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ENVIRONMENTAL IMPACT ASSESSMENT REPORT (EIAR) FOR THE PROPOSED CROAGHAUN WIND FARM, CO. CARLOW

VOLUME 2 – MAIN EIAR

CHAPTER 14 – ARCHAEOLOGY, ARCHITECTURAL AND CULTURAL HERITAGE

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Date: November 2020

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14. ARCHAEOLOGY, ARCHITECTURE AND CULTURAL HERITAGE

14.1 Introduction

This chapter assesses the impacts of the proposed project as described in Chapter 3 on the known and potential cultural heritage resource which encompasses assets relevant to both the tangible resources (archaeology and architecture heritage); and non-tangible resources (history, folklore, tradition, language, placenames etc.). The recorded and potential cultural heritage resource within study areas (described in Section 14.2) encompassing the various elements of the project and surrounding lands was assessed in order to compile a comprehensive cultural heritage baseline and context.

The chapter was prepared by John Cronin and Tony Cummins of John Cronin and Associates. Mr Cronin holds qualifications in archaeology (B.A. (University College Cork (UCC), 1991), regional and urban planning (MRUP (University College Dublin (UCD) 1993) and post-graduate qualifications in urban and building conservation (MUBC (UCD), 1999) while Mr Cummins holds B.A. and M.A. degrees in archaeology (UCC 1992/1994). Both individuals have over two decades experience in preparing archaeological and cultural heritage assessments.

A detailed description of the project assessed in this EIAR is provided in Chapter 3 and is comprised of three main elements:

- The wind farm (hereinafter referred to as the 'main wind farm site');
- Turbine delivery route (hereinafter referred to as the 'turbine delivery route' or 'TDR');
- Grid connection (hereinafter referred to as the 'grid connection'.

The main wind farm site includes the wind turbines, internal access tracks, hard standings, the permanent meteorological mast, recreational amenity trail and associated signage, onsite substation, internal electrical and communications cabling, temporary construction compound, drainage infrastructure and all associated works related to the construction of the wind farm. The grid connection includes the buried grid connection cable route from the on-site substation to the existing grid substation at Kellistown, Co. Carlow and the proposed off-site substation, also at Kellistown. The turbine delivery route includes all aspects of the route from the M11/N30 junction to the site entrance including proposed temporary accommodation works to facilitate the delivery of wind turbine components. Replanting lands at Sroove Co. Sligo and Crag Co. Limerick have also been assessed for cumulative impacts. Reports detailing environmental assessments carried out on these sites are contained in Appendix 3.3 and 4.4 of this EIAR.

14.2 Assessment Methodology

The methodology used for this assessment is based on Environmental Protection Agency (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*; as well as 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*. The chapter seeks to comply with the requirements of Directive 2011/92/EU as amended by Directive 2014/52/EU, and the Planning and Development Act, 2000 (as amended) and Planning and Development Regulations, 2001 (as amended). The assessment has also been informed by guidelines for the assessment of impacts on the cultural heritage resource as published by the International Council on Monuments and Sites (ICOMOS 2011).

The assessment was based on a programme of desk-based research combined with a number of site inspections and these studies were undertaken to identify any features of archaeological, architectural or cultural heritage significance likely to be impacted by the proposed development. The study area reviewed for the assessment of the main wind farm site comprised the locations of development areas (i.e. the locations of the proposed footprint of the various elements requiring ground works) and surrounding lands extending for 2km in all directions. The wider landscape extending for 10km from the main wind farm site was also reviewed to determine whether any National Monuments, World Heritage sites (including tentative sites) and archaeological monuments with potential visual alignments across the landscape were present. An archaeological review of the assessment of the significance of visual impacts on cultural heritage receptors within 20km of the project as presented in the Landscape and Visual Impact Assessment chapter was also carried out (see Chapter 15). A 100m wide study area centred on the grid connection and an area extending 200m from the offsite substation in Kellistown were also reviewed as was the road network which will form the turbine delivery route with a particular emphasis on sections where localised ground works will be required. The assessment of the replacement replant lands has been considered separately in Appendices 3-3 and 4-4.

14.2.1 Desktop Study

The assessment presents the results of a desktop study of relevant published sources and datasets undertaken in order to identify all recorded and potential archaeological, architectural and other cultural heritage sites/features/areas within the study areas. The principal sources reviewed for the assessment of the recorded archaeological resource were the Sites and Monuments Record (SMR) and the Record of Monuments and Places (RMP). The Record of Protected Structures (RPS) and the National Inventory of Architectural Heritage (NIAH) were consulted for assessing the designated architectural heritage resource. Details on the legal and planning frameworks designed to protect these elements of the cultural heritage resource are also provided.

Other sources consulted as part of the assessment included the following:

Development Plans

The *County Carlow Development Plan (2015-2021)* was consulted as part of this assessment. This publication outlines the Council's policies for the conservation of the archaeological and architectural heritage resource within the county and includes a list of Record of Protected Structures (RPS) as well as designated Architectural Conservation Areas (ACA).

Archaeological Inventory of County Carlow

This publication presents summary descriptions of the recorded archaeological sites within this area of the county and the relevant entries are included within this chapter. In addition, the current national online database resources pertaining to same were reviewed on the National Monuments Service's Historical Environment Viewer (www.archaeology.ie) in September 2020.

Heritage Council of Ireland: Heritage Map Viewer

This online mapping source (www.heritagemaps.ie) collates various cultural heritage datasets provided by, among others, the National Monuments Service, the National Museum of Ireland, local authorities, the Royal Academy of Ireland and the Office of Public Works and was reviewed in September 2020.

Database of Irish Excavation Reports

The Database of Irish Excavation Reports contains summary accounts of all archaeological excavations carried out in Ireland (North and South) from 1970 to present. Current data was accessed via www.excavations.ie in September 2020.

Literary Sources

Various published sources were consulted in order to assess the archaeological, historical, architectural heritage and folklore record of the study area and these are listed in Section 14.8 of this chapter.

Historic Maps

A review of available historic cartographic sources was undertaken, and these included the 17th-century Down Survey and various map editions published by the Ordnance Survey from the mid-19th century onward. These sources can indicate the presence of past settlement patterns, including features of archaeological and architectural heritage significance that no longer have any surface expression. Extracts from the reviewed maps are presented in Appendix 14.1.

Aerial, Satellite and LiDAR imagery

A review of available imagery of the study area was undertaken in order to review the extent of modern interventions and to ascertain if any traces of unrecorded archaeological sites were visible within proposed work areas.

Irish National Folklore Collection

A review was undertaken of transcribed material from the National Folklore Collection archive which has been digitised and published online at www.duchas.ie.

UNESCO designated World Heritage Sites and Tentative List

There are two designated World Heritage sites in Ireland and a number of other significant examples have been included in a Tentative List (2010) that has been put forward by Ireland for inclusion. None of these designated or tentative sites are located within 20km of the main wind farm site or other elements of the project.

14.2.2 Field Surveys

The project areas were surveyed in July and September 2020 and included inspections of the main wind farm site, grid connection and sections of the turbine delivery route between Bunclody and the main wind farm site. The subject lands were assessed in terms of historic landscape, existing land use, tree cover and the potential for the presence and survival of unrecorded archaeological and undesignated architectural heritage sites/features. The results of the field surveys are described within the chapter while annotated extracts from the photographic record are provided in Appendix 14.2.

14.2.3 Consultation

Carlow County Council have noted that there are a number of recorded monuments in the area, including CW020-028 (Standing Stone) on the proposed site and that an archaeological impact assessment should be carried out for the proposed development.

A scoping report was also issued to the National Monuments Service through the Development Applications Unit. A receipt of this consultation information was acknowledged by the DAU.

Further details of project scoping and consultation can be found in Chapter 5.

14.2.4 Assessment of Impacts

The following provides a summary of the criteria used to assess impacts in order to concisely outline the methodology specifically applied to the cultural heritage resource which has been informed by relevant EPA and ICOMOS guidelines (see Section 14.2 above).

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 Effect* – 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 Effect* – no change or effects that are imperceptible, within the normal bounds of variation for the cultural heritage environment.
- *Negative Effect* – 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 impact:

- *Direct Impact* – 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 Impact* – where a cultural heritage site or its setting in the landscape is located in within environs of the proposed development.
- *No predicted impact* – where the proposed development will not adversely or positively affect a cultural heritage site.

Magnitude of Effect

This is based on the degree of change, incorporating any mitigation measures, on a cultural heritage asset and can be negative or positive.

The magnitude is ranked without regard to the value of the asset according to the following scale: High; Medium; Low and Negligible and has been informed by criteria published in the International Council on Monuments and Sites *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS 2011) (Table 14-1).

Table 14-1: Magnitudes of Effect on Cultural Heritage Assets (after ICOMOS Guidelines 2011)

Magnitude	Description
High	• Most or all key archaeological or architectural materials affected such that the resource is totally altered • Comprehensive changes to setting • Changes to most or all key historic landscape elements, parcels or components; extreme visual effects; fundamental changes to use or access; resulting in total change to historic landscape character unit • Major changes to area that affect Intangible Cultural Heritage activities or associations or visual links and cultural appreciation
Medium	• Changes to many key archaeological or historic building materials/elements such that the resource is clearly/significantly modified. • Considerable changes to setting that affect the character of the archaeological asset. • Changes to the setting of a historic building, such that it is significantly modified. • Change to many key historic landscape elements, parcels or components, visual change to many key aspects of the historic landscape, considerable changes to use or access, resulting in moderate changes to historic landscape character. • Considerable changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation.
Low	• Changes to key archaeological materials/historic building elements, such that the resource is slightly altered/slightly different. • Slight changes to setting of an archaeological monument. • Change to setting of a historic building, such that it is noticeably changed. • Change to few key historic landscape elements, parcels or components; slight visual changes to few key aspects of historic landscape; slight changes to use or access; resulting in limited change to historic landscape character. • Changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation.
Negligible	• Very minor changes to key archaeological materials or setting. • Slight changes to historic building elements or setting that hardly affect it. • Very minor changes to key historic landscape elements, parcels or components; virtually unchanged visual effects; very slight changes to use or access; resulting in very small change to historic landscape character. • Very minor changes to area that affect the Intangible Cultural Heritage activities or associations or visual links and cultural appreciation.

Value assessment criteria

The evaluation of the values of cultural heritage asset used for the purposes of assessment is not intended as definitive, but rather an indicator which contributes to a wider judgment based the individual circumstances of each asset. The Value of all known or potential assets that may be affected by development are ranked according to the following scale: Very High; High; Medium; Low and Negligible. The factors for assessing the value of cultural heritage assets provided in Table 14-2 have regard to the ICOMOS *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS 2011, 14-17). This guidance is intended as indicative and is used in combination 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 assets on a case-by-case basis. The values assigned to identified assets within the study areas were determined following the completion of the desktop research combined with subsequent site inspections and are presented in Section 14.4 of this chapter.

Table 14-2: Factors for assessing the Value of Cultural Heritage Assets

Indicative Value	Example of Asset Types
Very High	• World Heritage Sites (including Tentative List properties) • Assets of acknowledged international importance • Assets that can contribute significantly to international research objectives
High	• Designated *National Monuments* (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	• 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	• 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

Indicative Value	Example of Asset Types
	• 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	• Assets with very little or no surviving archaeological interest • Buildings of no architectural or historical note; buildings of an intrusive character

Significance of Effects

The significance of effect can be described as Profound, Very Significant, Significant, Moderate, Slight, Not Significant or Imperceptible (Table 14-3) and is assigned based on the combined evaluation of effect magnitude and asset significance (Table 14-4).

Table 14-3: 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 14-4: 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			

14.3 Existing Environment

14.3.1 Introduction

The following sections present summaries of the legal and planning frameworks designed to protect the cultural heritage resource which are followed by details on the known and potential cultural heritage resource within the reviewed study areas.

14.3.2 Legal and Planning Context

The tangible elements of the cultural heritage resource can be loosely divided into the archaeological resource comprising sites and monuments dating from the prehistoric period to the post-medieval period and the architectural heritage resource, encompassing standing structures and sites of cultural importance often dating to the post-medieval and modern periods. In addition, local place names, folklore and traditions are considered part of the intangible cultural heritage resource. The management and protection of the cultural heritage resource in Ireland is achieved through a framework of international conventions and national laws and policies. This framework was established in accordance with the provisions of the 'European Convention on the Protection of the Archaeological Heritage' (the Valletta Convention) and the 'European Convention on the Protection of Architectural Heritage' (Grenada Convention). Both of these conventions were ratified by the Republic of Ireland in 1997. The UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage, 2003, was ratified by Ireland in 2015. The relevant legislation and guidelines that are relevant to this assessment include the following:

- National Monuments Act 1930 (and amendments);
- Heritage Act (1995);
- National Cultural Institutions Act (1997);
- Architectural Heritage (National Inventory) and Historic Monuments (Misc) Provisions Act (1999);
- Planning and Development Act (2000) as amended;

- Department of Arts, Heritage and Gaeltacht (2011) *Architectural Heritage Protection: Guidelines for Planning Authorities*
- Department of Arts, Heritage, Gaeltacht and the Islands (1999) *Framework and Principles for the Protection of Archaeological Heritage*

14.3.2.1 Relevant Archaeological Legislation and Planning Policies

The National Monuments Service (NMS) is currently based in the Department of Housing, Local Government and Heritage and is responsible for the preservation, protection and promotion of Ireland's archaeological heritage. The National Monuments Acts 1930 (and amendments), the Heritage Act 1995 and relevant provisions of the National Cultural Institutions Act 1997 are the primary means of ensuring the satisfactory protection of archaeological remains. There are a number of mechanisms under the National Monuments Acts that are applied to secure the protection of archaeological monuments. These include the designation of National Monument status, the Register of Historic Monuments (RHM), the Record of Monuments and Places (RMP) and the Sites and Monuments Record (SMR) as well as the placing of Preservation Orders and Temporary Preservation Orders on endangered sites[1]. In addition, the *County Carlow Development Plan 2015-2021* outlines the local authority's policies and objectives in relation to the protection of the archaeological resource within the county (Plan refs. Objective 8 and Policy 3, p.225-6)[2].

A National Monument is described as 'a monument or the remains of 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' (Section 2, National Monument Act, 1930). There are no National Monuments in State Ownership or Guardianship or monuments with Preservation Orders located within the main wind farm site or the surrounding 2km study area and, in addition, none are located within the 100m study area centred on the grid connection or in the environs of work areas along the turbine delivery route. The locations of accessible National Monuments with 20km were reviewed as part of the Landscape and Visual assessment and the results, which are presented in Chapter 15, were subject to archaeological review during the assessment process. In addition, the environs of a National Monument (Ballyloghan Castle, Nat. Mon. ref 351; SMR CW019-018-----) in private lands c.9km to the west of the project were inspected as part of the archaeological assessment (see Section 14.3.3.2).

The Record of Monuments and Places (RMP) was established under Section 12 (1) of the National Monuments (Amendment) Act, 1994 and was based on the Sites and Monuments Record (SMR). These records comprise lists and maps of all known archaeological monuments and places for each county in the State. All archaeological sites listed in the RMP receive statutory protection under the National Monuments Act 1994 and no works can be undertaken at their locations, including their surrounding Zones of Notification, without providing two months advance notice to the NMS. The SMR/RMP list a number of archaeological sites within the 2km study area around the main wind farm site and none of these are located within 400m of any of the turbine locations or associated infrastructure. The known archaeological sites located within the reviewed study area are identified below (Section 14.3.3) which includes their inventory entries published by the Archaeological Survey of Ireland (ASI). The potential for the presence of hitherto unrecorded, sub-surface archaeological features within proposed works areas is also considered.

[1] https://www.archaeology.ie/sites/default/files/media/publications/NMS%20-%20Managing%20and%20Protecting%20Ireland%27s%20Archaeological%20Heritage%202013.pdf

[2] http://www.carlow.ie/wp-content/uploads/2015/08/carlow-county-dev-plan-2015-2021.pdf

14.3.2.2 Relevant Architectural Heritage Legislation and Planning Policies

Protection of architectural or built heritage is provided for through a range of legal instruments that include the Heritage Act 1995, the Architectural Heritage (National Inventory) and National Monuments (Misc. Provisions) Act 1999, and the Planning and Development Act 2000. Section 2.1 of the Heritage Act 1995, describes architectural heritage as follows:

> *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, and, without prejudice to the generality of the foregoing, includes railways and related buildings and structures and any place comprising the remains or traces of any such railway, building or structure.*

The Planning and Development Act 2000 requires Planning Authorities to keep a 'Record of Protected Structures' (RPS) of buildings and other structures that are of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. All structures listed for protection in current Development Plans, have become Protected Structures and planning permission is required for any works to such structures that would affect their character. The current RPS for County Carlow is published in the *County Carlow Development Plan 2015-2021*. The Planning and Development Act 2000 also provides for the inclusion of objectives for preserving the character of places, areas, groups of structures or townscapes of special interest designated as Architectural Conservation Areas (ACAs). The Architectural Heritage Act 1999 established the National Inventory of Architectural Heritage (NIAH) and the NIAH Historic Gardens and Designed Landscapes to create a record of built heritage structures and associated lands within the State. While inclusion in a NIAH inventory does not provide statutory protection to a structure, the inventory is used to advise local authorities on compilation of their Records of Protected Structures. The *County Carlow Development Plan 2015-2021* (p. 227-30) presents the local authority's policies for Protected Structures (Plan ref. 9.3.1), ACAs (Plan ref. 9.3.3), town and village streetscapes (Plan ref. 9.3.4) and historic roadside features (Plan ref. 9.3.5). The term 'designated architectural heritage resource' is hereafter used to describe structures listed by the NIAH and in the County Carlow RPS and examples located within the study areas are identified in Section 14.3.3, which also provides details on undesignated assets identified during the assessment.

14.3.3 Desktop Study

14.3.3.1 *Introduction*

The following sections presents summary details of the main periods within the Irish archaeological record with references to known archaeological sites, designated architectural heritage structures (RPS and NIAH) and identified undesignated cultural heritage assets located within the study areas around the main wind farm site (Section 14.3.3.2), grid connection (Section 14.3.3.3) and turbine delivery route (Section 14.3.3.4). Datasets have been interrogated and retrieved from current state and local authority sources and are considered accurate at the time of writing in November 2020. The published inventory entries of all recorded archaeological sites and designated architectural heritage structures within the main wind farm and grid connection study areas are presented within the following sections.

14.3.3.2 Main Wind Farm Site Study Area

In summary, there are nine recorded archaeological sites located within the 2km study area around the main wind farm site and only one of these is located within 1km of a proposed turbine location (Table 14-5) which comprises a standing stone (CW020-028----) sited c.560m to the west of the proposed location of Turbine 2. This monument is located outside the boundary of the main wind farm site. None of the known archaeological sites within the study area are designated as National Monuments or have been assigned Preservation Orders. In addition, a review of the lands extending for 10km from the main wind farm site revealed the presence of three monuments which may have potential visual alignments across the landscape, and these are also detailed in this section.

Table 14-5: Known archaeological sites within 2km study area around main wind farm site

SMR No.	Class	Townland	ITM E	ITM N	Approx. distance from nearest turbine
CW017-005----	Ringfort - rath	ACLARE	684619	659838	1.64km to north
CW017-040----	Enclosure	MYSHALL	683422	659723	1.80km to northwest
CW017-041----	Racecourse	MYSHALL	683579	659777	1.84km to northwest
CW017-045----	Children's burial ground	MYSHALL	684132	660123	1.92km to north
CW020-008----	Enclosure	KILBRANNISH NORTH, KILBRANNISH SOUTH	685612	656053	1.49km to south
CW020-009----	Burial ground	KILBRANNISH SOUTH	685780	655996	1.7km to south
CW020-020001-	Burial ground	KILBRANNISH SOUTH	685473	655303	2km to south
CW020-022----	Standing stone	KILBRANNISH NORTH	685842	656113	1.7km to southeast
CW020-028----	Standing stone	ROSSACURRA	683417	657776	0.56km to west

The following section presents an overview of the archaeological context of the main wind farm site study area which includes references to all known archaeological sites. The dating framework used for each period of the archaeological record is based on the *Guidelines for Authors of Reports on Archaeological Excavations* as published by the National Monuments Service[3].

Prehistoric Periods

Until the recent identification of Palaeolithic human butchery marks on a bear bone recovered from a cave site in County Clare, the earliest recorded evidence for human activity in Ireland dated to the Mesolithic period (7000–4000 BC) when groups of hunter-gatherers lived on the heavily wooded island.

[3] https://www.archaeology.ie/sites/default/files/media/publications/excavation-reports-guidelines-for-authors.pdf

The archaeological record indicates that these mobile groups tended to favour coastal, lake and river shores locations which provided a transport resource and also provided elements of their varied diet. These groups did not construct any settlements or monuments that have left any above ground traces although their presence in an area can often be identified by scatters of worked flints in ploughed fields or during earth-moving undertaken as part of development works. The Neolithic period (4000-2400 BC) began with the arrival of agriculture and its establishment as the principal form of economic subsistence, which resulted in more permanent settlement patterns. As a consequence of the more settled nature of agrarian life, new site-types, such as substantial rectangular timber houses, field systems and various types of megalithic tombs, begin to appear in the archaeological record. Metalworking arrived in Ireland with the advent of the Bronze Age period (c. 2400–500 BC). This new technology introduced a new artefactual assemblage into the Irish archaeological record and this period was also associated with the construction of new monument types such as standing stones, stone rows, stone circles and fulachta fiadh. The development of new burial practices meant that the construction of funerary monuments such as cairns, barrows, boulder burials and tumuli or cists was a common practice during this period. The arrival of iron-working technology in Ireland saw the advent of the Iron Age (600 BC – 400 AD). Relatively little has been known about settlement patterns during this period until recent decades when the corpus of evidence has been greatly increased by the discovery of Iron Age sites during archaeological investigations undertaken as part of development projects.

There are two recorded prehistoric monuments in the lands within 2km of the main wind farm site and these comprise two standing stones of probable Bronze Age origin. Standing stones comprise single upright stones set into the ground and while their function can be difficult to discern, even following archaeological excavation, they may have fulfilled various ritual and other functions such as burial or commemoration monuments or may have marked territory boundaries or routeways. The nearest example to the main wind farm site (CW020-028----) is located within a separate landholding c.560m to the west of Turbine 2 and is situated on a northwest-facing slope on the opposite side of the hill summit (Appendix 14-1, Figure 14-1). As noted in the ASI inventory description of this monument, while its location commands views over the lowlands to the north and west the views in other directions, including towards the main wind farm site to the east, are impeded by natural topography. The standing stone has no recorded visual association with other known monuments and, in addition, as its location is not visible from the wider landscape to the east, the main wind farm site will not impinge on any potential unrecorded alignments from other monuments in that direction.

The location of the standing stone was visited during the site inspections undertaken as part of the current assessment and it is situated within close proximity to the junction of two modern access tracks on the western margin of the forestry plantation which are delimited from the stone's location by an existing fence line. It is located outside the boundary of the main wind farm site and the proposed recreational trail will terminate at a distance of c.70m to the south of its location.

The recorded location of the second standing stone within the study area (CW020-022----) is within private farmland at a distance of c.1.7km to the southeast of the nearest proposed turbine (Turbine 7) (Appendix 14-1, Figure 14-1). Its recorded location within a pasture field was visually appraised from the adjacent public road during the site inspection and no surface trace of an upright stone was observed. The ASI inventory description notes that the stone was extant but inclining when inspected in the 1990s and it is possible that it has been removed or fallen during the intervening decades. These two standing stones have been described as follows by the ASI:

> *Standing Stone CW020-028----*
>
> *On the NE-facing slope of Croaghaun mountain, near the summit, in an area of mountain heather at the point where two forest tracks meet, forming a fork. View impeded upslope to E-S-SW, but extensive to W and N. A standing stone sub-rectangular in plan (0.43-0.5m x 0.3-0.36m; H 1.6m) recorded by Walter Skelton and Barry Lacey (pers. comm. 28 October 2018).*

The top of the stone slopes towards the N. The standing stone is quite weathered, with pronounced spalling on the lower E and S sides. It inclines to the W.

Standing Stone CW020-022----

Irregularly shaped slab, inclined 45 degrees to SE (H 1.85m; base Wth c. 1m, narrowing to top; T c. 0.44m). Aligned WSW-ENE.

A review of the recorded archaeological monuments within 10km of the main wind farm site revealed three prehistoric monuments with potential visual alignment attributes within the environs of Mount Leinster to the southwest (Appendix 14-1, Figure 14-1). A possible cursus (CW020-027---) is located on a steep hillside c.2.63km to the southwest of the nearest turbine (Turbine 3) in the townland of Coolasnaghta and a second possible cursus (CW020-026----) is a further 1.7km to the west of that location and is also sited on a steep hillside. Cursus sites comprise Neolithic earthworks formed by long pairs of parallel banks with external ditches and, while they are rare in Ireland and little archaeological investigation has occurred, examples associated with important ceremonial centres such as Newgrange have been recorded. The ASI inventory descriptions of the two examples in Coolasnaghta townland describe them as possible cursus sites identified on aerial images and notes that both are orientated on a broadly NNW-SSE direction with potential alignments towards hill-top cairns to the southeast. The main wind farm site is located to the northeast and will not impinge on the recorded alignment of either example. In addition, no surface traces of either of these potential cursus sites were discernible from the main wind farm site and both of their recorded locations were visited during the field survey undertaken as part of the current assessment (see Section 14.3.4).

A stone row (CW020-017---), known locally as the Nine Stones, is located c.2.95km southwest of the main wind farm site in Coolasnaghta townland and is set on a northwest facing slope between the locations of the two possible cursus sites (Appendix 14-1, Figure 14-1). The location of this monument was also inspected as part of the current assessment (see Section 14.3.4). The ASI inventory description of this site notes that a 19th century Ordnance Survey account records that the stones were erected to commemorate nine men killed in the area in 1798 but the ASI also note an interpretation as a stone row monument cannot be discounted. These three monuments have been described as follows by the ASI:

Cursus CW020-027----

On a steep mountain slope on the northern spur of Mount Leinster. A similar curus monument (CW020-026----) is located c. 1.7km to the W-WNW in Knockendrane townland. It consists of two parallel banks (Wth c. 2m; H c. 0.4m), 33m apart, aligned NNW-SSE, which is visible over 400m (Corlett 2014, 21). The banks are obscured by blanket bog, but are likely to be constructed of stone (ibid.). The monument, which appears to end short of the summit, is known locally as the Witches' Slide (ibid.). The southern portion of the cursus appears to be aligned with a cairn (CW023-007----/WX008-001----) 2km to the SSE on the summit of Mount Leinster, on the Carlow-Wexford border. There are also two other possible cursus monuments, (WI027-089---- and KD) on Keadeen Mountain, Co. Wicklow and on Brewel Hill (KD032-058---) in Co. Kildare respectively.

Cursus CW020-026----

On the NW slope of Slievebawn. A possible cursus (L c. 270m) identified on OSI aerial (2005 ed.) consisting of two parallel banks or grass/heather/turf-covered walls (Wth 2-2.6m; H 0.2-0.8m) composed of schist and quartz (pers. comm. Ivor Kenny, 10 July 2014). The lower portion of the monument runs NW-SE for c. 160m and is 31m wide, while the upper portion changes direction slightly, running NNW-SSE for c. 113m and is slightly narrower, 22m wide. The lower portion of the cursus is aligned with a circular cairn (CW020-016----) on the summit of the mountain. This cairn is c. 135m SE of the SE end of the monument.

The upper portion of the cursus is aligned with a cairn (CW023-007----/WX008-001----) 3km to the SE on the summit of Mount Leinster, on the Carlow-Wexford border. There is another possible cursus (CW020-027----) c. 1.7km to the E-ESE in the townland of Coolasnaghta. The monument is similar to a possible cursus (WI027-089----) on Keadeen Mountain, Co. Wicklow and one on Brewel Hill (KD032-058----) in Co. Kildare. (Kenny 2014)

Stone Row CW020-017----

Marked 'The Ninestones' on the 1839 OS 6-inch map. On the E side of the pass between Slievebawn and the Black Banks and Mount Leinster. Nine low stones set in alignment orientated E-W (L 11.5m; distance between stones 1m-1.2m; H of stones 0.38m - 0.63m). According to OS Field Namebooks, erected to commemorate nine men murdered and buried nearby. While the extant remains are hardly sufficient to permit classification as a stone row with certainty the remains bear close resemblance to many monuments of this class. In light of the tradition recorded by the OS the interpretation given must be regarded as tentative and a proper elucidation of the monument must await further investigation.

Early Medieval Period

The early medieval period began with the introduction of Christianity to Ireland and continued until the arrival of the Anglo-Normans in the late 12th century (c. 400–1169 AD). While this period saw the emergence of the first phases of urbanisation around the larger monasteries and the Hiberno-Norse ports, the dominant settlement pattern continued to be rural-based and founded on a small-scale agricultural economy centred on enclosed farmsteads known as ringforts. The early medieval church sites were often morphologically similar to ringforts but are often differentiated by the presence of features such as church buildings, graves, stone crosses and shrines. The lower lying lands within the surrounding study area contain one ringfort (CW017-005----) as well as two enclosures (CW020-008---- and CW020-040----) which may potentially comprise unclassified ringforts but other origins cannot be discounted without recourse to archaeological excavation (Appendix 14-1, Figure 14-1). These sites have been described by the ASI as follows:

Ringfort CW017-005----

Circular area (diam. c. 25m) with remains of bank visible from W-N-E. On N-facing slope adjacent to stream at W.

Enclosure CW020-008----

Marked on 1839 and 1908 'OS 6-inch' maps as wooded area and visible on aerial photograph (GSIAP R3/10). Located on SE slope of ridge. Large circular enclosure (diam. c. 130m) surrounding a cross-roads, interior now cleared of trees. Enclosing bank only survives in SW quadrant (Wth c. 3m; int. H 1.1m; ext. H 1.4m) and is visible as a crop mark on AP (GSIAP R3/10) in NE and SE quadrants. Possible trace of fosse in SW quadrant.

Enclosure CW020-040----

Circular feature visible on aerial photograph (GSIAP 4/13).

There are also two recorded burial grounds located in the townland of Kilbrannish South to the south of the main wind farm site which may be associated with early ecclesiastical activity in that area (CW020-009--- & CW020-020001-) (Appendix 14-1, Figure 14-1). The former example is only visible as an uncultivated rectangular area within a field located 1.7km to the south of the nearest turbine (Turbine 7) while the latter example, which is c.2km to the south of the main wind farm site, comprises an area delimited by a low bank and also contains a cross (CW020-020002-), grave slab (CW020-020003-) and a nearby holy well (CW020-019----).

These burial grounds have been described by the ASI as follows:

> *Burial Ground CW020-009---*
>
> *Marked on 1839 'OS 6-inch' map 'Site of Kilbrannish Grave Yard'. Referred to locally as 'the Rath'. Unenclosed rectangular uncultivated area (c. 14.5m N-S; c. 16m E-W), slightly higher than surrounding field level. Traces of slight bank along E side of platform.*
>
> *Burial Ground CW020-020001-*
>
> *Shown on 1839 'OS 6-inch' map as circular enclosure. Consists of oval area (dims. 40.5m x 26m) narrowing at SW. Enclosed upslope by low bank and downslope by gentle scarp. Two grave markers noted (one cross-shaped, one rectangular slab). Holy well (CW020-019----) to SSW. Known locally as 'the Reilig'.*

Further evidence for early medieval ecclesiastical activity within the wider landscape is attested to by the presence of the remains of a Pre-Norman church (CW017-039001-) within the centre of Myshall village, which itself developed during the 17th century, at a distance of c. 2.8km to the northwest of the main wind farm site.

High and Late Medieval Periods

The arrival of the Anglo-Normans in the late 12th century broadly marks the advent of the Irish high medieval period which continued to c.1400 and was followed by the late medieval period which extended to c.1550. These periods saw the continuing expansion of Irish urbanisation as many of the port cities developed into international trading centres and numerous villages and towns began to develop throughout the country, often within the environs of Anglo-Norman manorial centres which were defended by masonry castles. By the 15th century the native Irish chieftains and lords began to construct tower-house castles within their own landholdings as centres of territorial control. There is little historical information on the settlement and land-use patterns within the environs of the main wind farm site during these periods and there are no known archaeological sites dating to either period located within the surrounding study area. A review of the recorded archaeological monuments within 10km of the main wind farm site revealed one late medieval castle within that area which is designated as a National Monument. This comprises Ballyloughan Castle which is located c.9km to the west (Nat. Mon. ref 351; SMR CW019-018-----). This monument is located within private lands and is inaccessible but an inspection of from the adjacent roadside on its east side revealed that it is within a level pasture field with views towards the Croughaun Hill area to the east screened by tall tree-lined and hedge field boundaries on both sides of the road. The Landscape and Visual Impact consultants also carried out a visual assessment of a number of heritage receptors within 20km of the wind farm and these included Ballymoon Castle, which is a National Monument (Nat. Mon. ref. 486, SMR CW016-055001-), located 10.5km to the west and the significance of visual impact from that location was assessed as slight-imperceptible (Chapter 15, ref. VP8).

Post-Medieval and Early Modern Periods

The centuries following 1550 comprise the post-medieval period which continued into the middle of the 19th century and the period thereafter is often described as early modern. The early decades of the post-medieval period was a turbulent time in Ireland and saw a period of wars between the 1560s and 1603 with further conflict during the mid-17th-century Cromwellian Wars which resulted in extensive dispossession of forfeited Gaelic lands. The 17th century Down Survey records compiled following the latter period of conflict provide very summary descriptions of existing and potential land use within the townlands in the main wind farm site which indicate that the area comprised poor quality mountain lands under woodland at that time (Table 14.6).

Table 14-6: Summary of Down Survey records for townlands within wind farm location

Townland	17th Century name	Owner 1641	Owner 1670	Down Survey description
Aclare	Aughelare	Henry Warren (Protestant)	Henry Warren (Protestant)	No written description, trees depicted on survey mapping
Cranemore	Craymore	Art Cavanagh (Catholic)	Art Cavanagh (Catholic)	Mountain and wood, very little arable
Kilbrannish North	Farnonile/Kilbranny	Patrick Esmond (Catholic)	Sir Lawrence Esmond (Protestant)	Mountain and wood, unprofitable
Rossacurra	No record	No record	No record	No record

An agricultural boom in the late 18th and early 19th centuries saw a rise in prices for both Irish tillage and dairy produce which resulted in landlords investing in extensive land improvement works within their holdings to increase productivity. This included widespread land drainage works and enclosure of open lands into field systems that survive to the present-day. The post-medieval period saw the development of high and low status stone houses throughout the Irish countryside and rural settlement clusters at this time typically consisted of single-storey thatched cottages with associated farm buildings while two-storey farmhouses became more common during the 19th century. The settlement pattern throughout much of the rural landscape was greatly affected by the famine period and its aftermath in the middle of the 19th century which saw the depopulation of many areas. The *Topographical Dictionary of Ireland* (Lewis 1837) provides detailed descriptions of Irish parishes during the first half of the 19th century and often provides information contemporary land use patterns, historical events and the locations of archaeological sites of note. The main wind farm site is within the civil parishes of Barragh and Myshall and the description of these areas contains no references to any of the townlands within its boundary or surrounding lands. It notes that the parish at that time contained areas of waste lands of mountain, bog and woods contrasted with other areas in use as arable and pasture farmland. The layout of the main wind farm site during the 19th century is described in the below review of cartographic sources.

There are two recorded archaeological sites within the 2km study area likely dating to the post-medieval period and include a former earthwork recorded to have been used as a racecourse during the 19th century (CW017-041---) (Appendix 14-1. Figure 14-1). The below ASI description of this site notes that it was levelled at some stage between 2009-2011. The recorded location of a possible children's burial ground (CW017-045----) to the north of the main wind farm site was recorded in the 19th century and no surface traces have been recorded by the ASI (Appendix 14-1. Figure 14-1). These two sites have been described by the ASI as follows:

Racecourse CW017-041---

Visible on aerial photograph (GSIAP R4/11-12). When inspected by ASI in 1988 it was described as a circular enclosure (D c. 100m) defined by low bank (ext. H 1 - 1.3m) enclosing the summit of a large hill. It appears to have been levelled sometime between 2009 and 2011 (see Google Earth imagery). According to local information it was used as a racecourse in the 19th century.

Children's burial ground (CW017-045----)

According to O'Donovan (OSL 1839, 129), 'a small burial ground for still-born children'. Uncultivated, unenclosed area.

Excavations Database

A review of the Excavation Database 1970-2020 (www.excavations.ie) revealed that no licensed archaeological investigations have taken place within any of the townlands that extend into the main wind farm site.

Architectural Heritage

There are no Protected Structures, or buildings of any date, located within the main wind farm site and, as described below, a review of the historic mapping revealed no former structures at locations of the proposed turbines and other elements of the wind farm. Hollybrook House and its former garden area are located c.2.1km to the northwest of the nearest proposed turbine location (Turbine 3). This five-bay, two-storey, gable-ended house dates to c.1765 and is listed as a Protected Structure (ref. CW35) in the current *Carlow Development Plan 2015-2021* and is also included in the NIAH (ref 10302001). As noted in the cartographic review section below, no curtilage features or attendant farmlands associated with this Protected Structure extend into the main wind farm site or its close environs.

Cartographic Review

The cartographic sources examined for the subject area comprised the 17th-century Down Survey, the 1st edition 6-inch Ordnance Survey (OS) map (1830s-40s series), and the 25-inch edition OS map (1888-1913 series) and relevant map extracts are presented in Appendix 14.1. The 17th-century Down Survey mapping (1660s) depicts the Croughaun Hill area, which is annotated as 'Mouantine belonging to Mishill', as unprofitable mountain lands with no settlement indicated. The 6-inch OS map depicts the majority of the main wind farm site as open upland heathland with marginal fields encroaching into the lower southern and western slopes and there are no farm buildings or other structures shown within proposed turbine locations, new access roads and other elements of the wind farm (Appendix 14-1. Figure 14-2). The 6-inch map shows the location of Hollybrook House in the lowlands to the west of Croaghaun Hill within an area of formal demesne lands surrounded by attendant farmland. The house's associated curtilage and attendant farmlands are shown confined to the low ground beneath the western slopes of the hill and do not extend into the main wind farm site. The general layout of the hillside shown on the 25-inch OS map is broadly similar to the 6-inch edition indicating that no significant alteration of the landscape occurred in the second half of the 19th century other than some divisions of the lower fields while the upper hillslopes continue to be occupied by vacant heathland. There are no potential unrecorded archaeological sites indicated within the main wind farm site on any of the reviewed cartographic sources.

Aerial, Satellite and LiDAR imagery

The detail on the consulted aerial and satellite images demonstrates that the majority of the main wind farm site has been occupied by a commercial forestry plantation since at least the 1990s. A study by the Heritage Council of Ireland on the impacts of forestry plantations on archaeological sites, including their surface and buried elements, has noted that the initial planting process involves a number of ground disturbance activities, such as ploughing, drainage, access roads and planting, that has the potential to destroy or severely impact any sites within the plantation (Johnson 1998). Further impacts are also likely to occur during the operational phase of the plantation through continued disturbance by extensive root systems, which will entwine with any sub-surface archaeological deposits or features with little or no potential for removal without causing further destruction (*ibid.*). Additional ground disturbance during subsequent harvesting and replanting processes were also noted. The study also concluded that given the impossibility of aerial reconnaissance and access constraints during field surveys, the potential for detecting unrecorded sites within forestry plantations is unlikely to be possible.

However, the development and widespread use of LiDAR technology in recent years has allowed for the potential for reconnoitring forestry plantations through the use of imagery that can screen out the forestry canopy and allow an assessment of the presence of potential archaeological sites. To this end, the LiDAR imagery of the forestry plantation was reviewed as part of this assessment. This review indicated that the ground surface within the plantation has been impacted by extensive cultivation and drainage works and no visible surface traces of potential unrecorded archaeological sites or architectural heritage structures were noted (Appendix 14-1. Figure 14-3).

Undesignated Cultural Heritage Assets

While encompassing the protected archaeological and architectural heritage resources, cultural heritage also includes various undesignated assets such as historic settlements, demesne landscapes, vernacular structures, folklore, placenames, townland boundaries and historical events. There are no historic settlements, vernacular structures, demesne features or associations with historical events located within, on in close proximity to, the main wind farm site. A number of townland boundaries extend through the forestry plantation on the hill and associated landscape features such as banks or ditches that demark their extent are typically considered to be features of local cultural heritage interest worthy of recording. The historic OS maps show a number of townland boundaries traversing the plantation and these are indicated as linear cartographic features that do not appear to have been associated with constructed land division features such as field banks and the majority are now occupied by modern forestry roads.

The main wind farm site is located in the civil parishes of Barragh and Myshall and extends into four townlands: Kilbrannish North, Cranemore, Rossacurra, and Aclare (see Table 14-7). 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 boundaries and nomenclature of the Irish townlands were recorded and standardised by the Ordnance Survey in the 19th century. The Irish roots of townland names often refer to natural topographical features, but some name elements may also give an indication of the presence of past human activity within the townland, e.g. lios or rath indicate the presence of a ringfort while names containing elements such as kill or temple are often indicative of ecclesiastical activity.

Table 14-7: Translation of townland names

Townland	Irish origin	Translation	Indicative potential
Kilbrannish North	Cill Bhreatnais Thuaidh	*'Welsh Church' (north)*	*There are no known ecclesiastical sites in Kilbrannish North although there are a number of recorded examples in Kilbrannish South in lower lying lands to the south of the main wind farm site*
Aclare	Áth Cláir	*'ford of the board'*	*Topographical description and historical land use*
Rossacurra	Ros an Churraigh	*'wood of the moor'*	*Topographical description*
Cranemore	An Corrán Mór	*Large area of rocky ground'*	*Topographical description*

The Irish National Folklore Collection contains a number of entries for the general area, although none specifically refer to Croughaun Hill, that record stories associated with holy wells, a stone row and church sites which appear to refer to known archaeological sites within surrounding townlands (Table 14-8).

Table 14-8: Summaries of local folklore traditions (source www.duchas.ie)

Source	Summary of transcript	Observations
Tom Foley	There are several fields in my district having names as The Reilig, Davis Field, the Rath and Castle field. The two best known of those fields are the Reilig and Castle field. The Reilig which is situated in Kilbrannish is owned by Mr Rothwell. A curious fact is that the Reilig is very near St Brigid's well. The Reilig as the name implies was an old graveyard. Some people say it was used by the parish as a burial place. There are four or five tomb stones. There is writing on one of them. This field is never tilled. The Castle field is in Clonmullen near Kilbrannish. In this field the castle of Eileen Aroon was supposed to have been built, and people believe that there is a tunnel under this field, and they found an underground room.	The Kilbrannish relig with a nearby holy well mentioned in this transcript likely refer to the known burial ground (CW020-020001-) and well (CW020-019----) located c2km to the south of the main wind farm site The recorded location of Clonmullen Castle (CW021-003----) is c.5km to the southeast of the main wind farm site
Mary B. Donohoe	There is a place near the foot of Mount Leinster called the Nine "Stones" and the people say that nine rebels were killed and buried there during the rebellion of '98. These men were natives of County Carlow and were coming home from the war in Wexford. The names of these men are not known. These men are also known as the "unknown warriors." This historic spot is visited by tourist in the summertime.	The Nine Stones are a recorded archaeological site (CW020-017---) which is located c.2.95km southwest of the main wind farm site
Annie Hayden	In days called the penal days. The people suffered very much from hunger. The English would not let them get anything except what they had. There was a man who lived in Cranemore at that time. He took up the flags of his own floor and sold them to another man in Cranemore for a bit to eat. There is a mass rock in Barragh. The priests said mass there. This was a very dangerous place because the soldiers stayed for days in Barragh. There was a Church in Kilbranish. There are the ruins of it there now. There is also a blessed well there and a graveyard there but not all Catholics were buried there. Many people visit the blessed well.	Barragh townland is located c.3km to the north of the main wind farm site The Kilbrannish graveyard and nearby holy well referred to in this story likely refer to the known burial ground (CW020-020001-) and well (CW020-019----) located c.2km to the south of the main wind farm site

14.3.3.3 Grid Connection

As described in Chapter 3, the proposed grid connection will extend northwards from the main wind farm site to the existing Kellistown substation and does not enter any villages or towns. The grid connection within the environs of Kellistown substation comprises two new self-contained substation options within adjacent areas, one within a field to the south of the substation and a second in a field to the east. The majority of the route follows existing public roads with localised areas within green fields and it extends through a landscape dominated by undulating pasture farmland. The required watercourse crossings along the route will be achieved by horizontal direction drilling in most instances and no interventions to bridge structures will be carried out. The potential exists for the use of 'dry-trench scenario' during dry conditions at minor streams where it may be possible for trenching associated with the grid connection to open cut through a dry stream bed instead of horizontal directional drilling under it.

There are no recorded archaeological sites located on the public road network or within the green field areas that will form the route. There are also no recorded archaeological sites within the 100m study areas within any of the green field areas. The sections of the public road network that form the route extend within the environs of a number of archaeological sites within adjacent fields and five of these are within the 100m study area centred on the route. None of these sites have recorded known elements that extend into the roadways. In addition, there is one recorded archaeological site located within 200m of the proposed location of an offsite substation option adjacent to the east side of the existing Kellistown substation. This comprises a levelled enclosure located within private lands located 185m to the north.

Table 14-9: Known archaeological sites within environs of the grid connection

SMR No.	Class	Townland	ITM E	ITM N	Approx. distance from route
CW013-003----	Barrow - mound barrow	KELLISTOWN EAST	679998	671041	10m to north
CW013-024----	Enclosure	BENDINSTOWN	680043	669661	Adjacent
CW013-120----	Ring-ditch	KELLISTOWN EAST	679841	670956	10m to north
CW017-045----	Children's burial ground	MYSHALL	684132	660123	10m to north
CW017-052----	Burial ground	SHANGARRY	681290	661193	20m to west
CW008-060----	Enclosure	KELLISTOWN EAST	679851	671837	185m to north of east offsite substation option

The ASI have published the following inventory descriptions of these archaeological sites:

CW013-003---- Barrow

Mound (H 3m; base diam. 16m) with steep sides and small, rounded summit.

CW013-024----Enclosure

Shown as circular enclosure on 1839 'OS 6-inch' map and described by O'Donovan as a 'broken rath' (OSL 1839, 127) (est. diam. c. 40m). Small portion of bank at NE incorporated in the field boundary with Ardbearn townland. Possibly a ringfort.

CW013-120---- Ring-ditch

Aerial photograph (GB90.BX.08, 13 July 1990) shows cropmark of a ring-ditch.

CW017-045---- Children's burial ground

According to O'Donovan (OSL 1839, 129), 'a small burial ground for still-born children'. Uncultivated, unenclosed area.

CW017-052---- Burial ground

Marked 'Site of Burial Ground' on 1839 OS '6-inch map'. Burials found here during construction work in the 1950's.

CW008-060---- Enclosure

Visible on aerial photographs (ASIAP (49) 12-14).

There is one NIAH-listed structure located within the grid connection study area and this comprises a former lodge (NIAH 10301305), now in use as private residence, on the north side of the N80 road in Kilknock townland (ITM 680344, 667901) (Appendix 14-1, Figure 14-8). This lodge was associated with Kilknock House, which was formerly located in lands on the opposite (south) side of the N80 road. The house was demolished in the 1940s and its associated lands were subsequently impacted by the construction of the existing N80 road later in the 20th century. The County Carlow Record of Protected Structures (RPS) and the NIAH do not list the former location of the house although the RPS does lists the remains of two associated features within its property which comprise a former walled garden (RPS ref. CW355) and the ruins of a small hexagonal outbuilding (CW354) which are both located to the south of the N80 road (Appendix 14-1, Figure 14-8). A section of the proposed grid connection will extend eastwards through a green field area adjacent to the south side of a field bank which forms the southern margin of the N80 in this area. This route will not extend close to the location of the walled garden, which is outside the study area at a distance of c.100m to the south. The small hexagonal building is located c.10m to the south of the N80 road and the cable trench will avoid its location by extending through an overgrown green field area to the north of its location. A review of the historic OS maps revealed no other structures or features associated with the demolished Kilknock House located within the environs of the proposed grid connection route in this area.

While the grid connection avoids Myshall village it does extend along a section of the L3033 road c.450m to the south of the settlement (Appendix 14-1, Figure 14-10). This road is known locally as the Croppy Road and it is recorded that this name originated in the aftermath of the 1798 rising when a local priest interceded with Robert Cornwall of Myshall Lodge on behalf of members of the outlawed United Irishmen who were given the option of building the road rather than facing execution. A review of the 6-inch OS map (1830s-40s) indicates that the existing public road follows the same line as the 19th century road. The road is commemorated by a modern wall plaque in the village and, while it is not listed as an archaeological site or a designated architectural heritage feature, its historical association is of local cultural heritage significance. The wall-mounted roadside plaque is at a road junction located c.450m to the north of the nearest section of the grid connection.

14.3.3.4 Turbine Delivery Route

The turbine delivery route shall approach the site from the east via Dublin Port, the M11, the N80 and the L2026 Barkers Road through the town of Bunclody before turning into the south end of the main wind farm site at Killbrannish North. The SMR lists a number of archaeological sites within the road-take of the section of the M11 that forms part of the turbine delivery route. These comprise sites that were discovered and resolved through systematic archaeological excavations prior to the construction of the road and no longer exist at their recorded locations. Bunclody town contains a number of buildings included in the NIAH and RPS which also list a channelled stream that extends within a pedestrian area in the centre of the main street (NIAH ref. 15602071). The transport of turbines through the town will require the removal of a number of modern street furniture features but will not result in any interventions to any designated architectural structures or features within the settlement. There are no recorded archaeological sites located within 100m of the section of the route that extends through Bunclody and the settlement is not designated as an archaeological area in the Sites and Monuments Record.

The section of the L2026 road that will form part of the delivery route to the northwest of Bunclody extends through the centre of an archaeological enclosure site (CW020-008----) in Kilbrannish North townland and the ASI inventory entry for this site is provided in Section 14.3.3.2 (see also Appendix 14-1, Figures 14-1 and 14-12).

The roadway in this area is present on the 6-inch OS map which shows it truncating the northern half of the enclosure, the interior of which is shown occupied by planted trees, indicating that the disturbance of the site by the construction of the existing road pre-dates the 1830s. Minor widening works of a narrow grass verge on the south side of the road within the enclosure are proposed as part of the turbine delivery route and further details on this intervention are provided in Section 14.3.4.3.

The turbine delivery route will require the construction of a temporary bridge structure over a stream to the east of the enclosure and this work will not extend into the Zone of Notification (ZON), as designated by the NMS, around the enclosure or within the ZONs around the recorded locations of a standing stone (CW020-022---) in a field to the northeast and a burial ground in a field to the south (CW020-009----) (Appendix 14-1, Figure 14-1). The ASI inventory entries for these two sites are presented in Section 14.3.3.2. An existing masonry bridge adjacent to the north side of the proposed temporary bridge is not listed in the RPS or NIAH and has previously been subject to widening works that are modern in appearance. No interventions to this existing bridge are proposed. A review of historic mapping of the proposed location of the temporary bridge revealed no potential unrecorded archaeological or architectural heritage features.

14.3.4 Field Survey

14.3.4.1 Main Wind Farm Site

The main wind farm site was inspected in July 2020 during clear weather conditions that allowed good landscape visibility. In general, the current use and layout of the site when compared to the detail shown on the historic OS maps demonstrates the extent of the 20th century interventions during the creation of the forestry plantations within the former area of open heathlands. Apart from Turbines 3 and 6, the majority of proposed wind farm construction locations are within sections of the forestry plantation under tree cover with localised areas that had been felled at the time of inspection. All of the forested areas have been subject to widespread ground disturbance activities resulting from the creation of the plantation, including ground preparation works, land drains and forest roads as well as the subsequent development of extensive root networks. The underlying natural subsoil was noted within many exposed cut sections not obscured by vegetation and, in general, the topsoil cover was shallow in depth within exposed areas. The construction of the stone-surfaced forestry roads and their flanking drains within the plantation all appear to have resulted in the reduction of ground levels down into natural subsoils. There were no traces of potential archaeological features, unrecorded built structures, pre-forestry field boundaries or trackways noted during the inspections of the main wind farm site. As detailed in Table 14-10, a number of proposed works areas are within felled and thinned sections of the plantation while others are within areas of closely-planted inaccessible forestry. As noted in Section 14.3.3.2 (Aerial, Satellite and LiDAR imagery), the presence of forestry plantations can hinder archaeological field-walking surveys and a review of LiDAR imagery of all areas under forestry was therefore carried out in order to supplement the field survey. There are no wide watercourses located within the main wind farm site and where narrow, shallow streamlets were noted within the forestry plantations they have been collected into modern earth-cut drains.

The field survey included inspections of the locations of three recorded extant archaeological sites with potential visual alignments located in accessible lands within 10km of the main wind farm site. The recorded locations of the two possible cursus sites located within the hills to the southwest of the main wind farm site comprise very steep, open hillslopes and no visible surface trace of the eastern example (CW020-027---) was observed from the public road below its location. There were very slight surface traces of the western example (CW020-026----) noted from the ridgeline above its location and comprised two barely perceptible low banks within the steeply sloping heathland.

Their recorded orientations to the north-northwest face over an extensive low plain that extends in that direction and the main wind farm site, which is located to the northeast, does not intrude into the projected alignments of either example. The two potentially associated cairns cited in the ASI inventory descriptions of the possible cursus sites are within upland slopes to the southeast and are not visible from the main wind farm site. A cairn (CW020-016----) on the ridgeline above the cursus (CW020-026----) was inspected and survives as a low dispersed mound of stones which may have been impacted by hillwalker activity as it is located adjacent to a public walkway along the ridge line. There is no existing inter-visibility between its location and a cairn (CW023-007----) on Mount Leinster to the southeast which the ASI record was damaged by the construction of an Ordnance Survey (OS) trigonometrical station. There are no known cairn sites on Croaghaun Hill that the examples on surrounding hillsides may have had visual alignments with and no former examples on the hill are indicated on historic OS maps. The locations of the cairns and two potential cursus sites within the hills in the area are not indicated on the public signage or information boards within the public car park on the nearby hillside. The location of the stone row (CW020-017---) on the spur between the two cursus sites comprises nine upright low stones (0.3m-0.6m high) which are set on an east-west long axis that does not align towards the main wind farm site which is located to the northeast. The tops of the stones are below the surface of an adjacent modern road to the south and it comprises a low-set feature does not form a visible feature within the wider landscape although it is included on public signage in the area and lends its name to an adjacent modern car park.

Table 14-10 (below) provides descriptions of the existing environment at the locations and environs of each proposed turbine hardstand and associated access roads as well as the location of the compound, substation, met mast and a borrow pit. The table also provides a summary of the character of each development area as shown on the historic OS maps as well as distances to the nearest recorded archaeological site and the results of a review of aerial and LiDAR imagery at each location.

Table 14-10: Description of wind farm development areas with references to consulted desktop sources

Project Element	Townland	Description/ Character	Approx. distance to nearest archaeological site	1st edition 6" OS Map	Aerial and LiDAR images
Turbine 1	Aclare	Located within slightly sloping ground within an accessible, closely-planted forestry plantation in mid-slope area of north side of the hill with extensive views to north. There is new forest growth at the location but extensive large tree stumps occupy the ground surface. An inspection of the section of an adjacent forest road indicates that there is a shallow soil cover over natural subsoils in the area. Access route to location follows an existing forest road	Standing Stone (CW020-028----) located c. 1,220m to east	Unenclosed, marginal vacant land.	Shown within forestry on 1995 OSI aerial image. No potential archaeological sites or built structures visible on LiDAR.
Turbine 2	Kilbrannish North	Within an accessible area of widely-spaced forestry in generally level terrain on the upper area of the hill. There are widespread plantation furrows running parallel with the tree lines and the ground surface appears to have been extensively disturbed. Access route includes a *c.*130m long new road extending through planted area from an existing forest road to the east	Standing Stone (CW020-028----) located c. 560m to northwest	Unenclosed, marginal vacant land.	Shown within forestry on 1995 OSI aerial image. No potential archaeological sites or built structures visible on LiDAR.
Turbine 3	Kilbrannish North	Located within an accessible reclaimed pasture field on lower slopes of the south side of the hill within an area sloping gradually down to south. The hardstand extends from an inaccessible planted area at east into the reclaimed pasture field at west. No surface traces of any potential unrecorded archaeological features were noted within the field and the presence of large stones	Standing Stone (CW020-028----) located c. 670m to north	Unenclosed, marginal vacant land.	The forestry plantation on east side is shown on 1995 OSI aerial image. The pasture field on the east side is shown as marginal land, possibly under gorse, on all OSI aerial images while more recent Google Earth images show it as

Project Element	Townland	Description/ Character	Approx. distance to nearest archaeological site	1st edition 6" OS Map	Aerial and LiDAR images
		along boundary indicated recent land improvement works have occurred which may have impacted on the ground surface. The ground surface within the east end has been extensively disturbed by the forestry plantation. Access route will include a *c.*170m long new road extending through planted area from an existing forest road to the east			green pastureland, indicating recent reclamation works. No potential archaeological sites or built structures are visible on LiDAR.
Turbine 4	Aclare	Located on the upper slopes on the north side of the hill within an area gradually sloping down to north. The ground surface on the west side of the proposed hardstand is occupied by a felled area with widespread thick tree stumps remaining and visible surface traces of exposed subsoil. The east end extends into an inaccessible, closely-planted forested area. The access route to the location will comprise a *c.*350m long road that will extend through the forestry from a forest road to the southwest.	Standing Stone (CW020-028----) located c. 1,110m to west	Unenclosed, marginal vacant land.	Shown within forestry on 1995 OSI aerial image. No potential archaeological sites or built structures visible on LiDAR.
Turbine 5	Kilbrannish North	Located within an accessible area of felled forestry on the mid-slopes of the southern side of the hill. The ground surface is occupied by widespread thick tree stumps and has been extensively disturbed. Access to location is from an existing forest road on the north side	Standing Stone (CW020-028----) located c. 850m to northwest	Within large, vacant reclaimed field	Location shown as a field on 1995 OSI aerial image with forestry present on a 2000 image. No potential archaeological sites or built structures visible on LiDAR.
Turbine 6	Cranemore	Within an accessible area of gently sloping open heathland on the east side of the hill. No surface traces of any potential unrecorded archaeological sites or built heritage features were noted. Access route from south will	Enclosure (CW020-008----) located c. 1,560m to south	Unenclosed, marginal vacant land.	No potential archaeological sites or built structures visible on aerial or LiDAR which show linear land

Project Element	Townland	Description/ Character	Approx. distance to nearest archaeological site	1st edition 6" OS Map	Aerial and LiDAR images
		comprise a c.120m long new access road within the adjacent forestry plantation and this will then continue through forestry for c. 650m to the west where it joins an existing forest road. The ground surface along this route has been extensively disturbed by planting.			drains extending through the area.
Turbine 7	Kilbrannish North	Located on mid-slope of southern side of the hill in an area of gradually sloping disturbed ground within an accessible section of the forestry plantation. Access to location is from an existing forest track to east. The ground surface at this location has been extensively disturbed by planting.	Standing Stone (CW020-028----) located c. 1,340m to northwest	Unenclosed, marginal vacant land with a linear land boundary feature extending through location on a NW-SE orientation	Shown within forestry on 1995 OSI aerial image. No potential archaeological sites or built structures visible on LiDAR.
Compound	Kilbrannish North	Located within an accessible area of the forestry plantation to the south of Turbine 6. The terrain within the area is broadly level with extensive ground surface disturbance created by forestry planting	Enclosure (CW020-008----) located c.1,490m to south	Shown within a vacant marginal field	Forestry cultivation appears to be evident at location on 1995 OSI aerial image and new growth visible on 2000 image. No potential archaeological sites or built structures noted on LiDAR.
Borrow Pit	Aclare	Located within the west end of the same felled area as Turbine 4 with the southwest half extending into an inaccessible planted area	Standing Stone (CW020-028----) located c. 960m to west	Unenclosed, marginal vacant land.	Shown within forestry on 1995 OSI aerial image. No potential archaeological sites or built structures visible on LiDAR.
Met Mast	Rossacurra	Located within inaccessible forestry to the southwest of Turbine 2. An inspection of the environs of the location indicated extensive	Standing Stone (CW020-028----) located c. 400m to northwest	Unenclosed, marginal vacant land.	Shown within forestry on 1995 OSI aerial image. No potential archaeological

Project Element	Townland	Description/ Character	Approx. distance to nearest archaeological site	1st edition 6" OS Map	Aerial and LiDAR images
		ground surface disturbance created by planting			sites or built structures visible on LiDAR.
Substation	Rossacurra	Located within inaccessible forestry on the mid-slopes of the north side of the hill. An inspection of the environs of the location indicated extensive ground surface disturbance created by planting	Standing Stone (CW020-028----) located c. 880m to southwest	Unenclosed, marginal vacant land.	Shown within forestry on 1995 OSI aerial image. No potential archaeological sites or built structures visible on LiDAR.
Recreation trail		This trail follows existing stone forest roads within the forestry plantation to the west of the main wind farm site. There are localised weathered areas where an inspection of gaps in the stone surface revealed underlying natural subsoils indicating that their construction involved ground excavations. The creation of the trail will entail upgrading of the surfaces of existing roads and no excavations for new sections will be required. A section of one of the existing tracks outside the boundary of the main wind farm site was also inspected. The track extends c.10m to the east of Standing Stone (CW020-028----) and its construction did not impact on the monument location	Standing Stone (CW020-028----) located c. 70m to north	Unenclosed, marginal vacant land.	The existing forest roads are shown within the plantation on the OSI aerial images. No potential unrecorded archaeological sites or built structures visible on LiDAR adjacent to the roads.

14.3.4.2 Grid Connection

The majority of the grid connection extends along the public road network between Kellistown substation and the main wind farm site with localised diversions through green field areas. The roads extend through a low-lying undulating land dominated by pasture farmland and their modern tarmac surfaces are broadly level with ground levels in the adjacent fields indicating that their construction involved ground excavation works rather than the introduction of embankment fills on existing ground surfaces. The majority of the road margins are delimited by field banks with localised narrow grass verges and the dispersed roadside houses are dominated by modern detached residences. The route extends across the location of a number of watercourses and the crossings will be achieved by horizontal directional drilling (HDD) which will result in the avoidance of works to bridge structures or within the channels. The potential exists for the use of 'dry-trench scenario' during dry conditions at minor streams where it may be possible for trenching associated with the grid connection to open cut through a dry stream bed instead of horizontal directional drilling under it. A visual appraisal of these minor watercourses was undertaken from adjacent areas as part of the site inspection.

The grid connection within the environs of Kellistown substation comprises two new self-contained substation options within adjacent areas, one within a field to the south of the substation and a second in a field to the east. No surface traces of potential unrecorded archaeological sites were noted during the inspection of the green field areas at the locations of both options. A levelled enclosure (CW008-060----) located 185m to the north of the eastern example is the only known cultural heritage asset located within 200m of either option (Appendix 14-1, Figure 14-5). This levelled site is with a field in a private landholding and is not visible from the eastern option. The grid connection to the eastern option follows a public road to the west and north of the existing Kellistown substation before extending into a field on its east side. The study area for this route option contains the recorded location of ring-ditch (CW013-120----) which is located in a field to the east side of the road to the west of the proposed substation location. The route to the southern substation option extends from the public road to the south through a tillage field and the 200m study area centred on its location contains no recorded archaeological sites. The section of the grid connection study area extending within the public road to the south of this substation option contains a barrow (CW013-003----) and the recorded location of a ring-ditch (CW013-120----) which are both contained within fields to the north of the road. No traces of any elements of these sites were noted during an inspection of the road margin.

The grid connection extending to the southwest of Kellistown substation also contains two options, one which follows the existing public road to the west and then to the south while the other extends in a southwest direction through four pasture fields and one watercourse. The route using the fields is the primary option with route in the public road as the alternative worst case option. There are no recorded archaeological sites or designated architectural heritage structures within the 100m study area centred on either option and no surface traces of potential unrecorded archaeological sites were noted during the field survey, which included a visual appraisal of the shallow watercourse which will be crossed by HDD. The lands between the two options contain the locations of a barrow site (CW013-019----) and a church and graveyard (CW013-020001-/02-) which are located outside the study areas. The route option that follows the roadway extends over an undesignated triple-arched bridge structure with random rubble stone parapets that contain sections of concrete repair (ITM 679111, 670061). The structure is named Ballynunnery Bridge on the 6-inch OS map and appears to be of 18th or early 19th century construction. While the structure is not listed in the RPS or NIAH it is, nonetheless, of low architectural heritage significance. It will be avoided by the use of HDD which will also avoid impacts on the underlying watercourse.

The grid connection then follows the public road southwards towards the N80 road and the study area centred on this section contains an enclosure site (CW013-024----) which now has a modern roadside house occupying its recorded location and no visible surface remains were observed from the roadside.

A cast-iron water pump is located along the north side of the road at a distance of c.80m to the east of the enclosure (@ITM 680131, 669619). The pump is contained within a concrete walled feature, which is open on the roadside and, while this example is not listed in the NIAH or RPS, these types of common rural features are of local cultural heritage interest. The pump and its walled feature are separated from the roadside by a narrow grass verge and neither are on the direct line of the grid connection (Appendix 14-1, Figure 14-7)

The section of the roadway forming the grid connection in the area to the north of the N80 passes a private residence listed in the NIAH (ref. 1030130) which as previously noted was originally a gate lodge belonging to the now demolished Kilknock House in the lands to the south (Appendix 14-1, Figure 14-8). The house is set back from the road and a car bay and a newly constructed garden wall are situated between it and the road margin. The location of a hexagonal outbuilding associated with the former house on the south side of the N80 was inspected and found to be completely overgrown and inaccessible, but derelict remains of the structure were visible within the thick overgrowth. This section of the grid connection will extend inside the field boundary to the south of the roadside and will be positioned within an area to the north of the outbuilding in order to avoid its location (Appendix 14-1, Figure 14-8). The other green field areas of this section of the route flanking the south side of the N80 were inspected and no traces of any other features associated with the former house were noted. The route then re-joins a public road to the east which extends to the south of the N80 towards the general environs of Myshall village. There is one recorded archaeological site within this study area which comprises the recorded location of a possible burial ground (CW017-052----) within a property to the east of the road (Appendix 14-1, Figure 14-9). The ASI inventory description of this site notes that no surface trace exists and that it may have been impacted by construction works during the 1950s. These works may have been associated with a 20th-century house at its recorded location which is visible from the north and is set c.20m back from the roadside. The views of a green field area to the west of the house were screened from that direction by a roadside hedgerow. No traces of a potential associated enclosing feature were noted during an inspection of the road margins within the environs of this site.

The section of the road to the south of Myshall village, which is locally known as the Croppy Road, has been recently re-surfaced and is flanked by earthen field boundaries on both sides (Appendix 14-1, Figure 14-10). No surface traces of any original late 18th or early 19th century features associated with the original construction of the road were noted although the potential for buried traces of an earlier road surface of local cultural interest cannot be discounted. The grid route will extend to this area through a number of pasture field to the west which were being grazed at the time of the site inspection. There are no recorded archaeological sites or designated architectural heritage structures located within these lands and none were noted during the site inspection.

The section of the grid route in Myshall townland to the north of the main wind farm site follows a public road that extends past the recorded location of a children's burial ground (CW017-045----) which was noted by the Ordnance Survey in the 19th century. The recorded location is within a field to the north of the road which is screened by a tall hedgerow and it is noted that the ASI description does not refer to any visible traces of the site (Appendix 14-1, Figure 14-11). No potential associated features, such as upright stone grave markers, were noted along the road margin during the inspection undertaken as part of this assessment. The grid route leaves the public road in the area further to the east and extends towards the north end of the main wind farm site through a number of pasture fields, a small stream and an existing farm trackway. The section of the stream crossing was visually appraised and nothing of archaeological significance was noted within the shallow, narrow eroded channel. There are no recorded archaeological sites within 100m of the green field section of the route and recent ground works associated with land improvement activity were evident in a number of the fields, including at the location of the derelict partial remains of a farmyard shown on historic OS maps which is outside the west side of the grid route. The existing farm trackway in the southern end of this section appears to have been created to access another 19th century farmyard which is outside the east side of the grid route and will not be impacted.

14.3.4.3 Turbine Delivery Route

The turbine delivery route will entail the use of the existing M11 and N80 roads from Dublin Port and no works to these public roads will be required. An inspection of the locations of proposed work areas to accommodate the turbine delivery route along a section of the L2026 road in Killbrannish North townland in the area to the south of the main wind farm site was undertaken as part of the assessment. This included the location of an area of minor widening of the grass verge along a section of the south side of the road which extends through a levelled archaeological enclosure (CW020-008----) (Appendix 14-1, Figure 14-12).

As noted in Section 14.3.3.4, the construction of the road likely post-dates the enclosure and resulted in the disturbance of the original ground surface on its footprint. The existing road surface is broadly level with the field to the south and no surface traces of the section of the enclosure within that area were observed. The inspection the grass verge along the south side of the road revealed that it forms the basal element of an earthen field boundary bank that now flanks the south side of the road and is likely contemporary with its construction. The grass verge has been disturbed by the excavation of an existing open drain at the base of the earthen bank and the grass-covered verge material above road level appears to comprise recent upcast from the drain. In addition, recent recutting activity within the verge was evident and an inspection of the exposed verge material indicate that it is formed by redeposited topsoil material.

An inspection of the location of a proposed temporary bridge over a stream to the east of enclosure CW020-008---- was also carried out. This is located outside the enclosure's Zone of Notification and no potential cultural heritage features were noted at the location which comprises an area of steep, overgrown ground extending down from the road to the north. The narrow, shallow stream channel has a stony, gravel bed and was fast flowing at the time of inspection. The historic OS maps which do not depict any associated features, such as a weir or stepping stones at the location and none were noted during a visual inspection undertaken from the adjacent banks during the field survey. The proposed methodology for the construction of the temporary bridge does not require any interventions to the existing channel. An existing masonry road bridge to the north of the proposed temporary bridge is not listed in the RPS or NIAH and has previously been subject to modern widening works which comprised the construction of a concrete extension on its southern side. No interventions to this existing bridge are proposed as part of the turbine delivery route.

14.4 Potential Impacts

The following sections present assessments of potential impacts on identified cultural heritage assets within the environs of the various elements of the proposed development and these are then collated in table format (Tables 14-11 to 14-15). The values assigned to the various assets are identified in these tables were determined based on the results of the desktop study and sites inspections and follow the guidelines outlined in Table 14-2.

14.4.1 Do Nothing Scenario

A 'Do Nothing Scenario' will see to the continued preservation of recorded and potential cultural heritage features within the study areas.

14.4.2 Construction Phase

Wind Farm Direct Impacts

There are no recorded archaeological sites located on the footprint of the main wind farm site, or within 560m of the locations of any proposed turbines, and no potential unrecorded archaeological sites were identified within the area during the desktop study and field inspections undertaken as part of this assessment. There are nine recorded archaeological sites located within 2km of the main wind farm site and of these eight are levelled or partially levelled while one standing stone (CW020-028----) remains extant. None are designated as National Monuments or have been assigned preservation orders and based on the criteria outlined in Table 14-2, they are interpreted as being of low-medium values (Table 14-11).

Given the absence of any known archaeological sites within 560m of the proposed wind farm turbines or within 400m of associated infrastructure it is concluded that the construction phase will, therefore, have no predicted direct impacts on the known archaeological resource.

The proposed recreational trail that will extend through the environs of the wind farm will utilise an existing forest stone road and terminates c.70m to the south of standing stone CW020-028---- (Appendix 14-1. Figure 14-1). The creation of the trail will entail minor re-surfacing of the weathered stone surface of the existing track to the south of this monument which will not result in any predicted impacts on the standing stone.

The forestry plantation that occupies the majority of the main wind farm site has resulted in extensive ground disturbance which has a high potential to remove or severely degrade archaeological sites and associated sub-surface deposits (Johnson 1998). While there is a low potential for the presence of unrecorded, archaeological sites within the forestry plantation, the survival of elements of unrecorded archaeological remains cannot be completely discounted. As the existence, nature and extent of any such unrecorded archaeological remains are unknown; the level of potential impacts is deemed indeterminable but ground works during the construction phase will have a potential to result in permanent, direct, negative effects on any unrecorded archaeological sites that may survive within the footprint of the development.

There were no designated or undesignated architectural heritage structures or other features of cultural heritage significance, such as extant townland boundaries, identified within the proposed wind farm construction areas, the majority of which are depicted as unenclosed, vacant heathland on the consulted historic OS map sources. The construction of the main wind farm site will, therefore, have no predicted direct impacts on the known architectural or cultural heritage resources.

Wind Farm Indirect Impacts

Given that there are no recorded archaeological sites located within 560m of the wind farm turbines or within 400m of associated infrastructure, no indirect impacts on the setting of the known archaeological resource are predicted during the construction phase.

There are no known architectural heritage structures or undesignated cultural heritage assets within the environs of the main wind farm site and no indirect impacts on the setting or associates with these elements of the cultural heritage resource are predicted during the construction phase.

Grid Connection Direct Impacts

There are no recorded archaeological sites or designated architectural heritage structures located on the direct footprint of the grid connection and it does not extend into any historical villages or towns.

The proposed grid connection will, therefore, result in no direct impacts to the known elements of these resources. There are also no recorded archaeological sites or designated heritage structures located at the proposed locations, or close environs, of the new substation options at Kellistown and no potential unrecorded examples were identified during the survey of both locations.

There are five recorded archaeological sites within the 100m wide study area centred on the proposed grid connection and all are located within fields adjacent to sections of the route that will extend along existing public roads. The majority of these sites appear to have been levelled in recent centuries and none have any recorded elements that extended into the areas now occupied by the nearby sections of roads. While the ground excavation works undertaken during the construction of these roads likely reduced original ground down to the level of natural subsoils the potential for the presence of hitherto unrecorded archaeological features associated with these sites cannot be entirely discounted.

While there are no recorded archaeological sites within the close environs of the sections of the grid connection that will extend through green field areas the potential for the presence of unrecorded, subsurface archaeological features also exist in such areas. A section of the grid connection will extend along a public roadway to the south of Myshall village which is known locally as the Croppy Road. The installation of the cable trench within this road will have a not significant impact on its historical association. While the existing road surface in this area is modern in date, the potential for the presence of earlier subsurface traces of an original late 18th/early 19th century road of local cultural heritage interest may also exist. As the presence, nature and extent of potential sub-surface archaeological features along the grid route is unknown, the magnitude and significance of effect is indeterminable but may be direct and negative.

The grid connection methodology will involve the use of horizontal directional drilling (HDD) primarily under watercourses and will not require any direct impacts to undesignated masonry bridges that may be of architectural heritage interest or their associated channels which may contain potential unrecorded underwater archaeological features or artefacts.

Grid Connection Indirect Impacts

The excavation and subsequent backfilling of the cable trench will result in no likely indirect impacts on the known cultural heritage resource because there are no recorded cultural heritage assets on the footprint of the trench within the public roads or green field areas and the existing ground surface will be reinstated following the installation of the cable.

Turbine Delivery Route Direct Impacts

The delivery of the turbines to the main wind farm site will not require the construction of any new sections of roads and will not require any interventions to any architectural heritage structures or conservation areas. This element of the proposed project will, therefore, result in no direct impacts on the known architectural heritage resource. There are no recorded archaeological sites within 100m of the route that extends through Bunclody village, which is not designated as an archaeological area in the SMR, and no predicted impact on the archaeological resource will arise if overhead lines within the settlement are put underground to facilitate turbine component deliveries.

The delivery of turbines will require minor temporary road widening works along a southern grass verge within a recorded archaeological enclosure (CW020-008----) in Killbrannish North townland to the south of the main wind farm site. The temporary works will consist of removal of existing upcast topsoil and laying of compacted aggregate in the verge. The construction of the existing road likely post-dates the enclosure and resulted in the disturbance of the original ground surface on its footprint.

The inspection of this area indicated that the grass verge along the south side of the road has been disturbed by an existing open drain at the base of the adjacent field bank with the verge material above road level comprising recent upcast from its excavation. Given the previous disturbance of the location of the proposed minor widening works by the construction of the existing road and open drain within the verge, it is predicted that it will result in a not significant, direct negative impact on the enclosure.

The construction of a temporary bridge over the stream to the east of the enclosure is located outside its Zone of Notification and no potential cultural heritage features were noted at the location during the desktop study or site inspection which included a visual appraisal of the shallow stream. The proposed bridge will require no in-channel works and will not result in any direct impacts on the cultural heritage resource, including any potential unrecorded underwater archaeological features or artefacts.

Turbine Delivery Route Indirect Impacts

The use of public roads to transport the turbines and the localized works along the route will not result in any predicted indirect impacts on the cultural heritage resource because no interventions to the settings of known cultural heritage assets will arise from the temporary nature of the transportation of turbines and localized works .

14.4.3 Operational Impacts

Wind Farm Direct Impacts

The operational phase of the proposed development will result in no predicted direct impacts on the known archaeological, architectural and cultural heritage resources. There are no designated architectural heritage structures within 2km of the main wind farm site and no undesignated structures of potential significance were identified during the assessment.

The successful implementation of the construction phase mitigation measures outlined in Section 14.5 will result in the preservation in situ (by avoidance) or the preservation in record (by archaeological excavation) of any unrecorded, sub-surface archaeological sites or features that may exist within proposed construction areas. There will, therefore, be no predicted direct impacts on any such potential unrecorded archaeological sites during the operational phase.

Wind Farm Indirect Impacts

There are nine recorded archaeological sites located within 2km of the main wind farm site and none of these are located within 560m of proposed turbine locations. The extant standing stone within the study area is screened from the main wind farm site to the east by existing topography and as noted by the ASI it is sited to command views to the west and north. The creation of the recreational trail will utilise an existing forest road and will terminate c.70m to the south of this monument. The remaining archaeological sites within the study area are either levelled or partially levelled and possess no visual sensitivities such as alignments across the landscape. There will, therefore, be no predicted indirect impacts on the setting of the cultural heritage resource within 2km of the main wind farm site during the operational phase.

The recorded archaeological resource within an area extending for 10km from the proposed development was assessed to determine the presence of monuments that may have potential visual alignments across the wider landscape.

Three monuments with potential visual alignments within the hills to the southwest (cursus sites CW020-026---- & CW020-027---- and stone row CW020-017----) have low surface expressions and are not aligned towards the main wind farm site. The proposed development will result in not significant, indirect impacts on the setting of these monuments during the operational phase.

The assessment of visual impacts undertaken by the Landscape and Visual Impact Assessment consultant within the wider region included a number of cultural heritage receptors with potential visual sensitivities which are identified in Chapter 15. The assessment of the sensitivities and impacts on the cultural heritage receptors presented in that chapter were subjected to an archaeological review. No significant visual impacts on cultural heritage assets were identified and, as detailed in Chapter 15, the visual impacts range from imperceptible to moderate in significance.

Grid Connection

The grid connection will comprise a buried cable and will result in no predicted direct or indirect impacts on the cultural heritage resource during the operational phase.

Turbine Delivery Route

No impacts relating to the turbine delivery route will arise during the operational phase because the use of the existing public road network to transport turbines will not arise during the operational phase.

14.4.4 Decommissioning Phase

No direct impacts on known elements of the cultural heritage resource are predicted during the decommissioning phase because there are no recorded cultural heritage assets located within the footprint, or close environs, of the various elements of the wind farm that will be subject to decommissioning. In addition, the decommissioning phase will reverse the indirect, imperceptible-moderate visual impacts on cultural heritage receptors within the wider landscape as identified by the Landscape and Visual Impact consultants (see Chapter 15).

14.4.5 Cumulative Impacts

A review of all existing and approved projects as detailed in Chapter 1 was undertaken in order to assess the potential for cumulative impacts on the cultural heritage resource within the study area. As a result of this review process, the number of projects with the potential to create a cumulative impact with Croaghaun Wind Farm have been identified.

These comprise proposed replant lands at Sroove, Co. Sligo and Crag, Co. Limerick as well as the existing and approved developments within lands in the environs of the project described below that may have potential to impact on the cultural heritage resource in combination with the project. The locations of the proposed replant lands at Sroove, Co. Sligo and Crag, Co. Limerick were subject to a separate assessment and the results are provided in the Environmental Assessment of these lands (Appendix 3-3 and 4-4). In summary, there are no recorded archaeological, architectural or cultural heritage assets located within the boundary of the Sroove replant area while there is one RMP within the Crag boundary which comprises a children's burial ground (LI052-002). The NMS has applied a 40m Zone of Notification around this burial ground and this zone will be maintained as an exclusion area during replanting works resulting in no predicted direct impacts on the site.

In addition, there are no recorded cultural heritage assets located within the commercial forestry plantations surrounding the main wind farm site and these planting works resulted in no likely impacts on known assets.

There are no recorded archaeological sites or designated architectural heritage structures located within the constructed Greenoge wind farm site to the east of the main wind farm site. The grant of planning for a two-turbine development within that site (Carlow Co. Council ref. 08527) included a condition requiring that ground works be archaeologically monitored during the construction phase. A review of the Excavations Database did not reveal a licensed investigation for the excavation of any previously unrecorded archaeological sites uncovered during ground works at that site. There are no identified archaeological monuments with potential visual alignments towards the combined locations of the existing Greenoge wind farm and the proposed Croaghaun wind farm noted during the assessment. In addition, as detailed in Section 14.3.3.2, the majority of the recorded archaeological sites within lands extending for 2km from the main wind farm site have been partially or completely levelled and no cumulative indirect impacts on their setting is therefore predicted.

The archaeological assessments of a proposed battery storage development at Kellistown substation (planning ref. 1823) and a proposed solar farm (planning ref. 20143) located 1.5km to the south of the Kellistown substation were reviewed on the Carlow County Council online planning enquiry system.

The assessments of these projects concluded that they will not result in any direct impacts on the archaeological or architectural heritage resources and archaeological monitoring during the construction phase was recommended at both locations.

It is, therefore, concluded that given the absence of known significant direct or indirect impacts on cultural assets arising from the project in combination with the results of the above review of nearby developments, the proposed project will not result in any predicted significant cumulative impacts on the cultural heritage resource.

Table 14-11: Summary of construction phase impacts on cultural heritage sites within wind farm study area

Monument No.	Class	Distance from nearest turbine	Value of Asset	Type of Impact	Quality of impact	Magnitude of impact	Duration	Significance of Impact
CW017-005----	Ringfort (partially levelled)	1.64km to north	Low/Medium	None predicted	Neutral	n/a	n/a	None
CW017-040----	Enclosure (levelled)	1.80km to northwest	Low/Medium	None predicted	Neutral	n/a	n/a	None
CW017-041----	Racecourse (levelled)	1.84km to northwest	Low/Medium	None predicted	Neutral	n/a	n/a	None
CW017-045----	Children's burial ground (levelled)	1.92km to north	Medium	None predicted	Neutral	n/a	n/a	None
CW020-008----	Enclosure (partially levelled)	1.49km to south	Medium	None predicted	Neutral	n/a	n/a	None
CW020-009----	Burial ground (partially levelled)	1.7km to south	Medium	None predicted	Neutral	n/a	n/a	None
CW020-020001-	Burial ground (partially levelled)	2km to south	Medium	None predicted	Neutral	n/a	n/a	None
CW020-022----	Standing stone (no surface trace)	1.7km to southeast	Low/Medium	None predicted	Neutral	n/a	n/a	None
CW020-028----	Standing stone (extant)	0.56km to west	Medium	None predicted	Neutral	n/a	n/a	None

Table 14-12: Summary of operation phase impacts on cultural heritage sites within wind farm study area

Monument No.	Class	Distance from development	Value of Asset	Type of Impact	Quality of impact	Magnitude of impact	Duration	Significance of Impact
CW017-005----	Ringfort (partially levelled)	1.64km to north	Low/Medium	None predicted	Neutral	n/a	n/a	None
CW017-040----	Enclosure (levelled)	1.80km to northwest	Low/Medium	None predicted	Neutral	n/a	n/a	None
CW017-041----	Racecourse (levelled)	1.84km to northwest	Low/Medium	None predicted	Neutral	n/a	n/a	None
CW017-045----	Children's burial ground (levelled)	1.92km to north	Medium	None predicted	Neutral	n/a	n/a	None
CW020-008----	Enclosure (partially levelled)	1.49km to south	Medium	None predicted	Neutral	n/a	n/a	None
CW020-009----	Burial ground (partially levelled)	1.7km to south	Medium	None predicted	Neutral	n/a	n/a	None
CW020-020001-	Burial ground (partially levelled)	2km to south	Medium	None predicted	Neutral	n/a	n/a	None
CW020-022----	Standing stone (no surface trace)	1.7km to southeast	Low/Medium	None predicted	Neutral	n/a	n/a	None
CW020-028----	Standing stone (extant)	0.56km to west	Medium	Indirect	Negative	Low	Long	Slight

Table 14-13: Operational phase impacts on monuments with potential visual alignments within 10km of the main wind farm site

Monument No.	Class	Distance from development	Value of Asset	Type of Impact	Quality of impact	Magnitude of impact	Duration of impact	Significance of Impact
CW020-026---	Cursus (partially levelled)	2.63km to southwest	High	Indirect	Negative	Negligible	Long term	Not significant
CW020-027---	Cursus (partially levelled)	3.76km to southwest	High	Indirect	Negative	Negligible	Long term	Not significant
CW020-017---	Stone row (extant)	2.95km to southwest	Medium	Indirect	Negative	Negligible	Long term	Not significant

Table 14-14: Summary of construction phase impacts within grid route connection study area

Monument No.	Class	Distance from route	Value of Asset	Type of Impact	Quality of impact	Magnitude of impact	Duration of impact	Significance of Impact
CW013-003----	Barrow (extant)	10m to north	Medium	None predicted	Neutral	n/a	n/a	None
CW013-024----	Enclosure (levelled)	Adjacent	Medium	None predicted	Neutral	n/a	n/a	None
CW013-120----	Ring-ditch (levelled)	10m to northeast	Medium	None predicted	Neutral	n/a	n/a	None
CW017-045----	Children's burial ground (levelled)	10m to north	Medium	None predicted	Neutral	n/a	n/a	None
CW017-052----	Burial ground (levelled)	20m to west	Medium	None predicted	Neutral	n/a	n/a	None

Monument No.	Class	Distance from route	Value of Asset	Type of Impact	Quality of impact	Magnitude of impact	Duration of impact	Significance of Impact
CW008-060	Enclosure (levelled)	185m to north of east substation option at Kellistown	Medium	None predicted	Neutral	n/a	n/a	None
NIAH 1030130	Lodge house (extant)	10m to north	Medium	None predicted	Neutral	n/a	n/a	None
RPS CW354	Building (derelict)	5m to south	Medium	None predicted	Neutral	n/a	n/a	None
None (Croppy Road)	Road (modern surfaced)	0m	Low	Direct	Negative	Negligible	Permanent	Not significant

Table 14-15: Summary of turbine delivery route construction phase impacts

Monument No.	Class	Distance from route	Value of Asset	Type of Impact	Quality of impact	Magnitude of impact	Duration of impact	Significance of Impact
CW013-003----	Enclosure (partially levelled)	0m	Medium	Direct	Negative	Negligible	Permanent	Not Significant

14.5 Mitigation Measures

Wind Farm

The extensive forestry plantation. Including the presence of tree stumps and root systems in felled areas, within the main wind farm site will preclude advance archaeological site investigations such as geophysical survey and test trenching. A systematic advance programme of archaeological site inspections will be undertaken within all development areas following pre-construction tree felling to assess whether there are any visible surface traces of any potential unrecorded archaeological or architectural heritage sites. Archaeological monitoring of ground excavation works during the construction phase will then be carried out under license by the National Monument Service. In the event that any sub-surface archaeological features are identified during these site investigations they will be recorded and cordoned off while the National Monuments Service are consulted to determine further appropriate mitigation measures, which may include preservation *in situ* (by avoidance) or preservation by record (archaeological excavation).

Grid Connection

A programme of licensed archaeological monitoring of all ground excavation works within the sections of road that extend within the Zones of Notification (ZON) around all known archaeological sites identified in Table 14-15 will be undertaken during the construction phase. The location and extent of these zones are illustrated in Appendix 14-1. Archaeological monitoring of all excavation works within green field areas will also be carried out and this will include advance inspections of all dry minor watercourses that may be crossed by the 'dry-trench scenario' and subsequent monitoring of these works.

All vegetation clearance and excavation works within the environs of the Protected Structure in Kilknock townland (RPS CW354) and within the section of the L3033 road (Croppy Road) to the south of Myshall will also be carried out under constant archaeological supervision and a photographic and written record of any traces of an underlying road surface will be compiled. An archaeological watching brief of all other ground excavation works will be maintained for the remainder of the grid connection works and the extent of this supervision will be agreed in advance with the National Monuments Service as part of the license application process. In the event that any sub-surface archaeological features are identified during these site investigations they will be recorded and cordoned off while the National Monuments Service are consulted to determine further appropriate mitigation measures, which may include preservation *in situ* (by avoidance) or preservation by record (archaeological excavation).

Turbine Delivery Route

The delivery of turbines to the main wind farm site will require minor widening works along a disturbed section of an existing public road at the location of an enclosure (CW013-003----) and the creation of a temporary bridge structure to the east of its location, both of which are located in Killbrannish North townland. The ground works at these locations will be subject to constant licensed archaeological monitoring. In the event that any sub-surface archaeological features are identified during these site investigations they will be recorded and cordoned off while the National Monuments Service are consulted to determine further appropriate mitigation measures, which may include preservation *in situ* (by avoidance) or preservation by record (archaeological excavation).

Monitoring of mitigation measures

There are a number of obligatory processes to be undertaken as part of archaeological license applications and these will allow for monitoring of the successful implementation of the archaeological mitigation measures.

Method statements detailing the proposed strategy for all site investigations will submitted for approval to the National Monuments Service as part of the license application. These will clearly outline the proposed extent of works and outline the onsite and consultation processes to be enacted in the event that any unrecorded archaeological sites or features are identified. A report will be compiled on all site investigations which will clearly present the results in written, drawn and photographic formats and copies will be submitted to the National Monuments Service, the Planning Authority and the National Museum of Ireland.

14.6 Residual Impacts

The mitigation measures presented in Section 14.5 will provide for either the avoidance of the unrecorded archaeological resource or the proper and adequate recording of this resource. The project will result in a number of indirect, imperceptible-moderate visual impacts on a number of cultural heritage receptors within the wider landscape which were identified and assessed by the Landscape and Visual Impact Assessment consultant and reviewed by the Archaeologist. These visual impacts are identified in Chapter 15 and will be reversible during the decommissioning phase of the main wind farm site.

No residual impacts on the architectural heritage and undesignated cultural heritage resources are predicted to arise following decommissioning of the main wind farm site.

No residual impacts on the architectural heritage and undesignated cultural heritage resources are predicted to arise from the grid connection route or turbine delivery route.

14.7 Conclusion

The proposed development will not result in any direct, indirect or cumulative significant impacts to known archaeological monuments or designated architectural heritage structures. The potential for the presence of unrecorded, sub-surface archaeological features within proposed construction areas is recognised and archaeological monitoring, licensed by the National Monuments Service, of the construction phase will be undertaken by a suitably qualified archaeologist.

14.8 References

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