



GALETECH
ENERGY SERVICES



Islandmore Wind Farm

Environmental Impact Assessment
Report

Chapter 10: Cultural Heritage

Islandmore Wind Farm Limited

Contents

11.1 Introduction.....	1
11.1.1 Statement of Authority	1
11.1.2 Description of the Project.....	1
11.1.3 Legislative, Policy and Guidance Framework	4
11.1.4 Scope of Assessment	8
11.1.5 Consultation and Scoping	9
11.2 Methodology	10
11.2.1 Study Area Definition	10
11.2.2 Desktop Sources.....	10
11.2.3 Field Inspection	11
11.2.4 Assessment Framework.....	12
11.2.5 Methodology for Assessment of Indirect Impacts on Heritage Setting .	13
11.2.6 Cumulative Impact Assessment	14
11.2.7 Decommissioning Phase Assessment	15
11.2.8 Summary.....	15
11.3 Description of Existing Environment.....	15
11.3.1 Archaeological and Historical Baseline	15
11.3.2 Physical and Landscape Context	16
11.3.3 Recorded Archaeological Resource	16
11.3.4 Excavations	25
11.3.5 Topographical Files	29
11.3.6 Archaeological Landscape Character and Sensitivity	29
11.3.7 Historic Cartography and Landscape Evolution	30
11.3.8 Toponymy	33
11.3.9 Architectural Heritage Baseline	35
11.3.10 Historic Townland Boundaries	38
11.3.11 Liminal Landscape Interpretation.....	39
11.3.12 Cultural Heritage Baseline Synthesis	39
11.3.13 Summary of Receiving Environment	41
11.4 Description of Likely Effects.....	41
11.4.1 Assessment Approach and Effect Pathways.....	41
11.4.2 Relationship to the Receiving Environment	44
11.4.3 Construction Phase.....	44
11.4.4 Operation Phase	49
11.4.5 Decommissioning Phase	60
11.4.6 Cumulative Effects.....	62
11.5 Embedded Design Measures.....	67
11.5.1 Avoidance of Known Archaeological Constraints	68
11.5.2 Consideration of Landscape-Scale Heritage Sensitivity	68
11.5.3 Integration with Landscape and Visual Design.....	68
11.5.4 Peatland Context and Infrastructure Design.....	69

11.5.5	Embedded Measures and Residual Risk	69
11.6	Mitigation Measures	69
11.6.1	Pre-Construction	70
11.6.2	Construction Phase.....	70
11.6.3	Operation Phase	72
11.6.4	Decommissioning Phase	72
11.6.5	Mitigation Schedule	72
11.6.6	Assessment of Confidence	72
11.7	Residual Effects	73
11.7.1	Archaeological Heritage	73
11.7.2	Heritage Setting	74
11.7.3	Architectural Heritage	74
11.7.4	Cumulative Effects.....	74
11.7.5	Decommissioning Phase	74
11.7.6	Summary.....	74
11.8	Conclusion	75
11.8.1	Summary of Assessment Findings.....	75
11.8.2	Overall Conclusion.....	76

11.1 INTRODUCTION

This chapter assesses the likely significant effects of the Islandmore Wind Farm in Co. Roscommon (hereafter referred to as 'the project') on archaeological, architectural and cultural heritage.

Cultural heritage represents a finite and non-renewable resource comprising archaeological sites, historic structures, cultural landscapes and places of intangible heritage value. These resources provide essential evidence for understanding past human activity and contribute to cultural identity, landscape character and sense of place. Irish planning policy recognises the importance of protecting cultural heritage and requires that potential effects arising from development proposals are identified, assessed and appropriately mitigated where necessary.

11.1.1 STATEMENT OF AUTHORITY

This chapter has been prepared by Gráinne Kelly, Senior Project Archaeologist with Atlantic Archaeology. Gráinne Kelly holds a BSc (Hons) in Archaeology and Palaeoecology from Queen's University Belfast and an MSc (Hons) in Science Communications from Dublin City University. She has over 24-years' professional experience in archaeological consultancy, including preparation of Archaeological Impact Assessments and Cultural Heritage EIAR chapters for planning and statutory purposes.

This chapter has been prepared in accordance with the Environmental Protection Agency *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports* (2022) and established professional practice.

11.1.2 DESCRIPTION OF THE PROJECT

In summary, the project comprises the following main components as described in **Chapter 3:-**

- 10 no. wind turbines, 3 no. with an overall height of 185m and 7 no. with an overall height of 150m;
- All associated and ancillary site development, excavation, construction, landscaping and reinstatement works, including provision of site drainage infrastructure and forestry felling;
- Works to the public road network along the turbine component haul route; and,
- 110kV electricity substation and installation of c. 7km of underground electricity line to facilitate connection of the wind farm to the existing Tonroe 110kV electricity substation at Ballaghaderreen, County Roscommon.

The project is located in north County Roscommon; c. 2km north of Ballaghaderreen, c. 13km east of Charlestown (Co. Mayo) and c. 6km southwest of Gorteen (Co. Sligo); and is located in close proximity to the county boundaries between counties Roscommon, Sligo and Mayo.

A full description of the project is presented in **Chapter 3**; and the location of the project is illustrated at **Figure 11.1(a)** below.

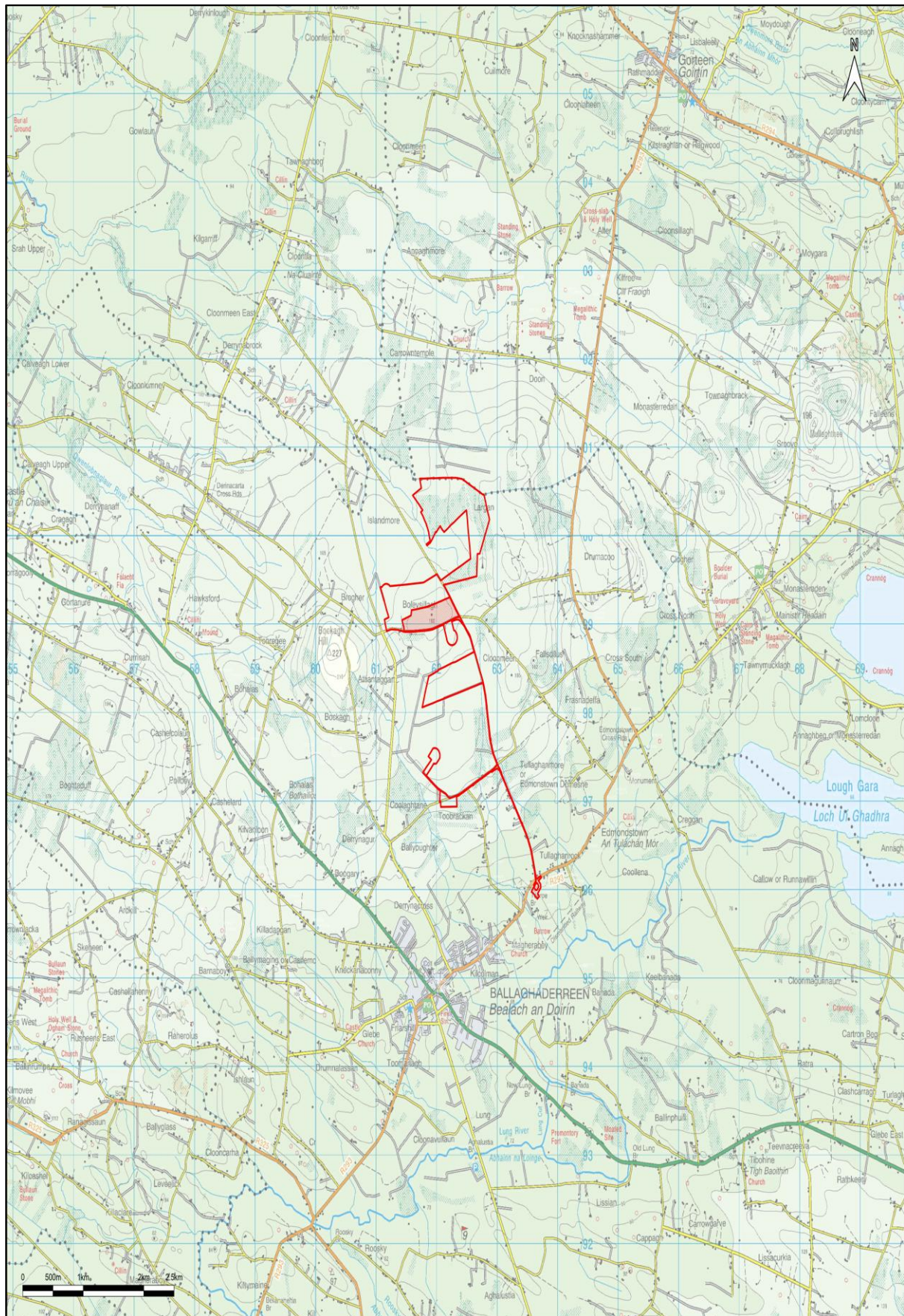


Figure 11.1(a): Site Location

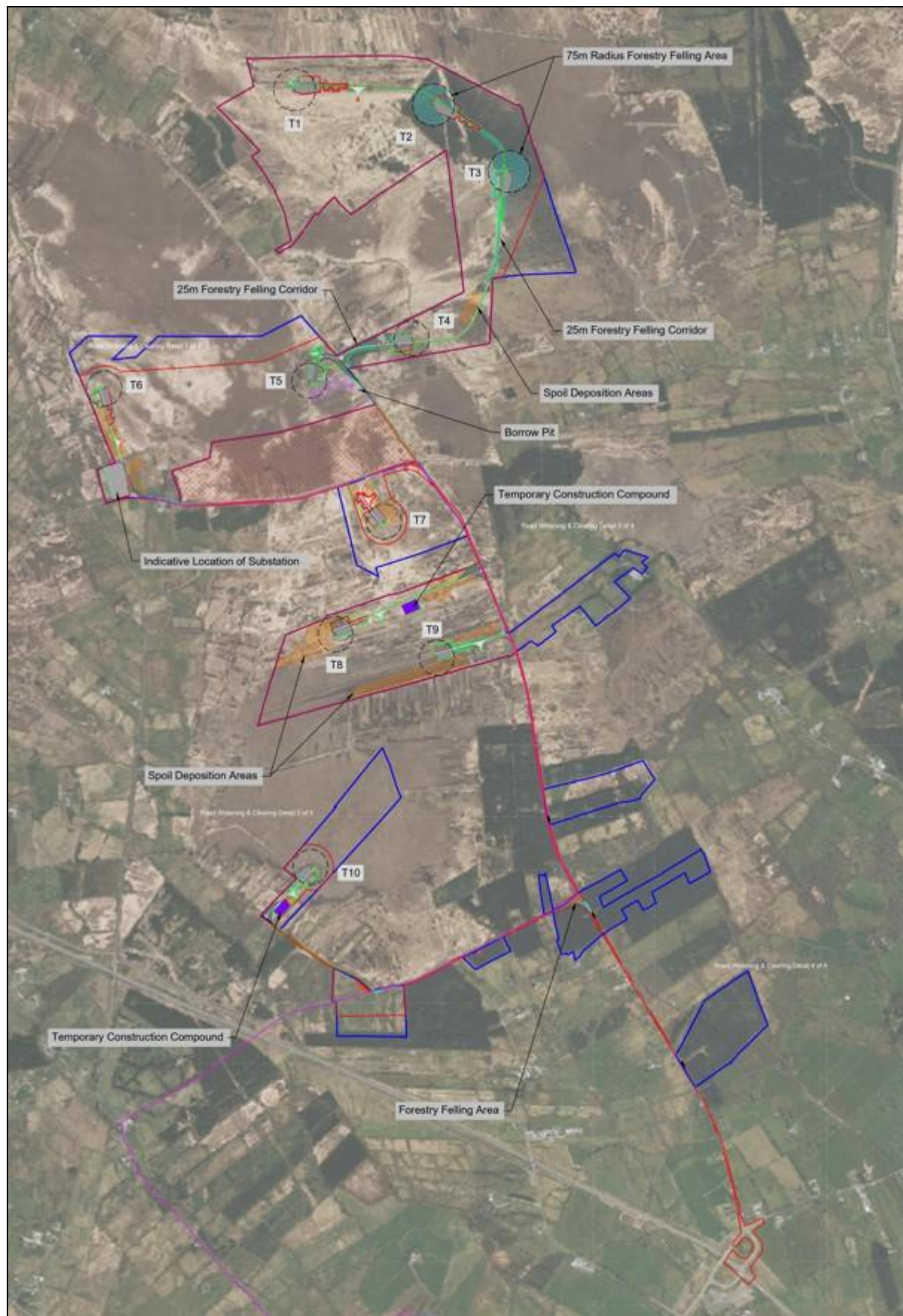


Figure 11.1(b): Project Layout

The principal elements of the project include wind turbines with associated foundations and crane hardstandings, access tracks, underground electrical and communications cabling, temporary construction compounds, a borrow pit, drainage and peat management works, localised road upgrade or widening works required to facilitate turbine delivery and construction access, and an electricity substation and underground electricity line to the Tonroe 110kV electricity substation. Forestry felling is also required in certain areas to accommodate infrastructure and operational safety requirements.

This chapter assesses the project as a whole, with particular focus on those elements involving ground disturbance or landscape change that may give rise to likely effects on archaeological, architectural and cultural heritage.

For the purposes of assessment, likely effects are assessed across construction, operational, decommissioning and cumulative scenarios. Direct effects relate primarily to ground disturbance within the project footprint, while indirect effects relate to likely changes to heritage setting and landscape-scale relationships arising from turbine visibility within the wider cultural landscape.

11.1.3 LEGISLATIVE, POLICY AND GUIDANCE FRAMEWORK

The protection and management of archaeological, architectural and cultural heritage in Ireland is governed by a comprehensive legislative and policy framework operating at national, regional and international levels. The assessment has been undertaken having regard to current legislation, national planning policy, local authority development plans and professional guidance relevant to cultural heritage assessment.

11.1.3.1 Historic and Archaeological Heritage Legislation

Archaeological heritage in Ireland is regulated through the *National Monuments Acts 1930–2014* and the more recent *Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023*, which represents a significant modernisation of heritage legislation.

Section 12 (1) of the *National Monuments (Amendment) Act 1994* provides that the Minister for Housing, Local Government & Heritage shall establish and maintain a record of monuments and places where the Minister believes there are monuments, such record to be comprised of a list of monuments and relevant places and a map or maps showing each monument and relevant place in respect to each county of the State. This is referred to as the 'Record of Monuments and Places' (RMP), and monuments entered into it are referred to as 'Recorded Monuments.'

Section 12(3) of the *National Monuments (Amendment) Act 1994* provides for the protection of monuments and places in the record, stating that: "*When the owner or occupier (not being the Minister) of a monument or place which has been recorded under subsection (1) of this section or any person proposes to carry out, or to cause or permit the carrying out of, any work at or in relation to such monument or place, he shall give notice in writing of his proposal to carry out the work to the Minister and shall not, except in the case of urgent necessity and with the consent of the Minister, commence work for a period of two months after giving the notice.*" RMP designation is the most widely applied provision of the *National Monuments Act*. The RMP and

Zones of Archaeological Notification (ZoN)¹ are maintained by the Department of Housing, Local Government and Heritage, identifying known archaeological sites and monuments and forming the key dataset for baseline assessment.

The *Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023*, now under commencement, enables the creation and upkeep of inventories for items of archaeological, architectural, and historic interest, including wrecks of such significance. These new provisions enhance the status of existing inventories that document sites of archaeological, historic, and architectural value, both on land and beneath the sea. They also ensure that certain records or archaeological objects receive legal protection in cases where individuals or organizations holding such items can no longer maintain them.

When fully commenced, the *Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023* will replace the existing *National Monuments Act 1930 to 2014*, and other related legislation, and introduce a range of new provisions to protect and conserve Ireland's historic heritage²³. Supporting powers include enforcement notices, which may serve as an alternative to or accompany criminal proceedings. Offences under the *Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023* can result in fines of up to €10,000 and/or imprisonment for up to 3-years. Additionally, the legislation promotes best practices in related fields by developing guidelines and codes of practice, fostering research, and increasing awareness and understanding of historic heritage. It also strengthens the implementation of the *1972 World Heritage Convention*.

11.1.3.2 Planning and Development Legislation

The assessment has been undertaken within the framework of the *Planning and Development Act 2000 (as amended)* and the *Planning and Development Act 2024 (as amended)*.

Planning and development legislation affords protection to buildings and groups of buildings, including streetscapes and townscapes, of special architectural, historical, archaeological, artistic, scientific, social or technical interest. In relation to a protected structure or proposed protected structure, the term 'structure' includes the interior of the structure, the land lying within the curtilage of the structure, any other significant structures lying within that curtilage and their interior and all fixtures and features which form part of the interior or exterior of that structure. The protection also extends to any features specified as being in the attendant grounds.

Protecting architectural heritage is a function of the planning authority through its Development Plan and the primary means of achieving this is to include a Record of Protected Structures (RPS) for the functional area within the Development Plan. When considering proposals for works to a protected structure or proposed protected structure, planning authorities have regard to the *Architectural Heritage Protection Guidelines for Planning Authorities 2004* (DEHLG) and the *Architectural Heritage*

¹ Note: Zones of Archaeological Notification (ZoNs), as shown on the Historic Environment Viewer, are indicative rather than definitive. Their mapped extent does not represent precise boundaries of known archaeology but highlights areas where subsurface remains may be present. The size and shape of these zones vary depending on monument class and other factors and should be interpreted as a guide for planning and assessment purposes rather than fixed limits.

² <https://www.irishlegal.com/articles/new-protections-for-historic-and-archaeological-heritage-commenced> accessed 01/02/2026

³ <https://www.archaeology.ie/news/commencement-of-certain-provisions-of-historic-and-archaeological-heritage-and-miscellaneous> accessed 01/02/2026

Protection for Places of Public Worship Guidelines for Planning Authorities 2003 (DEHLG) which set out best practice conservation principles. A planning authority is obliged to consider for inclusion in its RPS any buildings rated as being of Regional, National or International importance by the National Inventory of Architectural Heritage (NIAH) and consider structures rated as being of local importance. The inclusion of a building, feature or structure on the National Inventory of Architectural Heritage alone does not confer 'Protected' status.

Planning legislation requires that planning authorities protect archaeological and architectural heritage through development management processes and Development Plan policies. Environmental Impact Assessment requirements derive from European Union Directives transposed into Irish planning law and require assessment of cultural heritage as part of environmental evaluation.

11.1.3.3 Roscommon County Development Plan 2022-2028

The *Roscommon County Development Plan 2022-2028* ('the RCDP') provides the statutory planning framework guiding development within County Roscommon and constitutes a material consideration in the assessment of the project. The RCDP includes a range of policies and objectives relating to archaeological heritage, architectural heritage, cultural landscapes and renewable energy development, which are relevant to assessment of potential effects on cultural heritage (see **Annex 11.2**).

The policies and objectives of the RCDP require that:-

- archaeological heritage is protected and assessed through appropriate studies;
- impacts on heritage setting and landscape character are evaluated; and,
- mitigation measures are implemented where necessary.

The methodology adopted in this chapter, including attribute-led assessment of heritage setting and implementation of archaeological monitoring, is consistent with these objectives.

The attribute-led assessment of landscape setting adopted in this chapter is consistent with the RCDP's broader objectives to protect archaeological landscapes of national and international importance and ensures that potential effects on attributes contributing to archaeological significance have been appropriately evaluated.

11.1.3.4 Legislative and Policy Hierarchy

The assessment of cultural heritage effects has been undertaken within a structured legislative and policy hierarchy comprising statutory heritage legislation, national planning policy, local development plan objectives and relevant international heritage frameworks. This hierarchy ensures that cultural heritage considerations are evaluated consistently within both statutory and policy contexts.

At the national level, archaeological heritage is protected under the *National Monuments Acts 1930-2014* and associated legislation, which provide statutory protection for recorded monuments, National Monuments and archaeological objects. These provisions establish the primary legal framework governing archaeological assessment, licensing requirements and mitigation measures where development has the potential to impact archaeological resources.

The RCDP provides the statutory planning framework at local authority level and includes specific objectives relating to protection of archaeological heritage, architectural heritage and landscape character (including Objectives 9.33–9.36 relating to archaeological heritage protection and Objectives 8.8 and 8.10 relating to landscape sensitivity). These objectives guide the evaluation of development proposals within the county and require assessment of both direct and indirect effects on cultural heritage resources (see **Annex 11.1**).

International heritage frameworks also inform assessment methodology where relevant. The Rathcroghan archaeological landscape in County Roscommon and the Carrowkeel passage tomb landscape in County Sligo are included within Ireland's UNESCO Tentative World Heritage List. While inclusion on the Tentative List does not confer statutory protection or equivalent status to inscribed World Heritage Sites, it reflects recognition of potential Outstanding Universal Value and informs an understanding of heritage sensitivity within the wider region.

Although both the Rathcroghan archaeological landscape and the Carrowkeel passage tomb complex are included within Ireland's UNESCO Tentative List, their heritage sensitivity derives from differing archaeological attributes: Rathcroghan is characterised by a dispersed ceremonial landscape defined by broad spatial relationships and territorial organisation, whereas Carrowkeel derives significance primarily from localised topographic relationships and monument–horizon alignments within an upland setting. This distinction informs the proportional approach adopted in the assessment of heritage setting and potential effects.

This assessment has considered the likelihood of the project affecting attributes contributing to archaeological significance, with particular regard to landscape setting and experiential qualities. This has been undertaken at a strategic EIAR level and does not constitute a detailed landscape management assessment.

An attribute-led approach has been applied; informed by statutory protection, development plan policy and UNESCO Tentative World Heritage List status; to evaluate likely effects in accordance with relevant legislative and policy frameworks.

11.1.3.5 Architectural Heritage Protection

Architectural heritage is protected through the **Planning and Development Act 2000 (as amended)** via mechanisms including:-

- Records of Protected Structures (RPS);
- Architectural Conservation Areas (ACAs); and,
- the National Inventory of Architectural Heritage (NIAH).

Guidance for the assessment of effects on architectural heritage is provided in the *Architectural Heritage Protection Guidelines for Planning Authorities*⁴, which emphasises consideration of both direct physical effects and effects on setting.

11.1.3.6 International Conventions and UNESCO Framework

Ireland is a signatory to international conventions relating to heritage protection, including:-

- *UNESCO World Heritage Convention (1972)*; and,

⁴ [PART I - PLANNING](#) Architectural Heritage Protection Guidelines for Planning Authorities

- *European Convention on the Protection of Archaeological Heritage (Valletta Convention).*

11.1.3.7 Professional Standards and Guidance

The assessment has been informed by professional standards and best practice guidance including:-

- Institute of Archaeologists of Ireland professional codes and guidance;
- Chartered Institute for Archaeologists (CIfA) standards where relevant; and,
- heritage setting assessment methodologies developed through international conservation practice.

11.1.3.8 Renewable Energy and Planning Policy Context

National planning policy identifies renewable energy development as a key component of Ireland's response to climate change and energy security objectives. The National Planning Framework and associated policy documents support the development of renewable energy infrastructure while emphasising the need to protect environmental and cultural heritage resources.

11.1.4 SCOPE OF ASSESSMENT

This chapter assesses likely effects on:-

- archaeological heritage, including recorded monuments and potential previously unrecorded archaeological remains;
- architectural heritage assets; and
- cultural heritage landscapes.

The likely effects are assessed during construction, operation and decommissioning phases, and cumulative scenarios.

The 110kV electricity substation and approximately 7km underground electricity line connecting the wind farm to the existing Tonroe 110kV substation do not form part of the current planning application and will be subject to a separate consenting process. Notwithstanding this, the likely construction, operational and decommissioning effects associated with this infrastructure have been assessed within this chapter to ensure that the cultural heritage effects arising from the project, as a whole, are fully addressed. The scope of assessment also includes the turbine component haul route and associated upgrade works where these have potential to affect known cultural heritage constraints.

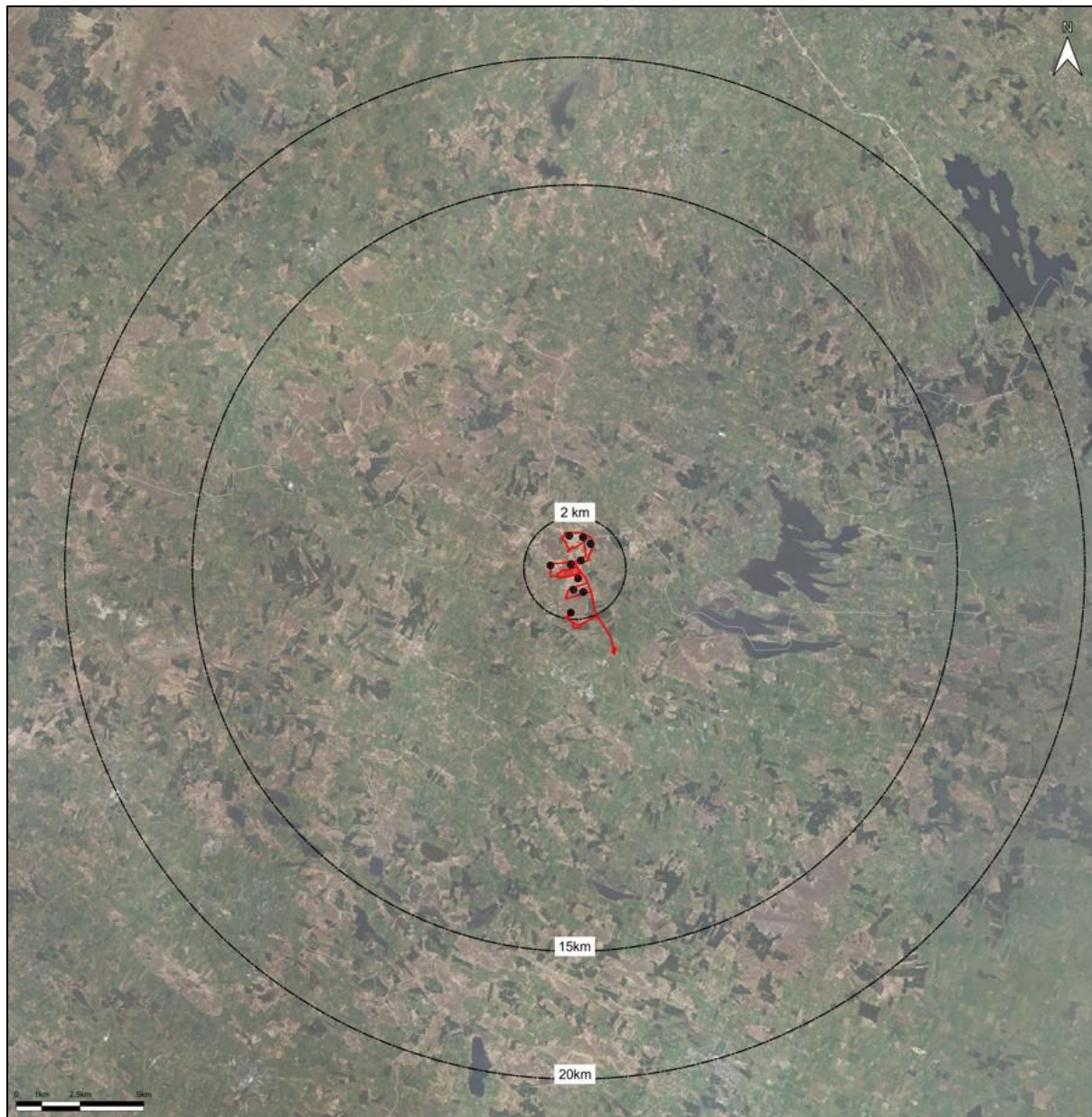


Figure 11.2: Study Area

11.1.5 CONSULTATION AND SCOPING

EIA scoping consultation was completed⁵ and advice was received from the Development Applications Unit (DAU) of the Department of Housing, Local Government and Heritage (Ref. G Pre 00312/2024, dated 25 October 2024, refer to **Annex 1.4**). The recommendations contained therein, including assessment of the wider archaeological landscape, integration of visual impact assessment, and provision for targeted advance investigation where appropriate, have informed the scope and methodology of this assessment.

⁵ Islandmore Wind Farm Archaeological, Architectural and Cultural Heritage Scoping Report Dermot Nelis Archaeology October 2023

11.2 METHODOLOGY

This assessment of likely significant effects on archaeological, architectural and cultural heritage has been undertaken in accordance with legislation and guidance detailed in **Section 11.1**.

The methodology combines desk-based assessment, field inspection, statutory dataset review, and integration of landscape and visual evidence prepared for the Landscape chapter (**Chapter 10 (Volume I)**).

The assessment addresses, direct impacts (construction, ground disturbance), indirect impacts (setting and landscape change), operational phase impacts, decommissioning impacts and cumulative impacts.

11.2.1 STUDY AREA DEFINITION

There is no single prescribed professional standard for defining study area extent in cultural heritage assessment. Accordingly, a tiered approach has been adopted based on receptor sensitivity and the potential pathway of effect.

Receptor Type	Study Area Radius (from centre of wind farm site)	Rationale
Tentative UNESCO World Heritage Sites	25km	Represents cultural heritage assets of international significance
National Monuments (State Care/Preservation Orders)	15km	Reflecting high statutory sensitivity
Recorded Monuments (RMP)	2km	Potential indirect setting impacts
NIAH structures	2km	Built heritage context
Undesignated local heritage assets	1km	Local character and cultural heritage considerations

Table 11.1: Study Areas

Distance from the proposed turbines has been considered as a factor in assessing potential setting effects, recognising that visual influence generally reduces with increasing separation from the heritage receptor.

11.2.2 DESKTOP SOURCES

The following sources were consulted:-

- Record of Monuments and Places (RMP);
- Excavations Bulletin database;
- National Inventory of Architectural Heritage (NIAH);
- Local authority development plans and heritage policies;
- Historic Ordnance Survey mapping (1st Edition, 25-inch and later revisions);
- Aerial imagery and mapping datasets;
- Zone of Theoretical Visibility (ZTV) mapping;
- Photomontages and viewpoint analysis (**Annex 10.2 (Volume II)**);
- Relevant peer-reviewed archaeological literature;
- Topographical Files; and,

- Previous Assessments

11.2.3 FIELD INSPECTION

A field inspection of the proposed development footprint was undertaken by a qualified archaeologist on February 16, 2026. The field inspection was undertaken to:-

- Assess the condition and setting of recorded monuments (where accessible);
- Verify topographical relationships relevant to archaeological potential;
- Ground-truth Zone of Theoretical Visibility (ZTV) outputs used in **Chapter 10**;
- Inform assessment of potential direct and indirect effect pathways; and,
- Identify and record any previously unrecorded archaeological or vernacular heritage features encountered within the development footprint or along access routes.

11.2.3.1 Weather

Weather conditions were dry with good horizontal visibility across the project site and its environs. Ground visibility varied within forestry plantation and peatland areas due to vegetation cover; however, exposed track margins, drainage lines and cut peat sections provided partial subsoil exposure.

11.2.3.2 Areas Inspected

The following elements were subject to walkover inspection where ground conditions allowed:-

- Turbine locations and associated hardstanding areas;
- Access tracks;
- Temporary construction compound locations;
- Electricity substation location;
- Drainage corridors and areas of peat excavation;
- Representative viewpoints towards identified heritage receptors; and,
- Sections of the turbine component haul route and public road upgrade works.

11.2.3.3 Findings

No previously unrecorded upstanding archaeological features were identified within the accessible parts of the wind farm site.

The project site comprises predominantly peatland and commercial forestry plantation, with no visible surface expression of archaeological remains within areas proposed to be subject to ground disturbance.

Existing forestry drainage and track infrastructure has resulted in prior ground disturbance across significant portions of the site.

The verification of key viewpoints confirmed that theoretical visibility patterns identified within **Chapter 10** are consistent with field observations.

The field inspection confirmed that:-

- Direct physical impact risk relates primarily to potential sub-surface remains within peat deposits;
- No known recorded monuments lie within the direct project footprint;
- Setting and visual effects represent the principal impact pathway for high-sensitivity receptors.
- Field inspection confirmed that the principal off-site (i.e off the core wind farm site) archaeological constraint occurs at the junction of the N5 and R293, where temporary public road upgrade works lie in proximity to a cluster of recorded monuments and associated Zones of Notification.

The findings of the field inspection have been utilised to inform the mitigation strategy set out at **Section 11.6** and the assessment confidence statement at **Section 11.6.6**.

11.2.4 ASSESSMENT FRAMEWORK

The assessment of likely significant effects on cultural heritage has been undertaken in accordance with the EPA *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022)* and established Irish professional practice.

The assessment of effects is based on the systematic combination of:-

- Sensitivity (or value) of the heritage receptor; and,
- Magnitude of change arising from the project;

The interaction of these two components determines the significance of effect. This methodology has been applied consistently to all archaeological, architectural and cultural heritage receptors assessed within this chapter.

11.2.4.1 Receptor Sensitivity

Sensitivity reflects the relative importance of a heritage asset and its capacity to absorb change without loss of significance.

Sensitivity	Description
Very High	World Heritage Sites, UNESCO Tentative List landscapes, National Monuments in State care or subject to Preservation Orders, or assets of international or national importance
High	Recorded Monuments of demonstrable national or regional importance; Protected Structures; Archaeological landscapes with strong spatial or ceremonial coherence
Medium	Assets of regional or local importance; well-preserved undesignated heritage features; NIAH structures
Low	Assets of limited local importance or reduced integrity
Negligible	Assets with little surviving heritage interest

Table 11.2: Receptor Sensitivity

11.2.4.2 Magnitude of Change

Magnitude describes the scale, extent and nature of change arising from the proposed development, irrespective of receptor sensitivity.

Magnitude	Description
-----------	-------------

High	Fundamental alteration of key attributes or complete removal of fabric; substantial and intrusive change to setting
Medium	Noticeable and material alteration of attributes; discernible change to setting relationships
Low	Minor alteration; limited or peripheral change to setting
Negligible	Barely perceptible or no measurable change

Table 11.3: Magnitude of Change

11.2.4.3 Determination of Significance

Significance of effect has been determined by combining sensitivity and magnitude using the matrix below.

Magnitude → Sensitivity ↓	Negligible	Low	Medium	High
Very High	Not Significant	Slight	Significant	Very Significant
High	Not Significant	Slight	Moderate	Significant
Medium	Imperceptible	Not Significant	Slight	Moderate
Low	Imperceptible	Imperceptible	Slight	Slight

Table 11.4: Determination of Significance

Effects categorised as Significant or Very Significant are assessed as likely significant effects in EIA terms. For the purposes of this chapter, Moderate effects may also be considered significant where, having regard to the sensitivity of the receptor, the magnitude and nature of change and professional judgement, the effect is considered sufficient to materially affect the heritage significance of the receptor.

11.2.5 METHODOLOGY FOR ASSESSMENT OF INDIRECT IMPACTS ON HERITAGE SETTING

The likelihood of indirect effects on cultural heritage setting have been assessed through a structured and proportionate methodology integrating outputs from the Landscape chapter (**Chapter 10**) with heritage sensitivity analysis.

The assessment of setting effects recognises that visibility alone does not constitute an impact. Rather, the assessment evaluates whether visual or spatial change alters the attributes contributing to the significance of a heritage receptor. These attributes may include spatial organisation, topographic relationships, experiential qualities, skyline context and wider landscape associations.

The methodology incorporates the following components:-

- Review of Zone of Theoretical Visibility (ZTV) mapping;
- Analysis of photomontage viewpoints and verified visualisations;
- Consideration of distance between turbines and heritage receptors;
- Assessment of the number and distribution of turbines theoretically visible;
- Evaluation of landscape scale, topographic separation and screening factors; and,
- Professional interpretation of how visibility relates to heritage significance.

This structured approach ensures that likely setting effects are assessed consistently and transparently while avoiding reliance on visibility as the sole indicator of impact.

11.2.5.1 Wind Turbine Visibility Analysis

Visibility has been assessed using ZTV outputs indicating the theoretical proportion of wind turbine blades visible from each receptor location. Turbine visibility has been interpreted using ZTV; while visibility categories reflect the number of turbines theoretically visible from a given receptor location, recognising that actual visibility may be reduced by vegetation, forestry cover and local topography.

Number of Turbines Visible	Project Visibility Category
7-10	High Visibility
4-6	Moderate-high Visibility
2-3	Moderate Visibility
1	Limited Visibility

Table 11.5: Turbine Visibility Categories

11.2.5.2 Interpretation of Visual Effects

Distance and visibility factors provide an indicative framework for assessing likely visual influence. These indicators are interpreted alongside:-

- Sensitivity of the heritage receptor;
- Importance of affected setting attributes;
- Role of skyline relationships;
- Landscape scale and context; and,
- Cumulative visual environment.

The assessment conclusions therefore reflect qualitative professional judgement rather than numerical scoring alone.

11.2.6 CUMULATIVE IMPACT ASSESSMENT

Cumulative effects have been assessed through consideration of existing, permitted and proposed wind energy and other developments within the wider regional study area.

The cumulative assessment considers:-

- Overlapping ZTV extents;
- Potential combined visibility from sensitive heritage receptors;
- Interaction of turbine arrays within wider landscape views; and,
- Whether additional development materially alters attributes contributing to heritage significance.

Cumulative effects have been evaluated using the same sensitivity, magnitude and significance framework applied to the assessment of the project in isolation.

Where relevant, cumulative assessment also considers strategic archaeological landscapes, recognising that landscape-scale heritage significance may derive from spatial relationships extending beyond individual site boundaries.

11.2.7 DECOMMISSIONING PHASE ASSESSMENT

Likely effects during the decommissioning phase have been assessed on the basis that turbines and associated infrastructure will be removed at the end of the operational lifespan and the site reinstated in accordance with regulatory requirements and best practice.

Likely effects during decommissioning relate primarily to:-

- Temporary ground disturbance associated with removal of infrastructure;
- Short-term visual presence of construction activity; and,
- Disturbance of previously undetected archaeological remains.

Decommissioning effects are anticipated to be temporary and reversible in nature. The assessment therefore focuses on ensuring that mitigation measures applied during construction are also applicable during decommissioning works where ground disturbance occurs.

11.2.8 SUMMARY

The methodology outlined above provides the analytical framework for identifying cultural heritage receptors, evaluating their sensitivity and assessing likely effects arising from the project.

The following section describes the receiving environment and establishes the archaeological, architectural and cultural heritage baseline against which likely effects are assessed. The baseline integrates desk-based research, field inspection findings and landscape-scale analysis to define both site-specific archaeological potential and wider heritage setting relationships.

This structured baseline ensures that subsequent impact assessment is proportionate, transparent and directly informed by the characteristics of the receiving environment.

11.3 DESCRIPTION OF EXISTING ENVIRONMENT

11.3.1 ARCHAEOLOGICAL AND HISTORICAL BASELINE

This section describes the cultural heritage receiving environment within which the project is located. The purpose of the baseline is to establish the archaeological, architectural and cultural landscape context against which likely effects may be assessed.

The assessment recognises that cultural heritage significance derives not only from individual sites but from broader landscape relationships, including spatial organisation, historic land-use patterns and experiential qualities of setting⁶.

The receiving environment described below is informed by desk-based research, review of visualisation material (**Annex 10.2**) and field verification undertaken during site inspection. Field observations were utilised to confirm baseline landscape character, spatial organisation and experiential qualities relevant to assessment of cultural heritage settings.

⁶ Cooney 2000; Waddell 2010

11.3.2 PHYSICAL AND LANDSCAPE CONTEXT

The project site is located within a transitional upland landscape characterised by extensive areas of peatland, rough pasture and marginal agricultural land. The terrain comprises gently elevated ground forming part of a broader upland zone situated between the lowland plains of central Roscommon and the upland ranges extending towards County Sligo. This landscape has historically functioned as a liminal zone between settlement areas, agricultural lands and higher elevation grazing or resource zones.

Geomorphologically, the area is defined by glacially derived soils and peat deposits which have influenced both historic land-use patterns and archaeological preservation. Peatland environments in Ireland are well recognised for their capacity to preserve organic archaeological remains and paleoenvironmental records, contributing significantly to understanding prehistoric land use, ritual activity and environmental change⁷.

The landscape today retains an open character with relatively limited tree cover, allowing extensive long-distance visibility across the region. Such intervisibility is a defining feature of many Irish prehistoric ceremonial landscapes, where monument placement frequently exploits skyline positions, horizon relationships and viewsheds across broader territories⁸. The open upland nature of the receiving environment therefore contributes to the archaeological sensitivity of the wider landscape setting, particularly in relation to potential visual relationships with major monument complexes beyond the immediate study area.

Historically, the upland bog margins formed areas of seasonal activity and movement rather than dense permanent settlement. Archaeological research has demonstrated that such marginal landscapes often contain dispersed prehistoric activity including burnt mound sites, trackways, boundary markers and ritual features, reflecting complex patterns of land-use beyond core settlement zones⁹.

11.3.3 RECORDED ARCHAEOLOGICAL RESOURCE

The archaeological baseline for the study area has been established through a review of the statutory RMP, the Sites and Monuments Record (SMR), available excavation records, historic mapping sources and published archaeological research. The distribution of recorded monuments reflects both patterns of past settlement and the varying intensity of archaeological survey across the landscape.

⁷ Mitchell & Ryan 1997; O'Sullivan et al. 2010

⁸ Cooney 2000; Scarre 2002

⁹ O'Sullivan et al. 2014

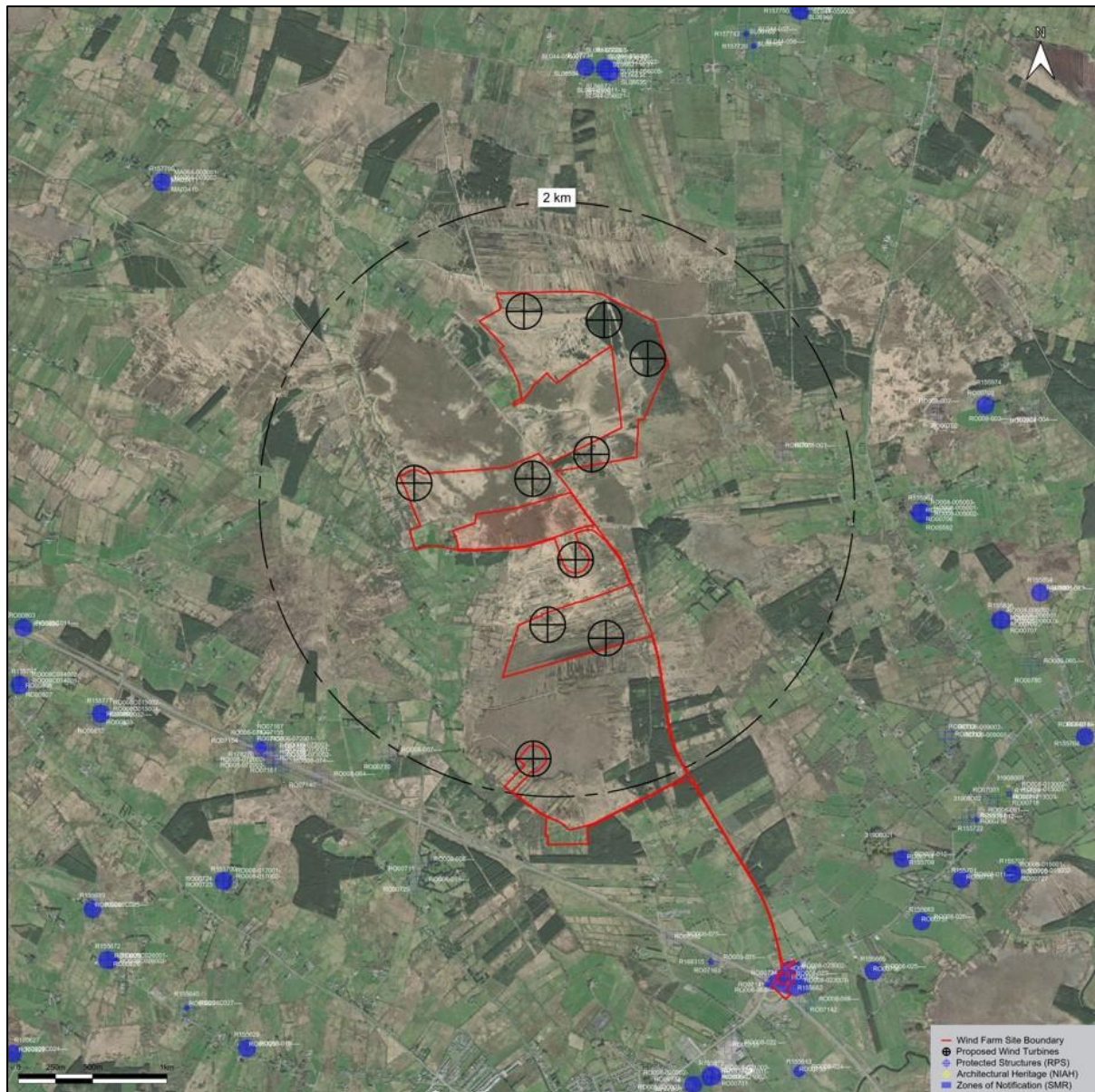


Figure 11.3(a): Cultural Heritage Constraints Map (2km local study area indicated)

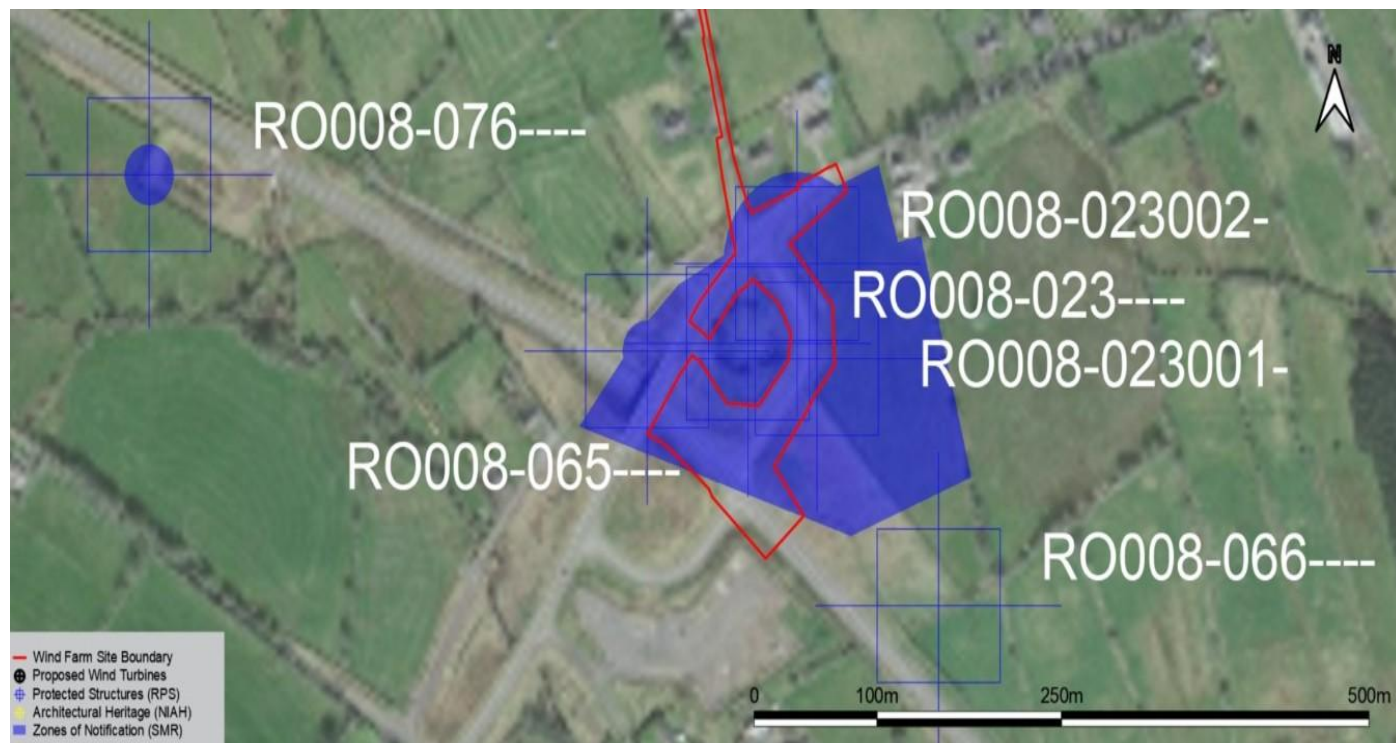


Figure 11.3(b): Recorded Monuments & Zones of Archaeological Notification (ZoN) in the vicinity of the junction of the N5 and R293

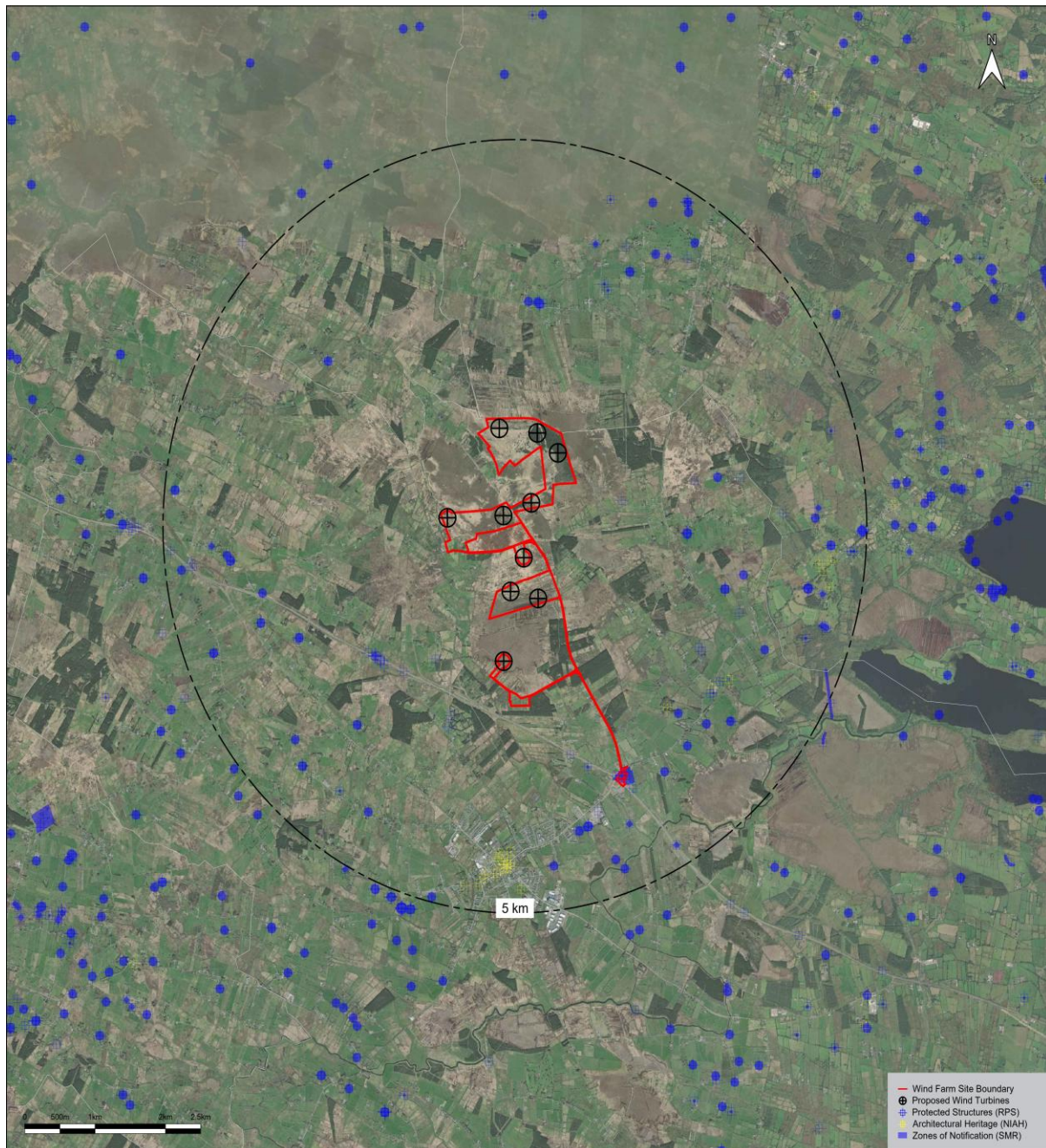


Figure 11.3(c): Cultural Heritage constraints map within wider landscape

11.3.3.1 Recorded Monuments

Recorded monuments within the 2km study area were identified through a review of the RMP, the SMR, historic mapping and available archaeological sources (see **Figures 11.3(a)-(c) & 11.4, Table 11.7 & Annex 11.3**)¹⁰. There are no recorded monuments located within the footprint of the project nor within the immediate vicinity of the wind turbine locations. The density of recorded monuments in the immediate upland environment is relatively low when compared with the more

¹⁰ The SMR refers to the original inventory of known archaeological sites compiled by the National Monuments Service. The RMP is the statutory subset of this record, established under the *National Monuments (Amendment) Act 1994*, and includes sites that are legally protected. The Recorded Historic Archaeological (RHA) dataset is a more recent digital development that builds on the SMR and RMP, incorporating updates and newly identified sites. Because the RMP was derived from the SMR, it is often still referred to or labelled as the "SMR" in maps and documentation. For this reason, the terms are sometimes used interchangeably. This EIAR has reviewed the statutory RMP dataset.

intensively settled lowland zones to the east and west. This pattern is typical of upland peatland landscapes, where permanent settlement was limited and archaeological remains are frequently dispersed, ephemeral or preserved beneath peat deposits.

The absence of dense monument clusters within the project site does not imply low archaeological potential. Rather, it can reflect historical land-use patterns associated with marginal upland environments and the likelihood that archaeological features may survive as subsurface remains, or as previously unidentified sites. Archaeological research across western Ireland has demonstrated that bog margins and upland transitional zones frequently contain evidence of episodic prehistoric and early historic activity that may not be visible at ground level or represented within the statutory record.

Recorded monument types within the wider 5km study area include enclosure sites and possible settlement remains, burnt mound (fulacht fiadh) locations associated with Bronze Age activity, burial monuments including cairns or mound features, ecclesiastical sites and early medieval landscape elements, together with routeways or boundary features reflecting historic territorial organisation. These monument types demonstrate continuity of landscape use from prehistoric through early medieval periods, with particular emphasis on activity associated with marginal upland zones. Fulachtaí fia, for example, are frequently located along bog margins or near water sources and represent a widespread component of Bronze Age activity in Ireland¹¹. Their presence within the wider landscape indicates episodic occupation and specialised resource use rather than nucleated settlement.

Identifiable clusters of archaeological monuments provide insight into broader landscape organisation. Recorded enclosures and settlement-related sites include RMP entries RO008-001 (enclosure), RO008-002 (enclosure), RO008-007 (enclosure) and RO008-008 (enclosure or settlement site), suggesting areas of early activity concentrated along transitional upland margins. Additional multi-element monument complexes including RO008-005001–003 (multi-component archaeological complex comprising enclosure and associated features) and RO008-072001–003 (composite monument group) indicate structured archaeological landscapes where individual recorded elements form parts of broader zones of activity rather than isolated sites. Further dispersed monuments such as RO008-071 (burnt mound / fulacht fiadh) and RO008-074–076 (recorded archaeological features including settlement or ritual elements) reinforce a pattern of episodic occupation and landscape utilisation characteristic of upland environments.

While there are no recorded monuments within the footprint of the project, a known archaeological cluster is present within the southern portion of the site in the vicinity of the junction of the N5 and R293. This comprises RO008-023 (ringfort), RO008-023001 (field system), RO008-023002 (enclosure) and RO008-065 (excavation site), representing a multi-period archaeological landscape identified during investigations associated with the N5 Ballaghaderreen bypass. These monuments indicate prehistoric, early medieval and high medieval activity in this area and are associated with Zones of Archaeological Notification. The location of, and relationship between, the proposed temporary public road upgrade works and this recorded monument cluster is illustrated at **Figure 11.3(b)**.

At a regional scale, the study area lies within the broader landscape context of the Rathcroghan archaeological complex. This is a major ceremonial landscape associated with prehistoric and early historic activity and represented by numerous

¹¹ Waddell 2010

RMP entries, including RO024-002 (Rathcroghan mound; ceremonial earthwork), RO024-003 (enclosure associated with Rathcroghan complex), together with a dispersed constellation of associated monuments forming part of a wider ritual landscape extending across County Roscommon. Rathcroghan is recognised as one of Ireland's principal royal sites, characterised by spatially distributed monuments rather than a single focal structure. The wider setting of this complex, including open upland areas permitting long-distance visibility and movement, forms an important component of its cultural significance.

To the north-west, within County Sligo, the Carrowkeel passage tomb landscape comprises another significant archaeological cluster represented by multiple RMP entries including SL044-056001 (passage tomb), SL044-056002 (passage tomb), SL044-056003 (passage tomb), SL044-056005 (passage tomb), SL044-056006 (passage tomb), SL044-056007 (passage tomb) and SL044-056021 (associated monument element). These monuments form part of a structured Neolithic ceremonial landscape, where spatial relationships between monuments and topography are fundamental to archaeological interpretation. The Carrowkeel complex represents one of the principal passage tomb cemeteries in Ireland, occupying elevated terrain and forming a key component of the wider prehistoric ceremonial landscape of the region.

The presence of both dispersed upland archaeological remains and major ceremonial landscapes within the wider receiving environment highlights the dual character of the region as both a transitional activity zone and part of a broader prehistoric ceremonial landscape network, extending between Rathcroghan and Carrowkeel. The recorded archaeological resource therefore, includes monuments located at greater distances but of both regional and national significance, contributing to landscape character, spatial organisation and archaeological setting relationships.

It is acknowledged that the recorded monument dataset represents only a partial record of archaeological survival. Many archaeological features remain undiscovered due to peat cover, limited survey coverage or past land-use practices. Consequently, the assessment adopts a precautionary approach recognising the potential for previously unrecorded archaeology to survive within the footprint of the project, informing the mitigation strategy outlined in later sections of this chapter.

The electricity substation site and route underground electricity line to the existing Tonroe 110kV substation were also reviewed against the recorded archaeological resource. No recorded monuments are located within the substation footprint or directly along the electricity line route.

RMP	Townland	County	Distance and Direction from Wind Farm	Classification	ITM Coördinate
RO008-001-- --	Largan	Roscommon	640m E	Redundant Record	563599 799605
RO008-005003-	Drumacoo	Roscommon	1440m E	Ringfort – cashel	564524 799183
RO008-005001-	Drumacoo	Roscommon	1440m E	Ringfort - cashel	564524 799183
RO008-002-- --	Drumacoo	Roscommon	1930m E	Redundant record	564638 799858

RO008-071-- --	Bockagh	Roscommon	1825m W	Fulacht fia	560000 797635
RO008-072001-	Bockagh	Roscommon	1775m W	Fulacht fia	560106 797599
RO008-072002-	Bockagh	Roscommon	1775m W	Fulacht fia	560106 797599
RO008-072003-	Bockagh	Roscommon	1770m W	Burnt mound	560094 797603
RO008-073001-	Bockagh	Roscommon	1650m W	Fulacht fia	560175 797558
RO008-073002-	Bockagh	Roscommon	1635m W	Fulacht fia	560182 797542
RO008-073003	Bockagh	Roscommon	1640m W	Fulacht fia	560172 797535
RO008-074-- --	Bockagh	Roscommon	1390m W	Hearth	560230 797484
RO008-007-- --	Bockagh	Roscommon	950m W	Redundant Record	560954 797557
RO008-008-- --	Balloughter	Roscommon	840m SW	Redundant Record	561172 796822
RO008-018-- --	Balloughter	Roscommon	850m SW	Redundant Record	561139 796684
RO008-075-- --	Toobrackan	Roscommon	1512m SE	TII Excavations	562872 796317
RO008-076-- --	Toobrackan	Roscommon	1605m SE	TII Excavations	563119 796162
SL044-056007-	Carrowntemple	Sligo	1500 N	Souterrain	562275 802179
SL044-056003-	Carrowntemple	Sligo	1500 N	Souterrain	562405 802174
SL044-056021-	Carrowntemple	Sligo	1500 N	Cross-slab	562437 802149
SL044-056006-	Carrowntemple	Sligo	1500 N	Ecclesiastical enclosure	562427 802153
SL044-056005-	Carrowntemple	Sligo	1500 N	Redundant record	562488 802155

Table 11.6(a): Recorded Monuments within 2km study area

RMP	Townland	County	Distance and Direction from Wind Farm	Classification	ITM
RO008-023--	Toobrackan	Roscommon		Ringfort	563606 796052
RO008-023001-	Toobrackan	Roscommon		Field System	563662 796042
RO008-023001-	Toobrackan	Roscommon		Enclosure	563606 796052
RO008-065	Toobrackan	Roscommon		Excavation	563524 796047

Table 11.6(b): Recorded Monuments in vicinity of N5/R293 junction**11.3.3.2 National Monuments**

In Ireland, a 'National Monument' is a monument or place considered to be of national importance and therefore subject to statutory protection¹². National Monuments may be protected through State ownership or guardianship (commonly referred to as 'National Monuments in State Care'), preservation orders, or other statutory controls¹³. National Monuments in State Care are those in the ownership or guardianship of the State, with the Office of Public Works (OPW) having responsibility for their care, management and interpretation. Development proposals that may affect a National Monument in State Care (including its setting or integrity) are subject to formal consultation and statutory heritage controls.

A spatial review indicates that no National Monuments in State Care are located within the footprint of the project or within a 15km screening radius of wind farm. The nearest formally protected sites of this category lie beyond this threshold. Examples of National Monuments in State Care located in excess of 15km from the project include:-

- Carrowkeel Passage Tomb Cemetery (National Monument No. 518) — a principal passage tomb complex in County Sligo, located approximately c. 18km north-west of the project area¹⁴;
- Ballinacfad Castle (National Monument No. 342) — a fifteenth-century tower house managed by the OPW in County Sligo, located approximately c. 20km north-west of the project area; and,
- Roscommon Castle (National Monument in State Care) — a medieval castle in Roscommon town, located approximately c. 20km south-east of the project area.

Other State-care monuments recorded in county and OPW schedules are similarly located outside the 15km screening radius and therefore lie beyond the immediate operational and setting assessment area.

Given the absence of National Monuments in State Care within 15km, direct effects on National Monuments in State Care are not assessed as likely as a result of the project. However, National Monuments can contribute to the wider cultural heritage baseline by influencing landscape character and historic spatial relationships within the wider region. Indirect effects on the setting of distant National Monuments have therefore been assessed in the context of the heritage landscape sensitivity and heritage viewpoint assessment frameworks described in **Sections 11.3** and **11.4**¹⁵.

While the Rathcroghan archaeological landscape contains numerous recorded monuments, the landscape itself is not designated as a National Monument in State Care. It is therefore assessed separately within this chapter as a strategic archaeological landscape of national importance.

¹² Irish Statute Book, *National Monuments Act 1930 (as amended)*

¹³ Roscommon County Development Plan 2021–2027, Appendix 9: National Monuments in State Care

¹⁴ Sligo County Development Plan 2011–2017, Appendix F: Monuments in State Care (Carrowkeel Passage Tomb Cemetery NM No. 518; Ballinacfad Castle NM No. 342)

¹⁵ Historic England, *The Setting of Heritage Assets* (3rd ed.) — staged approach for setting assessment integrated with LVIA evidence to evaluate indirect heritage effects

11.3.3.3 Tentative UNESCO World Heritage Sites

Ireland currently has 2 no. relevant Tentative List properties (see **Figure 11.3**) that form part of the wider cultural heritage context for the receiving environment: The Royal Sites of Ireland (including the Rathcroghan Complex) and The Passage Tomb Landscape of County Sligo (including the Carrowkeel passage tomb group)¹⁶.

The UNESCO Tentative List inclusion represents an official statement of intent by the State that the property is considered to have potential Outstanding Universal Value (OUV) and may be advanced for nomination. Tentative List inclusion does not constitute inscription on the World Heritage List and does not, of itself, confer World Heritage status¹⁷. Nevertheless, Tentative List properties are commonly treated as highly sensitive cultural heritage receptors for the purposes of impact assessment because nomination objectives place particular emphasis on protecting the attributes through which potential OUV may be expressed, including landscape context, integrity and the experiential qualities of setting¹⁸.

In undertaking this assessment, regard has been had to UNESCO Guidance and Toolkit for Impact Assessments in a World Heritage Context and UNESCO Guidance for Wind Energy Projects in a World Heritage Context, insofar as these provide best-practice principles for assessing potential effects on sites included on Ireland's Tentative List.

Rathcroghan

The Royal Sites of Ireland Tentative List entry comprises a series of properties including Cashel, Dún Ailinne, the Hill of Uisneach, the Rathcroghan Complex and the Tara Complex¹⁹. Turbine T10, being the nearest wind turbine of the project to Rathcroghan, is located at a distance of approximately 23km. Rathcroghan is widely understood as a major multi-period ceremonial and royal landscape, characterised by a dense and spatially distributed range of archaeological monuments which, collectively, reflect long-term ritual and political significance. Its archaeological character is expressed through a dispersed constellation of earthworks, enclosure forms, burial monuments and other features rather than a single monument core, and the wider landscape context forms an important component of how the complex is experienced and interpreted²⁰.

From an assessment perspective, the key point is that the potential heritage value of Rathcroghan is not limited to individual recorded monuments but also includes the integrity and legibility of the wider ritual landscape, including spatial relationships between components, topography, intervisibility and the experience of openness at the landscape scale²¹. This assessment therefore assesses likely effects on Rathcroghan in terms of whether the project could materially alter the ability to understand or appreciate these landscape attributes, using a staged, attribute-led approach aligned with established best practice for heritage impact assessment²².

¹⁶ 8. UNESCO World Heritage Centre. *The Royal Sites of Ireland: Cashel, Dún Ailinne, Hill of Uisneach, Rathcroghan Complex, and Tara Complex* (Tentative List entry; submitted 08/04/2010)

¹⁷ UNESCO World Heritage Centre. Tentative Lists: status and function of Tentative List entries (concept and process).

¹⁸ ICCROM/ICOMOS/IUCN. *Guidance and Toolkit for Impact Assessments in a World Heritage Context* (attribute-led approach; emphasis on OUV-related attributes and integrity).

¹⁹ UNESCO World Heritage Centre. *The Royal Sites of Ireland: Cashel, Dún Ailinne, Hill of Uisneach, Rathcroghan Complex, and Tara Complex* (Tentative List entry; submitted 08/04/2010).

²⁰ UNESCO World Heritage Centre. Tentative Lists: status and function of Tentative List entries (concept and process).

²¹ ICCROM/ICOMOS/IUCN. *Guidance and Toolkit for Impact Assessments in a World Heritage Context* (attribute-led approach; emphasis on OUV-related attributes and integrity).

²² OPW (Heritage Ireland). Rathcroghan Visitor Centre summary of the archaeological landscape and density of sites.

Carrowkeel

The Passage Tomb Landscape of County Sligo is a Tentative List property that explicitly includes the passage tomb groups of Carrowmore and Carrowkeel, together with a wider interconnected landscape of megalithic monuments²³. Turbine T3, being the nearest wind turbine of the project to Carrowkeel is located at an approximate distance of 17km. The Tentative List description emphasises the density and connectedness of passage tomb sites and the importance of dramatic topography and undisturbed settings as key elements of the property's value²⁴. In academic terms, the Carrowkeel complex is recognised as one of Ireland's principal passage tomb cemeteries, with monument form, placement and landscape relationships forming a central component of interpretation, including patterns of visibility, routeways and the structuring role of upland ridges and basins within the wider Bricklieve landscape.

This assessment treats Carrowkeel and the wider Sligo passage tomb landscape as a high-sensitivity receptor for indirect effects as potential heritage value is closely tied to landscape-scale setting and integrity, including the experience of an upland ceremonial landscape and the relationship between discrete tomb groups within a coherent topographic framework. Likely effects are therefore evaluated through the viewpoint-led landscape and setting methodology, drawing on outputs from the assessment at **Chapter 10** (ZTV mapping and photomontage evidence) to characterise change and to distinguish between intervisibility and material alteration to significance-defining attributes²⁵.

In line with international best practice, where a World Heritage or Tentative List receptor is relevant, the assessment focuses on the attributes that convey cultural value (and potential OUV) and evaluates whether the project would materially diminish those attributes. This approach is particularly important for wind energy developments where the principal impact pathway is often indirect (setting/landscape change) rather than direct physical impact. The assessment conclusions for Rathcroghan and Carrowkeel are therefore grounded in a traceable evidence chain: receptor definition, attribute identification, Landscape evidence review, magnitude characterisation and significance judgement, with mitigation and monitoring measures framed to ensure that commitments are implementable within the Irish statutory context²⁶.

11.3.4 EXCAVATIONS

The Excavations database contains summary accounts of all archaeological investigations conducted from 1969 onwards on the island of Ireland. Additionally, results of excavations conducted in advance of road schemes in the Republic of Ireland are available for review in the TII Digital Heritage Collections. These sources can indicate the level of unrecorded archaeological potential within a geographic area. A review of available online and published sources produced no results relevant to the project site (see **Table 11.7** for further details).

Extensive archaeological investigation has been undertaken within the wider landscape surrounding the project as part of major infrastructure schemes along the

²³ UNESCO World Heritage Centre. *The Passage Tomb Landscape of County Sligo* (Tentative List entry).

²⁴ Hensey, R., Meehan, P., Dowd, M. and Moore, S. 2014. "A century of archaeology—historical excavation and modern research at the Carrowkeel passage tombs, County Sligo." *Proceedings of the Royal Irish Academy* 114C(1), 57–87.

²⁵ Historic England. *The Setting of Heritage Assets* (3rd ed.) (staged approach distinguishing visibility from effect on significance; application to setting assessment)

²⁶ Historic England. *The Setting of Heritage Assets* (3rd ed.)

N5 corridor. These projects provide important contextual evidence for assessing archaeological potential within the receiving environment and demonstrate that landscapes characterised by dispersed settlement, agricultural use and wetland terrain may contain significant previously unrecorded archaeological remains.

Large-scale archaeological testing was carried out in advance of the N5 Ballaghaderreen Bypass scheme, a 13.6km road development located to the north of Ballaghaderreen. Testing programmes undertaken in 2009 investigated multiple areas along the proposed route through machine-assisted trenching and targeted excavation²⁷. Investigations identified archaeological features including burnt mounds, pits, hearths and evidence for settlement activity, demonstrating that prehistoric occupation extended into landscapes previously considered marginal. Analysis of the scheme has emphasised the importance of infrastructural archaeology in revealing buried archaeological landscapes not apparent through surface survey or historic mapping.

Further extensive archaeological investigation occurred during the N5 Ballaghaderreen to Scramoge road project, which involved one of the largest recent programmes of archaeological excavation undertaken in Ireland. Advance testing and excavation identified over 100 no. previously unrecorded archaeological sites along the road corridor, confirming the archaeological richness of the wider region.

Individual excavation sites within this programme provide some detail for the receiving environment. At Gortnacranagh (Excavation Licence 15E0587), archaeological excavation identified a ditched enclosure, ring-ditch features, pits and evidence for cultivation activity within a greenfield landscape lacking visible upstanding monuments prior to investigation. Excavations at Shankill (Excavation Licence 15E0545) revealed multi-period archaeological remains identified through systematic testing rather than surface indicators, reinforcing the importance of subsurface investigation in assessing archaeological potential.

Further excavation sites associated with the N5 scheme, including works at Gortnacranagh 2 and Shankill 1, identified additional settlement-related and multi-phase archaeological activity. At Tullen 2, archaeological remains were detected through geophysical survey followed by excavation, illustrating the effectiveness of targeted investigation strategies in identifying archaeological deposits within landscapes where visible monument density is low.

Of particular relevance to the project are archaeological investigations undertaken in the vicinity of the junction of the N5 and R293. Archaeological testing and excavation associated with the N5 Ballaghaderreen Bypass identified a multi-period complex comprising a ringfort (RO008-023), associated field system (RO008-023001), an enclosure (RO008-023002) and prehistoric activity recorded as RO008-065. These investigations demonstrated the presence of subsurface archaeological remains in the immediate vicinity of the subject project and confirm that this part of the overall project site has a materially higher archaeological sensitivity than the core wind farm site.

Collectively, the results of archaeological investigations along the N5 corridor demonstrate that significant archaeological remains occur within landscapes broadly comparable to the receiving environment in terms of environmental character and land use. The discovery of numerous previously unrecorded sites within pastureland

²⁷ Excavations Licence associated with testing programme; see Excavations.ie report for Ballaghaderreen Bypass Areas G–P TII

and bog-margin environments confirms that the absence of recorded monuments does not equate to absence of archaeological potential. These findings therefore provide empirical support for the precautionary approach adopted within this assessment, including in respect of mitigation and monitoring proposals as set out at **Section 11.6.**

Site/ Townland	Excavation Licence No.	Project	Approx. Relationship to Proposed Development*	Archaeological Remains Identified	Relevance to Assessment	Reference
Ballaghaderreen Bypass (multiple areas G–P)	Various (2009 testing programme)	N5 Ballaghaderreen Bypass	Regional corridor south-east of site	Burnt mounds, pits, hearths, settlement activity	Demonstrates archaeological survival within marginal wetland/upland landscapes	Excavations.ie report 2009 (Roscommon testing programme)
Gortnacranagh (AH04)	15E0587	N5 Ballaghaderreen–Scramoge	Within wider regional study area	Enclosure, ring-ditch, pits, cultivation ridges	Previously unrecorded settlement identified in greenfield context	Excavations.ie (2016 Roscommon)
Gortnacranagh 2	Various (construction phase)	N5 scheme	Regional proximity	Settlement-related features	Demonstrates archaeological potential in pastureland lacking visible monuments	Excavations.ie (2020 Roscommon)
Shankill 1	Various (construction phase) 15E0545	N5 scheme	Regional proximity	Multi-phase archaeological activity	Reinforces unpredictability of archaeological distribution	Excavations.ie (2020 Roscommon)
Tullen 2	Various	N5 scheme	Regional proximity	Archaeological features detected by geophysics and excavation	Reinforces unpredictability of archaeological distribution	Excavations.ie (2020 Roscommon)

Table 11.7 Relevant Archaeological Excavations

The high discovery rate recorded during these projects reflects broader patterns identified in Irish development-led archaeology, whereby systematic testing often reveals archaeological activity within landscapes traditionally perceived as marginal or of low monument density. The presence of comparable environmental conditions, including bog terrain, agricultural land use and dispersed settlement patterns, suggests that similar archaeological potential may exist within the receiving environment. Accordingly, the results of nearby excavation programmes reinforce the precautionary approach adopted within this assessment and support the implementation of archaeological monitoring during ground disturbance associated with the proposed development.

11.3.5 TOPOGRAPHICAL FILES

The National Museum of Ireland (NMI) Topographical Files constitute a primary archive of archaeological finds recovered throughout Ireland and represent an important source of information regarding the distribution of artefacts across the landscape. The Topographical Files record artefacts submitted to or recorded by the National Museum since the nineteenth century, including chance finds, stray discoveries, antiquarian collections and artefacts recovered during archaeological investigations.

The Topographical Files differ from the RMP in that they record artefact discoveries rather than fixed monument locations. As such, they provide insight into past activity that may not be represented by visible or recorded archaeological sites. Artefact distributions recorded within the Topographical Files frequently reflect patterns of prehistoric movement, ritual deposition or episodic landscape use, particularly in upland and bog margin environments where structural remains may be absent or obscured.

A review of available Topographical File references for the relevant project townlands does not indicate any recorded artefact discoveries within the immediate development area or surrounding townlands. This pattern is consistent with the upland character of the landscape and the relatively low intensity of historic agricultural activity, which reduces the likelihood of artefact recovery through ploughing or land disturbance.

The absence or scarcity of Topographical File entries within the immediate study area should not be interpreted as evidence for low archaeological potential. The Topographical Files are known to be influenced by discovery bias, reflecting historic patterns of land use, collection practices and reporting rather than the true distribution of archaeological material. Upland peatland environments in particular may preserve archaeological deposits that remain undiscovered due to limited exposure or ground disturbance.

11.3.6 ARCHAEOLOGICAL LANDSCAPE CHARACTER AND SENSITIVITY

The archaeological landscape character of the receiving environment reflects its position within a transitional upland zone situated between major ceremonial landscapes and more intensively settled lowland areas. The combined evidence from recorded monuments, historic territorial divisions, topographical context and artefact distributions indicates that the receiving environment forms part of a broader cultural landscape shaped by long-term patterns of movement, resource exploitation and episodic occupation rather than permanent settlement.

The relatively low density of recorded monuments within the immediate development area contrasts with the presence of significant archaeological complexes within the

wider region. This pattern is consistent with established archaeological interpretations of upland peatland environments, which frequently functioned as liminal landscapes situated between core settlement zones. Such areas may contain dispersed archaeological evidence reflecting seasonal activity, pastoral land use or ritual deposition, often preserved beneath peat deposits and therefore underrepresented within the statutory monument record.

The archaeological character of the landscape is strongly influenced by its relationship to 2 no. major prehistoric ceremonial landscapes: the Rathcroghan complex in County Roscommon and the Carrowkeel passage tomb landscape in County Sligo. Rathcroghan represents a dispersed royal and ceremonial landscape and the significance of this complex derives not only from individual monuments but also from the spatial relationships between elements and the wider landscape setting through which the complex is experienced.

Similarly, the Carrowkeel passage tomb complex forms part of a wider Neolithic ceremonial landscape characterised by monument placement in relation to upland ridges, valleys and long-distance views. Archaeological research has demonstrated that passage tomb landscapes frequently exhibit deliberate engagement with topography and visibility, suggesting that surrounding landscapes may contribute to the experiential context of these sites even where direct intervisibility is limited.

Within this regional framework, the receiving environment occupies an upland zone that can be interpreted as a landscape corridor linking different archaeological regions. The distribution of recorded monuments, the persistence of historic townland boundaries and the limited evidence for permanent settlement collectively support interpretation of the area as a marginal yet culturally meaningful landscape. Such liminal zones are increasingly recognised within Irish archaeological research as important components of prehistoric and early historic territorial organisation, marking thresholds between ecological zones or symbolic landscapes.

The archaeological sensitivity of the receiving environment therefore derives from several interrelated factors:-

- the potential presence of previously unrecorded archaeological remains within peatland environments;
- the landscape's role as a transitional zone within a broader regional archaeological network;
- the proximity of major ceremonial landscapes whose wider setting may extend beyond individual monument boundaries; and,
- the preservation of historic territorial structures expressed through townland divisions and landscape morphology.

Consequently, the archaeological landscape character is defined not solely by individual sites but by the cumulative spatial and experiential qualities of the wider environment. This understanding informs the assessment of potential impacts, particularly in relation to landscape setting and visual change, which are considered in subsequent sections.

11.3.7 HISTORIC CARTOGRAPHY AND LANDSCAPE EVOLUTION

Historic cartographic sources provide important evidence for understanding landscape development, settlement patterns and land-use change within the receiving environment. Analysis of early mapping, including the first edition Ordnance

Survey six-inch maps, subsequent revised editions and modern mapping datasets, demonstrates the evolution of the upland landscape from a marginal resource zone towards its present character as open rough pasture and peatland.

Early cartographic sources for the study area include the Down Survey (1656–1658). However, coverage of northern County Roscommon is limited and schematic, reflecting the survey's focus on documenting land confiscations rather than providing detailed mapping of upland landscapes.

The First Edition Ordnance Survey mapping at a scale of six inches to one mile was surveyed between 1829 and 1842 and published during the 1830s–1840s, providing the earliest detailed cartographic record of the pre-Famine landscape (**Figure 11.4**). For Roscommon sheets specifically, publication is generally late 1830s.

The earliest detailed cartographic records indicate that the study area was characterised by extensive areas of unenclosed ground, bog and rough grazing, with limited permanent settlement or agricultural improvement. This pattern is consistent with broader regional trends in western Ireland, where upland and bog margin landscapes were historically utilised for seasonal grazing, fuel extraction and movement between lowland agricultural areas rather than as centers of nucleated habitation (Feehan 2003).

The later 25-inch Ordnance Survey series (1:2500), surveyed from the mid-nineteenth century and generally published between 1897 and 1913, provides a highly detailed depiction of settlement, field systems and land use in the study area (**Figure 11.5**).

Townland boundaries shown on historic mapping reflect long-established territorial divisions that may preserve elements of earlier medieval or even prehistoric landscape organisation. The persistence of irregular field patterns and boundary alignments suggests gradual rather than planned enclosure, indicative of incremental land-use change over extended periods.

Later cartographic editions illustrate increased drainage activity and partial enclosure in some areas, reflecting agricultural improvement initiatives during the nineteenth and early twentieth centuries. However, the core upland character of the landscape remains largely unchanged, with relatively sparse settlement density and extensive open views across the surrounding countryside. The continuity of open landscape character is a significant factor in the assessment of cultural heritage setting, particularly where long-distance visibility contributes to the experiential context of archaeological landscapes.

Cartographic analysis therefore demonstrates that the receiving environment has historically functioned as a transitional zone between settled lowland areas and upland resource landscapes. This continuity supports interpretation of the area as part of a broader cultural landscape shaped by movement, grazing and seasonal activity rather than permanent occupation.

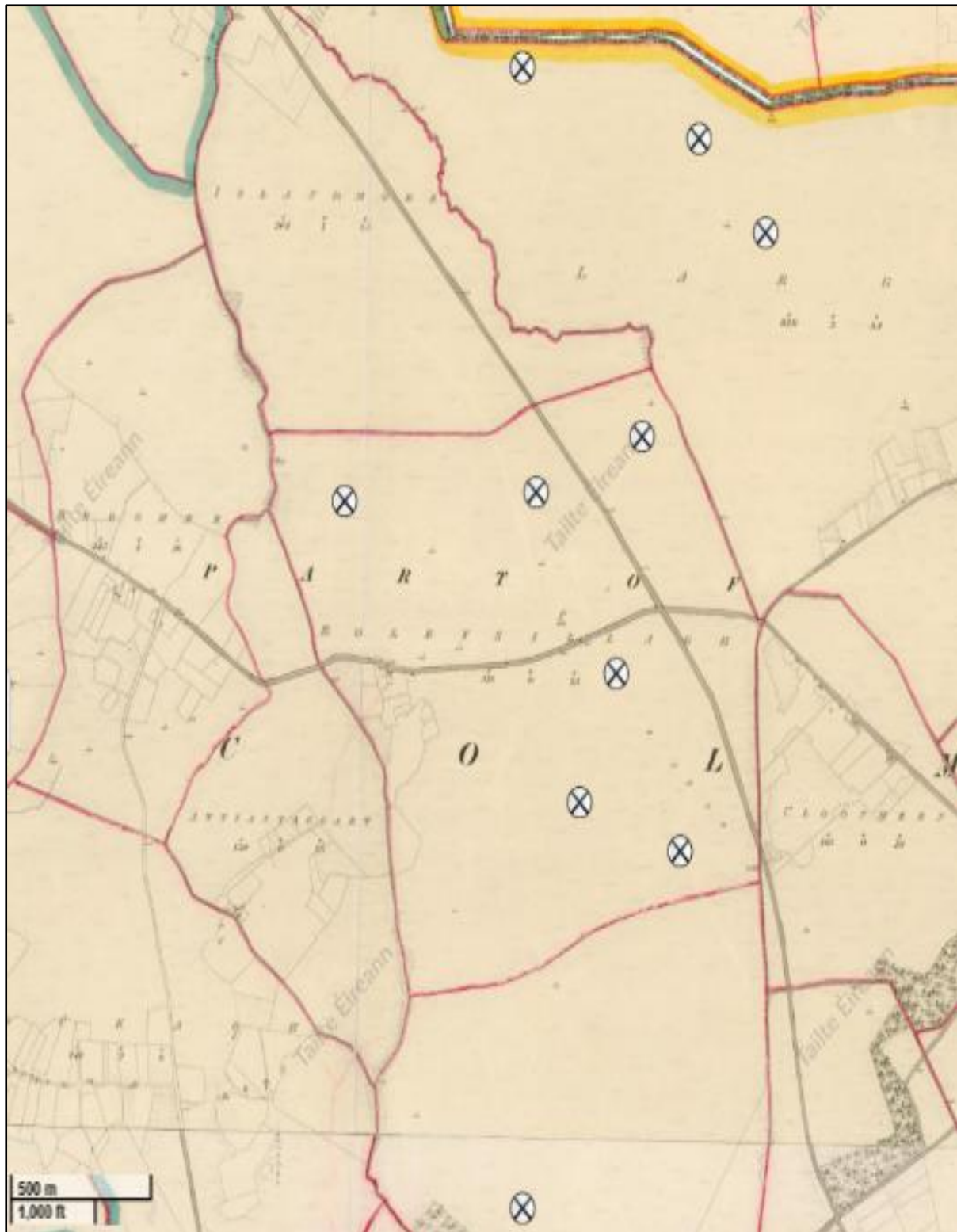


Figure 11.4: Historic OS Map 1st Edition 6 inch (late 1830s) – turbine locations indicated

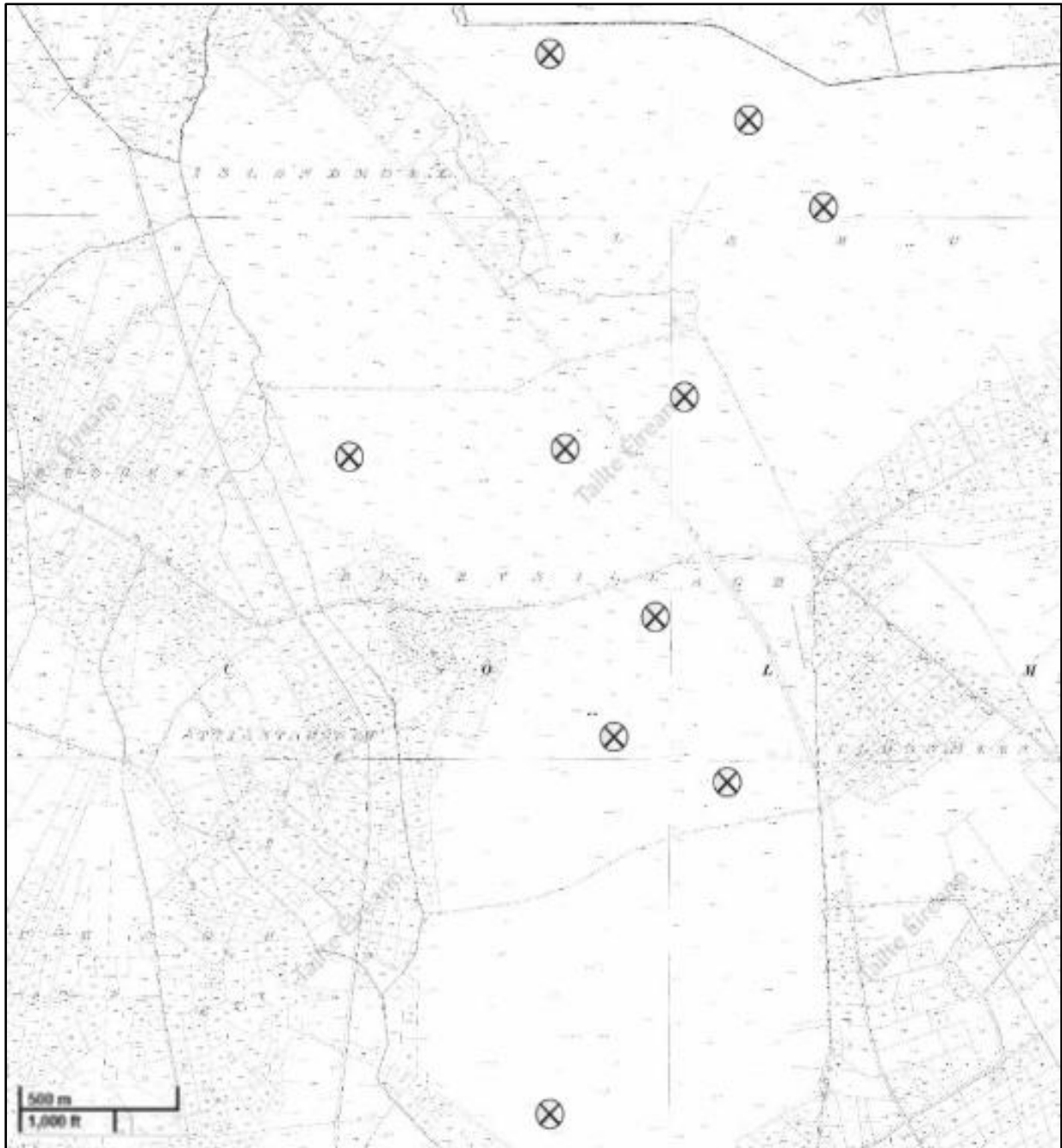


Figure 11.5: Historic OS Map 25 inch – turbine locations indicated

11.3.8 Toponymy

Toponymy and historic territorial divisions represent an important component of cultural landscape analysis and provide valuable contextual evidence for interpreting archaeological potential and historic land use. Irish townlands constitute one of the oldest surviving territorial frameworks in Europe and frequently preserve earlier patterns of land division reflecting environmental characteristics, settlement organisation and agricultural practices²⁸.

²⁸ Mac Giolla Easpaig; O'Sullivan et al. 2010

Analysis of placenames and townland structure can therefore assist in identifying historic landscape character and informing assessment of archaeological sensitivity, particularly in areas where visible monument density is low.

The townland system in Ireland developed through complex historical processes incorporating early medieval territorial units, Gaelic landholding practices and later administrative reorganisation. Archaeological research has demonstrated that townland boundaries often follow natural landscape features such as ridgelines, watercourses and zones of environmental transition, suggesting continuity with earlier patterns of territorial organisation²⁹. In upland and marginal landscapes, townland names frequently encode environmental descriptors reflecting historic land-use strategies, including grazing regimes, woodland exploitation and wetland utilisation.

Within the receiving environment of the project, analysis of townland names provides insight into the long-term interaction between communities and landscape (**Table 11.8**).

Islandmore (Inis Mhór)	Suggests an area of raised or dry ground within a wetter surrounding environment, consistent with settlement strategies favoring elevated locations within bog-dominated terrain.
Derrynabrock (Doire)	Incorporates terminology associated with woodland or rough vegetated terrain, indicating the former presence of wooded areas or scrubland potentially exploited for fuel or grazing.
Largan (Leargán)	Refers to sloping ground or hillside terrain, reflecting the importance of micro-topography in agricultural land division.
Toobrackan (Tobar)	References a spring or water source, highlighting the significance of water availability within marginal landscapes and potentially indicating focal points for settlement or seasonal activity.
Ballyoughter (Baile Uachtair)	Translates as "upper settlement" or elevated farmstead, suggesting hierarchical spatial organisation and differentiation between higher and lower ground within the landscape.
Boleysillagh	Incorporates elements associated with "booley" or seasonal grazing sites, indicating transhumance or seasonal pastoral activity, a recognised feature of historic agricultural systems in upland Ireland. Cloonmeen (Cluain) refers to meadow or pastureland, implying areas of improved or productive agricultural ground within otherwise marginal terrain.

Table 11.8: Townland Toponymy

Taken collectively, these place-name elements suggest a landscape structured around dispersed agricultural activity adapted to environmental constraints. Archaeological studies of upland and bog-margin environments demonstrate that such landscapes were frequently characterised by seasonal use, temporary structures and low-density settlement patterns, which may leave limited visible archaeological remains but retain potential for sub-surface evidence of past activity^{30,31}.

²⁹ O'Sullivan et al. 2010; Nicholls 2003

³⁰ O'Sullivan, A., McCormick, F., Kerr, T. & Harney, L. (2010) Early Medieval Ireland AD 400–1100

³¹ Fredengren, C. (2002) wetland archaeology and marginal landscapes

Toponymic evidence also supports interpretation of the receiving environment as a transitional or liminal landscape situated between more intensively occupied zones. Landscape archaeology emphasises that marginal areas often functioned as boundaries between territories or as zones of seasonal movement rather than permanent settlement cores. This interpretation is consistent with the wider regional context, where major ceremonial landscapes such as Rathcroghan occupy more centralised positions within broader territorial systems.

While toponymy alone cannot confirm the presence of archaeological remains, integration of place-name analysis with environmental context and regional archaeological frameworks provides an additional layer of interpretative evidence supporting assessment of archaeological potential. The combination of bog terrain, elevated dry ground and place-name indicators associated with seasonal grazing and dispersed settlement suggests moderate potential for previously unrecorded archaeological remains; particularly ephemeral features associated with agricultural or pastoral activity.

11.3.9 ARCHITECTURAL HERITAGE BASELINE

11.3.9.1 Methodology and Sources

The architectural heritage baseline has been established through review of the following sources:-

- National Inventory of Architectural Heritage (NIAH);
- RPS contained within the relevant County Development Plans;
- Historic mapping and cartographic sources;
- Aerial imagery and landscape character analysis; and,
- Published architectural and historical sources relating to the regional built environment.

The NIAH identifies structures of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. Inclusion within the NIAH does not confer statutory protection but indicates recognised heritage value.

11.3.9.2 Architectural Heritage within the Study Area

A review of available datasets indicates that:-

- there are no Protected Structures, NIAH-listed buildings or Architectural Conservation Areas located within the footprint of the project; and
- architectural heritage density within the study area (2km) is low.

This pattern reflects the environmental character of the receiving landscape, which is dominated by upland peatland and marginal agricultural land. Such environments historically supported limited permanent settlement and therefore exhibit lower densities of surviving historic buildings compared to lowland agricultural zones.

Historic cartographic sources including the First Edition Ordnance Survey mapping (c.1837–1838) and later nineteenth-century mapping were reviewed as part of the baseline assessment. These sources confirm the absence of significant building clusters within the study area (2km) and indicate that settlement historically concentrated within the more fertile lowland landscapes surrounding Ballaghaderreen and along established transport routes.

The absence of recorded architectural heritage within the project site does not imply an absence of historic landscape character. Rather, it reflects historical land-use patterns and the marginal nature of upland environments, where settlement tended to be dispersed, seasonal or focused along more fertile peripheral zones.

11.3.9.3 Architectural Heritage in the Wider Landscape

Although the immediate upland area contains limited recorded architectural heritage, the wider landscape includes significant concentrations of historic buildings and structures, particularly within nearby settlement centres such as Ballaghaderreen and surrounding lowland areas.

Ballaghaderreen and its hinterland contains a range of architectural heritage assets including:-

- ecclesiastical buildings and historic church complexes;
- nineteenth-century urban structures reflecting planned town development;
- vernacular farmsteads and agricultural buildings; and,
- traditional roadside cottages and boundary features associated with historic rural settlement patterns.

These structures contribute to the broader cultural landscape character and demonstrate continuity of settlement and land use within the region. Their presence reinforces the interpretation of the study area (2km) as a transitional or marginal landscape positioned between more intensively settled lowland zones.

Historic Estate Landscape: Ballaghaderreen and Edmondstown

The wider landscape surrounding the 2km study area contains a number of historic estate landscapes which provide an important architectural and historical context for the receiving environment. These landscapes developed primarily during the eighteenth and nineteenth centuries as part of the wider reorganisation of rural landholding associated with estate management, agricultural improvement and the development of market towns across Connacht³².

Ballaghaderreen, located approximately 2km southwest of the turbine T10, developed as a planned market town during the eighteenth century³³. The town contains a number of buildings of architectural heritage interest including structures recorded in the NIAH and the RPS contained within the RCDP. These buildings reflect the historic commercial and administrative role of Ballaghaderreen as a service centre for the surrounding agricultural hinterland. The town historically formed part of County Mayo until boundary changes enacted under the *Local Government (Ireland) Act 1898* transferred Ballaghaderreen and its surrounding lands to County Roscommon.

Immediately to the north of the town, the townland of Edmondstown forms part of the historic rural hinterland associated with the Ballaghaderreen estate landscape. The nearest turbines are located approximately 1.2km north of Edmondstown. The landscape is characterised by dispersed farmsteads, enclosed agricultural fields and vernacular buildings reflecting nineteenth-century rural settlement patterns. Traditional farmhouses and agricultural outbuildings occur within irregular field systems

³² Smyth, W.J. 2006. *Map-making, Landscapes and Memory: A Geography of Colonial and Early Modern Ireland c.1530–1750*. Cork University Press

³³ Graham, B. & Proudfoot, L. 1993. *An Historical Geography of Ireland*. Academic Press

defined by stone walls and hedgerows, reflecting the agricultural organisation typical of estate-managed landscapes of the post-medieval and modern periods³⁴. Historic cartographic sources including the First Edition Ordnance Survey mapping (c.1837–1838) indicate that this dispersed settlement pattern was already established by the early nineteenth century.

To the east of the study area, within south County Sligo, the historic Coolavin estate landscape represents a further component of the wider architectural and historical context of the region. The estate is historically associated with the MacDermot family of Coolavin, whose lands formed part of the historic barony of Coolavin surrounding Lough Gara³⁵. The principal demesne residence of the estate is Coolavin House (NIAH Reg. No. 32304002) located near Monasteraden. The present house dates to the late nineteenth century and replaced an earlier residence associated with the estate.

Coolavin House lies approximately 4km east of the nearest wind. Estate landscapes of this type typically comprised a demesne residence, agricultural tenant holdings, dispersed farmsteads and associated field systems organised within the wider rural landscape. Although the demesne centre lies outside the 2km study area, the historic estate structure contributed to the organisation of settlement and agricultural landholding across south Sligo and neighbouring parts of Roscommon.

Together, the historic landscapes of Ballaghaderreen, Edmondstown and Coolavin illustrate the development of the regional built environment during the eighteenth and nineteenth centuries, when estate management and agricultural improvement played a central role in shaping rural settlement patterns. While the upland areas within the project site contain relatively few historic buildings, the surrounding lowland landscapes demonstrate a long tradition of settlement, agricultural activity and estate organisation which forms an important component of the wider cultural heritage context within which the proposed development will be experienced.

Architectural heritage within the wider landscape therefore contributes to cultural heritage sensitivity primarily through:-

- historic settlement pattern and territorial organisation;
- visual and experiential relationships between upland and lowland environments; and,
- continuity of historic landscape character.

11.3.9.4 Architectural Heritage Sensitivity

Given the absence of designated architectural heritage assets within the project site, likely effects on architectural heritage are primarily indirect and relate to landscape setting rather than physical impact.

Architectural heritage sensitivity within the 2km study area therefore derives primarily from the broader historic landscape context rather than from individual designated structures and is therefore considered at a landscape scale, recognising that:-

- dispersed vernacular structures contribute to the experiential understanding of the landscape;
- settlement centres such as Ballaghaderreen form part of the historic context of the receiving environment; and,

³⁴ Stout, M. 1997. *The Irish Ringfort*. Four Courts Press.

³⁵ MacDermot, D. 1996. *MacDermot of Moylurg: The Story of a Connacht Family*.

- potential effects relate primarily to changes in landscape character or views rather than to direct alteration of historic fabric.

Architectural heritage receptors are therefore considered within the broader heritage landscape sensitivity framework outlined in **Section 11.3.11**.

11.3.9.5 Architectural Heritage Field Observations

During field inspection, a narrow stone-built bridge was identified crossing an unnamed watercourse along the L5506 local road leading to turbine T10 (see **Annex 11.3**). The structure comprises random rubble stone parapet walls supporting a narrow single-lane roadway. The bridge appears to span the watercourse via a culverted crossing beneath the road surface.

The structure is not recorded in historic mapping, the RPS, the NIAH, or the RMP. Evidence of relatively recent repair work was observed, including concrete coping to the parapets and modern road surfacing.

The bridge is interpreted as a small-scale vernacular rural bridge likely associated with historic agricultural access within the surrounding upland landscape. While the precise date of construction is uncertain, the structure likely originated during the late nineteenth or early twentieth century and has been subject to subsequent repair.

11.3.10 HISTORIC TOWNLAND BOUNDARIES

The project is located within the historic townlands of Largan, Largan, Boleysillagh, Cloonmeen, Toobrakan and Tullaghanrock in north County Roscommon. These townlands represent the smallest traditional administrative land divisions in Ireland and are widely considered to reflect long-standing patterns of landholding and territorial organisation that often have medieval or earlier origins.

Townland boundaries typically survive in the modern landscape through features such as:-

- drainage ditches;
- field boundaries;
- hedgerows;
- minor roads; and,
- forestry compartment boundaries.

Historic cartographic sources, including the First Edition Ordnance Survey mapping, indicate that the townland pattern within the 2km study area was already well established by the mid-19th century and broadly corresponds with the present-day landscape structure.

Within the project site, the landscape is characterised by peatland, commercial forestry plantation and areas of historic drainage and agricultural enclosure. In many locations the visibility of earlier boundary features has been partially obscured by forestry planting, peat cutting and drainage works associated with modern land management. Nevertheless, the underlying townland framework continues to structure landownership patterns and local spatial identity.

The project infrastructure, including turbines, access tracks and associated works, is located within this existing landholding framework. Within the main wind farm site, no significant historic townland boundary features are directly affected. However,

localised road carriageway widening along the turbine delivery route intersects historic townland boundaries between Toobrackan and Tullaghanrock and between Cloonmeen and Boleysillagh.

These boundaries have been modified over time through road development, drainage, forestry and agricultural land management but remain elements of the historic territorial framework. Localised disturbance may therefore occur where road widening intersects surviving boundary features. These effects are assessed further in **Section 11.4** and addressed through the mitigation measures set out in **Section 11.6**.

11.3.11 LIMINAL LANDSCAPE INTERPRETATION

Anthropological and archaeological studies identify upland margins and bogland edges as liminal zones representing boundaries between ecological or territorial regions.

Such environments may function as thresholds within cultural landscapes, marking transitions between inhabited lowlands and symbolic uplands.

The character of the receiving environment as a marginal upland environment suggests potential cultural significance derived from its position within wider landscape systems rather than from individual monument density.

11.3.12 CULTURAL HERITAGE BASELINE SYNTHESIS

The cultural heritage baseline indicates that sensitivity within the receiving environment derives from a combination of factors including archaeological landscape context, historic settlement patterns and the experiential qualities of the upland landscape. While recorded monuments and architectural heritage assets are relatively sparse within the immediate footprint of the project, the wider landscape contains areas of recognised archaeological and cultural significance, including the ceremonial landscapes of Rathcroghan and Carrowkeel.

The 2km study area is characterised by upland peatland environments which historically functioned as transitional or liminal zones between more intensively settled lowland regions. Archaeological evidence indicates episodic use of such landscapes rather than continuous occupation, with cultural value arising from spatial relationships, visibility and broader landscape organisation.

Consequently, the assessment of likely effects requires consideration not only of direct physical effects but also of indirect effects on heritage setting and landscape character. The heritage landscape sensitivity framework set out below provides the methodological basis for evaluating these relationships.

Receptor	Designation	Study Area Tier	Approx. Distance to Nearest Turbine	Sensitivity	Principal Effect Pathway
Development Footprint (peatland/forestry lands)	Undesignated land with archaeological potential	Core (Red Line Boundary)	Within site	Medium	Direct physical (ground disturbance)
RO008-005001-003 Cashel Complex (Drumacoo)	Recorded Monuments (Ringfort / Cashel Complex)	2km Local Study Area	c. 1.4km E	High	Indirect setting

RO008-071–074 Fulacht fiadh cluster (Bockagh)	Recorded Monuments (Burnt mound complex)	2km Local Study Area	c. 1.6– 1.8km W	Medium	Indirect setting
RO008-075–076 Excavation sites (Toobrackan)	Recorded Monuments (Excavated features; Neolithic & medieval activity)	2km Local Study Area	c. 1.5– 1.6km SE	Medium	Indirect setting
RO008-007, RO008- 008, RO008-018 (Redundant records)	RMP entries (redundant / natural features)	2km Local Study Area	0.8–1.0km	Low	No meaningful pathway identified
Architectural Heritage (RPS structures within 2km, if any identified)	Protected Structures	2km Local Study Area	None within threshold	N/A	N/A
NIAH structures within 2km	NIAH (non- statutory inventory)	2km Local Study Area	None within threshold	N/A	N/A
Rathcroghan Archaeological Landscape (incl. RO024-002 and associated complex)	Strategic Archaeological Landscape; UNESCO Tentative List	Regional Study Area (15–25km)	c. 23km SE	Very High	Landscape- scale setting
Carrowkeel Passage Tomb Landscape (SL044- 056001–021 complex)	Strategic Archaeological Landscape; UNESCO Tentative List	Regional Study Area (15–25km)	c. 18km NE	Very High	Landscape- scale setting
National Monuments in State Care (none within 15km)	Statutory National Monuments	15km Screening Area	None within threshold	N/A	N/A

Table 11.9(a): Summary of Cultural Heritage Receptors within Defined Study Areas

The receptors identified in **Table 11.9(a)** form the basis of the impact assessment presented at **Section 11.4**. The assessment evaluates likely direct, indirect, landscape-scale and cumulative effects in accordance with the sensitivity, magnitude and significance framework set out at **Section 11.2**.

While the main wind farm site contains no recorded monuments, temporary upgrade works at the junction of the N5 and R293 lie in proximity to a known archaeological complex and associated notification zones and therefore represents the principal pathway for direct effects on known archaeological assets (see **Table 11.9(b)**).

Receptor	Designation	Study Area Tier	Approx. Distance to Nearest Haul Road Upgrade	Sensitivity	Principal Effect Pathway
RMP Cluster at junction of N5 and R293	Recorded Monuments (Excavated features; Neolithic	Core (Red Line Boundary)	0km	High	Direct physical (ground disturbance)

	& medieval activity)				
--	----------------------	--	--	--	--

Table 11.9(b): Summary of Cultural Heritage Receptors within Defined Study Areas

11.3.13 SUMMARY OF RECEIVING ENVIRONMENT

The receiving environment is characterised by a combination of relatively low monument density within the immediate project site and the presence of regionally significant archaeological landscapes within the wider setting, including the Rathcroghan complex to the south-east and the Carrowkeel passage tomb landscape to the north-west. While no Recorded Monuments or protected architectural heritage site boundary, the broader landscape retains archaeological sensitivity derived from prehistoric activity, historic territorial organisation, and the experiential qualities of open upland terrain.

The cultural heritage baseline therefore reflects both site-specific considerations and landscape-scale relationships. Archaeological potential within the project site is influenced by peatland preservation conditions and the documented occurrence of previously unidentified subsurface remains within similar environments. At a wider scale, heritage sensitivity arises primarily from setting attributes, including visibility relationships, skyline character, spatial openness and the role of landscape context in understanding significant archaeological complexes.

The Heritage Landscape Sensitivity Framework and Heritage Viewpoint Assessment Framework defined in this chapter provide the analytical basis for the subsequent assessment of likely effects. **Section 11.4** applies these frameworks systematically to evaluate construction, operation and decommissioning phase effects, distinguishing between direct physical effects and indirect effects arising from changes to heritage setting and landscape experience. This structured approach ensures that assessment conclusions are transparent, proportionate and directly traceable to the characteristics of the receiving environment described above.

The receiving environment demonstrates that cultural heritage sensitivity within the study areas is primarily associated with archaeological landscape context and setting rather than direct physical interaction with known heritage assets.

Key receptors identified for detailed assessment include recorded archaeological monuments within the 2km study area, strategic archaeological landscapes including Rathcroghan and the Carrowkeel passage tomb complex, and architectural heritage receptors where landscape setting contributes to significance.

Accordingly, the impact assessment presented at **Section 11.4** focuses on indirect setting-based pathways, cumulative landscape interactions and precautionary mitigation for potential previously unrecorded archaeology.

11.4 DESCRIPTION OF LIKELY EFFECTS

11.4.1 ASSESSMENT APPROACH AND EFFECT PATHWAYS

This section assesses the likely effects of the project on cultural heritage resources, including archaeological heritage, architectural heritage and cultural landscapes. The assessment considers both direct physical effects arising from ground disturbance and indirect effects associated with changes to heritage setting, landscape character and experiential qualities.

The assessment is informed by the receiving environment described at **Section 11.3** and applies the methodological framework outlined at **Section 11.2**, including the Heritage Landscape Sensitivity Framework and Heritage Viewpoint Assessment Framework. The evaluation distinguishes between different impact pathways and assesses effects arising during the construction, operational and decommissioning phases of the proposed development.

The assessment of likely effects on heritage setting integrates verified visualisations, photomontages and ZTV mapping prepared for the Landscape assessment (**Chapter 10**), ensuring consistency between landscape and cultural heritage evaluation.

Consistent with current Irish Environmental Impact Assessment practice, the assessment focuses on the likelihood of change to heritage significance rather than visibility alone. Visibility of a development does not in itself constitute an adverse effect; rather, the assessment evaluates whether proposed changes materially alter attributes that contribute to the significance or understanding of heritage assets and landscapes.

Therefore, likely effects on cultural heritage have been assessed through a structured process comprising:-

- identification of relevant heritage receptors, including recorded monuments, archaeological landscapes and architectural heritage assets;
- evaluation of receptor sensitivity based on statutory designation, cultural significance and landscape context;
- assessment of magnitude of change arising from the project; and,
- determination of significance of effect through combination of sensitivity and magnitude criteria.

Effects are described using standard EIAR terminology consistent with EPA guidance. The assessment differentiates between:-

- direct physical effects resulting from ground disturbance or construction activities; and,
- indirect effects arising from alteration of heritage setting, visibility relationships or experiential landscape qualities.

Indirect effects are evaluated through integration of landscape and visual evidence, including ZTV mapping, photomontage visualisations and viewpoint analysis, interpreted through a heritage-specific framework to ensure that conclusions relate to cultural significance rather than solely visual presence.

11.4.1.1 Direct Physical Effects on Heritage

Direct effects may occur where ground disturbance affects known or previously unrecorded archaeological remains. These effects are typically associated with:-

- turbine foundations;
- crane hardstandings;
- access tracks;
- electricity substation and ancillary infrastructure; and,
- cable trenches and drainage works.

Given the absence of recorded monuments within the main wind farm site, likely direct effects relate primarily to the possibility of encountering previously unrecorded archaeological remains, particularly within peatland environments where preservation conditions may mask archaeological features.

11.4.1.2 Indirect Physical Effects on Heritage

Indirect effects may arise through changes to the setting of heritage assets or landscapes. 'Setting' is understood as the surroundings in which heritage is experienced and which contribute to its significance. In upland landscapes such as the receiving environment, setting often extends beyond immediate proximity and includes broader spatial relationships, skyline characteristics and experiential qualities.

The assessment therefore considers:-

- intervisibility between the project and heritage receptors;
- topographic prominence and landscape context;
- potential alteration of skyline relationships; and
- influence on experiential understanding of archaeological landscapes.

The analysis recognises that visibility alone does not equate to adverse impact; significance of effect depends on whether changes materially alter attributes contributing to heritage value.

11.4.1.3 Landscape-Scale and Cumulative Setting Effects

Due to the scale of the project and the openness of the upland landscape, consideration is given to likely landscape-scale effects on the wider archaeological setting, including relationships with significant regional complexes such as Rathcroghan and Carrowkeel.

The assessment considers:-

- likely changes to landscape character influencing perception of heritage landscapes;
- cumulative visibility with other existing or permitted wind energy developments where relevant; and,
- interaction between multiple developments within shared viewsheds.

Likely effects are assessed separately for each stage of the project lifecycle:-

- Construction Phase
 - Temporary effects arising from construction activities, including ground disturbance, noise, vibration and visual presence of construction infrastructure.
- Operation Phase
 - Long-term effects associated with turbine presence, including changes to landscape character, visibility relationships and heritage setting.
- Decommissioning Phase
 - Short-term effects similar in nature to construction-phase effects, associated with removal of infrastructure and reinstatement works.

11.4.2 RELATIONSHIP TO THE RECEIVING ENVIRONMENT

The assessment builds directly upon the receiving environment described in **Section 11.3**. In particular:-

- the relatively low density of recorded monuments within the immediate vicinity of the project site informs the assessment of direct physical risk;
- the wider regional archaeological context, including proximity to Rathcroghan and Carrowkeel, informs the evaluation of indirect setting effects; and,
- landscape sensitivity derived from openness, topography and experiential qualities provides the primary basis for assessing operation phase effects.

11.4.3 CONSTRUCTION PHASE

Construction phase effects on cultural heritage arise primarily through ground disturbance associated with excavation, earthworks and infrastructure installation within the project site. The principal pathway for impact relates to direct physical effects on previously unrecorded archaeological remains, together with temporary indirect effects arising from construction activity and associated landscape change.

No recorded monuments are located within the permanent footprint of the project. Consequently, likely construction phase effects relate primarily to the disturbance of unknown sub-surface archaeological remains and to temporary changes in the setting of heritage receptors during construction activities.

Construction phase effects are temporary and short-term in duration, occurring only during the active construction period.

The construction of the project will require the construction of new access tracks to provide access to turbine locations and associated infrastructure. Localised public road widening, junction upgrades and temporary construction access works will also be required to facilitate abnormal load delivery and construction traffic.

The project will not remove or alter any known historic townland boundary features and therefore no direct effects on the historic territorial framework of the landscape will arise.

For the purposes of cultural heritage assessment, likely effects arising from access works relate primarily to localised ground disturbance associated with road widening, drainage works and junction improvements.

11.4.3.1 Archaeological Potential within Wind Farm Site

The receiving environment comprises predominantly upland peatland and forestry landscapes where surface archaeological visibility is limited. There are no Recorded Monuments located within the site boundary and no direct physical impacts on designated archaeological sites are assessed as likely during construction.

Archaeological research demonstrates that peatland margins and upland transitional zones may contain dispersed and previously unrecorded archaeological remains, including burnt mound sites, trackways, boundary features or episodic activity areas preserved beneath peat deposits.

Field inspection confirmed the absence of visible upstanding archaeological features within the project footprint; however, sub-surface archaeological potential remains present. Existing forestry operations and drainage have resulted in areas of prior

disturbance, which may locally reduce archaeological integrity, but do not eliminate the possibility of surviving archaeological deposits.

11.4.3.2 Turbine Foundations and Crane Hardstandings

The construction of turbine foundations and associated crane hardstandings represents the most substantial ground disturbance within the project site. Excavations required for turbine foundations may affect previously unrecorded archaeological remains where present.

Given the absence of known recorded monuments within the wind farm site, direct effects on known archaeological assets are not predicted. However, excavation into peat and underlying deposits introduces a likely risk to unknown archaeological features. This risk is addressed through the implementation of archaeological mitigation measures including monitoring during ground disturbance.

11.4.3.3 Access Tracks

The construction of access tracks involve linear ground disturbance that may affect previously unrecorded archaeological remains along track corridors. As access tracks will be constructed using a floated construction method and will not involve any direct excavation into the underlying terrain, effects are therefore assessed as likely to be low in magnitude but requiring mitigation through archaeological monitoring and defined working boundaries.

11.4.3.4 Underground Electrical & Communications Cabling

Installation of underground electrical and communications cabling involves excavation of trench sections connecting turbine locations and associated infrastructure. Cable trenching represents a linear disturbance pathway similar in nature to track construction but generally of more limited width.

While trenching depth may locally extend below peat deposits, no known archaeological features are located along cable routes. Therefore, likely effects relate to disturbance of previously unrecorded archaeology and are addressed through archaeological monitoring measures.

11.4.3.5 Temporary Construction Compounds

Temporary construction compounds and laydown areas involve localised ground disturbance associated with plant storage, material handling and welfare facilities. Effects are assessed to be temporary in duration and confined to defined footprint areas.

Given the absence of recorded monuments within compound locations, direct effects are not assessed as likely. Likely effects relate to the disturbance of unknown archaeological remains, which will be mitigated through archaeological monitoring where ground disturbance occurs.

11.4.3.6 Borrow Pit and Spoil Deposition

Borrow pit excavation and associated spoil deposition represent focused areas of ground disturbance involving excavation and material handling. These activities may affect previously unrecorded archaeological deposits where present beneath peat or subsoil layers.

The assessment recognises that peatland environments can preserve archaeological material; therefore, mitigation measures including archaeological monitoring are required to ensure that any archaeological remains encountered during excavation are appropriately recorded and managed.

11.4.3.7 Forestry Felling

Forestry felling associated with construction may result in indirect ground disturbance through removal of root systems, machine movement and exposure of underlying soils. While felling does not inherently involve deep excavation, associated operations can contribute to erosion or disturbance where peat is present.

Given the absence of known archaeological sites within felling corridors, effects are assessed as low magnitude; however, potential exposure of previously unknown archaeological material cannot be excluded.

11.4.3.8 Substation & Electricity Line

The construction of the electricity substation will involve ground disturbance associated with site preparation, foundations, drainage and associated infrastructure. The installation of the approximately 7km underground electricity line to the existing Tonroe 110 kV substation will also involve excavation, principally comprising cable trenching within the existing public road network.

No recorded archaeological monuments have been identified within the substation footprint or directly along the electricity line route. The likelihood of direct effects therefore relates primarily to the possibility of previously unrecorded subsurface archaeological remains being encountered during ground disturbance. As the electricity line is principally located within the existing public road corridor, archaeological potential is reduced by previous disturbance, although the presence of previously unrecorded remains cannot be entirely excluded.

Subject to the archaeological mitigation measures set out in **Section 11.6**, no significant construction-phase effects on cultural heritage are predicted in association with the proposed electricity substation or underground electricity line.

11.4.3.9 Road Upgrades and Delivery Works

Road widening and localised delivery route works will involve disturbance of roadside verges and excavation within existing road corridors. While these areas have been subject to previous ground disturbance, such works may directly impact previously unrecorded archaeological remains where present.

A small, unrecorded stone bridge located along the approach route to turbine T10 represents a minor item of vernacular rural infrastructure (see **Section 11.3.9.5** and **Figure 11.6(a)**). The proposed works in this location will require localised ground disturbance and may result in direct impact on associated structural fabric or adjacent archaeological deposits.

Particular project site in the vicinity of the junction of the N5 and R293, where temporary upgrade works are proposed in proximity to a known archaeological complex comprising RO008-023 (ringfort), RO008-023001 (field system), RO008-023002 (enclosure) and RO008-065 (excavation site) (see **Sections 11.3.3.1** and **11.3.4** and **Figures 11.3(a)** and **11.6(b)**). These monuments and associated excavations indicate the presence of a multi-period archaeological landscape including prehistoric, early medieval and medieval activity.

Ground disturbance associated with temporary carriageway widening, verge stripping and drainage works in these locations will give rise to direct impacts on archaeological deposits and, in the case of the junction of the N5 and R293, may affect remains associated with the known monument complex.

The extent of the proposed works is limited and largely confined to existing road corridors; however, direct effects on archaeological material are assessed as likely. In the absence of mitigation, this would give rise to a direct, negative effect on archaeological heritage.

These effects will be addressed through advance archaeological testing and archaeological monitoring of all groundworks, as set out in **Section 11.6**.

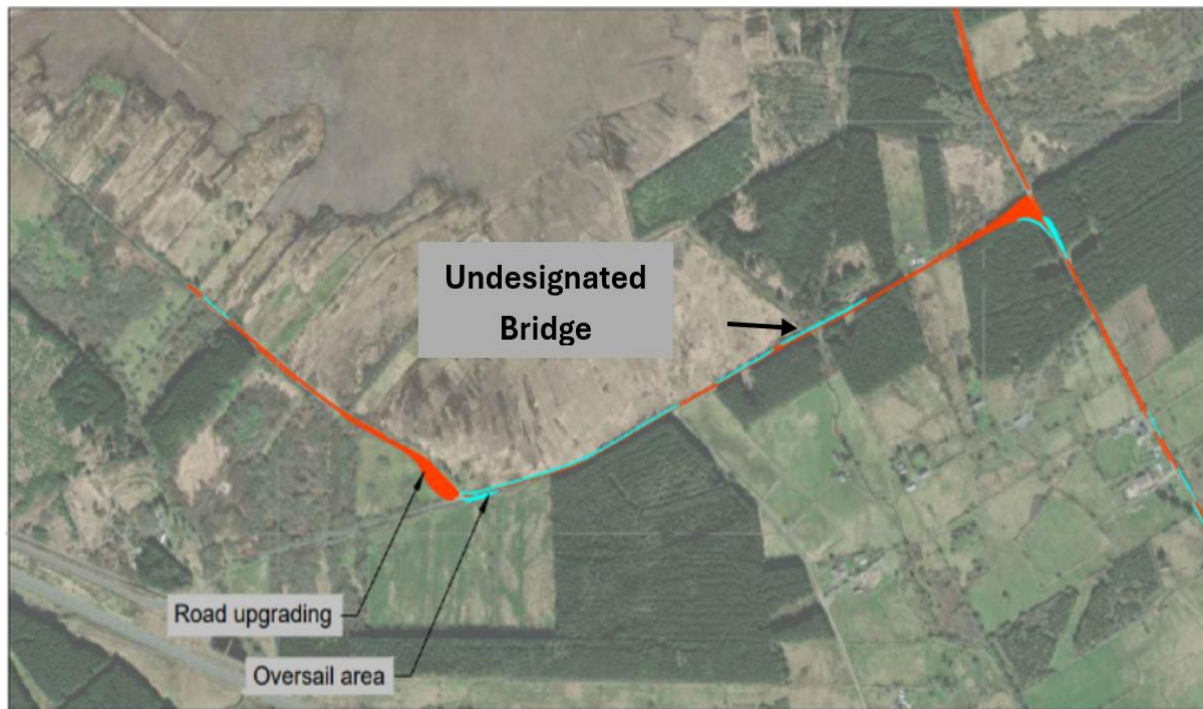


Figure 11.6(a): Proposed carriageway widening & undesignated bridge location indicated

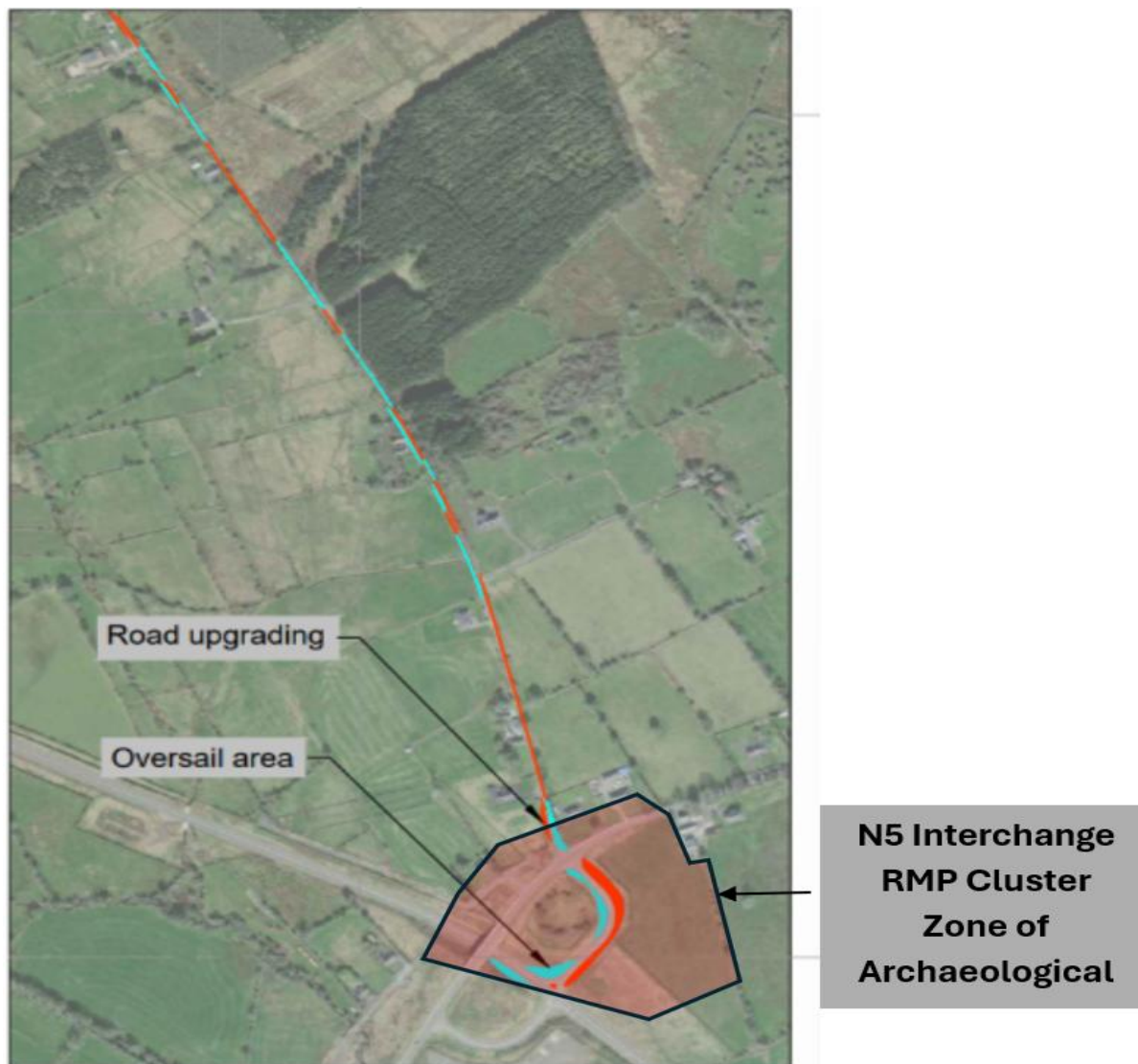


Figure 11.6(b): Proposed road upgrade at junction of N5 and R293. Zone of Archaeological Notification (ZoN) indicated

Any excavation, verge stripping, service diversions or ground reduction associated with the upgrade works may directly affect archaeological deposits or associated subsurface remains in this area. In the absence of mitigation, this would give rise to a likely direct, negative effect on archaeological heritage.

Given the limited extent of the proposed upgrade works and their location within an already modified road corridor, the likely zone of effect is localised. In the event road widening excavations are required, advance archaeological testing will be necessary.

Road widening works will also result in localised disturbance of historic townland boundaries, including those between Toobrackan and Tullaghanrock and between Cloonmeen and Boleysillagh. While these boundaries form part of the historic landscape framework, they are largely defined by modified roadside features and do not retain significant upstanding archaeological fabric. Effects are therefore assessed as likely to be localised and do not materially affect the overall historic landscape structure. However, a narrow stone bridge identified during field inspection along the approach route to turbine T10 represents a constraint within the existing road corridor

on the boundary between Toobrackan and Tullaghanrock. Any disturbance at this location will require a full record of the bridge structure.

11.4.3.10 Construction Phase Effects on Heritage Setting

Construction activity may result in temporary indirect effects on the setting of heritage receptors through the presence of plant, machinery and short-term landscape change. These effects are temporary, reversible and of limited duration relative to operational phase visibility. Construction phase setting effects are therefore assessed as low magnitude. Having regard to receptor sensitivity, the resulting effect would range from Slight to Moderate, temporary and negative, and would not be significant in EIA terms.

11.4.3.11 Cumulative Effects

Cumulative construction phase effects are limited due to the general absence of recorded features within the project site, the localised nature of any effects that may be experienced, the temporary nature of construction activities and the general absence of overlapping construction programmes with other developments of comparable scale within the immediate vicinity. The magnitude of cumulative construction phase effects on cultural heritage are therefore assessed as negligible, resulting in an Imperceptible to Not Significant, temporary and negative effect, which would not be significant in EIA terms.

11.4.3.12 Summary of Construction Phase Effects

Construction phase effects on cultural heritage are generally assessed as Slight, adverse and short-term. However, where ground disturbance occurs within areas of identified archaeological sensitivity, including the road upgrade works in the vicinity of the N5/R293 archaeological complex, greater direct effects may arise where previously unknown or associated archaeological remains are encountered. In the absence of mitigation, such effects could be significant, depending on the nature, extent and significance of any archaeological remains affected.

11.4.4 OPERATION PHASE

The operation phase of the project introduces permanent wind turbine structures and associated infrastructure into the landscape.

Unlike the construction phase, operational effects do not involve ground disturbance and therefore do not give rise to direct physical effects on the archaeological fabric. Operational effects relate primarily to indirect and setting-based pathways.

This section assesses the likely significant operational effects on cultural heritage receptors identified within the relevant study areas defined in **Section 11.2.1** using the methodology outlined at **Section 11.2**.

The underground electricity line will not give rise to ongoing direct effects on archaeological heritage during operation. The electricity substation will introduce additional built infrastructure; however, no significant operational effect on the setting or significance of identified cultural heritage receptors is predicted.

11.4.4.1 Pathways

Potential operational phase effects arise through the following pathways:-

- Introduction of vertical built elements within the landscape;

- Alteration of skyline character and distant horizon views;
- Incremental change to the perception of rural landscape character;
- Potential influence on experiential qualities of archaeological landscapes; and,
- Cumulative interaction with other wind energy developments (addressed in **Section 11.4.6**).

No operational activities involve excavation, peat removal or ground disturbance. Accordingly, no operational direct physical impacts on recorded archaeological monuments or architectural heritage fabric are predicted.

Operation phase effects, where identified, are long-term in duration and will persist for the operational lifespan of the wind farm. Operational effects on heritage setting are reversible, as the removal of turbines at the end of the operational period would restore the baseline visual conditions.

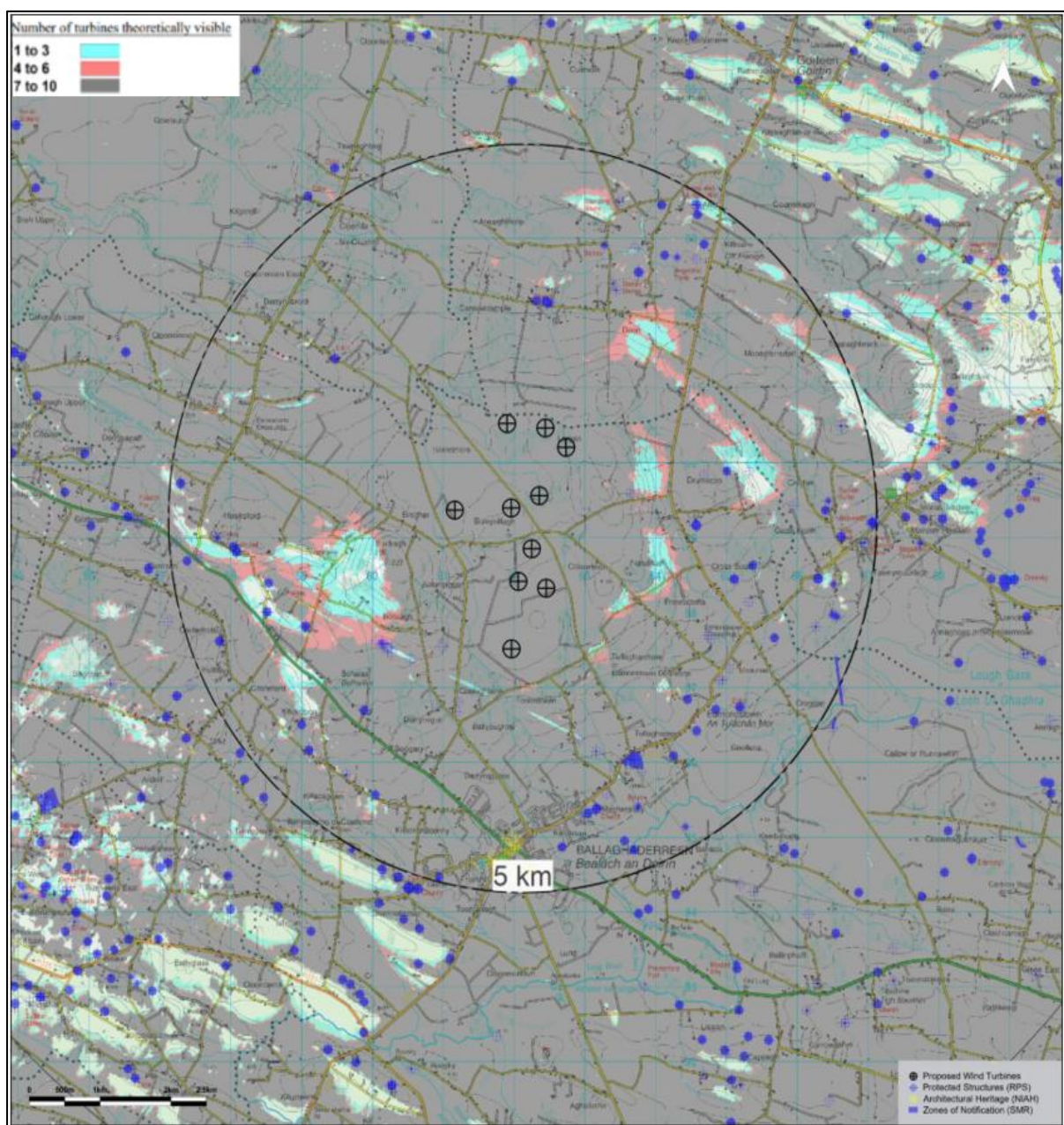


Figure 11.7(a): ZTV with Cultural Heritage Overlay (RMP sites within 5km radius)

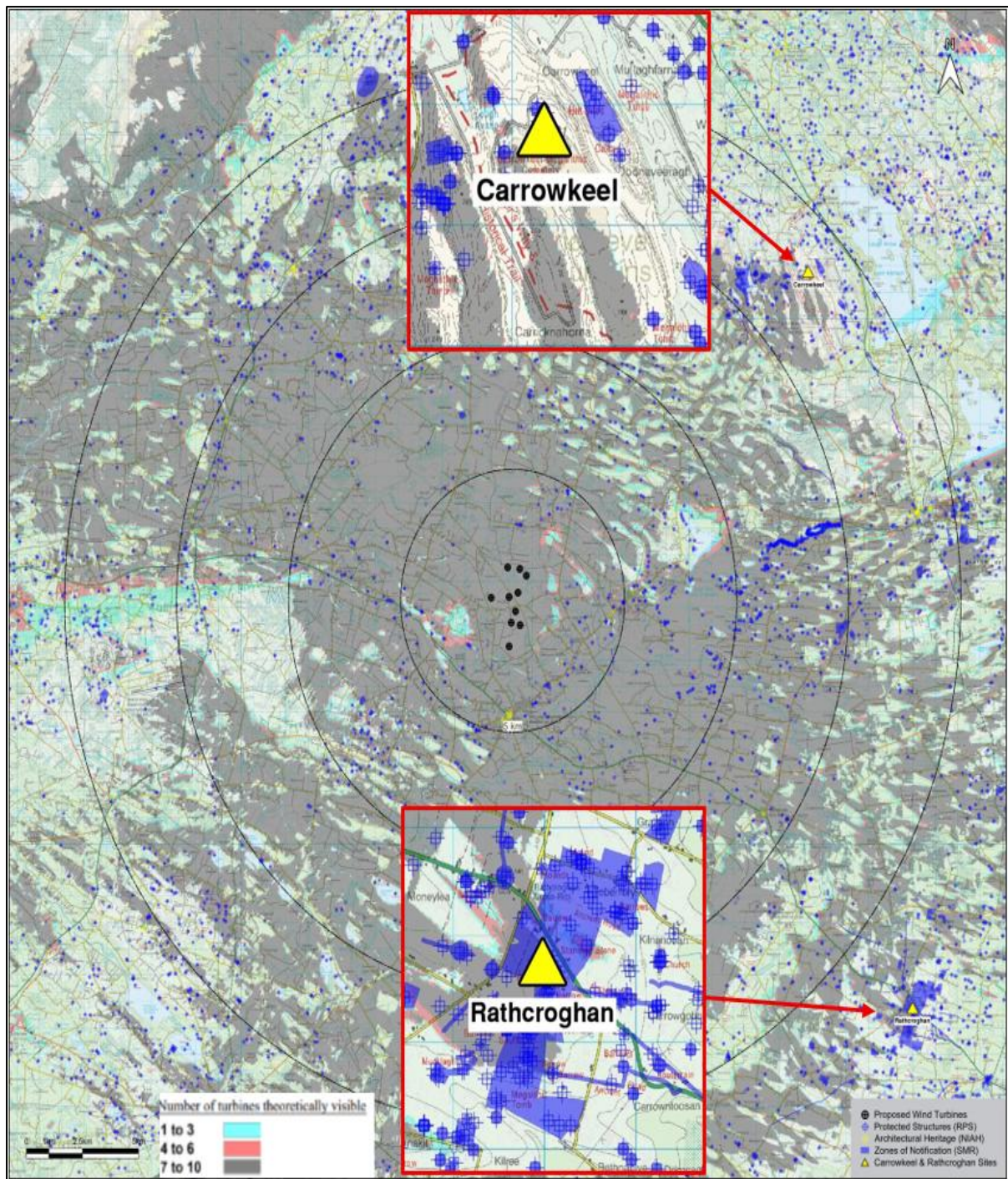


Figure 11.7(b): ZTV with Carrowkeel and Rathcroghan mapped (25km radius)

11.4.4.2 Assessment Approach

The operation phase assessment is structured on a receptor-led basis and addresses:-

- Archaeological assets within the 2km study area;
- Strategic archaeological landscapes, including Rathcroghan and Carrowkeel; and,
- Architectural heritage receptors where setting contributes to significance.

For each receptor, the assessment follows the consistent sequence of:-

Receptor description → Sensitivity → Key attributes → Nature of change → Magnitude of change → Significance of effect → Embedded design → Mitigation → Residual effect.

This structured approach ensures transparency and consistency across all operational phase assessments.

Embedded design measures that have informed the scheme layout and reduced the likelihood of cultural heritage effects are described at **Section 11.5**.

11.4.4.3 Relationship to Landscape Assessment

The assessment of operational setting effects has been informed by:-

- ZTV mapping;
- Verified photomontage viewpoints;
- Field verification of representative views; and,
- Landscape character analysis undertaken as part of the Landscape chapter (**Chapter 10**).

This heritage-specific assessment has focused on whether operational visibility results in a material alteration of attributes contributing to heritage significance rather than visibility alone.

11.4.4.4 Operational Effects on Archaeological Assets within the 2km Study Area

Receptor Description

An assessment of individual archaeological receptors listed in **Table 11.6** has been undertaken using the methodology outlined in **Section 11.2**.

Archaeological assets within the 2km study area comprise recorded monuments listed in the RMP, together with any additional archaeological features identified through desk-based assessment and field inspection.

No recorded monuments or national monuments occur within the direct development footprint. Accordingly, no operational phase effects relating to direct physical impact on known archaeological fabric are predicted.

Recorded monuments within the 2km study area, including enclosure sites (e.g. RO008-001, RO008-005001–003), burnt mound complexes (RO008-071–073) and dispersed settlement-related features, are located outside the development footprint and at distances where operational phase effects are limited to potential changes in distant visual context. Given the scale of the receiving landscape, intervening topography and the non-skyline dominance of turbines from these locations, no material alteration of key attributes contributing to the archaeological significance of these local recorded monuments is predicted and therefore no likely significant effect arises. Operational effects on these receptors are therefore assessed as slight and not significant.

Sensitivity

Recorded monuments within the 2km study area are assessed as possessing High sensitivity, reflecting statutory protection under the National Monuments Acts and their contribution to the archaeological landscape.

Sensitivity assessment has considered:-

- statutory designation and legal protection;
- archaeological significance and research potential;
- contribution to local and regional archaeological landscape character; and,
- dependence on landscape setting and spatial relationships.

Key Attributes Relevant to Assessment

The operation phase assessment focuses on attributes relating primarily to setting rather than physical integrity. Relevant attributes include:-

- visual and spatial relationships with surrounding landscape;
- topographic context and visibility;
- experiential qualities associated with landscape setting; and,
- contribution to archaeological landscape coherence.

Nature of Operational Phase Change

Operation phase change arises through the presence of wind turbines within the wider landscape context.

Potential pathways for effect include:-

- introduction of vertical structures within distant views;
- alteration to skyline character in certain directional views; and,
- perceptual change within the wider rural landscape.

No operational activities involve ground disturbance or direct interaction with archaeological fabric.

Magnitude of Change

Magnitude of change for archaeological assets within the 2 km study area is assessed as Negligible to Low, based on:-

- separation distances between recorded monuments and wind turbines;
- absence of direct physical interaction;
- large-scale landscape context capable of accommodating distant vertical elements; and,
- retention of primary spatial relationships between archaeological features and their immediate topographic setting.

Significance of Effect

Combining a High sensitivity with a Negligible to Low magnitude results in effects assessed as Not Significant to Slight, and therefore Not Significant in EIA terms.

Embedded design measures

Embedded design considerations contributing to a reduction of likely effects include:-

- avoidance of recorded monuments during site layout and turbine siting;
- maintenance of appropriate separation distances; and,
- integration with landscape design parameters assessed within the Landscape chapter.

Mitigation Measures

Embedded design measures together with Mitigation Measures M-01 to M-05 (**Section 11.6**) ensure that residual operational effects remain Not Significant in EIA terms.

Residual Effect

Following implementation of embedded design and mitigation measures, residual operational effects on archaeological assets within the study area are assessed as Slight and Not Significant.

10.4.4.5 Effects on Rathcroghan Archaeological Landscape

Receptor Description

The Rathcroghan archaeological landscape represents a dispersed ceremonial complex of national and potential international significance, characterised by a network of monuments whose significance derives from spatial relationships, topography and intervisibility across a broad upland and lowland landscape.

The landscape is included within Ireland's UNESCO Tentative List, reflecting recognition of potential OUV associated with its ceremonial and territorial organisation. Unlike localised monument groupings, the archaeological significance of Rathcroghan derives primarily from its dispersed ceremonial spatial organisation and internal monument relationships rather than reliance on uninterrupted horizon or skyline dominance extending across the full regional landscape.

Sensitivity

The sensitivity of the Rathcroghan archaeological landscape is assessed as Very High, based on:-

- National archaeological significance and research importance;
- Inclusion on the UNESCO Tentative List;
- Strong reliance on landscape setting and spatial relationships as key attributes of significance; and,
- High interpretative and experiential value.

Key Attributes Relevant to Assessment

The following attributes contribute to the heritage significance of the receptor and have informed the assessment:-

- Broad landscape-scale spatial organisation;
- Topographic relationships between monuments and surrounding terrain;

- Perception of openness and large-scale landscape context;
- Experiential qualities associated with movement through landscape; and,
- Visual relationships contributing to ceremonial interpretation.

Nature of Operation Phase Change

Operation phase change arises primarily from the introduction of wind turbine structures within the wider landscape context (see **Annex 10.2**).

Potential pathways for effect include:-

- Introduction of vertical built elements within distant views;
- Alteration of skyline character in certain directional views; and,
- Potential change to experiential perception of landscape scale.

No direct physical impacts on archaeological fabric are predicted.

Magnitude of Change

The magnitude of change is assessed as Low, based on:-

- Significant separation distance between turbines and core archaeological features;
- Large-scale landscape character capable of absorbing change;
- Absence of direct interference with known alignments or key topographic relationships; and,
- Turbine visibility occurring at distance within a broader visual field rather than dominating immediate setting.

Significance of Effect

Combining a Very High sensitivity ranking with a Low magnitude of change results in a Slight effect, which is assessed as Not Significant in EIA terms.

Embedded design measures

Embedded design considerations relevant to this receptor include:-

- Avoidance of known archaeological constraints during turbine siting;
- Integration with landscape design parameters assessed through the Landscape chapter; and,
- Maintenance of separation distance from key heritage features.

Mitigation Measures

Embedded design measures together with Mitigation Measures M-01 to M-05 (**Section 11.6**) ensure that residual operational effects remain Not Significant in EIA terms.

Residual Effect

Following implementation of embedded design and mitigation measures, residual operational effects on the Rathcroghan archaeological landscape are assessed as Slight and Not Significant.

11.4.4.6 Effects on the Carrowkeel Passage Tomb Landscape

Receptor Description

The Carrowkeel passage tomb landscape comprises a Neolithic ceremonial complex located within an upland topographic setting characterised by strong relationships between monument placement, ridgeline horizons and surrounding landscape morphology.

Unlike dispersed ceremonial landscapes, the significance of Carrowkeel derives primarily from localised topographic positioning, skyline relationships and monument-to-horizon alignments that form part of its cosmological and ceremonial interpretation.

The landscape is included within Ireland's UNESCO Tentative List, reflecting recognition of potential OUV.

Sensitivity

The sensitivity of the Carrowkeel passage tomb landscape is assessed as Very High, based on:-

- National archaeological significance;
- Inclusion within the UNESCO Tentative List;
- Strong dependence of significance on topographic and visual relationships; and,
- High experiential and symbolic landscape value.

Key Attributes Relevant to Assessment

The following attributes contribute to the heritage significance of the receptor and have informed the assessment:-

- Monument placement relative to ridgeline and horizon profiles;
- Visual relationships between tombs and surrounding upland landscape;
- Perception of skyline clarity and topographic dominance;
- Experiential qualities associated with elevation and panoramic views; and,
- Archaeological coherence of the upland ceremonial landscape.

Nature of Operation Phase Change

Operational phase change arises through potential visibility of wind turbine structures within distant landscape views (see **Annex 10.2**).

Potential pathways for effect include:-

- Introduction of vertical elements within wider landscape views;
- Localised alteration of distant skyline perception; and,
- Potential change to experiential perception of remote upland setting.

No direct physical effects on archaeological fabric are predicted.

Magnitude of Change

Magnitude of change is assessed as Low, based on:-

- Separation distance between development and monument cluster;
- Absence of direct interference with primary topographic relationships; and,
- Turbine visibility occurring at distance within wider landscape context;

Significance of Effect

Combining a Very High sensitivity ranking with Low magnitude results in a Slight effect, assessed as Not Significant in EIA terms.

Embedded design measures

Embedded design considerations relevant to this receptor include:-

- Avoidance of development within core archaeological landscape;
- Integration with landscape design principles assessed through the Landscape chapter; and,
- Maintenance of separation distances from sensitive ridgeline contexts.

Embedded design measures together with Mitigation Measures M-01 to M-05 (**Section 11.6**) ensure that residual operational effects remain Not Significant in EIA terms.

Residual Effect

Residual operational effects on the Carrowkeel passage tomb landscape are assessed as Slight and Not Significant.

11.4.4.7 Effects on Architectural Heritage and Built Heritage Setting

No Protected Structures or NIAH sites are located within the project site.

Architectural heritage assets within surrounding settlements, including Ballaghaderreen and dispersed rural structures, are sufficiently distant from the project such that:-

- turbines form distant landscape elements;
- key architectural settings remain legible; and,
- historic settlement patterns are not materially altered.

Embedded design measures together with Mitigation Measures M-01 to M-05 (**Section 11.6**) ensure that residual operational effects remain Not Significant in EIA terms.

11.4.4.8 Effects on Landscape-Scale Heritage Setting

Operation phase effects on cultural heritage arise primarily through the introduction of vertical structures into a previously open upland landscape and the resulting change to visual relationships across the wider setting. Assessment at the landscape scale provides an essential interpretative framework for understanding how these changes may influence heritage significance before considering effects on specific receptors.

The wider receiving environment is characterised by expansive upland terrain, extensive peatland cover and relatively open horizons. Such landscapes often derive

cultural value not from dense concentrations of archaeological remains but from spatial relationships, experiential qualities and the legibility of topographic form. The wind turbines introduce new elements within this landscape context, potentially altering aspects of skyline character, perceived scale and the visual rhythm of upland ridgelines.

The landscape-scale assessment therefore considers:-

- the extent to which turbines are theoretically visible across the wider landscape;
- their relationship to topographic features and existing landform;
- whether turbines appear as isolated elements or as part of broader landscape composition; and,
- the degree to which openness and horizon relationships contribute to heritage understanding.

ZTV mapping indicates that theoretical visibility extends across portions of the wider region; however, actual visibility is moderated by local topography, vegetation and distance. Within many areas of the landscape, turbines will be experienced as distant features rather than dominant foreground elements. Consequently, while operation phase change may introduce perceptible visual alteration, this does not necessarily translate into significant heritage effect.

From a heritage perspective, landscape sensitivity arises where views contribute directly to understanding archaeological significance or where spatial relationships between monuments and landscape form part of cultural meaning. In the present case, landscape-scale sensitivity is influenced by proximity to regionally significant archaeological complexes including the Rathcroghan landscape and the Carrowkeel passage tomb landscape. These areas derive part of their significance from experiential qualities associated with openness, visibility and the perception of surrounding terrain.

The assessment indicates that the project does not occupy or intrude upon core ceremonial landscapes associated with these complexes. Turbines are located within a separate upland context and are experienced primarily at long or intermediate distances from key heritage receptors. As a result, while turbines may be visible within certain views, they do not fundamentally alter the spatial relationships or topographic associations that underpin archaeological interpretation.

The introduction of turbines therefore represents a perceptible but limited landscape-scale change. The magnitude of this change is moderated by distance, topographic separation and the existing character of upland terrain, which already accommodates elements of modern land use and infrastructure.

At a landscape scale, operation phase effects are therefore assessed as Low magnitude change resulting in Slight adverse effects that are Not Significant in EIA terms.

11.4.4.9 Cumulative Effects

Cumulative assessment considers the combined visual presence of the project alongside other existing or permitted wind energy developments within the wider region, including the adjacent Largan Hill Wind Farm.

While cumulative visibility may increase the perception of wind energy infrastructure within the broader landscape, the assessment indicates that:-

- individual heritage landscapes retain their defining characteristics;
- spatial relationships fundamental to heritage significance remain appreciable; and,
- cumulative change does not fundamentally alter cultural meaning or archaeological interpretation.

Cumulative operational effects are therefore assessed as Slight adverse and Not Significant.

11.4.4.10 Summary of Operation Phase Effects

Operation phase effects arise primarily through indirect changes to landscape setting and visual context.

Key conclusions are:-

- No direct effects on known archaeological fabric or built heritage;
- Visual presence introduces limited landscape change; and,
- Core attributes contributing to heritage significance remain appreciable.

Any effects are assessed as slight, adverse, long-term and not significant. No likely significant adverse operational effects on archaeological, architectural or cultural heritage are predicted.

Receptor	Sensitivity	Operational Effect Pathway	Magnitude of Change	Significance of Effect	Embedded Design / Mitigation	Residual Effect
Recorded archaeological monuments (RMP) within 2km study area	High	Indirect setting change; distant visibility	Negligible–Low	Not Significant to Slight	Avoidance through design; archaeological mitigation strategy	Not Significant
Rathcroghan Archaeological Landscape	Very High	Landscape-scale setting change; distant skyline presence; cumulative context	Low	Slight (Not Significant)	Landscape-scale separation; design-led avoidance, separation distance; integration within Landscape chapter	Not Significant
Carrowkeel Passage Tomb Landscape	Very High	Landscape-scale setting change; distant skyline presence; cumulative context	Low	Slight (Not Significant)	Landscape-scale separation; design-led avoidance, separation distance; integration within	Not Significant

					Landscape chapter	
National Monument receptors	High–Very High	Indirect setting effects only	Negligible–Low	Not Significant to Slight	Avoidance buffers; standard mitigation	Not Significant
Architectural heritage receptors (RPS/NIAH)	Medium–High	Perceptual landscape change; distant visibility	Negligible–Low	Not Significant	Design layout; landscape integration	Not Significant

Table 11.10: Summary of Operation Phase Effects

11.4.5 DECOMMISSIONING PHASE

The decommissioning phase represents the potential future removal of wind turbines and associated infrastructure at the end of the operational lifespan of the project.

The precise methodology for decommissioning will be determined at that time in accordance with applicable legislation and best practice guidance. However, decommissioning activities are assumed to involve:-

- removal of turbine structures and above-ground infrastructure;
- potential removal or retention of access tracks;
- localised excavation associated with foundation removal or modification; and,
- restoration or reinstatement of disturbed areas.

Decommissioning of the electricity substation and underground electricity line would principally affect areas previously disturbed during construction. Where any new ground disturbance is required outside the previously disturbed footprint, the archaeological mitigation measures set out in **Section 11.6** will apply.

The assessment of decommissioning effects has been undertaken on a precautionary basis and considers worst-case reasonable scenarios.

Decommissioning phase effects are assessed to be temporary, short-term and fully reversible in nature following removal of infrastructure and site reinstatement.

11.4.5.1 Sources of Likely Effects

Decommissioning activities which may affect cultural heritage include:-

- removal of turbine components and crane hardstandings;
- excavation associated with removal or partial removal of foundations;
- removal or retention of underground cables depending on agreed strategy;
- reinstatement of access tracks and disturbed ground; and,
- restoration of peatland or upland habitats.

Ground disturbance associated with these activities may present a residual risk to previously unidentified archaeological remains, particularly in areas where

infrastructure removal requires excavation below existing ground levels. However, given that these areas will have experienced ground disturbance during the construction phase, effects are assessed as unlikely to occur.

11.4.5.2 Effects on Known Archaeological Assets

No recorded archaeological monuments occur within the main wind farm site.

Decommissioning activities are therefore not predicted to result in direct physical impacts on known archaeological assets, provided works remain within the established development footprint.

Indirect setting effects during decommissioning are temporary and limited in duration and are therefore assessed as Imperceptible to Not Significant.

11.4.5.3 Effects on Previously Unrecorded Archaeology

As with construction activities, the potential exists for previously unrecorded archaeological remains to survive within peatland or upland deposits.

Ground disturbance associated with removal works could result in damage to such remains if present. However, any archaeological mitigation implemented during construction will have reduced uncertainty regarding archaeological potential within disturbed areas.

Furthermore:-

- disturbance will occur primarily within previously developed footprints; and,
- archaeological monitoring protocols established during construction can be extended to decommissioning works where required.

The magnitude of likely impact on unknown archaeology during decommissioning is therefore assessed as Low, with effects considered Not Significant following mitigation.

11.4.5.4 Effects on Heritage Setting

Temporary visual and sensory change associated with removal activities may occur during the decommissioning phase. These effects are assessed to be short-term and reversible.

The removal of turbines and associated infrastructure is likely to restore aspects of landscape openness and skyline character. Consequently, long-term effects on heritage setting following completion of decommissioning works are assessed to be neutral or beneficial.

Decommissioning phase effects on heritage setting are therefore assessed as Imperceptible to Slight beneficial.

11.4.5.5 Cumulative Effects

Cumulative decommissioning effects have been considered alongside other wind energy developments and associated infrastructure including the electricity substation and underground electricity line.

As decommissioning reduces built elements within the landscape, cumulative effects are assessed as Neutral to Positive.

11.4.5.6 Mitigation Measures

Standard archaeological mitigation measures described in **Section 11.6** will apply where ground disturbance occurs during decommissioning.

These include:-

- archaeological monitoring of ground disturbance;
- stop-work procedures for archaeological discoveries; and,
- compliance with statutory licensing requirements.

11.4.5.7 Summary of Decommissioning Phase Effects

Following implementation of mitigation measures, residual decommissioning effects on cultural heritage are assessed as temporary, adverse and not significant.

11.4.6 CUMULATIVE EFFECTS

11.4.6.1 Introduction

Cumulative effects arise where a project interacts with other existing, permitted or proposed developments such that the combined effects may differ from those of the proposed development alone.

In accordance with EPA (2022) Guidelines, the cumulative assessment considers existing, permitted and proposed developments identified within the wider EIAR cumulative assessment, where these may contribute to overlapping effect pathways affecting cultural heritage receptors. These include operational, permitted and proposed wind energy developments, together with other infrastructure and development projects where relevant to the cultural heritage assessment.

Of particular relevance to the cultural heritage assessment are the permitted N5 Ballaghaderreen to Scramoge Road development and the permitted North Connacht 110 kV Project, comprising approximately 59 km of underground electricity line and associated works.

The remaining developments identified within the wider EIAR cumulative assessment have also been reviewed for their potential to contribute to cumulative cultural heritage effects. Having regard to their nature, location, scale and potential effect pathways, no additional significant cumulative cultural heritage effects have been identified.

Although the electricity substation and underground electricity line will progressed under a separate consenting process, it forms part of the broader energy infrastructure context and has therefore been included within cumulative assessment to ensure a comprehensive evaluation of likely effects.

The assessment has been undertaken using the sensitivity, magnitude and significance methodology described in **Section 11.2.5**.

Separately, the visibility of multiple wind energy developments does not in itself constitute a significant cultural heritage effect; the assessment has therefore focused on whether cumulative visibility results in material alteration of attributes contributing to heritage significance.

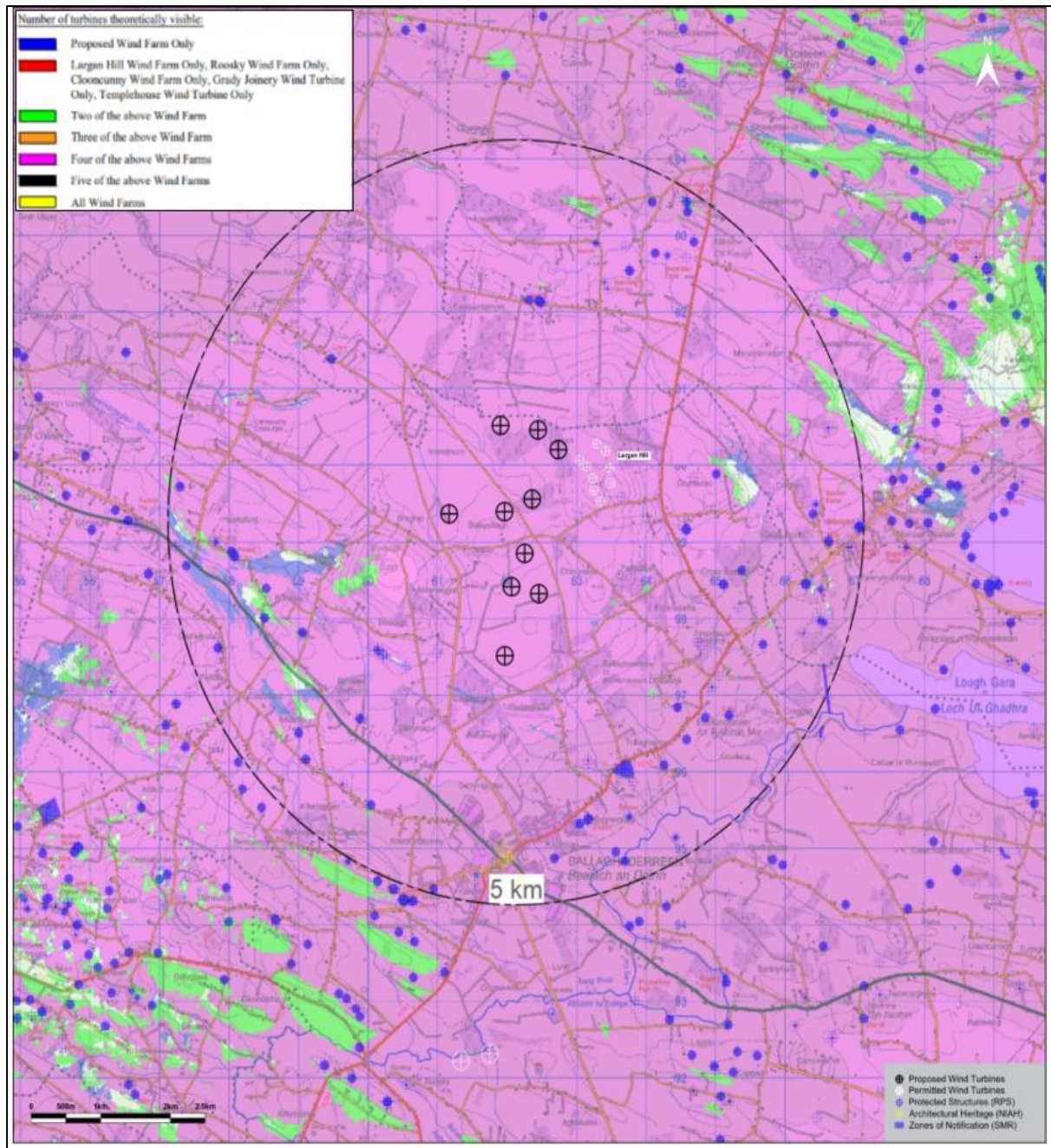


Figure 11.8(a): Cumulative ZTV map of permitted and proposed wind farms with cultural heritage features and 5km radius indicated

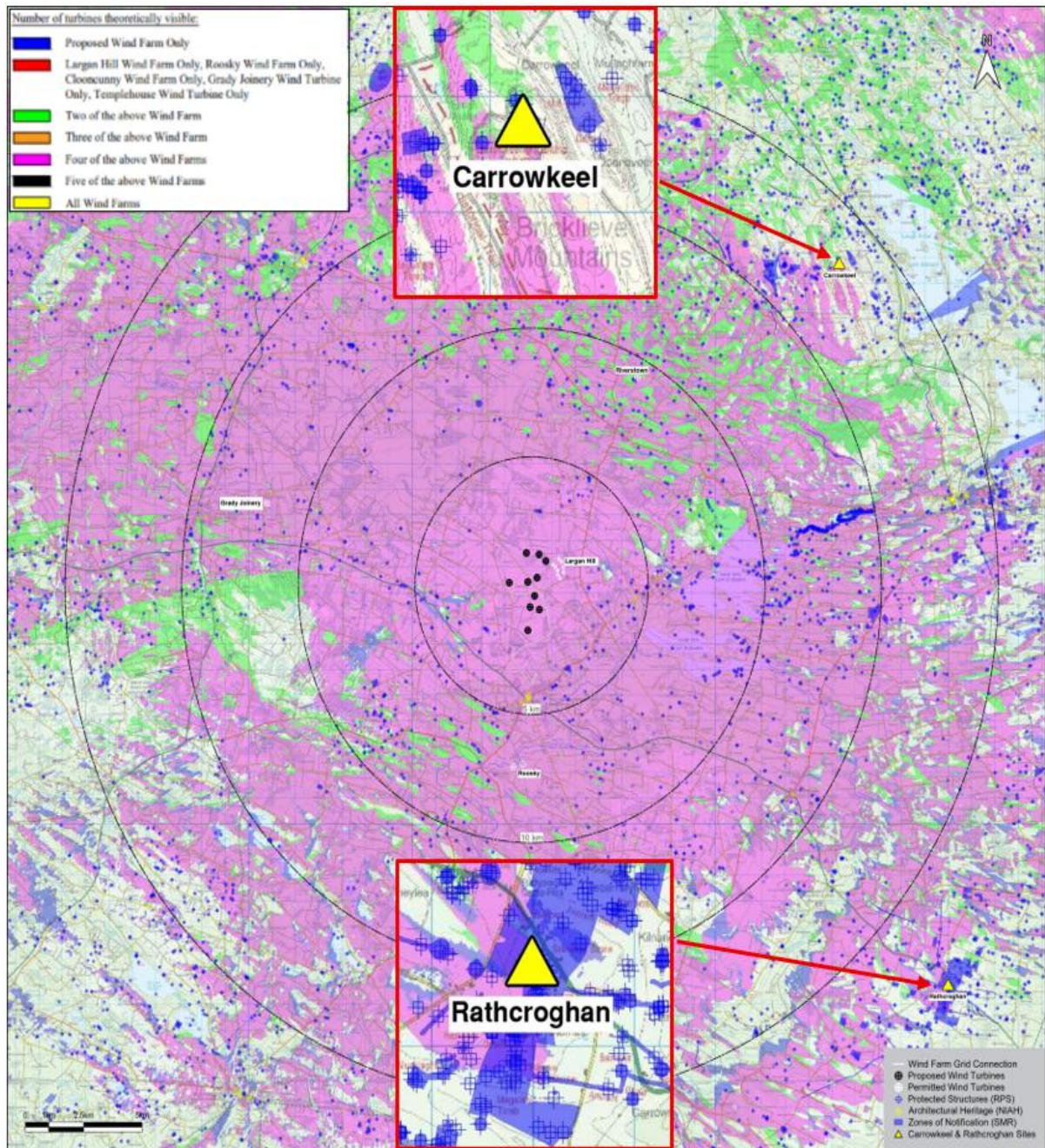


Figure 11.8(b): Cumulative ZTV map of permitted and proposed wind farms with Carrowkeel and Rathcroghan mapped (25km radius)

11.4.6.2 Cumulative Effect Pathways

Cumulative effects may arise through:-

- Incremental introduction of vertical structures within landscape views;
- Increased perception of wind energy development within sensitive archaeological landscapes;
- Combined skyline effects resulting from multiple turbine arrays;
- Additional ground disturbance associated with linear infrastructure such as grid connection works; and,

- Perceptual changes affecting experiential qualities of heritage landscapes.

No cumulative pathways relating to direct physical impacts on recorded archaeological monuments are identified within the development footprint.

11.4.6.3 Cumulative Effects on Archaeological Assets within the 2km Study Area

Receptor Description

Archaeological assets include recorded monuments listed in the RMP and undesignated archaeological features identified during assessment.

Sensitivity is assessed as High, reflecting statutory protection and archaeological significance.

Nature of Cumulative Change

Cumulative change may arise from:-

- Increased visibility of wind turbines from multiple schemes within wider landscape views; and,
- Incremental alteration to rural landscape character.

The electricity substation and underground electricity line introduces a likely additional pathway through linear ground disturbance; however, as this infrastructure is proposed to be located within the corridor of the public road network and is not located proximate to any recorded archaeological features, cumulative physical effects on archaeological assets are assessed to be Slight and are manageable through standard archaeological safeguards.

The N5 Ballaghaderreen to Scramoge Road Development has potential to contribute to cumulative archaeological effects through ground disturbance within the wider archaeological landscape. Archaeological investigations undertaken in association with the N5 road schemes have demonstrated the presence of previously unrecorded subsurface archaeological remains within the wider region, as discussed in **Section 11.3.4**. However, archaeological effects associated with the respective developments would be principally localised to their construction footprints and would not result in a combined direct effect on the same known archaeological receptors.

The North Connacht 110kV Project comprises approximately 59km of underground electricity line and associated works. Likely cumulative archaeological effects would similarly relate principally to construction-related ground disturbance. Given the linear and localised nature of this effect pathway, no combined direct effect on known archaeological receptors has been identified.

Magnitude of Cumulative Change

Magnitude is assessed as Negligible to Low, based on:-

- Absence of direct overlap between development footprints and recorded monuments;
- Separation distances maintained through design; and,
- Localised and reversible nature of electricity substation and electricity line groundworks.

Significance of Cumulative Effect

High sensitivity combined with Negligible to Low magnitude results in Not Significant to Slight cumulative effects.

11.4.6.4 Cumulative Effects on the Rathcroghan Archaeological Landscape

Sensitivity

Very High.

Nature of Cumulative Change

Likely cumulative effects arise from:-

- Visibility of multiple wind energy developments within the wider ceremonial landscape envelope; and,
- Incremental introduction of vertical elements within distant horizon views.

The electricity substation and underground electricity line does not introduce additional operational vertical elements and therefore does not materially increase cumulative setting effects.

Magnitude of Cumulative Change

Magnitude is assessed as Low, based on:-

- Retention of landscape-scale openness;
- Absence of enclosure or visual dominance; and,
- Preservation of primary spatial relationships underpinning ceremonial landscape interpretation.

Significance

Slight cumulative effect — Not Significant.

11.4.6.5 Cumulative Effects on the Carrowkeel Archaeological Landscape

Sensitivity

Very High.

Nature of Cumulative Change

Likely cumulative change relates to incremental visibility of turbines within distant panoramic views.

The electricity substation and underground electricity line does not materially affect key topographic or horizon relationships.

Magnitude of Cumulative Change

Magnitude is assessed as Low, based on:-

- Retention of landscape-scale openness;
- Absence of enclosure or visual dominance; and,

- Preservation of primary spatial relationships underpinning ceremonial landscape interpretation.

Significance

Slight cumulative effect — Not Significant.

11.4.6.6 Cumulative Effects on the Architectural Heritage

Sensitivity ranges from Medium to High.

Combined presence of multiple wind farms results in Negligible to Low magnitude change due to:-

- distance from receptors;
- retention of immediate architectural setting; and,
- absence of direct physical interaction.

The electricity substation and underground electricity line represent temporary ground disturbance and are not predicted to materially alter architectural heritage setting.

The resulting cumulative effect is assessed to be Not Significant.

11.4.6.7 Overall Cumulative Conclusion

Largan Hill Wind Farm is located in close proximity to the project and is already an established component of the contemporary landscape. The proposed turbines would therefore be perceived in association with an existing wind energy development rather than introducing a new or isolated element into previously undeveloped views.

Assessment of the ZTV mapping and field verification indicates that cumulative visibility from heritage receptors within the wider regional landscape would generally occur at considerable distance within a large-scale upland setting. The combined presence of turbines associated with both developments would not materially alter key attributes contributing to the significance of archaeological landscapes including Rathcroghan or the Carrowkeel passage tomb complex.

Cumulative cultural heritage effects arising from project (including electricity substation and electricity line) in combination with other existing, permitted and proposed developments are assessed as slight, adverse, long-term and not significant. No likely significant cumulative adverse effects on archaeological, architectural or cultural heritage are predicted.

11.5 EMBEDDED DESIGN MEASURES

Embedded design measures refer to elements of the project that have been incorporated into the design process to avoid or minimise likely effects on a particular resource from the outset. These measures form part of the project design and are therefore considered inherent to the scheme rather than additional mitigation introduced in response to identified effects.

In accordance with best practice in, avoidance represents the preferred approach to managing likely effects on cultural heritage. The design process has therefore taken account of archaeological sensitivity, landscape character and heritage setting considerations identified through baseline assessment and early consultation.

11.5.1 AVOIDANCE OF KNOWN ARCHAEOLOGICAL CONSTRAINTS

The layout of the main wind farm infrastructure has avoided direct impact on known recorded monuments within the upland site area. Turbines, hardstandings, access tracks and associated infrastructure have been positioned so as to avoid direct interaction with known archaeological sites within the principal development footprint.

Archaeological constraints arise within the southern part of the site boundary at the junction of the N5 and R293, where temporary road upgrade works occur in proximity to a known monument complex comprising RO008-023, RO008-023001, RO008-023002 and RO008-065. In this area, works have been limited to the existing road corridor in order to minimise disturbance; however, complete avoidance of archaeological sensitivity is not possible.

Localised road carriageway widening is also required along the turbine delivery route, including the approach to turbine T10, where a small, unrecorded stone bridge is present. These works have similarly been largely confined to existing road corridors to minimise impact.

Road carriageway widening works intersect historic townland boundaries between Toobrackan and Tullaghanrock and between Cloonmeen and Boleysillagh. These boundaries are expressed in the modern landscape through roadside features and field divisions which have been subject to modification over time. The proposed works have been designed to follow existing road alignments and minimise removal of boundary features; however, limited localised disturbance to these boundaries is unavoidable.

11.5.2 CONSIDERATION OF LANDSCAPE-SCALE HERITAGE SENSITIVITY

The design evolution has also considered landscape-scale heritage sensitivity, particularly in relation to heritage setting and visual relationships.

Embedded measures include:-

- selection of turbine locations within upland areas that are physically and spatially distinct from core ceremonial landscapes;
- maintenance of separation distances between turbines and key heritage receptors; and,
- avoidance of placement within prominent archaeological skyline contexts associated with significant monuments.

These decisions reduce the likelihood that turbines would interfere with spatial relationships or experiential qualities contributing to heritage significance.

11.5.3 INTEGRATION WITH LANDSCAPE AND VISUAL DESIGN

The project design has been informed by landscape and visual considerations, which indirectly support cultural heritage protection.

Relevant embedded measures include:-

- clustering of turbine locations to avoid dispersal across the wider landscape;
- avoidance of visually intrusive alignment patterns that could create continuous skyline effects; and,
- use of a coherent turbine design and layout to minimise visual complexity.

Such measures reduce the likelihood of cumulative or dominant visual effects that could adversely affect heritage setting.

11.5.4 PEATLAND CONTEXT AND INFRASTRUCTURE DESIGN

Recognition of the peatland environment has influenced infrastructure design and routing.

Embedded measures include:-

- routing of access tracks and services to follow existing landform where practicable;
- minimisation of new ground disturbance through careful layout and design planning; and,
- avoidance of areas where peatland preservation conditions may indicate higher archaeological potential were identified during early assessment.

These measures reduce the likelihood of significant adverse effects on previously unidentified archaeological remains.

11.5.5 EMBEDDED MEASURES AND RESIDUAL RISK

The embedded design measures outlined above significantly reduce the likelihood of adverse cultural heritage effects prior to application of additional mitigation measures. In particular, the avoidance of known archaeological assets and consideration of landscape-scale sensitivity ensure that predicted effects relate primarily to indirect setting effects rather than direct physical disturbance.

Embedded design has reduced the likelihood of archaeological impact through avoidance of known monuments within the main wind farm site and by restricting road improvement works to existing transport corridors. However, residual risk remains at the junction of the N5 and R293, along the approach to turbine T10, and at locations where road widening intersects historic townland boundaries. These areas will be subject to targeted archaeological mitigation as set out in **Section 11.6**.

11.6 MITIGATION MEASURES

Mitigation measures have been developed to avoid, reduce or manage potential effects on cultural heritage identified during the assessment process. These measures build upon the embedded design principles described in **Section 11.5** and reflect consultation responses received from statutory authorities, including guidance issued by the Department of Housing, Local Government and Heritage (DHLGH). The principal area of archaeological risk relates to ground disturbance and temporary road upgrade works along sections of the turbine delivery route, particularly within the southern part of the site boundary at the junction of the N5 and R293.

The mitigation strategy adopts a precautionary and proportionate approach consistent with Irish archaeological practice. Measures are structured to address:-

- likely effects on previously unrecorded archaeological remains;
- protection of archaeological context during construction; and,
- compliance with statutory licensing and reporting procedures.

11.6.1 PRE-CONSTRUCTION

In advance of construction, and where site conditions are suitable, targeted non-intrusive geophysical survey will be undertaken to further inform archaeological risk assessment within areas of proposed ground disturbance.

Survey methods may include magnetometry and, where appropriate, Ground Penetrating Radar. The suitability and scope of survey will be determined having regard to peat depth, forestry cover, ground conditions and accessibility, and will be agreed in consultation with the National Monuments Service.

The purpose of geophysical survey is to:-

- identify potential sub-surface archaeological anomalies;
- refine the spatial extent of areas requiring further investigation; and,
- inform the scope and location of targeted advance archaeological testing.

Geophysical survey will be applied in a proportionate and risk-based manner and will inform, but not replace, advance archaeological testing where required.

Targeted advance archaeological testing shall be undertaken in the vicinity of the junction of the N5 and R293, where temporary junction upgrade works occur in proximity to recorded monuments RO008-023, RO008-023001, RO008-023002 and RO008-065. The extent and location of testing shall be targeted to areas of proposed ground disturbance and informed by the final construction design, existing ground conditions and the results of any preceding non-intrusive survey, where undertaken. Testing shall be carried out under the appropriate statutory license and in consultation with the National Monuments Service. The objectives of advance testing are to:-

- confirm the presence or absence of archaeological remains;
- determine their character, extent and state of preservation;
- inform refinement of mitigation strategy prior to construction; and,
- reduce residual archaeological risk and uncertainty.

Particular attention shall be given to areas where road carriageway widening intersects historic townland boundaries to identify any surviving boundary features of archaeological significance.

Where archaeological remains are identified, appropriate preservation in situ or preservation by record will be agreed in consultation with the National Monuments Service. Where necessary, micro-siting of turbines or associated infrastructure will be employed to avoid previously unidentified archaeological features which may be identified during pre-construction investigations.

11.6.2 CONSTRUCTION PHASE

All ground disturbance associated with the project shall be subject to archaeological monitoring by a suitably qualified archaeologist under licence issued by the National Monuments Service. This includes works within both previously undisturbed areas and existing road corridors.

Monitoring will apply to all elements of the project involving ground disturbance, including turbine foundation excavations, crane hardstandings, access track construction, approach road widening, drainage infrastructure, borrow pit

excavation, peat removal, electricity substation construction, electricity line installation, and all associated works.

Where archaeological features or deposits are identified, works in the immediate area will cease pending consultation with the National Monuments Service. Appropriate mitigation measures will then be implemented, which may include preservation in situ, preservation by record or controlled archaeological excavation.

Archaeological monitoring will:-

- identify previously unrecorded archaeological remains;
- ensure preservation by record where necessary;
- provide a real-time mitigation response in the event of discovery; and,
- ensure compliance with statutory obligations under the National Monuments Acts.

Particular attention shall be given to areas of road carriageway widening, including locations where works intersect historic townland boundaries, to identify and record any surviving boundary features of archaeological significance.

11.6.2.1 Procedure for Archaeological Discoveries

In the event of archaeological features or material being uncovered during the construction phase:-

- all machine work will cease in the immediate area to allow the archaeologist/s time to inspect and record any such material;
- if any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record; and,
- any further mitigation will require approval from the National Monuments Service of the Department of Housing, Local Government and Heritage (DoHLGH).

11.6.2.2 Protection of Known Heritage Assets

Although no recorded archaeological monuments occur within the direct wind farm footprint, precautionary measures shall be implemented to ensure protection of heritage assets within the wider study area.

These measures include:-

- a programme of detailed measured and photographic recording shall be undertaken in advance of any alteration, removal or modification of the unrecorded stone bridge along the turbine component haul route;
- avoidance of known archaeological constraints through established design layout;
- maintenance of appropriate separation distances during construction activities;
- marking of exclusion zones where required; and,
- contractor awareness briefings regarding heritage protection obligations and legal responsibilities.

These measures will ensure that indirect or accidental effects on known heritage assets are avoided.

11.6.3 OPERATION PHASE

Operation phase effects relate primarily to indirect setting-based pathways associated with the presence of turbine structures within the landscape.

Embedded design measures described in **Section 11.5** will ensure the avoidance of direct effects on the archaeological fabric and minimise likely setting effects through appropriate siting and layout.

As operational effects are assessed as Not Significant in EIA terms, no additional operation phase mitigation measures are required beyond embedded design and cumulative design considerations.

11.6.4 DECOMMISSIONING PHASE

Decommissioning activities are assumed to involve localised ground disturbance within areas previously subject to excavation during construction.

Archaeological monitoring shall be implemented during decommissioning where ground disturbance occurs, consistent with procedures applied during construction.

This approach will ensure that any previously unidentified archaeological remains are appropriately recorded and managed in accordance with statutory requirements.

11.6.5 MITIGATION SCHEDULE

The mitigation measures outlined above are summarised below to provide a clear framework for implementation during the project lifecycle.

Measure ID	Measure	Phase	Responsibility	Licensing / Deliverable
M-01	Pre-construction archaeological testing	Pre-construction	Developer/ Licensed Archaeologist	Archaeological Licensing & Testing Report with updated mitigation on results advised,
M-02	Archaeological monitoring of ground disturbance	Construction	Licensed Archaeologist	Monitoring Report
M-03	Archaeological discovery protocol	Construction	Contractor / Archaeologist	Notification to NMS
M-04	Protection measures for known heritage assets	Construction	Developer	Site Management Procedures
M-05	Archaeological monitoring during decommissioning	Decommissioning	Developer	Monitoring Report

Table 11.11: Mitigation Measures

11.6.6 ASSESSMENT OF CONFIDENCE

Confidence in the effectiveness of the mitigation strategy is considered to be High based on:-

- absence of known archaeological assets within the direct development footprint;

- comprehensive desk-based assessment of statutory datasets;
- field inspection and verification of site conditions; and,
- precautionary mitigation measures including pre-construction testing and archaeological monitoring.

It is assessed that the implementation of mitigation measures M-01 to M-05 will ensure that residual cultural heritage effects are reduced to Not Significant in EIA terms.

11.7 RESIDUAL EFFECTS

Residual effects represent the predicted impacts on cultural heritage following implementation of mitigation measures M-01 to M-05 outlined in **Section 11.6**.

The assessment of residual effects has been undertaken using the same sensitivity, magnitude and significance methodology described in **Section 11.2**.

Following implementation of mitigation and embedded design measures, no residual significant effects on archaeological, architectural or cultural heritage receptors are assessed as likely.

11.7.1 ARCHAEOLOGICAL HERITAGE

11.7.1.1 Direct Physical Effects

No effects on known archaeological sites are predicted within the main wind farm infrastructure footprint. Localised direct impacts associated with road carriageway widening works are fully mitigated through advance archaeological testing and monitoring. Embedded design measures will ensure avoidance of known archaeological assets, and mitigation measures including pre-construction investigation and archaeological monitoring provide safeguards against effects on previously unidentified remains.

Following implementation of mitigation measures:-

- direct effects on known archaeological sites are not assessed as likely; and,
- likely effects on previously unrecorded archaeology will be identified and managed in accordance with statutory procedures.

Residual effects on archaeological heritage are therefore assessed as Imperceptible to Slight and Not Significant.

Residual effects on historic townland boundaries are assessed as negligible to slight and not significant, reflecting the modified nature of these features and the localised extent of disturbance.

11.7.1.2 Unknown Archaeological Potential

Residual uncertainty relates to the possibility of undiscovered archaeological remains beneath peat or subsoil deposits. This uncertainty is inherent in upland archaeological assessment and has been addressed through a precautionary mitigation strategy including targeted investigation and monitoring.

Given the implementation of these measures, residual effects associated with unknown archaeology are assessed as likely to be **Not Significant**.

11.7.2 HERITAGE SETTING

Operation phase effects relate primarily to changes in landscape context and visual relationships rather than direct physical impact.

The assessment has demonstrated that:-

- turbines do not intrude into core ceremonial landscapes;
- key spatial relationships contributing to heritage significance remain legible; and,
- experiential qualities associated with major archaeological landscapes are retained.

Residual operational effects on heritage setting, including those associated with the Rathcroghan and Carrowkeel landscapes, are assessed as likely to be Slight adverse and Not Significant in EIA terms.

11.7.3 ARCHITECTURAL HERITAGE

No direct effects on Protected Structures or NIAH assets are predicted.

Operational visibility from architectural heritage receptors is limited to distant landscape views and does not materially alter the character or appreciation of built heritage assets.

Residual effects on architectural heritage are therefore assessed as likely to be Not Significant.

11.7.4 CUMULATIVE EFFECTS

The cumulative assessment indicates that while incremental visual presence of wind energy infrastructure may occur within the wider landscape, defining attributes of key archaeological landscapes remain appreciable and intact.

Residual cumulative effects are assessed as likely to be Slight adverse and Not Significant in EIA terms.

11.7.5 DECOMMISSIONING PHASE

Decommissioning activities may involve temporary ground disturbance; however, archaeological monitoring and established procedures for managing discoveries will apply.

The removal of turbines may result in neutral or beneficial outcomes in terms of heritage setting through restoration of landscape openness.

Residual effects during decommissioning are therefore assessed as likely to be Not Significant, with potential for slight beneficial effects.

11.7.6 SUMMARY

Following the implementation of embedded design measures and mitigation, any residual effects on archaeological, architectural and cultural heritage are assessed as likely to be slight, adverse and not significant. Residual operational setting effects are long-term in duration but do not give rise to likely significant adverse effects in EIA terms. Residual operational effects are assessed as likely to be long-term but reversible. Residual decommissioning effects are assessed as likely to be temporary, adverse and not significant.

11.8 CONCLUSION

This assessment has evaluated the likely effects of the project on archaeological heritage, architectural heritage and cultural heritage landscapes within the receiving environment. The assessment has been undertaken in accordance with relevant legislation, national guidance and established professional practice, incorporating a structured methodology based on receptor sensitivity, magnitude of change and significance of effect.

The receiving environment is characterised by a predominantly upland landscape with relatively low density of recorded monuments within the project proximity but increased regional sensitivity arising from proximity to significant archaeological landscapes including the Rathcroghan complex and the Carrowkeel passage tomb landscape.

11.8.1 SUMMARY OF ASSESSMENT FINDINGS

11.8.1.1 Archaeology

The project avoids direct effects on known archaeological monuments within the main wind farm infrastructure footprint. Localised direct effects will occur in association with road carriageway widening works along the turbine delivery route at the junction of the N5 and R293 where a known archaeological complex is present; however, these effects are fully mitigated through advance archaeological testing and monitoring.

11.8.1.2 Heritage Setting and Landscape Context

Operation phase effects relate primarily to indirect effects associated with landscape setting and visual change. The assessment demonstrates that while turbines may be theoretically visible from parts of the wider landscape, they do not intrude upon core ceremonial landscapes nor materially alter spatial relationships or experiential qualities contributing to heritage significance.

Localised disturbance to historic townland boundaries will occur along sections of the turbine component delivery route; however, these features are of low sensitivity and the overall historic landscape framework remains intact.

Likely effects on key archaeological landscapes, including Rathcroghan and Carrowkeel, are assessed as slight adverse and not significant in EIA terms.

11.8.1.3 Architectural Heritage

No direct effects on Protected Structures or NIAH assets are anticipated. Operational visibility of turbines within wider landscape views does not materially affect the character or appreciation of architectural heritage assets.

Residual effects on architectural heritage are therefore assessed as likely to be not significant.

11.8.1.4 Cumulative Effects

The cumulative assessment indicates that the proposed development represents an incremental addition to existing wind energy infrastructure within the wider region. Combined effects do not fundamentally alter heritage significance or landscape legibility.

Cumulative cultural heritage effects are assessed as likely to be slight adverse and not significant.

11.8.2 OVERALL CONCLUSION

On the basis of the assessment undertaken,

Heritage Receptor	Sensitivity	Key Setting Attributes	Nature of Change	Magnitude of Change	Significance of Effect	Basis of Assessment
Rathcroghan Archaeological Landscape	Very High	Dispersed ceremonial landscape; spatial organisation; landscape scale; experiential qualities	Distant perceptibility of turbines within wider landscape	Low	Slight adverse (Not significant in EIA terms)	Substantial distance (~22.7 km); turbines visually recessive; spatial relationships and interpretative legibility preserved
Carrowkeel Passage Tomb Landscape	Very High	Upland setting; skyline relationships; monument–topography relationships; experiential enclosure	Potential distant visibility within broader landscape	Negligible to Low	Imperceptible to Slight adverse (Not significant)	Localised topographic relationships remain dominant; horizon relationships intact
Regional Archaeological Landscape	Moderate	Historic landscape organisation; dispersed settlement pattern	Introduction of modern vertical elements within evolving landscape	Low	Slight adverse (Not significant)	Visual change perceptible but consistent with contemporary rural character
Local Archaeological Environment	Low to Moderate	Archaeological potential of sub-surface remains	Construction-related disturbance	Low (with mitigation)	Neutral to Slight adverse (Not significant)	Mitigation through monitoring reduces residual effects
Cumulative Cultural Heritage Effects	Variable	Strategic landscape setting	Additional distant elements within wider context	Low	Not significant	No material alteration of defining archaeological

Table 11.12: Assessment Summary

Assessment Outcome (Cumulative Cultural Heritage Impacts)	
Overall cumulative effect	Not significant in EIA terms.
Basis	No material additional alteration of defining attributes contributing to the significance of strategic archaeological landscapes beyond that identified for the proposed development in isolation.

Table 11.13: Overall Assessment of Outcome

Receptor	Sensitivity	Phase	Nature of Effect	Magnitude of Change	Mitigation	Residual Effect (EPA Terminology)
Unknown archaeological remains	Medium	Construction	Ground disturbance	Medium (unmitigated)	Archaeological monitoring	Not Significant (Slight/Minor Adverse)
Rathcroghan archaeological landscape	Very High	Operation	Landscape setting change	Low	Embedded design measures	Not Significant (Slight/Minor Adverse)
Carrowkeel passage tomb landscape	Very High	Operation	Distant visual interaction	Negligible	Embedded design measures	Not Significant (Negligible)
Architectural heritage	Medium	Operation	Visual context change	Low	Embedded design measures	Not Significant (Slight/Minor Adverse)
Cultural heritage landscape	Medium	Operation	Incremental landscape change	Low	Embedded design measures	Not Significant (Slight/Minor Adverse)
Cultural heritage (cumulative)	Varies	Operation	Combined landscape change	Low	Design iteration	Not Significant (Slight/Minor Adverse)

Table 11.14: Summary of Likely Effects

BIBLIOGRAPHY

LEGISLATIVE SOURCES

National Monuments Acts 1930–2014.

Historic and Archaeological Heritage and Miscellaneous Provisions Act 2023.

Planning and Development Acts 2000–2024 (as amended).

POLICY AND GUIDANCE

Department of Arts, Heritage and the Gaeltacht (2011). *Framework and Principles for the Protection of the Archaeological Heritage*.

Department of Environment, Heritage and Local Government (2004). *Architectural Heritage Protection Guidelines for Planning Authorities*.

Environmental Protection Agency (2022). *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports*.

European Commission (2017). *Environmental Impact Assessment of Projects: Guidance on the Preparation of Environmental Impact Assessment Reports*.

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

Historic England (2017). *The Setting of Heritage Assets*.

UNESCO World Heritage Centre (various). Guidance relating to assessment of development impacts on heritage landscapes.

CARTOGRAPHIC AND DATA SOURCES

Ordnance Survey Ireland (OSI) historic mapping.

National Monuments Service — Historic Environment Viewer.

Record of Monuments and Places (RMP).

National Inventory of Architectural Heritage (NIAH).

Excavations.ie Database.

ARCHAEOLOGICAL RESEARCH

Bergh, S. (1995). *Landscape of the Monuments: Passage Tombs of the Cúil Irra Peninsula*.

Bradley, R. (2000). *An Archaeology of Natural Places*.

Cooney, G. (2000). *Landscapes of Neolithic Ireland*.

Fenwick, J. & Newman, C. (eds.) (2002–ongoing). Publications relating to the Rathcroghan Archaeological Landscape.

Grogan, E. (2004). *Studies on Bronze Age landscapes in Ireland*.

Ingold, T. (1993). "The Temporality of the Landscape." *World Archaeology*. Newman, C. (1997). *The Archaeology of the Rathcroghan Complex*.

Mount, C. (1997). Irish settlement and landscape studies. Newman, C. (2007). Studies relating to ceremonial landscapes and spatial organisation within the Rathcroghan complex.

Nelis, D. 2023. *Archaeological Scoping Assessment for the Proposed Islandmore Wind Farm, County Roscommon*. Unpublished report prepared by Dermot Nelis Archaeology for Gale Tech Energy Services.

O'Brien, W. (2012). Research relating to prehistoric landscape organisation in Ireland.

O'Sullivan, M. (2005). *Duma na nGiall and the Mound of the Hostages*.

Shee Twohig, E. (1981). *The Megalithic Art of Western Europe*.

Thomas, J. (2004). *Archaeology and Modernity*.

Tilley, C. (1994). *A Phenomenology of Landscape*.

Waddell, J. (2010). *The Prehistoric Archaeology of Ireland*.

Waddell, J., Fenwick, J. & Barton, K. (2009). Rathcroghan Archaeological and Geophysical Survey.