these, as well as possibly other unrecorded sites, have since been levelled within the wider environs.

There are 9 no. recorded architectural heritage features within 2kms of the proposed windfarm site planning boundary and 100m of the UGC route alignment. These include thatched cottages, bridges, a post-box, houses and a COI church.

A review of placenames for the study area noted some townlands that may infer archaeological potential in the context of unrecorded sites, including Kilbride (*Cill Bhríde*) which may infer a former 'Church of Bhríde' in the area; Cooltedery (*Cúil an tSúdaire*) 'corner of the tanner/cobbler' indicating the presence of leather-working in the area; and Doolough (*An Dúleacht*) 'The Black Grave/monument' indicating a possible burial site in the area. The proposed windfarm site is located within Dernacart, Forest Upper and Forest Lower townlands – all of which suggest that the low-lying area has been wooded/forested in the past.

15.5.5 Field Survey Results

A walkover survey of the proposed Dernacart Wind Farm site (including a small parcel of land on the opposite side of the road at the western side of the site boundary that shall be utilised for the turbine delivery route) was undertaken by two suitably qualified archaeologists (David Murphy BA and Seán Tiffin BA) on 31 July 2019. Accessible areas proposed for design elements of the proposed windfarm infrastructure were inspected (access roads, turbine hardstand locations, sub-station, temporary compound and UGC route). A photographic record is presented in **Appendix 1** and Field Survey Record is presented in **Appendix 2**.

15.5.5.1 Proposed Windfarm site

The majority of areas were accessible, however, portions of the proposed windfarm site which currently comprise commercial forestry plantations and/or dense overgrowth were inaccessible and not surveyed via a walkover. These areas included proposed location areas for Turbine 1, Turbine 3, the proposed substation area, Turbine 5 and Turbine 6. However a comprehensive desktop review, including cartographic and aerial imagery analyses, is deemed sufficient in order to assess the archaeological potential of these inaccessible areas, despite on-site difficulties encountered.

The proposed windfarm site comprises a combination of improved pastureland (particularly in the northwest and southern portions of the site), areas of commercial mixed forestry plantation (central and eastern portions of the site) and a small area of marginal scrub and peatland (in the north-central portion of the site). The landform terrain of the windfarm site is generally level with only slight undulations in the topography.

The areas of pasture within the proposed windfarm site are predominantly of good quality and have evidently been improved including the area south and northwest of Turbine 1, area of Turbine 2, an area north of the forested central portion, sharing a boundary with the peatlands to the north; area of Turbine 7 and Turbine 8.

Historic OS mapping shows much of the proposed windfarm site to have comprised marginal commonage well into the 20th century, while some early available aerial imagery shows improvement works in progress, transforming marginal areas into productive pastureland. Such improvement works are likely to have disturbed the underlying subsoil, and, although low surface undulations were noted within pasture fields during the site survey, they are likely to be associated with same and therefore non-archaeological in nature. The majority of pasture fields in the area are bounded by drainage ditches of varying depths with overgrowth and mature deciduous trees growing along boundary alignments.

The north central portion of the surveyed areas concerning Turbine 3 comprise a mix of marginal scrubland and dense young mixed forestry plantations, whilst more mature forestry plantation is present in the eastern portion of the windfarm area (location of Turbines 4, 5 & 6). A small stream (Bornass/Cottoner's Brook) extends along the north-eastern site boundary, beyond Turbine 6. The planting and possible rotation of the forestry in these areas would have resulted in previous subsurface ground disturbances. Frequent drainage channels, of varying depth, observed within the forested areas would also have caused disturbance of the underlying strata. The area northeast of Turbine 2 was not subject to plantation or land improvement, although it is possible that some minimal surface truncation, associated with peat extraction, may have occurred in the past.

15.5.5.2 Proposed UGC route

The proposed underground cable (UGC) route connecting the proposed windfarm and the proposed Bracklone 110kV substation (separate application) was surveyed in a west-to-east direction, commencing at the eastern margin of the windfarm site.

The first section of the proposed UGC route extends along the banks of the Bornass/Cottoner's Brook stream and an unpaved road parallel to an area of planted coniferous forestry located in the north-eastern portion of the townland of Forest Lower, extending broadly south for c. 1,450m, following a local road network L20972 (**Plate 1, Appendix 1**). There is a recorded findspot of a (probable early medieval) saddle quern at this area (ITM 645892, 710092) c. 760m east of the UGC route, as well as an enclosure site (OF033-012---) 830m southeast, and a metalworking site (LA004-003---) c. 130m to the south. A derelict farm cottage to the immediate north of the UGC route at Forest Lower (ITM 645735, 709508) potentially originally dates to the earlier part of the 19th century as there is a structure depicted on the 1st edition 6-inch OS map at this location. The cottage appears to have been much altered over the years with few vernacular features surviving (**Plate 2, Appendix 1**). Bay Bridge (RPS 823) is located to the immediate south of the UGC (5m) along the local road network junction at this location. The UGC route continues eastwards for c. 825m before connecting with the R423 regional road (Boreness Rd), where the proposed alignment continues in a north-easterly direction towards the Co. Offaly border.

The R423 is lined with high hedgerows and denuded mature tree growth. The proposed UGC route extends in a north-easterly direction, crossing a minor watercourse Bornass/Cottoner's Brook (forming the part of the county border), and 'Cottoner's Bridge' (marked on the 1st ed OS but only a low stone built parapet to the eastern roadside visually evident) towards Garryhinch crossroads. As the route extends into Barranaghs townland in Co. Offaly it is tree-lined on both sides and is raised slightly higher than the surrounding landscape (**Plate 3, Appendix 1**). The proposed UGC route continues for c. 2.4km northeast through a mix of improved pastureland and planted forestry before entering the village of Garryhinch. The western approach to the village contains a mix of commercial and residential development. At the crossroads in the centre of the village are 3 no. sites of built heritage interest including a small cast iron post-box dated c. 1890, mounted into a stone wall on the south-eastern side of the crossroads is registered on both the NIAH (**Reg. No. 14933009**) and as a protected structure (**RPS Ref. No. 52-02 (Offaly)**) and is located 5m from the UGC route (**Plate 4, Appendix 1**). To the northeast of the crossroads is Cloneyhurke Church of Ireland Church and graveyard (**Plate 5, Appendix 1**), c. 61m north of the UGC route. This detached Church of Ireland church was built c. 1820 by John Semple and has a pinnacle tower rising from gabled entrance and four-bay nave. The church is a notable feature within the landscape and a landmark structure in the area. It is registered on the NIAH (**Reg. No. 14933007**) and is also a protected structure (**RPS Ref. No. 52-01 (Offaly)**). To the northwest of the crossroads is Tudor Lodge (recorded on the **NIAH Reg. No. 14933008**), a detached three-bay single-storey house, built c. 1820, located 59m from the UGC route.

The proposed UGC route continues north-eastwards after exiting the village of Garryhinch, along the R423, with ribbon housing development bordering the route throughout an area of improved pasture and woodland. Woodland associated with 'Garryhinch Loops' walking trail is located immediately south of the roadway, whilst historic OS mapping indicates a former house, outbuildings and gate-lodge associated within Garryhinch House demesne at this area. Only the gate-lodge is marked on current mapping (ITM 649321, 710974) as extant at the entry point for the walking trail, however the area was heavily overgrown during survey and there was no visible trace of the feature (**Plate 6, Appendix 1**).

At the eastern side of Garryhinch, the UGC route exits the R432 and extends south-eastwards along a local road which spans the River Barrow and Kilnahown Bridge, which forms the boundary between counties Offaly and Laois (**Plate 7, Appendix 1**). The bridge is recorded on both the NIAH (**NIAH Reg. No. 14933012**) and as a Protected Structure on both county development plans **RPS Ref. No. 52-05 (Offaly)** and **RPS Ref. 825 (Laois)**. It is a four-arch masonry road bridge; of random rubble construction, built c. 1795, with squared rubble voussoirs and V-cutwaters (**Plate 8, Appendix 1**). The road on the approach to the bridge is bound by hedgerows with frequent mature tree growth, there is a shallow ditch on the southern side.

Upon crossing the bridge and entering the townlands of Coolaghy and Kilbride (and County Laois again), the proposed UGC route continues in a south-easterly direction along a (raised) local road which bounded by improved pasture and woodland, and deep drainage ditches on either side (**Plate 9, Appendix 1**). The road is bordered by rural housing and tall hedgerows with mature deciduous tree growth. The route extends northwards along Ballymorris Road, throughout an area of pasture. There are 2 no. derelict farm cottages located 0.5km from Doolough crossroads, set back from the roadside, one on each opposite side (ITM 653694, 709982 & 653717, 709989) (**Plates 10 & 11, Appendix 1**). These undesignated cultural heritage features date appear to date from the 19th century, with the farm cottage on the eastern side of the road being depicted on the 1st edition 6-inch OS map indicating that it was originally constructed in the earlier part of the 19th century.

The UGC route ultimately extends and terminates along the southern urban environs of Portarlinton (mix of residential and commercial development), along Canal Road and onto the R420 to the proposed Bracklone 110kV substation (separate application). Canal Road follows the route of the now disused Mountmellick branch of the Grand Canal. This branch of the canal ceased operating in 1950, and long stretches have since been infilled, including this section (ITM 655048, 711448). Features relating to this undesignated cultural heritage site may survive beneath the surface of Canal Road (**Plate 12, Appendix 1**). In addition, Ballymorris House (**RPS 674**) is located c. 87m north of the UGC along this section of Canal Road.

15.5.5.3 Field survey summary

As a result of the land improvement works which were evidently undertaken across much of the proposed windfarm site where proposed infrastructure (i.e. design footprint) is located, as well as the disturbances which would have occurred during the planting and possible rotation of forestry, the proposed windfarm site is considered to be of **low archaeological potential**. Areas of increased archaeological potential include more localised areas of marginal land which were not subject to land improvement or forestry works such as the northern portion of the area for a portion of the proposed access road between Turbines 2 and 3. Notwithstanding same, there still remains a possibility that subsurface archaeological artefacts, features or deposits survive across the overall windfarm site.

The UGC route extends along a network of farm/forestry tracks, local rural road networks, regional roads and suburban roads (southern outskirts of Portarlinton). The surface of the public road and trackways is generally level with, or slightly above, the level of the adjacent verge/fields. The upper subsoil levels along the road verges are likely to have been truncated during the construction of same and as such the **archaeological potential of these is considered low**. The forestry/farm tracks are often slightly raised above the surrounding landscape and are likely to have had less of an impact on the underlying subsoil strata. Given the presence of recorded sites and findspot within the wider environs of the western end of the UGC route, including the land-based area of Cottoner's Bridge (and Bornass/Cottoner's Brook banks), there remains potential to encounter archaeological finds/features, albeit of a low-level risk.

There are a number of designated built heritage features located within 100m of the UGC route: Bay Bridge (RPS 823), post-box, (RPS 52-02 & NIAH 14933009) COI church (RPS 52-01 & NIAH 14933007), Tudor Lodge (NIAH 14933008), Kilnahown Bridge (RPS 825 & 52-05; NIAH 14933012) and Ballymorris House (RPS 674 & NIAH 12800554).

In addition, there are 6 no. undesignated cultural heritage features within the study area pertaining to the UGC route:

- Cottoner's Bridge 19th century low parapet remains, Forest Lower/Barranaghs townlands (ITM 646564, 709675)
- Derelict 19th century farm cottage, Forest Lower townland (ITM 645735, 709508)
- Possible gate-lodge associated with the former Garryhinch House (ITM 649321, 710974)
- 2 no. derelict 19th cottages at Ballymorris townland (ITM 653694, 709982 & ITM 653717, 709989)
- Mountmellick Branch of the Grand Canal, at Canal Road, Portarlinton (ITM 655048, 711448)

15.6 Impact Assessment

In determining the design layout, construction methods and infrastructural requirements of the proposed windfarm development, due regard has been made to avoid, prevent and reduce any potential significant effects on the recorded Cultural Heritage (including underwater) resource. The proposed windfarm site does not retain any recorded archaeological sites or features. The minor watercourse (Bornass/Cottoner's Brook) that extends along the north-easternmost site boundary shall not be subject to any infrastructural augmentation or in-stream works. As such, there is no underwater archaeological impact associated with same. Overall, it is proposed that the UGC route shall be trenched along existing road corridors, predominantly in the verge; whilst for water-course crossings directional drilling shall be employed which shall have in-road entry and exit points (beyond and separate to any bridging structures) and shall extend beneath the riverbed(s). Given there shall be no proposed UGC developmental footprint on either riverbed(s) or associated riverbanks, there is no underwater or riverbank land-based archaeological impact associated with same.

There are 3 no. recorded archaeological sites located within the defined study area for the proposed windfarm assessment. None of these sites shall be directly negatively impacted by the proposed windfarm development or associated UGC route.

There are 9 no. recorded architectural heritage features located within the defined study area for the proposed windfarm development and UGC route. Of these sites, 3 no. assets are located on, or in close proximity to, the UGC route which may be indirectly negatively impacted by same. These assets include Bay Bridge (a protected structure Laois RPS 823), Kilnahown Bridge (a protected structure on both Laois and Offaly RPS Refs. 825 and 52-05 respectively); and a cast-iron post box at Garryhinch crossroads (a protected structure Offaly RPS Ref. 52-02).

There are 6 no. undesignated cultural heritage features located within the defined study area for the proposed windfarm development and UGC route which may be directly/indirectly and negatively impacted by same. Of these, 5 no. sites are located along the UGC route; whilst 1 no. feature is located directly on the UGC route. These sites include a derelict 19th century cottage at Forest Lower (roadside); a possible gate-lodge associated with Garryhinch House (roadside); 2 no. 19th century cottages at Ballymorris townland (roadside) and a section of the Mountmellick Branch of the Grand Canal (infilled) at Canal Road, Portarlinton (directly on the route).

15.6.1 Construction Phase

Construction phase pertaining to the proposed project will involve significant ground reduction and topsoil removal throughout the proposed windfarm design layout footprint, including hardstand areas/turbine locations, access tracks, temporary compound and sub-station areas. It is proposed that the UGC shall be constructed by means of an excavated trench (approx. 0.6m wide and 1.2m depth) along the existing road network, predominantly on the verge associated with same. However, for any road bridging points along the route, the UGC shall be installed via means of directional drilling under the riverbed (and separate to the bridging structures), at these locations.

15.6.1.1 Archaeology

There are no identified likely significant effects on the designated archaeological resource pertaining to the study area or the proposed development site (windfarm and UGC route) during construction phase.

There are no recorded archaeological sites within the proposed construction areas, and, due to intensive land improvement works throughout the windfarm area and road carriageway construction (often with deep drainage ditches) along the UGC route, the overall archaeological potential to reveal sub-surface archaeological features is low. However, there is still a possibility of encountering archaeological finds/remains throughout the area during the construction phase. Such potential features shall be subject to direct negative impact, of high magnitude, although the value/sensitivity potential of the sub-surface archaeological resource is unknown, it is considered to be of **potential slight/moderate** significance of effect. It should be noted that a programme of licenced archaeological testing at pre-planning stage is, in this case, not deemed beneficial to facilitating impact assessment (or formulating an appropriate mitigation strategy) on the unknown archaeological resource. The proposed site has been significantly improved (indicating extensive ground disturbance) and is of low archaeological potential; and there are several large areas currently forested and inaccessible, thereby inhibiting a conclusive overall site-based test.

15.6.1.2 Architectural Heritage

There are 3 no. designated architectural heritage assets located on, or in close proximity to, the proposed UGC route. Bay Bridge (a protected structure on Laois RPS Ref. 823) is a mid-19th century twin-span masonry road bridge over the River Barrow, on the site of an 18th century ford, and is located c. 5m south of the proposed UGC route alignment. The abutments and piers are of rock-faced masonry blocks laid to courses, with finely dressed curved masonry cutwaters to the west (upstream) piers. The arches are of shallow segmental profile, whilst the parapets are coped with dressed masonry blocks and rounded ends. At this location, the UGC route extends along the verge of a local road network, parallel to the River Barrow, and extends northwards (and away from) a junction point created by Bay Bridge which extends southwards, over the water-course. As such, the bridge shall not be directly impacted by the proposed works, although it may be at risk to inadvertent damage during construction. Bay Bridge is a high value asset, with indirect negative impact, of low magnitude, resulting in a **slight** significance of effect.

Kilnahown Bridge (a protected structure on both Laois and Offaly RPS Refs. 825 and 52-05 respectively and NIAH Reg No. 14933012) is a road-over-river bridging point on the River Barrow (and Laois/Offaly county border) and located directly on the UGC route. The bridge is a four-arch masonry bridge, with V-cutwaters both up and down river, dating to c. 1795, and is one of two such 'Grand Jury' style four-arch bridges in the county. The arch profile is semi-circular with squared rubble voussoirs. It is proposed that the UGC route shall be installed via means of directional drilling under the riverbed at this location. The precise engineering involved in this construction method shall ensure that the masonry bridge structure shall not be compromised as a result same, although the bridge may be at risk to inadvertent damage during construction works. In addition, it is noted that there shall be no in-river works and as such there is no identified impact to potential underwater archaeological finds/features at this location. Kilnahown Bridge is a high value asset, with indirect negative impact, of low magnitude, resulting in a **slight** significance of effect.

A cast-iron post box c. 1890 at Garryhinch is a protected structure (Offaly RPS Ref. 52-02) and is recorded on the NIAH inventory 14933009. The post-box is built into a rubble-built masonry wall on the south-eastern road frontage of Garryhinch crossroads. The proposed UGC route at this location shall be constructed in the form of a continuous trench, predominantly along the verge. The post-box is both elevated and wall-mounted and shall not be directly impacted by the UGC route, although may be at risk to inadvertent damage during construction works. Garryhinch post-box is a high value asset, with indirect negative impact, of low magnitude, resulting in a **slight** significance of effect.

There are 6 no. undesignated cultural heritage features located within the defined study area for the proposed windfarm development and UGC route which may be negatively impacted by same. Of these, 5 no. sites are located along the UGC route including Cottoner's Bridge (low parapet wall to roadside), a derelict 19th century cottage at Forest Lower (roadside); a possible gate-lodge associated with Garryhinch House (roadside) and 2 no. 19th century cottages at Ballymorris townland (roadside). All of these undesignated assets, save for Cottoner's Bridge, are marginally set back from the roadside, and in turn, from the UGC route. The proposed UGC route at these locations shall be constructed in the form of a continuous trench, predominantly along the verge, whilst for Cottoner's Bridge directional drilling shall take place beneath the minor watercourse bed with entry/exit points in-road and beyond the minor bridge location itself. The identified assets shall not be directly impacted by the UGC route, although they may be at risk to inadvertent damage during construction. The undesignated sites are low value assets with indirect negative impact, of low magnitude, resulting in a **not significant** significance of effect.

The final identified undesignated asset comprises a section of the Mountmellick Branch of the Grand Canal (infilled) at Canal Road, Portarlinton. The canal was infilled c. 1970 and it is possible that sub-surface remains associated with same survive in a sub-surface state. The proposed UGC route at this (urban) location shall be constructed in the form of a continuous trench, predominantly along the verge. The potential canal sub-surface remains are a low value asset with direct negative impact of high magnitude, resulting in a **slight/moderate** significance of effect.

15.6.2 Operational Phase

15.6.2.1 Archaeology

Following the construction phase for the proposed windfarm development, including the UGC route; the operational phase is considered to have **no likely or significant effects** on the archaeological heritage resource. Any identified construction phase impacts shall be fully mitigated in advance and/or during on-site works.

15.6.2.2 Architectural Heritage

Following the construction phase for the proposed windfarm development, including the UGC route; the operational phase is considered to have **no likely or significant effects** on the architectural heritage resource. Any identified construction phase impacts shall be fully mitigated in advance and/or during on-site works.

15.6.3 Cumulative Impacts

The proposed windfarm development site is located within a low-lying area comprising of improved and marginal pasture, forestry plantation and peatland, whilst the UGC route extends across a landscape dominated by varying quality pasture, coniferous forestry plantations and suburban development, particularly at the eastern terminus where it connects with the proposed (separate application) Bracklone 110kV substation, on the eastern urban extent of Portarlinton. The town of Mountmellick is located c. 2.5kms to the south of the site planning boundary.

There are 3 no. existing/proposed windfarms located within 20kms of the proposed Dernacart windfarm (Mountlucas (existing); Cloncreen (permitted) and Moanvane (permitted)). All three of these sites are located north of the proposed windfarm site. In addition, there are a number of other applications granted permission within the wider areas including solar farms, energy storage facilities and waste processes, as well as (lapsed and new application in process) permission for Bracklone 110kV substation located at the terminus point of the proposed UGC route east of Portarlinton.

There are no National Monuments located within the study area, however the Rock of Dunamais (RMP LA013-052--- & National Monument No. 615) is located c.14km southeast of the proposed development site boundary and shall not be impacted by the proposed windfarm development. There are 3 no. designated archaeological sites and 9 no. designated architectural heritage sites located within the study area, none of which are directly affected by the proposed windfarm development. Upon review of the permitted development applications in the wider environs, including the proposed connection to the proposed Bracklone 110kV substation, it is considered that there are **no identified likely or significant cumulative impacts** on the archaeological, architectural or cultural heritage resource pertaining to the proposed windfarm development at Dernacart.

15.7 Mitigation Measures

Detailed below are mitigation measures applicable to the identified impacts pertaining to the proposed windfarm development. These measures shall be undertaken at Construction Phase of the proposed windfarm development and form part of the Schedule of (Environmental) Commitments relating to same.

15.7.1 Construction Phase

15.7.1.1 *Archaeology*

There are no identified likely significant effects on the designated archaeological resource pertaining to the study area or the proposed development site (windfarm and UGC route). The overall archaeological potential of the windfarm area (incl. a small land parcel proposed for the turbine delivery route to the west of the site boundary) is considered low, however, given the scale of the proposed development there is still a possibility of encountering archaeological finds/remains throughout the area during the construction phase. As such, a programme of archaeological monitoring shall be undertaken by a suitably qualified archaeologist, during all ground reduction works/topsoil stripping associated with the proposed windfarm hardstands/turbine locations, turbine delivery haul routes, access tracks, temporary compound and sub-station, and specifically including the north-eastern land-based area (adjacent Turbine 6 and associated access track) which is sited adjacent the minor watercourse of Bornass/Cottoner's Brook. It is noted that there are no other riverine environments present within the proposed windfarm site. Such an archaeological monitoring programme, given both the low archaeological potential and presence of heavily forested areas within the proposed windfarm site, is considered an appropriate archaeological mitigation strategy in this regard.

The proposed UGC route shall traverse predominantly along the verge of the existing road network throughout the study area. These areas are often bounded by heavy hedge/tree growth and deep ditches. The western extent of the UGC route exits the windfarm site and traverses past a junction with Bay Bridge and onwards to Cottoner's Bridge. This area is within the wider environs of a recorded findspot (saddle quern), a recorded metalworking site and an enclosure site, as well as the River Barrow itself. In addition, directional drilling is proposed for bridge crossing points (under the riverbed(s)), at Cottoner's Bridge (minor watercourse – Bornass/Cottoner's Brook) and at Kilnahown Bridge (River Barrow). Riverbanks are considered locations that have higher potential for sub-surface archaeological finds or features; however, the entry and exit points for the directional drilling shall be located within the road surfaces immediately before and after the river crossings (and adequately beyond any bridge structures themselves), with no ground disturbance on the riverbanks. As such, the area at the western extent of the UGC, from the exit point at the windfarm to Cottoner's Bridge, shall be subject to archaeological monitoring during the construction phase. There shall not be a requirement for archaeological mitigation at the in-road directional drilling entry/exit points for the river crossings.

Given the construction method of in-road directional drilling beneath riverbed(s), where applicable, there is no underwater archaeological impact associated with the proposed windfarm development (including UGC route), and as such, no mitigation measures are deemed necessary.

In the event of an archaeological find or feature being discovered during the construction phase works, the archaeologist shall evaluate, characterise and determine the extent of the remains. Thereafter an agreed mitigation framework including a Method Statement and Programme of Works shall be required in order to adequately preserve and/or record the archaeological resource, with consultation from the National Monuments Service (NMS). Whilst determination is being sought to mitigate the find/feature, the area shall be appropriately buffered with temporary fencing and an adequate works exclusion zone created in order to minimize any potential indirect damage during the site works.

15.7.1.2 *Architectural Heritage*

There are identified impacts on the architectural heritage resource that shall require specific mitigation measures in advance of the commencement of the construction phase.

Bay Bridge is a protected structure. The proposed UGC route extends c. 5m north of the bridge structure, along the verge of the existing local road network. Given the close proximity to proposed works, in advance of construction phase, a detailed method statement and management plan shall be prepared which shall address the construction method.

It shall include directions towards protecting the bridge, ensuring no inadvertent damage shall occur to the masonry structure, including that of the roadside parapets, during construction (and heavy vehicular movements associated with same). This shall be approved by the relevant Conservation Officer of Laois County Council.

Kilnahown Bridge is a protected structure and is also listed on the NIAH inventory. The proposed UGC route shall extend under the riverbed by means of directional drilling. In advance of construction phase, a detailed method statement and management plan shall be prepared which shall address the construction method and include directions towards protecting the bridge, ensuring no inadvertent damage shall occur to the masonry structure, including that of the roadside parapets, during construction (and heavy vehicular movements associated with same). This shall be approved by the relevant Conservation Officers of both Laois County Council and Offaly County Council.

Garryhinch post-box is a protected structure and is also listed on the NIAH inventory. In advance of construction there shall be inclusion of specific measures to address the need to protect this asset from inadvertent damage from during construction (including heavy vehicular movements associated with same). The areas shall be clearly demarcated on-site, with the creation of a buffer and adequate exclusion zone pertaining to same. These precautionary measures shall be approved by the relevant Conservation Officer of Offaly County Council.

There are 5 no. identified undesignated cultural heritage assets located within the study area. These assets are considered to have a 'not significant' significance of effect. The locational data pertaining to these sites shall be included in the Construction Environmental Management Plan (CEMP) to ensure due care and diligence is undertaken during the site works within these areas.

There is a section of the (now infilled) Grand Canal located along the proposed UGC route at Canal Road, Portarlinton. It is possible that associated remains/features exist at a sub-surface level in this area. In advance of construction works all sub-surface services/utilities shall be surveyed and planned for purposes of routing the UGC. All proposed trenching works for the UGC at this area shall be monitored by a suitably qualified archaeologist. In the event of a feature/find being discovered, the archaeologist shall evaluate same and the feature(s) shall be avoided and preserved *in situ* or, a full written, drawn and photographic record undertaken prior to removal, as part of the construction phase works.

Table 15-8: Construction Phase Impacts and Mitigation Measures

Asset	Magnitude of Impact	Value/Sensitivity	Significance of Effect	Mitigation Measures
Potential sub-surface archaeological features	High	Unknown	Potential Slight/Moderate	On-site archaeological monitoring for all windfarm infrastructural works that require ground reduction/topsoil stripping and western portion of UGC route from the windfarm site to Cottoner’s Bridge
Bay Bridge	Low	High	Slight	Preparation of a detailed construction method statement and management plan outlining required on-site precautionary measures to avoid inadvertent damage to the bridge masonry structure including roadside parapets
Kilnahown Bridge	Low	High	Slight	Preparation of a detailed construction method statement and management plan outlining required on-site precautionary measures to avoid inadvertent damage to

Asset	Magnitude of Impact	Value/Sensitivity	Significance of Effect	Mitigation Measures
				the bridge masonry structure including roadside parapets
Garryhinch Post-Box	Low	High	Slight	Clear inclusion on construction method statement and management plan to include detailed measures to demarcate, buffer and create an exclusion zone in and round this feature in order to avoid inadvertent damage during works
5 no. undesignated cultural heritage assets	Low	Low	Not Significant	Locations of assets to be clearly included in CEMP to ensure due care and diligence during works, within these areas
Section of the former Grand Canal	High	Low	Slight/Moderate	On-site archaeological monitoring for all UGC route trenching works along the former Canal alignment. Should any features be encountered the archaeologist shall evaluate same and the features shall be preserved <i>in situ</i> or a full written, drawn and photographic record undertaken prior to removal, as part of the construction phase works

15.7.2 Operational Phase

There are no identified likely or significant impacts identified at Operational Phase.

15.7.2.1 Archaeology

Should there be a presence of sub-surface archaeological finds/features exposed during the construction phase, such items shall be fully mitigated by means of preservation *in situ* and/or preservation by record. Such potential locations will be fully recorded, mapped and appropriately demarcated at construction stage, which shall also facilitate appropriate site measures and protocols for any future site maintenance works that may be required.

15.7.2.2 Architectural Heritage

In the event of future maintenance works to the UGC route, the same measures and protocol undertaken at construction stage to safeguard the protection of the architectural heritage resource shall be followed for the duration of the operational phase of the development.

15.8 Residual Impacts

Construction stage impacts identified on the archaeological resource shall be mitigated by the measures outlined in section 15.7.1. The presence and/or extent of the potential sub-surface archaeological resource within the proposed windfarm site/UGC is currently unknown, and as such any measurable impact is largely indeterminable at this stage and can only be postulated as *potential* impacts and *potential* significance of effects. Should archaeological remains be encountered during the construction stage, these direct impacts shall be mitigated by either preservation *in situ* (avoided) or preservation by record (fully archaeologically excavated), per consultations and agreements with NMS.

Preservation *in situ* shall allow for a negligible magnitude of impact albeit on a hitherto unknown value/sensitivity asset, resulting in a **potential not significant/imperceptible** significance of effect in the context of residual impact on the archaeological resource.

Preservation by record shall allow for a high magnitude of impact, albeit ameliorated by the creation of a full and detailed archaeological record, the results of which shall be publicly disseminated. This shall result in a **potential slight/moderate** significance of effect in the context of residual impact on the overall archaeological resource.

Construction stage impacts identified on the architectural heritage resource shall be mitigated by the measures outlined in section 15.7.1. There are no identified residual impacts on the architectural heritage resource.

15.9 Monitoring

Given the identified construction phase impacts and the mitigation measures detailed therein; as well as no identified operational phase impacts, there shall not be a requirement for monitoring of the windfarm operations in the context of protection of the cultural heritage resource.

15.10 References

EPA (2002) *Guidelines on the Information to be contained in Environmental Impact Statements*

EPA (2003) *Advice Notes on Current Practice on the preparation of Environmental Impact Statements*

EPA (2015) *Draft Advice Notes for preparing Environmental Impact Statements*

EPA (2017) *Draft Guidelines on the Information to be contained in EIARs*

ICOMOS (2011) *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties*

Laois County Council *Development Plan 2017-2023*

Offaly County *Development Plan 2014-2020*

Laois Heritage Forum (2008) *The Mountmellick Canal*. Laois County Council & The Heritage Council.

Websites consulted

Heritage Council Mapping: www.heritagemaps.ie Date accessed 22/08/2019

Historic Map Viewer, National Monuments Service: www.archaeology.ie Date accessed 21/08/2019

National Excavations Database: www.excavations.ie Date accessed 06/08/2019

National Folklore Collection: www.duchas.ie Date accessed 06/08/2019

National Inventory of Architectural Heritage survey: www.buildingsofireland.ie Date accessed 20/08/2019

Placename Index of Ireland: www.logainm.ie Date accessed 06/08/2019