

## 14 CULTURAL HERITAGE

### 14.1 INTRODUCTION

This chapter assesses the impacts of the Proposed Development on Cultural Heritage. The Proposed Development refers to all elements of the application for the construction, operation and decommissioning of Firlough Wind Farm and Hydrogen Plant (**Chapter 2: Project Description**). Where negative effects are predicted, the chapter identifies appropriate mitigation strategies therein. The assessment considers the potential effects during the following phases of the Proposed Development:

- Construction of the Proposed Development
- Operation of the Proposed Development
- Decommissioning of the Proposed Development

The term 'Cultural Heritage' encompasses heritage assets relevant to both the tangible resource (archaeology, architecture heritage); and non-tangible resources (history, folklore, tradition, place names etc.). The recorded and potential cultural heritage resource within lands encompassing the proposed Wind Farm Site and Hydrogen Plant Site (the "Sites") and the surrounding landscape was reviewed in order to compile a comprehensive cultural heritage baseline for the assessment. The proposed Grid Connection Route, Interconnector Route, Wind Farm Internal Cabling, works areas for the Turbine Delivery Route and Construction Haul Routes to and from the Wind Farm Site and the Hydrogen Plant Site were also assessed.

Common acronyms used throughout this EIAR can be found in **Appendix 1.2**. This chapter of the EIAR is supported by Figures provided in **Volume III** and by the following Appendix documents provided in **Volume IV** of this EIAR:

- **Appendix 14.1 Cultural Heritage Plates**

#### 14.1.1 Statement of Authority

The chapter was prepared by Kate Robb of John Cronin and Associates. Ms Robb holds B.A. and M.A. degrees in archaeology (University of Galway 1999/2001) and has fifteen years industry experience. She holds a post-graduate diploma in EIA/SEA Management (University College Dublin (UCD), 2005) and has extensive experience in preparing cultural heritage impact assessments for a range of large-scale projects (including renewables), for both private and public development.

### 14.1.2 Assessment Structure

The desktop study and the field survey outlined in **Section 14.3** together with the other assessments are considered to allow the Planning Authority to carry out an assessment of the Proposed Development from a Cultural Heritage perspective. In line with the revised EIA Directive and EPA guidelines the chapter provides considerations of effects based on the following:

- Assessment of cultural heritage value and sensitivity
- Assessment of the magnitude of cultural heritage effects within the Study Area
- Assessment of the significance of cultural heritage impacts
- Assessment of cumulative cultural heritage impacts

## 14.2 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

### 14.2.1 Definition of Study Area

The study area reviewed for the assessment comprised the area within the Redline Boundary and the surrounding lands extending for 1 km in all directions beyond the proposed wind farm boundary as well as a 100 m wide area centred on the proposed Hydrogen Plant Site, Interconnector Route, Grid Connection Route, and any work areas required to facilitate the Turbine Delivery Route and Construction Haul Routes. The extent of this study area was chosen in order to compile a context for the known cultural heritage resource within the Wind Farm Site and the Hydrogen Plant Site and their environs as well as to assess potential direct and indirect impacts on the locations and settings of known cultural heritage assets within proximity to the Sites. In addition, the wider landscape extending for 10 km in all directions from the Redline Boundary was reviewed to determine the presence of any National Monuments in State Care, World Heritage sites (including tentative sites) and other archaeological monuments with notable visual attributes that extend beyond their immediate setting, such as prehistoric monuments with ritual visual alignments across the wider landscape (e.g., stone circles, stone rows and megalithic tombs). It is noted that the Redline Boundary crosses the county border with Sligo and as such, relevant provisions of both the *Mayo County Development Plan 2022-2028* and the *Sligo County Development Plan 2017-2023* have been considered.

### 14.2.2 Assessment Methodology

The methodology used for this assessment is based on Environmental Protection Agency (2015) *Draft Advice Notes for Preparing an EIS* and (2022) *Guidelines on the information to be contained in Environmental Impact Assessment Reports*. 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).

### 14.2.3 Relevant Legislation and Guidance

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, elements such as local placenames, 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 Ireland in 1997. In addition the UNESCO 'Convention Concerning the Protection of the World Cultural and Natural Heritage', 1972 (World Heritage Convention) was ratified by Ireland in 1991. While there is no current national legislation providing legal protection for the Irish intangible heritage resource it is noted that the UNESCO 'Convention for the Safeguarding of the Intangible Cultural Heritage', 2003 (the Paris Convention), was ratified by Ireland in 2015.

The legislation and guidelines that are relevant to this assessment include the following:

- National Monuments Act 1930-2014 (as amended)
- Heritage Act (1995) (as amended)
- National Cultural Institutions Act (1997) (as amended)
- 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*

### **14.2.3.1 Archaeological Heritage**

The National Monuments Service (NMS) is currently based in the Department of Housing, Local Government and Heritage (DHLGH) and is responsible for the preservation, protection and promotion of Ireland's archaeological heritage. The National Monuments Acts 1930-2014, the Heritage Act 1995 (as amended) and relevant provisions of the National Cultural Institutions Act 1997 (as amended) 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.

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 Care located within or in close proximity to the proposed Wind Farm Site, Hydrogen Plant Site, Interconnector Route or Grid Connection Route, although there are eleven examples located within c. 10 km of the Sites details of which are presented in **Section 14.4.8** of this chapter.

The Record of Monuments and Places was established under Section 12 (1) of the National Monuments (Amendment) Act, 1994 and was based on the Sites and Monuments Record and Register of Historic Monuments. 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 Record of Monuments and Places receive statutory protection under the National Monuments Act (1994 amendment) and no works can be undertaken at their locations without providing two months advance notice to the National Monuments Service. The known archaeological sites located within the environs of the project are detailed in **Section 14.4.3**. The potential for the presence of hitherto unrecorded, sub-surface archaeological features within proposed construction areas is also considered.

### **14.2.3.2 Architectural Heritage**

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

and Development Act 2000 (as amended). 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 (as amended) requires Planning Authorities to maintain a 'Record of Protected Structures' 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, are designated Protected Structures and planning permission is required for any works to such structures that would affect their character. A protected structure also includes the lands and other structures within its curtilage. While the element of curtilage is not defined by legislation, the *Architectural Heritage Protection Guidelines for Local Authorities* (Department of Arts, Heritage and the Gaeltacht 2011), describes it as the parcel of land immediately associated with a structure and which is (or was) in use for the purposes of the structure. The current Record of Protected Structures (RPS) for County Mayo is published in the *Mayo County Development Plan 2022-2028*, while that for County Sligo is published in the *Sligo County Development Plan 2017-2023*. The Planning and Development Act 2000 (as amended) also provides for the inclusion of objectives for preserving the character of places, areas, groups of structures or townscapes of special interest to be designated as Architectural Conservation Areas (ACAs).

The National Inventory of Architectural Heritage (NIAH) and Historic Gardens and Designed Landscapes comprises a non-statutory record of built heritage structures and lands within the State. While inclusion in the inventory does not provide statutory protection to a structure or lands, it does provide an indication of their architectural heritage value and is intended to advise local authorities on the compilation of their Records of Protected Structures (RPS).

There are no Protected Structures or buildings and historic gardens listed in the National Inventory of Architectural Heritage located within the proposed Sites or their close environs. There is one NIAH record within the town of Bunnyconnellan comprising the early twentieth century Roman Catholic church of the Immaculate Heart of Mary (NIAH Ref. 31303102), c. 0.5 km south of the Grid Connection loop-in point (with 2 no. end mast towers) at Rathreedaun/Bunnyconnellan West (see **Section 14.4.9**). There is a bridge structure at

Emlymoran townland along the proposed Construction Haul Route, as listed on the Sligo RPS (Ref. 428) (see **Section 14.4.7**).

#### **14.2.4 Mayo County Development Plan 2022-2028**

The *Mayo County Development Plan 2022-2028* includes a number of policies and objectives concerning the protection of the cultural heritage resource within the county. In relation to the archaeological resource these include relevant policies (BEP 1) and objectives such as the protection of recorded archaeological sites and their settings (BEO 1 and BEO 4) the protection of newly discovered archaeological sites (BEO 5) and underwater archaeology (BEO 6). The Plan also includes a number of policies (BEP 4 and BEP 7) and objectives in relation to the protection of the architectural heritage resource within the county including the protection of designated elements of this resource such as Protected Structures (BEO 8 – 10) and Architectural Conservation Areas (BEO 11 – 12). In addition policies concerning non-designated built heritage stock (BEP 8 – 14) are set out which refers to objectives to protect historic street furniture, industrial, maritime or vernacular structures, thatched dwellings and historic gardens and demesnes (BEO 14 – 17).

#### **14.2.5 Sligo County Development Plan 2017-2023**

The *Sligo County Development Plan 2017-2023* includes a number of policies and objectives concerning the protection of the cultural heritage resource within the county. In relation to the archaeological resource these include relevant policies P-AH-1 and P-AH-2 to protect recorded archaeological sites, their setting and visual integrity, as well as underwater archaeology (P-AH-8). The Plan also includes a number of policies in relation to the architectural heritage resource including the protection of structures identified on the RPS as well as non-designated vernacular built heritage (including industrial, marine, street furniture, historic gardens and demesnes) (P-ARH-5).

### **14.3 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 area for the Sites, Grid Connection Route, Turbine Delivery Route and Construction Haul Route. The principal sources reviewed for the assessment of the recorded archaeological resource were the Sites and Monuments Record and the Record of Monuments and Places. The Record of Protected Structures and the National Inventory of Architectural Heritage were consulted for assessing the locations of designated elements of the architectural heritage resource.

Other sources consulted as part of the desktop study included the following:

- All current national online database resources pertaining to recorded sites were reviewed on the National Monuments Service's (NMS) Historical Environment Viewer ([www.archaeology.ie](http://www.archaeology.ie)) in June 2023.
- *Heritage Council of Ireland Map Viewer*: This online mapping source ([www.heritagemaps.ie](http://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 December 2022.
- *Topographical Files of the National Museum of Ireland*: These files comprise paper and digital records of known information on Irish artefacts, including discovery locations, and are archived in the museum premises in Kildare Street, Dublin. These topographical files were consulted in February 2022.
- *Database of Irish Excavation Reports*: This online database contains summary accounts of archaeological site investigations carried out in Ireland (North and South) from 1970 to present ([www.excavations.ie](http://www.excavations.ie)). Current data was accessed in June 2023.
- *Literary Sources*: Various published sources were consulted in order to assess the archaeological, historical, architectural heritage and folklore record of the study area.
- *Cartographic Sources*: 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. Relevant extracts from the reviewed cartographic sources are presented in **Volume III**.
- *Aerial and Satellite 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 development 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](http://www.duchas.ie).
- *UNESCO designated World Heritage Sites and Tentative List*: There are two designated World Heritage sites in Ireland three tentative properties (2022 List) that are currently being put forward by Ireland for submission to UNESCO for world heritage

consideration and approval<sup>1</sup>. None of these designated or tentative sites are located within 10 km of the Site, although the 'Passage Tomb Landscape of County Sligo' is noted.

### 14.3.1 Field Survey

Proposed construction locations within the Sites were subjected to field walking surveys and inspections of the Grid Connection Route were also carried out. The surveyed lands were assessed in terms of historic landscape, existing land use, vegetation cover and the potential for the presence and survival of unrecorded archaeological and undesignated architectural heritage sites or features. The results of the field surveys are described within the chapter while annotated extracts from the photographic record are provided in **Appendix 14.1**. Any cultural heritage constraints within the sections of the study area located outside the Redline Boundary, but within private properties were not accessible during field surveys. These constraints were assessed based on a combination of reviews of their classifications and conditions of preservation as described in NMS online records as well as reviews of their locations on consulted historic mapping and modern aerial/satellite imagery and public roadside inspections.

### 14.3.2 Consultation

A requested scoping opinion for the Proposed Development was issued by Mayo County Council in August 2021, which has been supplemented with pre-planning meetings conducted by the Project Design Team. The need for an archaeological assessment was stipulated, the findings of which may require the need for non-invasive/invasive archaeological site investigations (e.g. geophysical survey, test-trenching, monitoring of groundworks).

### 14.3.3 Predicted Impacts on Cultural Heritage

#### 14.3.3.1 Level of Impact

The following provides a concise summary of the criteria used to assess impacts in order to outline the methodology specifically applied to the cultural heritage resource which has compiled with relevant EPA and ICOMOS guidelines (see **Section 14.2**).

#### *Duration of Effect*

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

- Momentary (seconds to minutes)

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<sup>1</sup> See details on World Heritage Sites and Tentative List 2022 here: <https://worldheritageireland.ie/> [Accessed 05.12.2022]



- 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 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)

#### *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 receptor is physically located within the footprint of the Development, which will result in its complete or partial removal.
- Indirect Impact – where a cultural heritage receptor or its setting in the landscape is located within the environs of the Development.
- No predicted impact – where the Development will not adversely or positively affect a cultural heritage receptor.

#### *Magnitude of Impact*

Determination of the Magnitude of Impact is based on a consideration of character, duration, probability and consequences of the likely impact on the cultural heritage receptor. Magnitude of Impact (degree of change) can be negative or positive and should be ranked without regard to the value of the asset according to the following scale: High; Medium; Low and Negligible. Ranking levels 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**).

*Value assessment criteria*

The evaluation of the value of cultural heritage receptors 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 receptor. The value of all known or potential assets that may be affected by the Development are ranked according to the following scale: Very High; High; Medium; Low and Negligible. The factors for assessing the value of cultural heritage receptors provided in **Table 14.2** have regard to the ICOMOS *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties*<sup>2</sup> (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.

*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 magnitude effect and asset significance (

**Table 14.4**).

**Table 14.1: Magnitude of Impact Assessment Indicators for Cultural Heritage Assets**

Indicative factors for assessing the Magnitude of Impact on the Cultural Heritage Asset (after ICOMOS Guidelines 2011)	
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. 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.

<sup>2</sup> [https://www.iccom.org/sites/default/files/2018-07/icomos\\_guidance\\_on\\_heritage\\_impact\\_assessments\\_for\\_cultural\\_world\\_heritage\\_properties.pdf](https://www.iccom.org/sites/default/files/2018-07/icomos_guidance_on_heritage_impact_assessments_for_cultural_world_heritage_properties.pdf)

Indicative factors for assessing the Magnitude of Impact on the Cultural Heritage Asset (after ICOMOS Guidelines 2011)	
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.

**Table 14.2: Value Indicators for Cultural Heritage Assets**

Indicative factors for assessing Value of Cultural Heritage Assets (after ICOMOS Guidelines 2011)	
Very High	Potential for International Significance which may include: World Heritage Sites (including Tentative List properties) and associated individual attributes that convey OUV of the property. Assets of acknowledged international importance. Assets that can contribute significantly to international research objectives.
High	Potential for National Significance which may include: Designated National Monuments (archaeological) (including sites with Preservation Orders). Assets of significant quality and importance, including designated SMR/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	Potential for Regional Significance which may include: Assets of recognised quality and importance, including levelled/disturbed SMR/RMP sites. Assets that can contribute significantly to acknowledged regional research objectives Regional Grade NIAH Buildings. Undesignated buildings that can be shown to have exceptional qualities in their fabric or historical associations. 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	Potential for Local Significance which may include: 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. 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.

**Table 14.3: Significance of Effects (EPA EIAR Guidelines 2022)**

Indicative factors for assessing Value of Cultural Heritage Assets (after ICOMOS Guidelines 2011)	
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.

<b>Indicative factors for assessing Value of Cultural Heritage Assets (after ICOMOS Guidelines 2011)</b>	
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 (per EIAR Guidelines 2022)**

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

## 14.4 BASELINE DESCRIPTION

### 14.4.1 Introduction

The following sections present summary details of the main periods within the Irish archaeological record with references to known archaeological sites, designated architectural heritage structures listed in the Record of Protected Structures and the National Inventory of Architectural Heritage located within the study area including the Wind Farm Site, the Hydrogen Plant Site, Grid Connection Route, Interconnector Route, Turbine Delivery Route and Construction Haul Routes. Datasets have been interrogated and retrieved from current state and local authority sources and are considered accurate at the time of writing in December 2022. Extracts from published inventory entries of recorded archaeological sites and designated architectural heritage structures within the study area are also presented where relevant.

### 14.4.2 The Sites: Archaeological and Historical Background

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. The archaeological record indicates that these mobile groups tended to favour coastal, lake and river shore locations which provided a

transport resource and also provided elements of their varied diet. They 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 sub-surface traces of their settlements revealed during earth-moving undertaken as part of development works. There are no recorded Mesolithic sites located within the Sites or surrounding study area.

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. There is one known archaeological site (megalithic tomb) dating to the Neolithic period located within the Sites, recorded as Carrowleagh court tomb (RMP MA031-034---) (see **Volume III, Figures 14.1-14.3 & 14.12**). Court tombs are a form of Neolithic megalithic tomb defined by a crescent-shaped forecourt area constructed from upright stones or dry walling leading to a series of small chambers covered by a mound or cairn. Their geographical distribution is almost entirely focused on Ulster and north Connaught. The court-tomb RMP MA031-034--- located within the Wind Farm Site is described by De Valera and Ó Nualláin<sup>3</sup> (1964) as very well preserved, uncovered during turf-cutting and largely still embedded in the peat; commanding a wide view across northeast Mayo, with the Owencam River flowing westwards to join the River Moy, located a short distance to the north. The gallery is orientated E-W, with the long cairn (and roofed gallery within) retained in the peat. The open side of the gallery is recorded to the east of the cairn. This court tomb is visible on modern aerial images as a circular mound that appears to measure approx. 25 m in diameter. The associated Zone of Notification (ZoN), as designated by NMS (DHLGH), measures 120 m in diameter, although this does not comprise a formal exclusion area/zone in its own right.

A review of the locations of Neolithic megalithic tombs, which may have ritual alignments across the wider landscape, within 10 km of the Sites was examined. This identified a number of court tomb sites including Carrownaglogh Court Tomb (RMP MA032-001----) orientated ESE-WNW and located c. 2.8 km southeast of onsite Carrowleagh Court Tomb (RMP MA031-034----). A second, unclassified megalithic tomb is recorded within the townland of Drumsheen (RMP MA031-048----) c. 2.2 km to the southwest of Carrowleagh Court Tomb. A further three court tombs are also noted in the townlands of Caltragh (RMP SL017-045----) and Tawnatruffaun (RMP SL017-048---- and RMP SL017-049----) located

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<sup>3</sup> De Valera, R. and Ó Nualláin, S (1964) *Survey of the Megalithic Tombs of Ireland. Vol. II. County Mayo*. Dublin: Stationery Office.

approximately 5 km – 7 km to the northeast of Carrowleagh Court Tomb (RMP MA031-034--).

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 wedge tombs, standing stones, stone rows, stone circles and *fulachta fiadh*. The development of new burial practices meant that the construction of funerary monuments such as wedge tombs, cairns, barrows, boulder burials and tumuli or cists was a common practice during this period. There is a recorded barrow site at Carraun (Tireragh By.) townland (SMR SL022-026---) adjacent to the Hydrogen Plant Site which is defined by a low circular grass-covered earthen platform, measuring 13 m diameter, with a levelled bank.

Wedge tombs represent the most common form of megalithic tomb in Ireland, built during the Early Bronze Age period with a geographical distribution largely restricted to the western half of the island. As the name suggests, these tombs are defined by a wedge-like shape with a central roofed gallery constructed from large stones and covered by a cairn or mound retained by kerbstones. There is a recorded wedge tomb RMP MA031-005--- located 240 m north of the Wind Farm Site in Carrowleagh townland, as well as recorded National Monuments (Ref. 293) Carrowcastle and Carrowcrom Wedge Tombs RMP MA040-094---- (orientated NE-SW) and RMP MA040-019---- (orientated NE-SW), located approximately 7.5 km and 8 km southwest of the Wind Farm Site respectively (see **Volume III, Figure 14.14**). The wedge tomb RMP MA031-005--- in Carrowleagh townland, outside the Site, is located within a commercial forestry plantation and is described by De Valera and Ó Nualláin<sup>4</sup> (1964) as located within a small shallow hollow in the bog, well preserved, orientated approximately NE-SW (with entrance the opening to the SW) and surround by a U-shaped outer wall.

It is also noted that a socketed bronze spearhead (NMI Ref. 1942:1864) was found in the bog at Carrowleagh. It is unknown if this was within the Wind Farm Site area, although 2010 mapped NMI findspots from heritagemaps.ie record the location within the Wind Farm Site, c. 250 m north of court tomb RMP MA031-034---. Bogland environments such as the proposed Site are particularly conducive to preserving organic artefact remains such as leather, wood etc. with a wooden scoop also recorded from the townland 'under about four feet of peat' in the NMI Topographical Files (1949:18) (see **Section 14.4.4**). A clustering of sites consisting of an enclosure, hut site, field system and cultivation ridges (RMP MA031-049001-, RMP MA031-049002-, SMR MA031-049003- and SMR MA031-049004-) were

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<sup>4</sup> See Ref. 2.

found to date to the Bronze Age, located 1.1 km south/southwest of the Wind Farm Site. These sites were previously subject to excavation and are described<sup>5</sup> as:

“In an area of cutaway blanket bog, located on the SW-facing slope of a low knoll, on the lower west-facing slopes of the Ox Mountains. This enclosure is not shown on the 1837-8 and 1922 OS 6-inch maps. Following the discovery during peat cutting in 1961 of a flint scraper of Bronze Age type, this area of bog was inspected, and the enclosure was found beneath c. 0.7 m of peat. A programme of survey and excavation (E000769) was subsequently carried out during the 1970's and 1980's (Herity, 1981<sup>6</sup>), and sampling for pollen analysis was also undertaken (O'Connell 1990<sup>7</sup>). The enclosure consists of a kidney-shaped area (c. 150 m E-W; c. 100 m N-S) defined by a drystone wall (Wth 1.9 m base, 1 m top; H 0.9 m). The wall was built of small-medium-sized stones (max. dim. c. 0.3 m) and directly overlay a gravelly clay subsoil. The excavation uncovered evidence for extensive areas of cultivation ridges (MA031-049004-) throughout the interior of the enclosure, and also outside it to N and S. A hut site (MA031-049003-) was found within the enclosure. A sample of charcoal, retrieved from beneath the enclosure wall, yielded a radiocarbon determination of 3245+/- 85 bp (1295 BC), indicating a Bronze Age date (Herity 1981, 36-7). Analysis of the pollen cores, retrieved from within the enclosure, and from a low-lying area downslope to S, confirmed cereal cultivation, and further elucidated the chronology, indicating there were successive phases of clearance and farming activity over the course of several centuries from the Bronze Age into the Iron Age, before the area was finally engulfed in blanket bog (O'Connell 1990, 261-70)”.

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 various development projects.

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 an agricultural economy centred on enclosed farmsteads known as ringforts and their stone-built equivalents known as cashels. The early medieval

<sup>5</sup> Per Historic Environment Viewer online records. Available at: <https://maps.archaeology.ie/HistoricEnvironment/> [accessed 09.06.2023].

<sup>6</sup> Herity, M. 1981 A Bronze Age farmstead at Glenree, Co. Mayo. *Popular Archaeology* 2, 36-7.

<sup>7</sup> O'Connell, M. 1990 Early land use in north-east County Mayo –the palaeoecological evidence. *Proceedings of the Royal Irish Academy* 90C, 259-279.

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. A cluster of sites comprising a burial ground (RMP MA031-004001-) and two souterrains (RMP MA031-004002- and RMP MA031-004003-) are noted c.1.1 km to the west of the Wind Farm Site and to the north of the banks of the Owencam River. There are currently no online descriptive records available for the cluster of sites, however it is noted as 'Kilbride Burial Ground' on the 1<sup>st</sup> edition OS map (c. 1830s) and 'site of Kilbride Burial Ground' on the 2<sup>nd</sup> (c.1900) and 3<sup>rd</sup> (1940s) OS editions.

Raths or ringforts are the most commonly found monument in Ireland, typically defined by one or more extant circular enclosing elements (e.g. bank, ditch, scarp), or indicated as such on historic maps, they represent the remains of enclosed rural settlements or cattle enclosures from the early medieval period (c. 400–1169 AD). Rathes are often found in significant topographical locations such as high ground and along river valleys. A large concentration of raths is noted outside the Site along the Glenree or Owenmore River and beyond to the west/southwest at Carrownaglogh townland, all of which demonstrate the presence of farming communities within the region during this period. These include a ringfort and hut site (RMP MA031-032--- and SMR MA031-032001-), and a ringfort and souterrain (RMP MA031-033001- and RMP MA031-033002-).

The arrival of the Anglo-Normans in the late 12<sup>th</sup> century broadly marks the advent of the Irish high medieval period which continued to c.1400 AD and was followed by the late medieval period which extended to c.1550 AD. 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 15<sup>th</sup> century, the native Irish chieftains and lords began to construct tower-house castles within their own landholdings as centres of territorial control. There are no recorded late or high medieval monuments located within the study area.

The centuries following 1550 AD comprise the post-medieval period which continued into the middle of the 19<sup>th</sup> century and the period thereafter is often described as early modern. The early phase 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-17<sup>th</sup> century Cromwellian Wars which resulted in extensive dispossession of forfeited Gaelic lands. An agricultural boom in the late 18<sup>th</sup> and early 19<sup>th</sup> 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 19<sup>th</sup> century which saw the depopulation of many areas.

The Civil Survey and Down Survey were compiled in the mid-17<sup>th</sup> century in order to establish records on lands to be forfeited to members of the Cromwellian army as payment for service. The province of Connaught was for the most part located outside the dispossessed lands and the surveys provide very little information on the townlands within the Site other than the names of landowners (**Table 14.5**). The Down Survey maps typically only depict larger settlements as well as other significant built features within the landscape such as castles, churches, roads and bridges, none of which are shown within the general area containing the Sites.

**Table 14.5: Down Survey record of 17<sup>th</sup> century landowners of the townlands in the study area**

Townland	Down Survey Name	1641 Owner	1670 Owner
Carha, Co. Mayo	Caldragh	William McPhilbin	Sir Thomas Newcomen
Carrowleagh, Co. Mayo	Carrowbleh	Callogh McJordan	Robert Morgan
Carrownaglogh, Co. Mayo	Killdawnaght alias Killdawmod	Earl of Ormond	Earl of Ormond
Cloonkeelaun, Co Mayo	Clonoluny	David Dowd	Lewes Winkfield
Drumsheen, Co. Mayo	Carrowneglogh	Callogh McJordan	Robert Morgan
Fiddandarry, Co. Sligo	Carrowkeale	Teige Reagh O'Dowd	George Ormesby
Rathreedaun, Co. Mayo	Raredane	James McJordan	Thomas Dillon, Viscount of Costello Gallen
Carraun, Co. Sligo	-	'Bog, Unprofitable'	-
Knockbrack. Co. Sligo	-	'Bog, Unprofitable'	-

Samuel Lewis's *The Topographical Dictionary of Ireland*<sup>8</sup> presents high-level descriptions of Irish parishes during the early decades of the 19<sup>th</sup> century (1837) which often provide information on contemporary land use patterns, historical events and the presence of archaeological sites and features of architectural heritage interest such as large country

<sup>8</sup> Lewis, S. (1837) *Topographical Dictionary of Ireland*. 2 Volumes, Lewis & Company, London. Available at: <https://www.libraryireland.com/topog/> [Accessed 21.03.2022]

houses. The Proposed Development is largely located within the civil parish of Kilgarvan and Lewis's description of this area contains no direct references to any of the townlands within the Site or surrounding environs. Reference is made to the town of 'Bonneconlan' or 'O'Dowd's-town' which is described as an 'improving place' with a weekly market due to be established, and the Roman Catholic Church erected in 1800, about to be rebuilt. There is also reference to 'several raths and an ancient burial ground' within the parish. The proposed hydrogen plant is located in the civil parish of Castleconnor in Co. Sligo. Further details on the character of the Sites and their environs during the 19<sup>th</sup> century are presented in the review of historical Ordnance Survey (OS) maps (**Section 14.4.11**).

#### 14.4.3 Record of Monuments and Places/Sites and Monuments Record

As detailed in **Section 14.4.2**, there are fourteen recorded archaeological monuments located within c. 1 km of the Sites (see **Volume III, Figure 14.1**), with one located within the Wind Farm Site but outside the footprint of proposed construction areas (**Table 14.6**). None of these monuments are designated as National Monuments in State Ownership or Guardianship or have been assigned Preservation Orders. Ten are protected through their inclusion in the Record of Monuments and Places (RMP) while a further four are recorded in the Sites and Monuments Record (SMR).

**Table 14.6: Recorded Archaeological Monuments within approx. 1 km of the Sites**

RMP no.	Class	Townland	ITM E	ITM N	Distance from nearest construction area
RMP MA031-004001-	Burial ground	Carrowleagh	534082	822464	1.2 km NW of sub-station; 267 m N of Grid Connection (existing roadway)
RMP MA031-004002-	Souterrain	Carrowleagh	534051	822442	1.2 km NW of sub-station; 267 m N of Grid Connection (existing roadway)
RMP MA031-004003-	Souterrain	Carrowleagh	534061	822429	1.2 km NW of sub-station; 267 m N of Grid Connection (existing roadway)
RMP MA031-005- ---	Megalithic tomb - wedge tomb	Carrowleagh	535245	822252	225 m NW of hardstand for T5
RMP MA031-032- --	Ringfort	Carrowmaghlogh	534060	820790	1.2 km W of access road (existing)
SMR MA031-032001-	Hut Site	Carrowmaghlogh	534062	820791	1.2 km west of access road (existing)
RMP MA031-033001-	Ringfort	Carrowmaghlogh	534571	820595	803 m SW of access road (existing)
RMP MA031-033002-	Souterrain	Carrowmaghlogh	534567	820611	803 m SW of access road (existing)

RMP no.	Class	Townland	ITM E	ITM N	Distance from nearest construction area
RMP MA031-034- ---	Megalithic tomb - court tomb	Carrowleagh	536360	820981	48 m east of existing access road to Wind Farm Site; 235 m SW of hardstand for T10
RMP MA031- 049001-	Enclosure	Carrownaglogh	535805	819279	1.1 km S/SW of hardstand for T1
RMP MA031- 049002-	Field system	Carrownaglogh	535805	819279	1.1 km S/SW of hardstand for T1
SMR MA031- 049003-	Hut site	Carrownaglogh	535805	819279	1.1 km S/SW of hardstand for T1
SMR MA031- 049004-	Cultivation ridges	Carrownaglogh	535805	819279	1.1 km S/SW of hardstand for T1
SMR SL022-026- --	Barrow - unclassified	Carraun (Tireragh By.)	528791	822807	14 m S of access road to Hydrogen Plant Site

#### 14.4.4 Topographical Files of the National Museum of Ireland

The National Museum of Ireland (NMI) Topographical File archive, which is stored in the museum premises at Kildare Street, Dublin was inspected as part of the assessment and contained file entries for some of the townlands within the study area (**Table 14.7**).

**Table 14.7: NMI Topographical Files within 1 km of the Site**

Townland	County	NMI ID Reference	Artefact	Notes
Carrowleagh	Mayo	1949:18	Wooden scoop	Open bog, about 400 yards from nearest habitation; Scoop was lying on its side under about 4 feet of peat
		1942:1864	Socketed Bronze Spearhead	Bog
Carrownaglogh	Mayo	1963:19	Flint Scraper	Found under the wall of what appears to be a cashel, under 3ft of peat. Found during turf cutting in 1961, investigated by Peter Danaher, archaeologist, National Museum of Ireland.
Cloonkeelaun	Mayo	1974:47	Wooden dagger	c. 4 feet deep in cutaway bog

#### 14.4.5 Aerial and Satellite Imagery

A review of Available Digital Globe aerial/satellite images of the Sites revealed that the lands within the Redline Boundary (except for the Hydrogen Plant) have been occupied by and extensive area of open bogland that has been subject to turf-cutting for a number of decades. Recorded court tomb RMP MA031-034--- within the Wind Farm Site is noted as a mounded feature, c. 25 m in diameter, with turf-cutting immediately adjacent same.

The proposed Hydrogen Plant Site is occupied by sloping improved pasture. No surface traces of potential unrecorded archaeological sites or architectural heritage structures were noted within the Redline Boundary during this review.

#### 14.4.6 Mayo County Development Plan 2022-2028

The Record of Protected Structures for County Mayo does not list any structures or Architectural Conservation Areas within the Sites or surrounding study area.

#### 14.4.7 Sligo County Development Plan 2017-2022

The Record of Protected Structures for County Sligo does not list any structures or Architectural Conservation Areas located within the Sites. It is noted that there is a bridge structure (RPS Ref. 428) crossing the Brusna River (ITM 531557, 823948) and located along the public roadway that forms part of the Construction Haul Route at Emlymoran townland. No works/road widening is required at this location.

#### 14.4.8 National Monuments in State Ownership/Care

A review of the locations of National Monuments within the surrounding landscape revealed the presence of eleven examples within c. 10 km of the Sites (**Table 14.8** and **Volume III, Figure 14.14**).

**Table 14.8: National Monuments within 10 km of the Sites**

National Monument Ref.	RMP Ref.	Townland	Type	ITM (Easting, Northing)	Distance from Site	Alignment/Orientation axis	Dedicated Public Access
293 - Ownership	MA040-019---	Carrowcrom	Wedge Tomb	531444, 816161	6.3 km SW	Towards SW	Within private farmland
293 - Ownership	MA040-017---	Carrowcrom	Megalithic Tomb	531170, 816455	6.4 km SW	Undefined	Within private farmland
293 - Ownership	MA040-094---	Carrowcastle	Wedge Tomb	529410, 816730	7.6 km SW	Towards SW	Within private farmland
293 - Ownership	MA040-014---	Carrowcrom	Standing Stone	530474, 815835	7.3 km SW	NE-SW	Within private farmland
293 - Ownership	MA040-091---	Carrowcrom	Standing Stone	530900, 816990	6.2 km SW	N-S	Within private farmland
293 - Ownership	MA040-093001-	Carrowcrom	Cairn	531231, 815830	6.7 km SW	Undefined	Within private farmland
479 – Guardianship (PO 196/1954)	SL036-003---	Carrowreagh	Court Tomb	538302, 812429	7.5 km S	Towards NE	Within private farmland
104 - Ownership	MA022-082001-	Rosserk	Rosserk Abbey	525345, 825324	10.1 km NW	n/a	Yes
103 – Ownership	MA022-024001-	Abbeylands	Moyne Abbey	523195, 828784	8.5 km NW	n/a	Yes

National Monument Ref.	RMP Ref.	Townland	Type	ITM (Easting, Northing)	Distance from Site	Alignment/Orientation axis	Dedicated Public Access
145 – Guardianship	MA030-073---	Ballina (Tirawley By.)	Megalithic Tomb	523762, 818182	6.9 km SW	Undefined	Within Business Park
402 – Guardianship & PO 81/1939	MA040-074001-	Kildermot	Church	528620, 812684	10.7 km SW	n/a	Within private farmland

There is a group of prehistoric monuments assigned the same National Monument Reference (Ref. No. 293) that are located in the Carrowcrom/Carrowcastle townland areas, c. 6.3 km to the southwest of the Site. These monuments consist of two wedge tombs, an unclassified megalithic tomb, two standing stones and a cairn. The wedge tombs retain a SW-facing alignment orientation as viewed from the entrance, which is typical of this megalithic tomb type. The Ox Mountains dominate the skyline to the E-SE for wedge tomb RMP MA040-019--- and Nephin Mountain is visible on the far horizon to the WSW. Similarly, the Ox Mountains dominate the skyline at the NE-SE and Nephin Mountain is a focal point on the far horizon at the SW for wedge tomb RMP MA040-094---. Record descriptions of the unclassified megalithic tomb does not refer to an obvious entrance although it is noted that the Ox mountains define the skyline to the E-S, with Nephin Mountain visible in the distance to the WSW. The unclassified tomb RMP MA030-073--- at Ballina has a gallery aligned N-S and is situated within the urban environs of the town at a green space surrounding Moy Valley Business park. There are no views afforded towards the Sites from this megalithic tomb.

Standing stone RMP MA040-014--- has a long axis NE-SW orientation and has good views in all directions, with the Ox Mountains defining the skyline to the E-S and the summit of Nephin Mountain visible in the distant horizon at the WSW. Standing stone RMP MA040-091--- has a N-S long axis orientation with the Ox Mountains defining the skyline to the E and Nephin Mountain visible to the SW. The cairn RMP MA040-093001- has no distinctive orientation alignment but is sited close to two wedge tombs (RMP MA040-19--- 370 m to NE, and RMP MA040-017--- 600 m to the N, and standing stone RMP MA040-014--- is visible on a knoll c. 730 m to the W. The Ox Mountains are visible E-SE on the near horizon, with the summit of Nephin Mountain visible in the far distance to the SW.

The court tomb (located within Co. Sligo) RMP SL036-003--- is located 300 m S of another court tomb SL036-002--- at higher slopes of the Ox Mountains, with its court area facing NE.

Given the geographical location, all of these prehistoric megalithic monuments retain skyline views that are predominantly inclusive of the Ox Mountain range to the NE-E-SE as well as the distance views of Nephin Mountain to the W-SW. For the Carrowcrom/Carrowcastle grouping, the integral orientation alignment for sites where this can be determined is towards the SW. Although the Ox Mountains contribute to the overall setting of the monuments, given proximity distances afforded to the Site, it is not considered that the proposed development will significantly negatively affect same (see **Appendix 14.1, Plates 14.38-14.41**). Court tomb RMP SL036-003--- is sited at a higher elevation, on a plateau in the Ox Mountains, with a court area facing towards the NE, away from the proposed Site. Views towards the Site from the court tomb are obstructed due to the high mountainous terrain (see **Appendix 14.1, Plate 14.42**).

Rosserk Abbey RMP MA022-082001- (built 1440s) is a Franciscan friary located on low-lying ground on the edge of the banks of the River Moy, 4 km south of the mouth of the river at Killala Bay. It is noted as the most complete and well-preserved Franciscan Third Order Regular (Tertiaries) friary in Ireland. Public access is via a dedicated roadway and the site is regularly visited. Views towards the Sites from the abbey are distant and barely discernible although slight visibility of existing turbines in this general direction is noted (see **Appendix 14.1, Plates 14.43-14.45**). Similarly, Moyne Abbey (RMP MA022-024001-) a Franciscan friary established c. 1455, is located on the western shores of Killala Bay, close to the mouth of the River Moy, with Rosserk Abbey 5 km to the south-east. There is dedicated public access to the abbey site which also retains an enclosure, a hospital and an 18<sup>th</sup> century house as well as a mill race (**Appendix 14.1, Plate 14.46**). The abbey is situated on low ground along the Moy and the views towards the Sites from the abbey are very distant and barely discernible, in part obstructed by the existing topography and mature tree-lines. Kildermot Church (RMP MA040-074001-), dating to the twelfth century, is situated on a narrow ridge overlooking and falling steeply towards the western shoreline of Ballymore Lake. The Ox Mountains are visible on the opposite side of the lake and in general there is low-lying open pastureland in all directions. The church does not have dedicated public access, and given the distance from the Proposed Development views towards the Sites are limited and barely discernible.

A review of a National Monuments Service dataset of National Monuments that the [Office of Public Works](#) maintain [visitor services](#) (for which there may be a charge) and those which

have no formal visitor services on-site but which are accessible to the public, indicate that none of the above monuments are listed<sup>9</sup>.

#### 14.4.9 National Inventory of Architectural Heritage

The National Inventory of Architectural Heritage does not list any structures or historic gardens within the Sites or surrounding study area. There is one structure located within Bunnyconnellan town comprising the early twentieth century Roman Catholic church of the Immaculate Heart of Mary (NIAH Ref. 31303102), 450 m south of the Grid Connection loop-in point (with 2 no. end mast towers) at Rathreedaun/ Bunnyconnellan West.

#### 14.4.10 Previous Archaeological Work in the Study Area: Excavations Database

A review of the Excavations Database revealed four licensed archaeological investigations recorded within the study area. These included an archaeological assessment undertaken by Mr M. McGonigle of John Cronin and Associates in relation to a previous planning application within the boundaries of the Wind Farm Site (The Existing Permission ABP Ref. No. PL 16.241592 / Mayo Planning Ref. no. 11495, Archaeological Excavation Licence Ref. 11E0374, Archaeological Excavations Bulletin No. 2011:441). The assessment consisted of a total of 2100 m<sup>2</sup> of linear test trenches excavated across 21 proposed turbine bases (see **Table 14.9** and **Volume III, Figure 14.3**). A single feature of archaeological potential, a small spread of heat affected stones and charcoal, was identified within Trench No. 16 at ITM 536522, 821119 approximately 200 m northeast of court tomb MA031-034---- and 58 m south of the existing access road adjacent proposed T10.

**Table 14.9: Archaeological test trench site investigation locations within Wind Farm Site (2011, Licence Ref. 11E0374)**

Trench Ref.	ITM Easting	ITM Northing	Notes
1	536033	822443	No archaeological deposits
2	536373	822543	No archaeological deposits
3	536928	822512	No archaeological deposits
4	535801	822131	No archaeological deposits
5	536586	822125	No archaeological deposits
6	537157	822144	No archaeological deposits
7	536374	821807	No archaeological deposits
8	536729	821797	No archaeological deposits
9	537112	821783	No archaeological deposits
10	537483	821986	No archaeological deposits
11	536182	821486	No archaeological deposits

<sup>9</sup> <https://www.archaeology.ie/monuments-to-visit>

Trench Ref.	ITM Easting	ITM Northing	Notes
12	536539	821490	No archaeological deposits
13	536900	821485	No archaeological deposits
14	537350	821503	No archaeological deposits
15	536144	821124	No archaeological deposits
16	536521	821133	Burnt spread
17	537283	821148	No archaeological deposits
18	536000	820782	No archaeological deposits
19	536713	820803	No archaeological deposits
20	536541	820462	No archaeological deposits
21	536911	820479	No archaeological deposits

Archaeological monitoring of ground works relating to the construction of the existing Carrowleagh wind farm (Licence Ref. 09E0158; Excavation Bulletin Nos. 2009:599, 2010:484, 2011:440 and 2013:414) immediately east of the Site, did not identify any archaeological deposits. Similarly, archaeological monitoring of the construction of a 6.43 km long UGC to the existing sub-station at Bunnyconnellan East was undertaken along the public road throughout townlands Carrowleagh, Carrownaglogh and Drumsheen, where no archaeological features were noted.

Archaeological monitoring (Licence Ref. 08E0826 and 08E0826Ext) of groundworks relating to the Carha and Bofield group water scheme was undertaken (in part). Of relevance to the proposed development is the archaeological testing of the pipeline route along the road verge within the vicinity of MA031-047---, a ringfort in the townland of Rathreedaun. No archaeological features were noted. This location also forms part of the proposed Grid Connection Route.

Unlicensed monitoring of the construction of wind farm infrastructure and turbines c. 1 km from the north of the subject site in the townland of Cloonskeelaun, County Sligo did not uncover any archaeological deposits (Excavation bulletins 2017:346, 2019:748, and 2019:749). Finally, investigations by Michael Herity at Carrownaglogh, approximately 800 m southwest of the proposed development site (Excavation Bulletin No. 1971:27) uncovered evidence of an extensive prehistoric (Bronze Age) field system defined by cultivation furrows and ridges and an enclosure (RMP MA031-049001-) below the blanket bog (see **Section 14.4.2**).

#### 14.4.11 Ordnance Survey Maps

The first edition 6-inch Ordnance Survey (OS) map (1837) shows the lands within the proposed Wind Farm Site as open vacant heathland. Whilst the 25-inch edition map sheet



(1888-1913 series) for the Wind Farm Site was not available for online review, the third edition 6-inch edition OS (1913) shows the land still as predominantly open bog, but to the west of the Wind Farm Site there is a new local N-S extending road network and small enclosed fields/drainage ditches. A small vernacular single-story cottage at ITM 535277, 821595 to the immediate south of a proposed access road to the Wind Farm Site (and adjacent to the temporary compound area) is noted and depicted on the third edition OS mapping as a dwelling with possible outbuilding.

The location of court tomb MA031-034---- is not recorded on any of the available 19<sup>th</sup> and early 20<sup>th</sup> century historic maps. All editions depict a small number of natural ponds within the eastern portion of the Wind Farm Site. No potential unrecorded archaeological sites or structures of potential architectural heritage interest were noted within the windfarm site during the reviews of these cartographic sources.

On the first edition OS mapping, the proposed Hydrogen Plant Site is occupied by enclosed field systems at rising ground above the boggy wetter lands to the immediate south (outside the site). A vernacular dwelling and small outbuilding are depicted within the Hydrogen Plant Site boundary at ITM 529431, 822631 together with a well (ITM 529480, 822701); while a lime kiln is mapped just outside the Redline Boundary at ITM 529329, 822568. A cluster of vernacular dwellings with roadways and two lime kilns is also noted immediately south of the proposed access road to the Hydrogen Plant Site. All of these features are levelled and none are depicted on the second (1901) or third (1913) edition OS maps. The existing outbuildings/yard area located immediately south of the proposed access road to the Hydrogen Plant Site is depicted on the second (1901) and third (1913) OS map editions as a farmstead.

Further details of the depictions of the locations of the infrastructure for both Sites on the available 1<sup>st</sup> edition OS cartographic sources are presented in **Volume III, Figures 14.8-14.11**.

#### **14.4.12 Undesignated Cultural Heritage Assets**

While encompassing the protected archaeological and architectural heritage resources, cultural heritage also includes various undesignated assets such as demesne landscapes and vernacular structures as well as intangible assets such as folklore, placenames and historical events and associations.

The Sites, Interconnector Route and Grid Connection Route extend into six townlands which 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. Townland boundaries were recorded and standardised by the Ordnance Survey (OS) during the 19th century and their names typically comprise anglicisations of their original Irish names which often refer to natural topographical features, past landowners and farming practices, but some may also indicate the presence of archaeological sites within the townland, e.g. lios or rath typically indicate the presence of a ringfort while temple, saggart, termon or kill may record associations with a church site. The translations of the names of the townlands into which the study area extends were sourced from the Placenames Database ([www.logainm.ie](http://www.logainm.ie)) and none are likely to refer to potential unrecorded archaeological sites (Table 14.10).

**Table 14.10: Translation of Townland Names within study area**

Townland	Irish Origin	Translation	Placename Database notes	Archaeological Indicator?
Carrowleagh	<i>Ceathrú Bhlaoch</i>	Quarter of the calves	Mentioned in 15 <sup>th</sup> , 17 <sup>th</sup> , 18 <sup>th</sup> and 19th century records	No
Cloonkeelaun	<i>Cluain Chaoláin</i>	Keelan's Meadow	Mentioned in 19th century records	No
Fiddandarry (Sligo)	<i>Feadán Daraigh</i>	Brook of the oaks	Mentioned in 18 <sup>th</sup> and 19th century records	No
Carrownaglogh	<i>Ceathrú na gCloch</i>	Stony quarter	Mentioned in 15 <sup>th</sup> , 17 <sup>th</sup> , 18 <sup>th</sup> and 19th century records	No
Rathreedaun	<i>Ráth Raodáin</i>	Readan's fort	Mentioned in 15 <sup>th</sup> , 17 <sup>th</sup> , 18 <sup>th</sup> and 19th century records	Yes; there are two ringforts in this townland MA031-042--- & MA031-047---
Drumsheen	<i>Droim Síon</i>	Ridge of the storm	Mentioned in 19th century records	No
Carraun	<i>An Cárán</i>	Rocky ground	Mentioned in 19th century records	No
Knockbrack	<i>An Cnoc Breac</i>	Speckled hill	Mentioned in 19th century records	No
Carha	<i>An Cairthe</i>	The Rocks	Mentioned in 15 <sup>th</sup> , 17 <sup>th</sup> , 18 <sup>th</sup> and 19th century records. Reference to '...one fort...'	Yes; there are three enclosures in this townland MA031-002---, MA031-009-- and MA031-011001-

#### 14.4.13 Hydrogen Plant Site and Interconnector Route

A review of designated cultural heritage constraints within lands for the proposed Hydrogen Plant Site and 1 km study area, and within lands extending 100 m from either side of the

proposed Interconnector Route was carried out. These constraints comprise a review of the Record of Protected Structures, and the Record of Monuments and Places and the National Inventory of Architectural Heritage.

There are no designated cultural heritage constraints within the Hydrogen Plant Site, however there is a recorded barrow site SL022-026--- located just outside the Redline Boundary. This barrow site is located south of the proposed access road and Interconnector Route within a small paddock associated with a dwelling house. The location is a level area of pasture with a discernible raised, flat circular platform area (see **Appendix 14.1, Plate 14.27**). The ZoN associated with the monument extends partially into the Redline Boundary, largely at the existing dwelling house and along the existing N59 road network (**Volume III, Figure 14.7**). There are no designated cultural heritage constraints located along or adjacent to the in-road Interconnector Route. Heightened archaeological sensitivity is noted at the Brusna river crossing point although the use of horizontal directional drilling will provide for least intrusion on road bridging structures and ground surfaces in these areas.

#### 14.4.14 Grid Connection

A review of designated cultural heritage constraints within lands extending for 100 m from either side of the proposed Grid Connection Route was carried out. These constraints comprise a review of the Record of Protected Structures, and the Record of Monuments and Places and the National Inventory of Architectural Heritage. Details on all identified constraints within the environs of the route are presented in **Table 14.11**. There are no designated built heritage features along the route corridor, however a total of eight RMP archaeological sites/Zones of Notification (ZoN) are noted within c. 100 m of same. The Grid Connection Route follows the local public roadway save for its loop-in point (with 2 no. end mast towers connecting to the existing 110kV OHL) at the south where it extends offline along a mature hedgerow comprising the Rathreedaun/Bunnyconnellan townland boundary. Heightened archaeological sensitivity is noted at water crossing points although the use of horizontal directional drilling will provide for least intrusion on bridging structures and ground surfaces in these areas.

It is noted that the Grid Connection Route extends immediately adjacent to a ringfort (RMP MA031-047---) and a ringfort with children's burial ground (RMP MA031-023--- and MA031-023001-).

**Table 14.11: Collated information on known cultural heritage constraints within 100 m of Grid Connection Route**

Designation	Class	ITM E	ITM N	Inventory Description	Notes
RMP MA031-012---	Ringfort	532773	821889	In pasture, on a low ridge, with good views. To W ground slopes to a low-lying expanse of wettish pasture. This enclosure is not shown on the 1837-8 OS 6-inch map; it is shown on the 1922 edition as a penannular hachured area, open to NE. It consists of a slightly raised, semi-circular area (30 m E-W; c. 25 m N-S) defined on the curving side at E-WNW by a scarp with a low internal lip (Wth 4 m; int. H 0.35; ext. H 1.05 to S, 1.5 m to W), from which stones protrude. To N-NE the enclosure has been levelled, here there is an area of rough, uneven ground, dotted with field clearance heaps. There is a slight depression (Wth c. 2 m) outside the bank to E, possibly indicating an infilled fosse, but it cannot be traced elsewhere.	This ringfort is 130 m SE of the Grid Connection Route with the ZoN 95 m distant
RMP MA031-017---	Ringfort	532817	821302	In pasture, located on a rise on the spine of a low E-W ridge. To N ground falls away to an area of wettish pasture, bordered by stream; there is a more gradual fall of ground to S. This possible rath is shown as a roughly circular enclosure on the 1837-8 and 1922 OS 6-inch maps; on the 1922 edition it is incorporated into a field boundary at S-WNW. It has been levelled; the outline of a slightly raised oval area (c. 23 m N-S; 15 m E-W) can still be traced. Remnants of a bank/scarp (int. H 0.1 m; ext. H 0.7; Wth slope 2.4 m) remain on the NE arc, but elsewhere the circuit is evident only as a slight undulation, and is barely discernible at S. It is bisected centrally by a property wall on a ENE-WSW axis.	Levelled site, 152 m E of Grid Connection Route, with edge of ZoN 87 m distant
RMP MA031-020---	Ringfort	532753	820988	Indicated on the 1837-8 OS 6-inch map as a circular enclosure (diam. 20-25 m), but not shown on the 1922 edition. There are no visible surface remains. The SE part of the knoll was disturbed/quarried out in the early 1990's.	Levelled site, 137 m SE of Grid Connection Route, with edge of ZoN 76 m distant
RMP MA031-019---	Ringfort	532671	820939	In rough pasture, on low ridge with good views. There is a farmyard immediately to S. Slightly raised, roughly circular area (diam. 26 m NW-SE) defined by a low stony bank (Wth 2 m; int. H 0.3 m; ext. H 0.5 m). The stone bank retains a low internal rim of stones S-NW, but for much of its circuit shows clear evidence of modification as a result of being incorporated into a later field wall. It is topped with a later field wall at NNW-S, and at S-NW the external scarp (H 0.5 m) is faced externally with large, contiguous boulders. The interior has a gentle slope down to E and SE. The perimeter and interior are largely covered by blackthorn and hawthorn.	This ringfort is 105 m SE of Grid Connection Routewith edge of ZoN 56 m distant
RMP MA031-022---	Ringfort	532450	820735	In level, average pasture. Stone-built farm buildings stand nearby to SW. Indicated on the 1837-8 OS 6-inch map as a circular enclosure (diam. c. 25 m), but not shown on the 1922 edition. There are no visible surface remains.	Levelled site, 90 m E of Grid Connection Route, edge of ZoN 32 m distant
RMP MA031-023--- and MA031-023001-	Ringfort and Children's	532535	820472	Located on level ground in an area of undulating average pasture. Views are restricted by rising ground to N and E. Circular area (diam. 37 m N-S) defined by a severely degraded bank (Wth c. 4 m; max. H 0.5 m). The bank is best preserved at W-NE; it peters out at E-SE to a slight rise, overlain by field	Edge of site 35 m E of Grid Connection Route, within ZoN

Designation	Class	ITM E	ITM N	Inventory Description	Notes
	Burial Ground			clearance debris, and is levelled at S-W, where the rath is truncated at the junction of two later field walls. A band of thistles (Wth 4-5 m) outside the bank to NE may indicate an infilled fosse. The interior, which is not noticeably raised, has an uneven surface, strewn with boulders. There appears to be a depression close to the inner face of the bank at N and NW, but it was obscured by overgrowth at the time of visit. According to local tradition, the rath was used as a children's burial ground (MA031-023001-). No graves are visible. There is an E-W farm track immediately to S of the rath.	
RMP MA031-047---	Ringfort	532758	819132	In thicket of trees and scrub, located on a bluff, with a steep slope W-N, overlooking a stream to N. Roughly circular raised area (diam. c. 30 m) defined by substantial scarp (H 2.4 m to SE), which is enhanced at W-N by the steep natural fall of ground, and enclosed at NE-SSW by fosse (Wth 4.5 m at S) and external bank (Wth c. 4 m; int. H 1 m; ext. H c. 0.5 m). The fosse is truncated at W by a road, which skirts the rath. The fosse is not evident at NW-NE where rath scarp merges with the steep natural slope. The original entrance may have been at SE where there is a slump (Wth 1.5-2 m) in the scarp, with a low causeway extending across the fosse, and a corresponding gap in the external bank. The interior is level. At the time of inspection, a circular pit (diam. 1.1 m; D 1.6), of relatively recent date but unknown function, was noted roughly in the centre of the interior. It had vertical earthen sides, and a low rim of upcast earth encircled it at top. There was a small metal ladder in the pit.	Edge of site abuts eastern verge of local road (0 m). Grid Connection Route within ZoN. This is also a HDD location (Srafaungal stream)

#### 14.4.15 Turbine Delivery Route Work Areas

A review of the Turbine Delivery Route accessing the Wind Farm Site from the N59 to the west, indicates that there are three works areas (road widening) required to facilitate same. Review of designated cultural heritage constraints within lands extending for 100 m either side of the existing road network for the Turbine Delivery Route shows that there are no recorded entries.

It is noted that the overall Turbine Delivery Route from either Killybegs Port or Galway Port will require a certain level of temporary works (e.g. street furniture and/or signage removal and reinstatement; vegetation pruning, telegraph pole/OHL removal). The Killybegs Port route will not require any additional works, although the Galway Port route will require road widening at a number of discreet areas (bends) along existing junctions (including roundabouts) and National, Regional and Local road networks (see **Chapter 15: Traffic and Transport**). The proposed Turbine Delivery Routes from either Killybegs port or Galway port do not indicate any predicted negative direct or indirect impacts on the recorded cultural heritage resource.

#### 14.4.16 Construction Haul Routes

A review of the Construction Haul Routes accessing and egressing the Sites indicate that a number of discreet passing bays are required to facilitate same. Review of designated cultural heritage constraints within lands extending for 100 m either side of the existing road network for the Construction Haul Routes shows that there are two recorded entries. The ZoN of a ring barrow (RMP MA031-001---) extends across the local road network, which is well preserved and prominently sited at the break of slope at the end of a ridge overlooking the Owencam river to the south. A road-over-river bridge is located at the Brusna river crossing point and is recorded on the Record of Protected Structures for Co. Sligo (RPS Ref. 428).

#### 14.4.17 Field Work

Field surveys of the locations of proposed construction areas within the Wind Farm Site, Hydrogen Plant Site, the Grid Connection Route and Construction Haul Routes work areas were carried out as part of the assessment. All proposed access roads shall utilise the existing roads/tracks within the Wind Farm Site and an existing agricultural track is proposed for direct access to the Hydrogen Plant Site together with a new junction upgrade to facilitate turning and entry/egress to the N59. The purpose of these surveys was to assess the potential for direct and indirect impacts on the locations and settings of known monuments and to also establish if any unrecorded features of cultural heritage interest

exist within proposed construction locations. The surveys also assisted in the appraisal of the potential for the presence of sub-surface archaeological sites or features within proposed construction areas.

The results of the field survey for the Site area are presented in **Table 14.12** and **Table 14.13**, which also collates relevant information gathered during the desktop study, including the locations of known constraints relative to work areas and details from historic mapping.

The recorded court tomb (RMP MA031-034---) located within the Wind Farm Site was inspected and its location and above ground extent confirmed as accurate per available online records. The monument is in good condition although the immediate environment has been subject to intensive mechanical turf-cutting (within the ZoN) (see **Appendix 14.1, Plates 14.15-14.18**). The existing Carrowreagh wind farm to the east is clearly visible from the site (see **Appendix 14.1, Plate 14.16**).

The wedge tomb located outside the Site boundary (RMP MA031-005---) was inaccessible during survey due to dense vegetation and young forestry plantation growth (see **Appendix 14.1, Plate 14.19**). Similarly, the burial ground and souterrains (RMPs MA031-004001-, MA031-004002- and MA031-004003-) are located outside the Site and within private lands, but the location was confirmed and viewed from the local public roadway (see **Appendix 14.1, Plates 14.20-14.21**).

An inspection of the area of the burnt spread located during archaeological testing of the site in 2011 (see **Section 14.4.10**) was undertaken. Examination of the ground surface did not indicate any changes to the area of the backfilled trench location or any stray surface finds (see **Appendix 14.1, Plate 14.14**).

An inspection of the proposed Hydrogen Plant Site and access road was undertaken. The location of SL022-026--- was accessible and its above ground extent confirmed as accurate per available online records. The barrow site is well defined and sited within a small paddock area of pasture adjacent to an existing dwelling house, just south of the proposed access road entrance area that fronts onto the existing N59 roadway (see **Appendix 14.1, Plate 14.27**). Two potential unrecorded cultural heritage features were noted outside the Redline Boundary at the proposed Hydrogen Plant Site: a possible turf stand (ITM 529160, 822724) of vernacular heritage interest and a rock outcrop noted to have folkloric (fertility) associations (ITM 529268, 822633) (see **Appendix 14.1, Plates 14.29 and 14.30**). With reference to the latter, it is noted that the townland name 'Carraun' refers to 'rocky place' and rock outcropping is noted in the area.

The 1<sup>st</sup> edition OS mapping of the proposed Hydrogen Plant Site and access road indicates former (now levelled) vernacular settlement (see **Section 14.4.11**). None of these features were visible at ground level during field survey.



**Table 14.12: Wind Farm Site & Hydrogen Plant Site Field Survey Results**

Development Element	Distance to nearest archaeological site	1 <sup>st</sup> edition 6-inch OS Map	Aerial images	Field Survey Notes
Turbine 1	499 m S of MA031-034--- Court Tomb	Open bogland	Bogland in turbary use with formalised trackways	Located at the southern end of the proposed Wind Farm Site, its located in very wet bogland which has not been cut in recent times and the area is overgrown with bog grasses and heather. Nothing of archaeological interest noted. <b>See Appendix 14.1, Plate 14.1.</b>
Turbine 2	437 m SW of MA031-034--- Court Tomb	Open bogland	Bogland in turbary use with formalised trackways	Located northwest of T1, T2 is located in very wet bogland which has not been cut in recent times and the area is overgrown with bog grasses and heather. Nothing of archaeological interest noted. <b>See Appendix 14.1, Plate 14.2.</b>
Turbine 3	512 m NW of MA031-034--- Court Tomb	Open bogland	Bogland in turbary use with formalised trackways	Located north of T2, T3 is located in very wet bogland which has not been cut in recent times and the area is overgrown with bog grasses and heather. Nothing of archaeological interest was noted. <b>See Appendix 14.1, Plate 14.3.</b>
Turbine 4	826 m SE of MA031-005--- Wedge Tomb	Open bogland	Bogland in turbary use with formalised trackways	Located northwest of T3, T4 is located in very wet bogland which has not been cut in recently but does however have previously open cuts that are infilled with water. The area is overgrown with bog grasses and heather. Nothing of archaeological interest was noted. <b>See Appendix 14.1, Plate 14.4.</b>
Turbine 5	387 m SE of MA031-005--- Wedge Tomb	Open bogland	Bogland in turbary use with formalised trackways	Located northwest of T4, T5 is located in very wet bogland which has not been cut in recent times but has a number of shallow cuts from previous hand turf cutting. The area is overgrown with bog grasses and heather. Nothing of archaeological interest was noted. <b>See Appendix 14.1, Plate 14.5.</b>
Turbine 6	372 m NE of MA031-005--- Wedge Tomb	Open bogland	Bogland in turbary use with formalised trackways	Located northwest of T5, T6 is located in very wet bogland which has not been cut in recent times. The area is heavily overgrown with bog grasses and heather. Nothing of archaeological interest was noted. <b>See Appendix 14.1, Plate 14.6.</b>
Turbine 7	969 m NE of MA031-005--- Wedge Tomb	Open bogland	Bogland in turbary use with formalised trackways	Located east of T6, T7 is located in very wet bogland which has not been cut in recent times but does have waterlogged areas previously used for turf cutting. The area is overgrown with bog grasses and heather. Nothing of archaeological interest was noted. <b>See Appendix 14.1, Plate 14.7.</b>
Turbine 8	1.4 km E of	Open bogland	Bogland in turbary use with formalised trackways	Located east of T7, T8 is located in very wet bogland which has not been cut in recent times and the area is heavily overgrown with bog

Development Element	Distance to nearest archaeological site	1 <sup>st</sup> edition 6-inch OS Map	Aerial images	Field Survey Notes
	MA031-005--- Wedge Tomb			grasses and heather. Nothing of archaeological interest was noted. <b>See Appendix 14.1, Plate 14.8.</b>
Turbine 9	962 m N/NE of MA031-034--- Court Tomb	Open bogland	Bogland in turbary use with formalised trackways	Located southwest of T8, T9 is located in very wet bogland which has not been cut in recent times and the area is heavily overgrown with bog grasses and heather. Nothing of archaeological interest was noted. <b>See Appendix 14.1, Plate 14.9.</b>
Turbine 10	281 m NE of MA031-034--- Court Tomb	Open bogland	Bogland in turbary use with formalised trackways	Located south of T9, T10 is located in very wet bogland which has not been cut in recent times and the area is heavily overgrown with bog grasses and heather. Nothing of archaeological interest was noted. <b>See Appendix 14.1, Plate 14.10.</b>
Turbine 11	585 m E/SE of MA031-034--- Court Tomb	Open bogland	Bogland in turbary use with formalised trackways	Located southeast of T10, T11 is located in very wet bogland which has not been cut in recent times and the area is heavily overgrown with bog grasses and heather. Nothing of archaeological interest was noted. <b>See Appendix 14.1, Plate 14.11.</b>
Turbine 12	837 m NE of MA031-034--- Court Tomb	Open bogland	Bogland in turbary use with formalised trackways	Located northeast of T11, T12 is located in very wet bogland which has not been cut in recent times and the area is heavily overgrown with bog grasses and heather. Nothing of archaeological interest was noted. <b>See Appendix 14.1, Plate 14.12.</b>
Turbine 13	1.5 km NE of MA031-034--- Court Tomb	Open bogland	Bogland in turbary use with formalised trackways	Located northeast of T12, T13 is located in very wet bogland which has not been cut in recent times and the area is heavily overgrown with bog grasses and heather. Nothing of archaeological interest was noted. <b>See Appendix 14.1, Plate 14.13.</b>
Wind Farm Substation	416 m S of MA031-005--- Wedge Tomb	Open bogland (with some later field enclosures/ improvements/ drainage)	Located within commercial forestry plantation	Not accessible during field survey due to dense forestry plantation growth.
Peat Restoration Areas (northern and southern) Wind Farm Site	Northern area: 845 m W of MA031-034--- Court Tomb/ 716 m S of wedge tomb MA031-005---; Southern area: 824 m N of MA031-049001- to MA031-049004- prehistoric field system/	Open bogland	Located within open bogland within (northern site) and adjacent to (southern site) Redline Boundary	Northern peat restoration site: Located northwest of T3, within Wind Farm Site, on banks of Owencam River; open overgrown bogland with relict evidence of turf-cutting banks. An E-W access track traverses the area at the central portion. A single-storey vernacular cottage is located immediately south of the proposed access to the plant at the west.  Southern peat restoration area: Located west of T2, outside Redline Boundary. Minor stream traverses area E-W and area comprised open cutaway bogland. Forestry plantations to N and W. No identified cultural heritage receptors.

Development Element	Distance to nearest archaeological site	1 <sup>st</sup> edition 6-inch OS Map	Aerial images	Field Survey Notes
	enclosure/ hut/ cultivation ridges			
Wind Farm Site Temporary Construction Compound	603 m S of wedge tomb MA031-005---	Open bogland	Located within open bogland	Located south of Wind Farm Substation. An E-W access track extends along the southern perimeter. A single-storey vernacular cottage is located immediately east, also along the access road.
Hydrogen Plant Site	606 m SE of barrow SL022-026---	Enclosed field systems, vernacular dwelling with outhouse and well	Removal of field boundaries resulting in two large open areas of sloping/undulating pasture	The area rises steeply from the low-lying boggy ground to the south, and is of improved pasture on south-facing slopes. The ground is undulating in places and may be indicative of previous vernacular settlement, although no above ground material remains are visible. No archaeological features were noted and notwithstanding previous early 19 <sup>th</sup> C disturbance to the site, the south-facing well drained ground above the water source to the south is considered to be of some archaeological potential. See <b>Appendix 14.1, Plates 14.27-14.32</b> .
Hydrogen Plant Site access road	10 m N of barrow site SL022-026---	Trackway and enclosed field systems with vernacular settlement to south	Improved pasture on level ground at top of slope	This area is still use as an agricultural field access track, and although grassed over, is firm underneath. Ground surface undulations to the south of the red line boundary may indicate relict remains of the former early 19 <sup>th</sup> century vernacular settlement. Also south of the Redline Boundary, a possible turf stand (ITM 529160, 822724) and a rock outcrop with local folkloric fertility association (ITM 529268, 822633) were observed. Outbuildings associated with the existing (20 <sup>th</sup> C) dwelling at the proposed road access entrance area are a former single-storey house, now with no front elevation and heavily modified, and two other outbuildings in poor/derelict condition. These structures, in use as outbuildings, are indicated on the 2 <sup>nd</sup> ed OS map (c.1901) as a small farmstead. See <b>Appendix 14.1, Plates 14.33-14.37</b> .
Interconnector Route	10 m N of barrow site SL022-026---	As for access road to hydrogen plant. Thereafter the circuit route follows the local existing road network.	As for access road to hydrogen plant. Local road network, crossing county boundary at Brusna river.	The proposed works will be in-road, with directional drilling at river crossing points. No above ground cultural heritage features were noted and the road bridge over the River Brusna at the county boundary (ITM 531023, 822552) is of mid/late 20 <sup>th</sup> C construct. A former smithy (ITM 531732, 822392) and a former lime kiln (531688, 822378) are noted on the 2 <sup>nd</sup> ed OS (1901) mapping but are levelled.

**Table 14.13: Grid Connection Option Field Survey/Desk Review Results**

ID Ref.	Unrecorded cultural heritage feature	Historic OS Mapping	ITM (Easting, Northing)	Field Survey/Mapping review notes
BH01	Vernacular cottage complex, Carrowleagh	Indicated on 2 <sup>nd</sup> ed OS, with lime kiln along roadway	534328, 822164	Vernacular complex along northern side of roadway. Road not indicated on 1 <sup>st</sup> ed OS map, therefore likely construction c. 1850-90.
BH02	Vernacular cottage, Carrowleagh	Not indicated	533809, 822114	Not on historic mapping, likely early-mid twentieth century in date, derelict
BH03	Vernacular cottage, Carrowleagh	Not indicated	533552, 822170	Not on historic mapping, likely early-mid twentieth century in date, derelict
BH04	Vernacular cottage, Carrowleagh	Indicated on 2 <sup>nd</sup> ed OS, with lime kiln along roadway	532786, 821998	Vernacular complex south of roadway. Road not indicated on 1 <sup>st</sup> ed OS map, therefore likely construction c. 1850-90. Lime kiln noted on 2 <sup>nd</sup> ed OS along southern side of roadway to northwest of cottage at ITM 532710, 822012 but not indicated by 3 <sup>rd</sup> OS map edition (c. 1940s)
BH05	Outbuilding, Carrownaglogh	Indicated on 2 <sup>nd</sup> ed OS, with lime kiln to SW along roadway	532495, 820923	Part of a vernacular complex (removed); road not indicated on 1 <sup>st</sup> ed OS, therefore likely construction c. 1850-90. Lime kiln noted on 2 <sup>nd</sup> ed OS along western side of roadway to southwest of outbuilding at ITM 532455, 820883 but not indicated by 3 <sup>rd</sup> OS map edition (c. 1940s)
BH06	Outbuilding, Carrownaglogh	Indicated on 3 <sup>rd</sup> ed OS	532469, 820926	Outbuilding (open gable-fronted) to west side of road, not indicated on 1 <sup>st</sup> or 2 <sup>nd</sup> ed OS, likely date c. 1940
BH07	Bridge, Carrownaglogh	Indicated on 2 <sup>nd</sup> ed OS	532456, 820868	Stone masonry road bridge over Glenree or Owenmore River; unnamed, not indicated on 1 <sup>st</sup> ed OS (road not built)
BH08	Vernacular complex, Carrownaglogh	Indicated on 2 <sup>nd</sup> ed OS	532440, 820843	Cottage and outbuildings complex along western side of roadway, not indicated on 1 <sup>st</sup> ed OS, date likely c. 1850-90
BH09	Lime Kiln, Carha	Indicated on 2 <sup>nd</sup> ed OS	532634, 821534	Located along west side of roadway, not indicated on 3 <sup>rd</sup> ed OS (1940s)
BH10	Lime Kiln, Carrownaglogh	Indicated on 2 <sup>nd</sup> ed OS	532657, 821147	Located along west side of roadway, not indicated on 3 <sup>rd</sup> ed OS but possible levelled footprint visible on aerials
BH11	Smithy and Lime Kiln, Carrownaglogh	Indicated on 2 <sup>nd</sup> ed OS	532434, 820815	Smithy with lime kiln (ITM 532437, 820809) adjacent west side of roadway (kiln not indicated on 3 <sup>rd</sup> ed OS c. 1940s)
BH12	Vernacular outbuilding, Carrownaglogh	Indicated on 2 <sup>nd</sup> ed OS	532524, 820715	Robust two-storey vernacular outbuilding, originally part of a larger complex set back from east side of road; original house (removed) indicated on 1 <sup>st</sup> ed OS

ID Ref.	Unrecorded cultural heritage feature	Historic OS Mapping	ITM (Easting, Northing)	Field Survey/Mapping review notes
BH13	Vernacular complex, Carrownaglogh	Indicated on 2 <sup>nd</sup> ed OS	532507, 820350	Not shown on 1 <sup>st</sup> ed OS, road-fronted, to east side of roadway
BH14	Timothy's Bridge & Pound Carrownaglogh/Rathreedaun	Indicated on 1 <sup>st</sup> ed OS	532504, 820286	Stone built road bridge, indicate don 1 <sup>st</sup> ed OS but heavily overgrown parapet to west side of roadway, named 'Timothy's bridge' but unnamed on 2 <sup>nd</sup> ed OS; 'Pound' (removed) located on opposite side (ITM 532521, 820289), not indicated on 2 <sup>nd</sup> ed OS
BH15	Lime kiln, Drumsheen	Indicated on 2 <sup>nd</sup> ed OS	532633, 819819	Located east of road, within hedgerow area, not indicated on 3 <sup>rd</sup> ed OS (1940s)
BH16	Lime kiln, Rathreedaun	Indicated on 2 <sup>nd</sup> ed OS	532732, 819199	Located along west side of road, within tree covered area, indicated on 3 <sup>rd</sup> ed OS
BH17	Bridge Drumsheen/Rathreedaun	Indicated on 1 <sup>st</sup> ed OS	532740, 819173	Unnamed but indicated on 1 <sup>st</sup> ed OS, stone squared boulder masonry style – possibly later replacement, road bridge crossing Srafaungal river
BH18	Vernacular complex, Rathreedaun	Indicated on 2 <sup>nd</sup> ed OS	532699, 819159	Vernacular complex, to west of roadway, not indicated on 1 <sup>st</sup> ed OS, date likely c. 1850-90
BH19	Vernacular complex, Rathreedaun	Indicated on 2 <sup>nd</sup> ed OS	532750, 819064	Vernacular complex, to east of roadway, not indicated on 1 <sup>st</sup> ed OS, date likely c. 1850-90
BH20	Lime Kiln, Bunnyconnellan West	Indicated on 2 <sup>nd</sup> ed OS	532881, 818732	Appears to be covered with vegetation, not indicated on 1 <sup>st</sup> ed OS but a lime kiln mapped further to east is noted on the 1 <sup>st</sup> ed OS (ITM 532922, 818742)

#### 14.4.18 Baseline Summary

##### *Wind Farm Site and Hydrogen Plant Site*

There is one recorded archaeological monument located within the Redline Boundary. This consists of a well-preserved court tomb RMP MA031-034--- visible on modern aerial images as a circular mound that appears to measure approx. 25 m in diameter, with an associated ZoN measuring 120 m in diameter. Field inspection noted that the immediate environment has been subject to intensive mechanical turf-cutting (within the ZoN) whilst the existing Carrowreagh wind farm to the east is clearly visible from the site. A recorded barrow site, SMR SL022-026--- is located within a paddock area, immediately south of an existing dwelling and the proposed access road to the Hydrogen Plant Site. It is well defined and visible on modern aerial images as a circular platform c. 12.5 m in diameter.

A field inspection of the recorded location of an archaeological burnt spread located during previous site works (2011) at the Wind Farm Site did not result in any baseline changes (backfilled trench) or yield any new material observations.

There are no designated architectural heritage structures within the Sites. There is one protected structure, a bridge (RPS Ref. 428) located along the Construction Haul Route. The National Inventory of Architectural Heritage lists one structure located within Bunnyconnellan town comprising the early twentieth century Roman Catholic church (NIAH Ref. 31303102), 450 m south of the Grid Connection loop-in point (with 2 no. end mast towers) at Rathreedaun/Bunnyconnellan West.

Undesignated features of cultural heritage interest comprising vernacular outbuildings at the proposed access road to the Hydrogen Plant Site, and a former (levelled) vernacular house were identified within the Redline Boundary during the desktop study and field surveys carried out as part of this assessment. It is also noted that an undesignated vernacular cottage is located immediately south of the access road to the proposed Wind Farm Site, and a possible turf stand and rock outcrop with local folkloric associations are located south of the proposed access road to the Hydrogen Plant Site.

##### *Grid Connection Route*

The Grid Connection Route follows the local road network, along which there are 20 no. undesignated vernacular heritage features identified from field survey and historic OS mapping reviews. Three of these features comprise stone masonry road-over-river bridges: BH07, Carrownaglogh at the Glenree or Owenmore River (indicated on 2<sup>nd</sup> ed OS mapping

only (published 1898) – road not built at time of 1<sup>st</sup> ed OS c.1839); BH14 ‘Timothy’s Bridge’, Carrownaglogh/Rathreedaun at the Fiddaun River (indicated on 1<sup>st</sup> ed OS 1839) and BH17 at Drumsheen/Rathreedaun crossing the Srafaungal River (indicated on 1<sup>st</sup> ed OS 1839).

#### *Turbine Delivery and Construction Haul Route Work Areas*

There are no recorded cultural heritage constraints located within the footprint of the modern roadway for Turbine Delivery (two works areas required), whilst the Construction Haul Routes show two recorded entries: the ZoN of ring barrow RMP MA031-001--- extends across the local road network and protected bridge RPS Ref. 428 is sited along the road network itself. No works areas are required for the Construction Haul Routes.

## 14.5 ASSESSMENT OF POTENTIAL EFFECTS

### 14.5.1 Construction Phase – Direct Impacts

#### *Wind Farm Site*

The construction phase will have no predicted direct impacts on the designated archaeological monuments within the Wind Farm Site or within the wider landscape surrounding the Site itself. The recorded court tomb RMP MA031—034--- has been avoided as part of design layout within the Redline Boundary. Similarly, the location of a single feature of archaeological potential, a small spread of heat affected stones and charcoal at ITM 536522, 821119 approximately 200 m northeast of court tomb RMP MA031-034---- has been avoided as part of the design layout within the Redline Boundary. Provision of a works exclusion zone (with non-ground intrusive temporary fencing) around the area of the court tomb monument, to also include the potential archaeological burnt spread area to the northeast shall ensure no predicted direct impact during construction stage (see **Volume III, Figure 14.12**).

There are no designated architectural heritage structures located within the Wind Farm Site and no undesignated features of cultural heritage interest were identified at proposed construction areas during the desktop study and site inspections. It is, therefore, concluded that the construction phase will result in no predicted direct impacts on the known cultural heritage resource.

The existence, location, extent and significance of any unrecorded, sub-surface archaeological remains that may be present within the Wind Farm Site is unknown. Bogland environments can have excellent potential for the preservation of organic material remains

below the surface (such as bog butter, wooden/leather artefacts and human remains) due to the anaerobic conditions that prevail. Previous archaeological site test trenching (2011) across 21 no. locations within the Site revealed only one discreet potential archaeological burnt spread. However given the known evidence of prehistoric activity in the form of the recorded court tomb RMP MA031-034--- as well as a socketed bronze axehead (likely to be contemporary with the Bronze Age wedge tomb RMP MA031-005---outside the Redline Boundary at the northwest); infers that potential still exists for currently unknown archaeological sub-surface remains to be present within the Site. Should such potential features be located within the footprint of proposed construction areas, this would result in direct, negative and permanent construction phase impacts.

There is an undesignated vernacular cottage located along the proposed entrance access track to the wind farm, east of the temporary compound area. This structure is not directly impacted however there is close working area proximity and provision of peat restoration area at this location. As such the property shall be cordoned off as an exclusion zone. No construction phase direct impacts on the architectural or undesignated cultural heritage resources are predicted.

#### *Hydrogen Plant Site, Access Road and Interconnector Route*

There is one recorded archaeological site within close proximity to the proposed access road to the Hydrogen Plant Site in Carraun townland: a barrow site SMR SL022-026---. This monument is well defined and not directly impacted, and is sited outside the Redline Boundary. However, the ZoN extends partially within the construction works area and given the close proximity, strict exclusion of any potential temporary construction works (vehicular tracking, temporary storage etc.) at the monument location will be undertaken via a works exclusion zone utilising the existing field boundary at this location. This shall ensure no predicted direct impact during construction stage (see **Volume III, Figure 14.13**).

There is a former vernacular homestead indicated on 1<sup>st</sup> edition OS mapping (1837) at the location of the proposed Hydrogen Plant Site. This and any associated structures (well, outhouse) have been entirely removed. Footprint remains may exist at a sub-surface state and this is considered a direct (negative) impact of high magnitude on a low/negligible value receptor, resulting in a slight significance of effect. Scaling on the 1<sup>st</sup> edition OS historic mapping may be slightly inaccurate for the location of the proposed access road. This possibility is indicated by the roadway infrastructure that is mapped on the subsequent 2<sup>nd</sup> and 3<sup>rd</sup> edition OS mapping. As a result, there are two former lime kilns (now levelled) that may be located within the footprint of the proposed access road. Footprint remains may



exist at a sub-surface state and this is considered a direct (negative) impact of high magnitude on a low/negligible value receptor, resulting in a slight significance of effect.

The existing outbuildings at a domestic yard area represent the remains of a former late nineteenth century vernacular farmstead, located at the proposed access road entrance and roundabout area (see **Appendix 14.1, Plates 14.33-14.37**). The existing dwelling is a later addition (c.1940) to the farmyard complex. Demolition of outbuildings agricultural shed C and partial demolition of agricultural shed B will be demolished as part of the Proposed Development, (see **Planning Drawing No. 6129-PL-121**) which are indicated on the 2<sup>nd</sup> edition OS mapping suggesting a mid-19<sup>th</sup> century date. It is also proposed that the dwelling (20<sup>th</sup> century) and agricultural sheds D and E and the demolition of the remainder of shed B (mid-19<sup>th</sup> century) be demolished with provision of a replacement dwelling and shed by way of separate planning application within a greenfield area to the immediate south of the existing sheds. The proposed new dwelling would be accessed from the proposed roundabout at the north and would be sited adjacent to barrow site SL022-026--- (but outside the ZoN). For the two vernacular 19<sup>th</sup> century outbuilding remains (Buildings B and C), this will be a direct (negative) impact of high magnitude on a low value receptor, resulting in a moderate significance of effect. Similarly, any proposed future removal of Building E would result in a moderate significance of effect. Removal of the existing dwelling (Building A) is not considered a significant significance of effect; however the proposed replacement dwelling will have an indirect (Negative) impact on the setting of the barrow site SL022-026---, of medium magnitude, on a medium value receptor, resulting in a moderate significance of effect. There is also heightened potential to directly impact sub-surface archaeological features associated with and/or contemporaneous to the prehistoric barrow site.

The overall greenfield site of the proposed access road (including the Interconnector Route) and Hydrogen Plant Site is located within well drained south-facing pastures with boggy terrain to the south (outside the Redline Boundary). Potential exists for currently unknown archaeological sub-surface remains to be present within the area. Should such potential features be located within the footprint of proposed construction areas, this would result in direct, negative and permanent construction phase impacts.

There are no recorded or undesignated upstanding cultural heritage receptors located along the in-road locations for the proposed Interconnector Route. Given the presence of the existing road infrastructure, there is no likely predicted significance of effect associated with the construction stage works at this area.

### *Grid Connection*

There are two recorded archaeological sites on or within close proximity to the Grid Connection Route: ringfort (RMP MA031-047---) and a ringfort with children's burial ground (RMP MA031-023--- and MA031-023001-). The existing roadway traverses around the western edge of the tree-lined banks of ringfort RMP MA031-047--- with the Grid Connection Route within the ZoN relating to same. The previous early 19<sup>th</sup> century building of the road has truncated the fosse at the western side, and previous archaeological monitoring at the road side verge (Licence Ref. 08E0826 and 08E0826Ext) for the Carha and Bofield group water scheme did not yield any archaeological features. This area (and the in-road location of the Grid Connection Route) is likely to be heavily disturbed, however there is nonetheless a measurable direct impact on the archaeological site extent. This is considered a direct (negative) low magnitude impact on a medium value receptor, resulting in a slight significance of effect.

The ZoN relating to ringfort MA031-023--- and children's burial ground MA031-023001- is very marginally within the existing road network and Grid Connection Route. The excavation of the cable trench within the existing road/roadside verge will have no likely predicted impacts on upstanding remains of the ringfort itself (35 m east), however the area limits of the children's burial ground is presently unknown and could potentially extend outside the perimeter banks of the ringfort. These archaeological site types retain heightened sensitivity and although there is no direct impact on the recorded site, there is potential for associated archaeological remains to exist outside of and adjacent to same. The previous construction of the road in the early nineteenth century is likely to have heavily disturbed the area to the west of the site, however archaeological sensitivity at this location of the Grid Connection Route is noted.

There are three masonry road bridges (BH7, BH14 and BH17) centred on the Grid Connection Route, with works methodology at these locations involving the use of horizontal directional drilling under the watercourses. As such this will not require any works to the masonry bridges at these locations (and therefore no direct impact) and this methodology will also avoid impacts on the watercourses which may contain potential unrecorded underwater archaeological features or artefacts. There is a further 17 no. vernacular structures noted along and fronting the local road network comprising the Grid Connection Route. All of these structures shall be avoided during the works with the excavation of a cable trench retained to in-road/immediate roadside verge only and appropriate property exclusion zones adhered to during the construction stage.

While there are no recorded archaeological sites located within environs of the short off-road section at Rathreedaun/Bunnyconnellan West townland boundary, the potential for the presence of unrecorded, sub-surface archaeological sites or features within undisturbed lands in this area cannot be discounted and the potential for direct, negative impacts on such remains exists.

#### *Turbine Delivery and Construction Haul Route Work Areas*

There are two works areas required to facilitate construction phase works for Turbine Delivery routes along the existing road network. None of these locations retain recorded or unrecorded cultural heritage constraints. No works areas are required for Construction Haul Routes along the existing road network. An existing road bridge at Emlymoran townland is recorded on the RPS (Ref. 428) and is located along the Construction Haul Route. This is a well built and robust bridge of cut stone masonry construct. Construction-related traffic will not directly impact the bridge however due care and diligence shall be taken during vehicular crossings to avoid any inadvertent damage to same. There is no predicted direct construction stage impacts on the cultural heritage resource relating to the Turbine Delivery works areas and Construction Haul Routes.

### **14.5.2 Construction Phase – Indirect Impacts**

#### *Wind Farm Site*

There is a recorded court-tomb RMP MA031-034--- located within the Wind Farm Site. The tomb is well preserved (bog-covered in part) and located within open blanket that has been subject to turf cutting throughout and immediately adjacent the monument. Design layout provision has avoided direct impact on the site with the closest Wind Farm Site footprint being the existing access track to the west (on edge of ZoN). The monument is easily accessible via the existing turbarry access tracks although it is not clear if it is visited often by the general public. There will be a temporary/short-term negative indirect impact on the landscape setting of the monument during the construction stage, which is considered a significant significance of effect.

The wedge tomb RMP MA031-005--- located 225 m northwest of T5 (outside Redline boundary) is within dense vegetation and commercial planting with reduced monument landscape setting integrity (views from) as a result. As such, no negative temporary/short-term indirect construction impacts on landscape setting are identified for the monument. The remaining recorded archaeological monuments are located within approx. 1 km of any proposed construction locations. Similarly, the identified National Monuments are located

approx. 6.5 km - 10 km distant. Given these proximity distances, the construction phase of the proposed development will have no predicted negative temporary/short-term indirect significant impacts on the settings of recorded archaeological monuments within the study area. There are no designated architectural heritage structures within the Site or 2 km of the Redline Boundary, with the RC church in Bunnyconnellan (NIAH 31303102) noted 450 m south of the Grid Connection loop-in point (with 2 no. end mast towers). There are no predicted construction stage impacts on this structure.

#### *Hydrogen Plant Site, Access Road and Interconnector Route*

There is one recorded archaeological site located immediately outside the Redline Boundary for the proposed access road to the Hydrogen Plant Site. This is a barrow monument, (SMR SL022-026---) largely comprising an earthen circular (level) platform area c. 12.5 m in diameter. A works exclusion zone will ensure no direct impact on the site. Removal of the existing outbuildings to the northeast of the site (within the Redline boundary) and construction of an access road is not predicted to have any indirect impact on the monument at construction stage (see **Volume III, Figure 14.13**).

There are two undesignated cultural heritage receptors identified outside the Redline Boundary: a possible turf stand and a rock outcrop with local folkloric association (see **Appendix 14.1, Plates 14.29 and 14.30**). The location of these features will comprise work exclusion zones to avoid any inadvertent damage during temporary construction works (vehicular movements, tracking etc.). As such, there is no likely predicted indirect impact on same during construction stage.

#### *Grid Connection Route*

There are two recorded archaeological sites located alongside the Grid Connection Route however the in-road/roadside verge grid connection ground excavation works during the construction phase will result in no likely indirect impacts on the known cultural heritage resource. The use of horizontal directional drilling at the location of 3 no. masonry bridges, and associated watercourses will result in no predicted indirect impacts on these structures or any potential unrecorded underwater archaeological remains at their locations. Similarly, the undesignated vernacular heritage resource located adjacent the existing roadway and within the close environs of the Grid Connection Route shall be subject to exclusion zones with no likely indirect construction stage impacts predicted.

### *Turbine Delivery and Construction Haul Route Work Areas*

There are no cultural heritage receptors at any proposed works areas required to facilitate construction phase works for the Turbine Delivery Route. There is a no works required for the Construction Haul Routes along the existing road network. As such, there is no predicted indirect construction stage impacts on the cultural heritage resource.

#### 14.5.3 Construction Stage Impacts Summary

Detailed in **Table 14.14** is a tabulated summary of identified construction stage direct and indirect impacts on the Cultural Heritage resource.

**Table 14.14: Construction Stage Impacts on the Cultural Heritage Resource**

Receptor ID	Impact Duration	Impact Type	Impact Magnitude	Receptor Value	Significance of Effect
MA031-034--- Court Tomb (setting)	Temporary/ Short-Term (Wind Farm Site)	Indirect	Medium	Medium	Significant
Potential Burnt Spread	Temporary/ Short-Term (Wind Farm Site)	No predicted impact	n/a	Low	None
Unknown archaeological sub-surface finds/features	Potential permanent (complete removal) (Wind Farm Site, Hydrogen Plant Site, access road, Grid Connection, Interconnector Route & Peat Restoration areas)	Potential Direct	Potential High	Unknown	Unknown
Vernacular cottage adjacent access track	Long-term (Wind Farm Site)	No predicted impact	n/a	Low	None
MA031-005--- Wedge Tomb	Temporary/ Short-Term (Wind Farm Site)	No predicted impact	n/a	Medium	None
Known archaeological monuments within study area	Temporary/ Short-Term (Both Sites)	No predicted impact	n/a	Medium	None
National Monuments within 10 km of Site	Temporary/ Short-Term (Both Sites)	No predicted impact	n/a	High	None
RC Church NIAH 31303102	Temporary/ Short-Term (Both Sites)	No predicted impact	n/a	Medium	None
SL022-026--- Barrow (setting)	Temporary/ Short-Term (access road/	No predicted Impact	n/a	Medium	None

Receptor ID	Impact Duration	Impact Type	Impact Magnitude	Receptor Value	Significance of Effect
	Hydrogen Plant Site)				
Levelled vernacular homestead and lime kilns x 2	Permanent (access road/ Hydrogen Plant Site)	Direct	High	Low/Negligible	Slight
Vernacular outbuildings	Permanent (access road/ Hydrogen Plant Site)	Direct	High	Low	Moderate
Possible turf stand and rock outcrop	Temporary/ Short-Term (access road/ Hydrogen Plant Site)	Indirect	n/a	Low	None
Stone Bridge RPS 428	Temporary/Short-Term (Construction Haul Route)	Direct	n/a	High	None
MA031-047--- Ringfort	Permanent (Grid Connection)	Direct	Low	Medium	Slight
MA031-023--- & MA031-023001- Ringfort & CBG	Permanent (Grid Connection)	Potential Direct	Potential Low	Medium	Unknown
Masonry Road Bridges BH7, BH14 & BH17	Long-term (Grid Connection)	No predicted impact	n/a	Low/Negligible	None
Vernacular structures x 17 no.	Long-term (Grid Connection)	No predicted impact	n/a	Low	None

#### 14.5.4 Operational Phase – Direct Impacts

##### *Wind Farm Site*

There is a recorded court-tomb RMP MA031-034--- located within the Wind Farm Site and a potential archaeological burnt spread located a short distance northeast of same. Both of these areas have been avoided by the design layout and there will be no predicted direct impacts at operational stage as a result. A wedge tomb RMP MA031-005--- is located 225 m northwest of T5 (outside Redline Boundary) and is within dense vegetation and commercial planting, with no predicted direct impacts at operational stage. Similarly, all other recorded archaeological monuments identified within the study area are located approx. 1 km distant, with identified National Monuments also located 6.5 km – 10 km distant and will not be directly impacted at operational stage. There are no designated architectural heritage structures within the Site or 1 km of the Redline Boundary, with the RC church in Bunnyconnellan (NIAH 31303102) noted 450 m south of the Grid Connection loop-in point (with 2 no. end mast towers). There are no predicted operational stage impacts on this structure.

In addition, the successful implementation of the construction phase mitigation measures outlined in **Section 14.6** 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.

#### *Hydrogen Plant Site, Access Road and Interconnector Route*

The successful implementation of the construction phase mitigation measures outlined in **Section 14.6** will result in the preservation in situ (by avoidance) or the preservation in record (by archaeological excavation) of any undesignated cultural heritage receptors and any unrecorded, sub-surface archaeological sites or features that may exist within proposed construction areas at the Hydrogen Plant Site, Access Road and Interconnector Route. There will, therefore, be no predicted direct impacts during the operational phase.

#### *Grid Connection*

As the grid connection will comprise a buried cable within existing roads and tracks it will, therefore, result in no predicted direct impacts on the cultural heritage resource during the operational phase.

#### *Turbine Delivery and Construction Haul Route Work Areas*

No direct impacts relating to the Turbine Delivery Route and Construction Haul Route will arise during the operational phase as the use of the existing public road network to accommodate same will not occur during this phase.

### **14.5.5 Operational Phase – Indirect Impacts**

#### *Wind Farm Site*

There is a recorded court-tomb RMP MA031-034--- located within the Wind Farm Site. The tomb is well preserved (bog-covered in part) and located within open blanket of that has been subject to turf cutting throughout and immediately adjacent the monument. The existing wind farm to the east of the Wind Farm Site is clearly visible at the NE-SE horizon (see **Appendix 14.1, Plates 14.15-14.18**). The tomb has an E-W axis orientation, with the open gallery to the east. It cannot be ascertained if specific archaeo-astronomical alignment features acted as an integral function of the monument, although it is evidenced that the court tomb series of megalithic tombs do follow a predominantly NE/E-SW/W axis orientation. Horizon views in these directions include the Ox Mountains to the NE/E and the

distinctive peak of Nephin Mountain to the SW/W. The monument is easily accessible via the existing turbary access tracks although it is not clear if its if visited often by the general public.

Design layout iteration has successfully avoided direct impact on the monument at construction stage, however given the nature of the flat open bogland topography it is noted that the proposed wind farm infrastructure (Turbines, Turbine Hardstands, Wind Farm Substation) will be clearly visible from same. As such, there will be long-term (albeit reversible) negative indirect impact on the landscape setting of the monument during the operational stage, which is considered a high magnitude impact on a medium value receptor, resulting in a significant/very significant significance of effect.

A review of the locations of likely contemporary Neolithic megalithic tombs to that located within the Site (RMP MA031-034---), within 10 km of the Wind Farm Site that may have connected ritual alignments across the wider landscape, was also examined for purposes of indirect operational stage impact assessment. This identified four court tomb sites, all of which have the broadly E/SE-W/NW axis orientation that is typical of these tomb types. Carrownaglogh Court Tomb (RMP MA032-001----) is located 1.9 km to the southeast of the Site on a slope of the Ox Mountains with the local topography limiting views in the direction of the Wind Farm Site. Similarly, a further three court tombs noted in the townlands of Caltragh (RMP SL017-045----) and Tawnatruffaun (RMP SL017-048---- and RMP SL017-049----) are located approximately 4.5 km – 6.5 km to the north/northeast of the Wind Farm Site. Both the distances from the Wind Farm Site, and the axis orientation of each example demonstrably not focused towards the direction of the Wind Farm Site to the S/SW, infers that there are no predicted operational stage indirect impacts on the immediate settings of same, or in the context of any potential grouping value of this tomb type within the locale.

The wedge tomb RMP MA031-005--- located 225 m northwest of proposed T5 (outside Redline boundary) is within dense vegetation and commercial planting, is inaccessible and has reduced monument landscape setting integrity (views from) as a result. Although the forestry is likely to be harvested in the future, the proposed wind farm development is also of long-term duration and reversible and as such there is a predicted indirect low magnitude impact of slight significance of effect on landscape setting noted for this site at operational stage.

The remaining archaeological monuments with upstanding remains (burial ground, souterrains, ringforts, prehistoric enclosure and hut site/field systems – see **Table 14.6**)



identified within the study area are located approx. 1 km distant from the Wind Farm Site and do not retain notable visual alignment sensitivities towards the Wind Farm Site. Both the distant proximities and local topography with mature tree-lined road networks and land use including several locations of commercial forestry indicate that there are no likely predicted indirect significant operational stage impacts on the immediate setting of these archaeological monuments within the wider landscape.

The National Monuments identified within approx. 10 km of the Wind Farm Site include a group of prehistoric monuments to the southwest. Given the geographical location, all of these prehistoric megalithic monuments retain skyline views that are predominantly inclusive of the Ox Mountain range to the NE-E-SE and distance views of Nephin Mountain to the W-SW. For the Carrowcrom/Carrowcastle grouping (National Monument Ref. 293), the integral orientation alignment for sites where this can be determined (entrances) is towards the SW. Although the Ox Mountains contribute to the overall setting of the monuments, the local undulating topography and mature tree-lined field boundaries mask skyline views in some directions due to drumlin terrain/rising ground. Given proximity distances afforded to the Wind Farm Site, it is not considered that the proposed development will significantly negatively affect the skyline related same. There are long glimpse views of turbine blades/upper shafts presently afforded to the existing wind farm located east of the Wind Farm Site which do not detract from the general or immediate setting of the monuments (see **Appendix 14.1, Plates 14.38 – 14.41**). Views in the direction of the proposed Wind Farm Site are largely restricted by the local topography and vegetation. Any potential glimpse views of upper shafts/blades/blade tips relating the Proposed Development are considered a low magnitude impact on the setting of high value receptors resulting in a long-term negative slight significance of effect.

National Monument Ref. 479, court tomb RMP SL036-003--- is located south of the Wind Farm Site and sited at a higher elevation, on a plateau in the Ox Mountains, with a court area facing towards the NE, away from the Proposed Development. Views towards the Wind Farm Site from the court tomb are obstructed due to the high mountainous terrain (see **Appendix 14.1, Plate 14.42**). Given the location distances and the integral orientation alignments away from the direction of the Wind Farm Site, it is considered that there are no predicted indirect significant operational impacts on this archaeological site.

Rosserk Abbey RMP MA022-082001- and Moyne Abbey RMP MA022-024001- are also National Monuments (Ref. 104 & 103 respectively) located c. 10-13.5 km north-west of the Wind Farm Site. Public access is via dedicated roadways and the sites are regularly visited.

Views towards the Wind Farm Site from the abbeys are distant and barely discernible although slight visibility of existing turbines in this general direction is noted for Rosserk Abbey (see **Appendix 14.1, Plates 14.43-14.45**). There is no predicted indirect significant operational stage impact on the immediate heritage setting or visitor appreciation of the abbey sites at Rosserk and Moyne.

#### *Hydrogen Plant Site, Access Road and Interconnector Route*

The barrow site SL022-026--- is located south of the proposed access road and an existing field boundary. There will be removal of existing outbuildings beyond the field boundary to the northeast and installation of an access roadway with roundabout. This is considered to be an indirect impact on the setting of the monument of low magnitude scale on a medium value receptor, resulting in a slight significance of effect.

Two undesignated cultural heritage receptors were noted during field survey outside the Redline Boundary, within the environs of the proposed hydrogen plant: a possible turf stand and a rock outcrop with local folkloric association. Indirect impact at operational stage on the respective site setting and character of these receptors is considered of low magnitude on a low value receptors, resulting in a Not Significant significance of effect.

#### *Grid Connection*

As the grid connection will comprise a buried cable within existing roads it will, therefore, result in no predicted indirect impacts on the cultural heritage resource during the operational phase.

#### *Turbine Delivery Route and Construction Haul Route Work Areas*

No indirect impacts relating to the Turbine Delivery Route or Construction Haul Route will arise during the operational phase as the use of the existing public road network to facilitate same will not occur during this phase.

### **14.5.6 Operational Stage Impacts Summary**

Detailed in **Table 14.15** is a tabulated summary of identified construction stage direct and indirect impacts on the Cultural Heritage resource.

**Table 14.15: Operational Stage Impacts on the Cultural Heritage Resource**

Receptor ID	Impact Duration	Impact Type	Impact Magnitude	Receptor Value	Significance of Effect
MA031-034--- Court Tomb (setting)	Long-term (Wind Farm Site)	Indirect	High	Medium	Significant/Very Significant
Potential Burnt Spread	Long-term (Wind Farm Site)	No predicted impact	n/a	Low	None
Unknown archaeological sub-surface finds/features	Long-term (Both Sites)	No predicted impact	n/a	Unknown	None
Vernacular cottage adjacent access track	Long-term (Wind Farm Site)	No predicted impact	n/a	Low	None
MA031-005--- Wedge Tomb	Long-term (Wind Farm Site)	Indirect	Low	Medium	Slight
Known archaeological monuments within study area	Long-term (Both Sites)	No predicted impact	n/a	Medium	None
Carrowcrom/Carrowcastle National Monuments Ref. 293 within 10 km of Site	Long-term (Wind Farm Site)	Indirect	Low	High	Slight
National Monuments Rosserk Abbey (Ref. 104) and Court Tomb SL036-003--- (Ref. 479)	Long-term (Wind Farm Site)	No predicted impact	n/a	High	None
RC Church NIAH 31303102	Long-term (Wind Farm Site)	No predicted impact	n/a	Medium	None
SL022-026--- Barrow (setting)	Long-Term (Hydrogen Plant Site/access road)	Indirect	Low	Medium	Slight
Levelled vernacular homestead and lime kilns x 2	n/a	No predicted impact	n/a	Low/negligible	None
Vernacular outbuildings	n/a	No predicted impact	n/a	Low	None
Possible turf stand and rock outcrop	Long-Term (Hydrogen Plant Site/access road)	Indirect	Low	Low	Not Significant
Stone Bridge RPS 428	n/a	No predicted impact	n/a	High	None
MA031-047--- Ringfort	Long-term (Grid Connection)	No predicted impact	n/a	Medium	None
MA031-023--- & MA031-023001- Ringfort & CBG	Long-term (Grid Connection)	No predicted impact	n/a	Medium	None

Receptor ID	Impact Duration	Impact Type	Impact Magnitude	Receptor Value	Significance of Effect
Masonry Road Bridges BH7, BH14 & BH17	Long-term (Grid Connection)	No predicted impact	n/a	Low/Negligible	None
Vernacular structures x 17 no.	Long-term (Grid Connection)	No predicted impact	n/a	Low	None

## 14.6 MITIGATION MEASURES AND RESIDUAL EFFECTS

The Wind Farm Site layout was informed by the archaeological desktop studies and fieldwork undertaken during the design and assessment phases and was designed to avoid or minimise impacts on the known archaeological monuments in the area. The mitigation measures presented in this section include pre-construction and construction phase archaeological site records, investigations and protection measures for known monuments and potential unknown (sub-surface) heritage receptors. These mitigation measures are in accordance with guidelines for planning conditions for wind energy developments located within close proximity to recorded archaeological monuments as published in the *Wind Energy Development Guidelines* (2006, Section 7.4) and the *Draft Revised Wind Energy Development Guidelines* (2019, Section 7.6).

### 14.6.1 Construction Phase

Ground works within the Redline Boundary during the construction phase of the Wind Farm Site area, as well as peat restoration areas located both within and outside the Red Line Boundary, will be subject to archaeological monitoring under licence by the National Monuments Service (DHLGH). An archaeological testing programme under licence by National Monuments Service shall be adopted at the greenfield areas within the Redline Boundary for the proposed access road and Hydrogen Plant Site. This programme will be undertaken in advance of construction and will include targeted trenching of the former levelled vernacular settlement and lime-kilns within the design footprint. Should any material sub-surface remains be discovered, these shall be evaluated and recorded with written, drawn and photographic trench/section details.

Given the ZoN and proximity to barrow SMR SL022-026---, licenced archaeological monitoring shall also extend to the domestic yard area at the proposed access road to the Hydrogen Plant Site. This shall be undertaken during groundworks associated the demolition and removal of existing outbuildings to site. A strict works exclusion zone shall also be adopted to ensure no access to the barrow monument is permitted during construction stage. A full written, drawn and photographic record of the vernacular outbuildings to the domestic yard area at the proposed access road will be undertaken prior

to their removal. A record of the existing dwelling and remaining outbuilding shall also be undertaken in order to complete a full archival record of the existing 19<sup>th</sup>/20<sup>th</sup> century farmyard complex. It is also noted that in the event of the construction of a replacement dwelling with shed to the south of the proposed access roundabout, as part of a separate planning process, this will likely require archaeological site investigations prior to construction in order to mitigate any potential impacts on unknown sub-surface archaeological features/remains.

In the event that any sub-surface archaeological features are identified during these site investigations (testing and/or monitoring) they will be recorded and then securely 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).

A full written and photographic record of the court tomb RMP MA031-034--- located within the Wind Farm Site, to specifically include its monument setting, shall be undertaken for archival record purpose in advance of construction works. Furthermore, provision of a works exclusion zone via non-ground intrusive temporary fencing shall ensure that no construction related activities or tracking of machinery shall occur within the designated buffers assigned for court tomb RMP MA031-034--- which shall also account for a previously discovered area of potential archaeological sub-surface remains (burnt spread) (see **Volume III, Figure 14.12**).

Licensed archaeological monitoring noted shall also extend to identified discreet sections of the Grid Connection route at the location of a ringfort MA031-047--- and adjacent to a ringfort and children's burial ground (MA031-023--- and MA031-023001-) as well as a short offline portion at the 110kV loop-in and 2 no. end-mast towers location at Rathreedaun/Bunnyconnellan West townland boundary.

Works exclusion zones shall be applicable to the discreet areas outside the Redline Boundary at the proposed Hydrogen Plant Site to ensure no inadvertent damage during construction stage to the undesignated cultural heritage features (turf stand and rock outcrop). In addition, due care and diligence will be exercised for all construction-related vehicular crossings for material haul routes at protected stone bridge RPS 428.

### 14.6.2 Construction Phase Residual Impacts – Direct

The mitigation measures set out in **Section 14.6.1** for direct construction stage impacts can reduce the significance of effect by means of preservation *in situ* and/or preservation by record. Nonetheless any physical loss of a Cultural Heritage receptor is noted as a residual effect both in the context of the heritage site itself as well as a loss to the overall Cultural Heritage resource on a local, regional and/or national level. There is direct construction stage impact (Grid Connection Route) on a recorded ringfort (RMP MA031-047---) with measurable slight significance of effect, however the existing road truncates the fosse at this location and together with the highly disturbed nature of ground conditions as well as the implementation of mitigation measures, there is no predicted residual effect on the site as a result.

There is direct construction stage impact on the undesignated cultural heritage resource at the proposed Hydrogen Plant Site and access road (levelled vernacular farmstead and lime kilns; upstanding vernacular outbuildings) of slight and moderate significance of effects. These receptors are levelled or in poor condition, and with the adoption of the mitigation measure set out to evaluate and record same, there is no predicted residual impact on the sites as a result.

Any other identified direct construction stage impacts are potential only at this stage, with unknown significance of effect (potential presently unrecorded sub-surface remains), and as such any predicted residual impacts on same at construction stage are also unknown.

### 14.6.3 Construction Phase Residual Impacts – Indirect

An indirect construction stage impact is noted for the court tomb RMP MA031-034--- located within the Wind Farm Site, which although avoided, the setting will be subject to temporary/short-term construction stage impact on its setting (e.g. noise, visual amenity distraction, heavy machinery movements etc.). The mitigation measures set out in **Section 14.6.1** for indirect construction stage impacts can reduce the significance of effect by means of a written and photographic monument setting record in advance of construction and provision of a works exclusion zone area. The full implementation of construction stage mitigation measures for indirect impact on the court tomb RMP MA031-034--- shall ensure that there are no predicted residual impacts on the site as a result.

### 14.6.4 Operational Phase

Following the implementation of the mitigation measures presented in **Section 14.6.1**, the operational phase of the Proposed Development will result in no predicted direct impacts

on the archaeological, architectural and cultural heritage resources and, therefore, no mitigation measures are required.

As detailed in **Section 14.5.5**, the Development will result in a negative long-term significant/very significant indirect impact on the setting of court tomb RMP MA031-034---. The landscape setting archival record to be undertaken prior to construction shall off-set and reduce this the indirect operational impact on monument setting. There is also a range of long-term, indirect, slight negative impacts of a visual nature on the wider setting of archaeological sites within the surrounding landscape (wedge tomb RMP MA031-005---, barrow SMR SL022-026--- and National Monuments Ref. 293 at Carrowcrom/ Carrowcastle). Given the nature and form of wind farm turbines there are no mitigation measures that can ameliorate these visual impacts on the court tomb or those archaeological monuments in the wider environment, but it is noted that they will be reversed following the decommissioning phase.

#### 14.6.5 Operation Phase Residual Impacts - Direct

Residual impacts are defined as “the final predicted or intended effects which occur after the proposed mitigation measures have been implemented” (EPA 2022, 62)<sup>10</sup>. In cases where it is not possible to fully mitigate adverse effects that cannot be reasonably avoided, residual effects on the Cultural Heritage resource can be identified. Following the successful implementation of mitigation measures, the operational phase of the Development will result in no predicted residual direct impacts on the archaeological, architectural and cultural heritage resources.

#### 14.6.6 Operation Phase Residual Impacts - Indirect

The indirect impact on archaeological monument setting during the operational phase, as set out in **Section 14.5.5** cannot be fully mitigated (see **Section 14.6.4**). As such the residual (long-term) indirect impact remains the same as that predicted for operational phase until the reversal of the impact occurs during the decommissioning phase.

### 14.7 CUMULATIVE IMPACTS

The baseline for scoping cumulative effects has considered a review of ten wind farm developments located within 20 km of the Proposed Development:

- Black Lough Wind Farm (6 Turbines, 1.3 km NE)
- Carrowleagh Wind Farm (13 Turbines, adjacent Site)

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<sup>10</sup> Available at: <https://www.epa.ie/news-releases/news-releases-2022/epa-publishes-guidelines-on-the-information-to-be-contained-in-environmental-impact-assessment-reports.php>

- Carrowleagh Wind Farm Extension (4 Turbines, adjacent Site)
- Bunnyconnellan Wind Farm (12 Turbines, 3.6 km S)
- Ounagh Wind Farm (3 Turbines, 7.5 km SE)
- Kingsmountain Wind Farm (10 Turbines, 12 km NE)
- The Dunneill Wind Farm (13 Turbines, 12 km NE)
- Lacken Wind Farm (3 Turbines, 12.6 km NW)
- Stokane Wind Turbine (1 Turbine, 1.09 km S)
- Bunnyconnellan East Turbine (1 Turbine, 3.5 km S)

Of relevance to cumulative impact on the Cultural Heritage resource is the cumulative effect of the addition of many minor or insignificant effects, including those related to other projects, to create larger, more significant impacts. This can be applicable to indirect impact on the character of site/monuments, particularly in relation to setting. It is noted that long-distance views from National Monuments within the surrounding 10 km study area retain glimpse views of existing wind turbines (see **Section 14.4.8** and **Appendix 14.1, Plates 14.38-14.45**). The geographical location of the National Monuments to the south of the proposed Wind Farm Site retain skyline views that are predominantly inclusive of the Ox Mountain range to the NE-E-SE as well as the distance views of Nephin Mountain to the W-SW. Although the Ox Mountains contribute to the overall setting of the monuments, given proximity distances afforded to both the existing operational windfarms of Carrowleagh (to the east of the Wind Farm Site) as well as that of the proposed Wind Farm Site, it is not considered that the proposed development will give rise to any significant negative cumulative effect on these high value receptors. Similarly, views from Rosserk Abbey and Moyne Abbey towards the southeast and the proposed Site retains very partial long glimpse views of existing turbines but does not serve to detract from the character, site setting or amenity value attached to the monument. The overall cumulative effect on the high-value National Monuments is determined as negligible magnitude resulting in a slight overall cumulative significance of effect.

There is a measurable operational stage significant/very significant indirect impact on the setting of a recorded court tomb within the Wind Farm Site. The existing Carrowleagh wind farm is clearly visible to the environs to the east of the monument. The cumulative effect of the proposed development together with the existing operational Carrowleagh wind farm is considered to be of medium magnitude on a medium value receptor, resulting in a moderate/significant cumulative significance of effect.



## 14.8 DECOMMISSIONING IMPACTS

No direct impacts on known elements of the cultural heritage resource are predicted during the decommissioning phase as there are no recorded cultural heritage assets located within the footprint of the various elements of the Wind Farm Site and Hydrogen Plant Site that will be subject to decommissioning. Notwithstanding this, a works exclusion zone shall also apply to the area of the recorded court tomb RMP MA031-034--- and adjacent area of potential archaeological burnt spread; as well as the recorded barrow site SMR SL022-026---. The decommissioning phase will result in the reversal of the long term, indirect, negative impacts on the setting of archaeological monuments located within the wider landscape.

## 14.9 CONCLUSIONS

The Proposed Development will not result in any direct negative impacts to any known archaeological monuments, designated architectural heritage structures. There is direct negative impact to undesignated vernacular cultural heritage receptors that are considered slight and moderate significance of effects. Appropriate mitigation via preservation by record (written, drawn, photographic) will result in no predicted residual impact on the cultural heritage resource.

The potential exists for the presence of unrecorded, sub-surface archaeological features within proposed construction areas within the Sites. In the event that any sub-surface archaeological remains are identified during archaeological testing and monitoring of the construction phase, they will be cleaned, recorded and left to remain *in situ* within cordoned off areas while the National Monuments Service are notified and consulted in relation to appropriate future mitigation strategies. The latter may entail preservation *in situ* by avoidance or preservation by record by archaeological excavations.

The Proposed Development will result in a range of indirect impacts on the setting of archaeological monuments located within the Sites and surrounding lands during the operational phase. Of note is a significant indirect effect on the landscape setting of a designated court tomb monument RMP MA031-034--- located within the Wind Farm Site. These indirect operational impacts will be long term in duration and will be reversible following the decommissioning phase.

## 14.10 SUMMARY OF SIGNIFICANT EFFECTS

No predicted significant direct effects on the Cultural Heritage resource arising from the Proposed Development have been identified. A significant indirect effect has been noted for the landscape setting of a designated court tomb monument RMP MA031-034--- located

within the Wind Farm Site. Mitigation measures shall serve to reduce and offset this indirect impact which will be reversed at decommissioning stage.

**Table 14.16: Summary of Impacts and Mitigation for the Cultural Heritage Resource**

Receptor ID	Development Stage	Impact Duration	Impact Type	Significance of Effect	Mitigation Measures
MA031-034--- Court Tomb (setting)	Construction	Temporary/ Short-Term (Wind Farm Site)	Indirect	Significant	Application of works exclusion zone with temporary fencing. Written and photographic record of monument landscape setting prior to construction.
Levelled vernacular homestead and lime kilns x 2	Construction	Permanent (Access Road/ Hydrogen Plant Site)	Direct	Slight	Licensed archaeological testing in advance of construction stage, with provision for record and evaluation
Vernacular outbuildings	Construction	Permanent (Access Road/ Hydrogen Plant Site)	Direct	Moderate	Written, drawn and photographic record prior to removal. Licensed archaeological monitoring during groundworks with provision for full evaluation in the event of an archaeological find.
Unknown archaeological sub-surface finds/ features	Construction	Potential permanent (Both Sites & Grid Connection at greenfield loop-in and 2no. end mast towers location)	Potential Direct	Unknown	Licensed archaeological monitoring during groundworks with provision for full evaluation in the event of an archaeological find.
MA031-047--- Ringfort	Construction	Permanent (Grid Connection)	Direct	Slight	Licensed archaeological monitoring during groundworks with provision for full evaluation in the event of an archaeological find.
MA031-023--- & MA031-023001- Ringfort & CBG	Construction	Permanent (Grid Connection)	Potential Direct	Unknown	Licensed archaeological monitoring during groundworks with provision for full evaluation in the event of an archaeological find.
MA031-034--- Court Tomb (setting)	Operational	Long-term (Wind Farm Site)	Indirect	Significant/Very Significant	None applicable (reversible at decommissioning stage).
MA031-005--- Wedge Tomb	Operational	Long-term (Wind Farm Site)	Indirect	Slight	None applicable (reversible at decommissioning stage).
SL022-026--- Barrow	Operational	Long-term (access road)	Indirect	Slight	None applicable (reversible at decommissioning stage).

Receptor ID	Development Stage	Impact Duration	Impact Type	Significance of Effect	Mitigation Measures
		and Hydrogen Plant Site)			
Carrowcrom/Carrowcastle National Monuments Ref. 293 within 10 km of Wind Farm Site	Operational	Long-term (Wind Farm Site)	Indirect	Slight	None applicable (reversible at decommissioning stage).
MA031-034--- Court Tomb (setting)	Cumulative	Long-term (Wind Farm Site)	Indirect	Moderate/ Significant	None applicable (reversible at decommissioning stage).
National Monuments within 10 km of Site	Cumulative	Long-term (Wind Farm Site)	Indirect	Slight	None applicable (reversible at decommissioning stage).

#### 14.11 STATEMENT OF SIGNIFICANCE

An assessment has been made of the potential for significant effects of the Proposed Development on the cultural heritage resource. Following the application of effective mitigation measures based on best practice guidelines, including archaeological inputs during the Project design process combined with onsite archaeological testing investigations and monitoring of the construction phase, and built heritage recording of the undesignated vernacular heritage resource, the Proposed Development is not predicted to result in any likely direct significant effects on the cultural heritage resource.

There is a likely negative long-term operational indirect significant impact on the monument setting of one recorded archaeological site located within the Wind Farm Site, and overall moderate indirect cumulative effect on its setting. Although there are no mitigation measures to ameliorate same, it is noted that the indirect impact on setting shall be reversed during decommissioning stage.