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An Archaeological, Architectural and Cultural Heritage Impact Assessment of a 110 kV Substation and grid connection at Lysaghtstown, Co. Cork.

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EXECUTIVE SUMMARY

The purpose of this report is to assess the importance and sensitivity of the known, as well as the potential archaeological, architectural and cultural heritage environment of lands at a proposed 110 kV Substation and grid connection at Lysaghtstown in Co. Cork. The study area for the assessment incorporates all designated archaeological, architectural and cultural heritage sites within 1 km of the development boundary. This study was undertaken for HW Planning on behalf of Terra Solar II Ltd as part of an application for planning permission to An Bord Pleanála under the provisions of the Planning and Development (Strategic Infrastructure) Act 2006.

An Bord Pleanála have confirmed that the 110 kV substation and associated loop-in infrastructure constitutes 'strategic infrastructure' having regard to the provisions of the Planning and Development (Strategic Infrastructure) Act 2006. The Act provides that applications for strategic infrastructure developments be made directly to the Board. A separate application is being made to Cork County Council provides for amendments to the solar farm permitted under planning reference 18/6769 to facilitate the proposed 110kV substation. It is focused on proposed amendments to the layout of the previously permitted solar array, including omission and reconfiguration of panels, minor alterations to access tracks and support infrastructure and an increase in the size of the site entrance. Notwithstanding this dual consent process, this report considers the full combined development for the purposes of completing a robust assessment of the entire project.

Terra Solar II Limited are seeking a 10-year planning permission for development at Lysaghtstown, Co. Cork comprising a 110kV 4-bay C-type electricity substation (with 33kV customer compound) (including two control buildings, lightning protection, perimeter security fencing, security lighting, drainage infrastructure, temporary construction compound) to connect to and serve a solar farm; associated loop-in infrastructure to tie into an existing 110kV overhead transmission line including underground 110kV cabling and 2 No. new end masts with 110kV line diversion cabling; vehicular entrance and access track from public road; all ancillary site development and landscaping works within area of permitted solar farm (under Reg. Ref. 18/6769). Construction and operational access will be via the L-7634 at Lysaghtstown, Co. Cork.

The 110kV substation involves two separate compounds namely (i) the 110kV compound which will be in the ownership of ESB Networks and (ii) the 33kV compound which will be in the ownership of the customer. The main construction elements will be two substation buildings of concrete block construct with slate roof, electrical infrastructure, plinths, bunds, lightning masts, surface water and foul drainage works and lighting. The compound facility will be secured with fencing to full EirGrid specification. Cables connecting the substation to the associated solar farm development will be underground to a depth of approximately 1 m. Existing site levels will be reprofiled for the purposes of accommodating the substation following detailed pre-commencement site investigations. In order to connect the substation to the transmission network, it is proposed to break the existing 110kV overhead line and divert it underground via two new end mast steel lattice structures of approximately 21 m in height. These new masts will allow for approximately 574m of new underground cable which will be routed into and out of the substation.

As outlined, it is necessary to amend previously permitted Cork County Council Reference 18/6769 to cater for the proposed subject substation and associated loop-in grid connection. This change in plan is being formalised by means of separate application to Cork County Council, which provides for the omission of solar panels in the area of the planned substation and insertion of panels in lieu of the 38kV substation which is now not required.

The archaeological assessment of the proposed works at Lysaghtstown, Co. Cork has identified 19 sites of archaeological, and/or cultural heritage significance within the study area. These include seven RMPs none of which are located within the proposed development site. In addition, 12 undesignated cultural heritage sites were found within the proposed development site. Four of these sites are townland boundaries forming the perimeter of the development site (CH008–011). The remaining eight are the sites of vernacular buildings (CH012–019) with no upstanding remains.

Buffer zones have been designed in to avoid a direct impact on seven of the vernacular building sites within the proposed development site (CH013–019). The eighth should not be impacted by the development due to its position within the site.

Any development at the site should take mitigating measures to protect any sub-surface archaeology that may exist and to offset any visual impacts on known monuments. The mitigation strategy may include (but is not limited to) minimising ground disturbance at the site during the construction phase and archaeological monitoring of cable and access routes and other groundworks associated with the development.

Further details on the proposed mitigation is outlined in the Mitigation Section.

Please note all recommendations are subject to the approval of the National Monuments Service and the local planning authority archaeologist.

1 INTRODUCTION

This report details the archaeological, architectural and cultural heritage issues that need to be addressed in respect of the proposed 110 kV Substation and grid connection at Lysaghtstown in Co. Cork. This study was undertaken for HW Planning on behalf of Terra Solar II Ltd. during November 2020 and constitutes a revision and update to the previous assessment of the site conducted in 2018 (O'Dowd and Bolger 2018).

An Bord Pleanála have confirmed that the 110 kV substation and associated loop-in infrastructure constitutes 'strategic infrastructure' having regard to the provisions of the Planning and Development (Strategic Infrastructure) Act 2006. The Act provides that applications for strategic infrastructure developments be made directly to the Board. A separate application is being made to Cork County Council provides for amendments to the solar farm permitted under planning reference 18/6769 to facilitate the proposed 110kV substation. It is focused on proposed amendments to the layout of the previously permitted solar array, including omission and reconfiguration of panels, minor alterations to access tracks and support infrastructure and an increase in the size of the site entrance. Notwithstanding this dual consent process, this report considers the full combined development for the purposes of completing a robust assessment of the entire project.

Terra Solar II Limited are seeking a 10-year planning permission for development at Lysaghtstown, Co. Cork comprising a 110kV 4-bay C-type electricity substation (with 33kV customer compound) (including two control buildings, lightning protection, perimeter security fencing, security lighting, drainage infrastructure, temporary construction compound) to connect to and serve a solar farm; associated loop-in infrastructure to tie into an existing 110kV overhead transmission line including underground 110kV cabling and 2 No. new end masts with 110kV line diversion cabling; vehicular entrance and access track from public road; all ancillary site development and landscaping works within area of permitted solar farm (under Reg. Ref. 18/6769). Construction and operational access will be via the L-7634 at Lysaghtstown, Co. Cork.

The 110kV substation involves two separate compounds namely (i) the 110kV compound which will be in the ownership of ESB Networks and (ii) the 33kV compound which will be in the ownership of the customer. The main construction elements will be two substation buildings of concrete block construct with slate roof, electrical infrastructure, plinths, bunds, lightning masts, surface water and foul drainage works and lighting. The compound facility will be secured with fencing to full EirGrid specification. Cables connecting the substation to the associated solar farm development will be underground to a depth of approximately 1 m. Existing site levels will be reprofiled for the purposes of accommodating the substation following detailed pre-commencement site investigations. In order to connect the substation to the transmission network, it is proposed to break the existing 110kV overhead line and divert it underground via two new end mast steel lattice structures of approximately 21 m in height. These new masts will allow for approximately 574m of new underground cable which will be routed into and out of the substation.

As outlined, it is necessary to amend previously permitted Cork County Council Reference 18/6769 to cater for the proposed subject substation and associated loop-in grid connection. This change in plan is being formalised by means of separate application to Cork County Council, which provides for the omission of solar panels in the area of the planned substation and insertion of panels in lieu of the 38kV substation which is now not required. The revision to the proposed solar farm development consists of circa 14,600 m² of solar panels on ground mounted frames, 2 no. single storey electrical inverter/transformer stations, battery storage container, battery control unit, security fencing, satellite pole, CCTV, access tracks, upgrade to existing agricultural field entrance, temporary construction

compound, landscaping and all associated ancillary development works. It will provide for the omission of the previously permitted 38kV substation and a net decrease in panel area of circa 10,800 m².

This report was produced in support of a planning application to be submitted to An Bord Pleanála.

1.1 Site location and description

The proposed development site is located in the Townland of Lysaghtstown, Parish of Carraigtohill, in the Barony of Barrymore, Co. Cork (Figure 1). The nearest urban settlement is the town of Midleton, 4.5 km south east of the proposed development site. The proposed development covers an area of 56.7 HA (of which 50.3 HA will be fenced).

The topography of the area comprises sloping pasture and agricultural lands at 70–120 m OD. The land undulates across the proposed development site with the most elevated position in Field 8 to the in the north-west. The site is bounded to the east by an established woodland and all other limits by banks and mature hedgerows. A small road transects the area from the south-easterly corner to the north-west corner. A working farmyard is located in the south-east. Historic maps show that the field layout has changed and that a number of small structures, possible dwellings, are now gone. The area of the development is currently being used for mixed farming. The site contains 12 fields (numbered 1-12, see Figure 2).

Field 1

Field 1 is a long rectangular slightly undulating field under high crop, bounded by hedgerows and by the small road to the east. Historic maps show a laneway between Field 1 and Field 2 and two structures (CH017–018) at the east end of Field 1, both of which are now gone.

Field 2

Field 2 is bounded by a mature hedgerow to the southern side which form part of the townland boundary (CH010) marked on historic maps as a tree-lined lane now overgrown. The eastern boundary with the small road is a stone revetted bank and hedgerow of mature trees. Historic maps show a laneway between Field 2 and Field 1 and a small structure at the east end of Field 2 (CH019), both of which are now gone. At the time of the site visit this field was being prepared for planting.

Field 3

Field 3 is bounded by mature hedgerows, the southern part of which forms part of the townland boundary (CH011). The interior of this field was under crop at the time of inspection.

Field 4

Field 4 is bounded on the west by the mature trees, bank and laneway visible on historic maps (external to the proposed development site). The townland boundary (CH011) forms the southern boundary. This field was under high crop at time of inspection.

Field 5/Field 6

Field numbers were assigned on the basis of the most recent aerial photographic survey available, however, at the time of inspection it was found that the field boundary between the two has been removed uniting them into a single field. At the time of the site visit this field was under high grass and had been used for grazing.

The area near the boundary of Field 5/6 and the north-west corner of Field 1 was generally low-lying and wet underfoot. A large bank and ditch formed this section of field boundary (between Field 1 and Field 5/6), most likely built up from the clearance of the original boundary between Fields 5 and 6 which would have commenced at this location. A hedge and ditch form the south and south-eastern boundaries, the boundary between Field 5/6 and Field 4 is a low bank and sparse hedge of furze. The field boundary to the west is made up of large mature trees and a stone revetted bank onto a laneway (external to the development site) visible on the historic maps. A break in the bank at the junction of Field 5/6 and Field 8 shows the stone revetting and marks the end of this lane as seen on the historic maps.

Field 7

Field 7 is a large irregular shaped field which at the time of the site visit had recently been ploughed and planted with young crop. The land in Field 4 slopes down north-westwards to rise again in Field 8. This field is bounded to the south and north by a mature hedgerow, to the west by a bank and sparse hedge of furze and to the east by a hedge of mature trees onto the small road which transects the proposed development area. Historic maps show a small structure (CH016), possibly a dwelling in the north of this field, which is now gone.

Field 8

Field 8 is the largest field within the proposed development area and is on the most elevated location, sloping down to the north towards the road and Field 7. At the time of site visit this field was recently ploughed and planted. The townland boundary (CH009), a hedgerow of mature trees looking out onto the small road, forms the northern boundary. The west, south and east boundaries are mature hedgerow and low banks. Historic mapping shows a building in the northwest corner of the field (CH013) and another approximately midway along the northern boundary (CH014). Neither have any surface remains.

Field 9

This field is located on the northeast side of the small road which transects the proposed development area, bounded by mature hedgerows along the roadside. The northern and eastern limit is part of the townland boundary (CH009) which runs through an area of mature woods. Historic mapping shows a building in the northwest corner of the field (CH015); it has no surface remains.

Field 10

This field is bounded by the townland boundary (CH009) and mature woodland from north to southeast, Field 11 and the current farmyard on southwest and Field 9 on northwest. It was under high crop at time of inspection.

Field 11

This field is bounded by the current farmyard on the northwest and Field 10 on the northeast, while the townland boundary (CH010) runs along the southeast boundary. It was under high crop at time of inspection. The small road which transects the development area enters the site in the southern corner of Field 11. A gatepost and small section of wall are visible just outside the southern corner of Field 11.

Field 12

Field 12 is located on the north side of the road which runs along the townland boundary (CH008) north of Field 8 and along to Field 12 which is bounded by mature hedgerows. This is a long, narrow and fairly flat field under long grass at the time of site visit. A small wooded area outside the east end

of Field 12 hides a trackway which leads to the hilltop enclosure (CH007). Historic mapping shows a structure in the southeast corner of the field (CH012); this has no visible remains.

1.2 Study area

The study area for this assessment has been defined in respect of two factors: 1) the ability of sites/information sources to provide information pertaining to the archaeological potential of the proposed development site, and 2) the potential physical impact, as well as impact on setting, that the proposed works may have on sites of cultural heritage significance.

Taking these factors into account the study area has been defined as follows (See figure 2):

Subject	Study area
National Monuments and Recorded archaeological monuments (RMPs)	Within 1 km of proposed development site
Protected Structures and/or their curtilage	Within approx. 1 km proposed development site
Architectural Conservation Areas (ACAS)	Within approx. 1 km proposed development site
Structures recorded in the NIAH	Within approx. 1 km of proposed development site
Unregistered features of cultural heritage	Within the proposed development site
Areas of archaeological potential	Within approx. 1 km of proposed development site
Previous Excavations	Within townlands encompassed by and adjacent to the proposed development site including; Lysaghtstown, Curragh, Ballyrichard Beg, Carrigane, Woodstock, Ballyleary, Lackenbehy, Ballyrichard More, Water-rock, Ballyadam, Ballycurrany West, Ballynaclashy

Table 1 – Dimensions of the study area

2 OBJECTIVES AND METHODOLOGY

2.1 Objectives

This study aims to assess the baseline archaeological, architectural and cultural heritage environment, evaluate potential impacts that the proposed works will have on this environment, and provide mitigation measures in accordance with the policies of the National Monuments Service, Department of Culture, Heritage and the Gaeltacht (DoCHG) and Cork County Council, the National Monuments Acts 1930-2004 and best practice guidelines, to ameliorate these impacts.

In order to provide a comprehensive assessment, an extensive desktop study in addition to a field inspection of the proposed development area was undertaken.

The scope and methodology for the baseline assessment has been devised with reference to the following guidelines:

- Environmental Protection Agency (2002) 'Guidelines on the information to be contained in Environmental Impact Statements'
- Environmental Protection Agency (2003) 'Advice notes on current practice (in the preparation of Environmental Impact Statements)'
- Environmental Protection Agency (2017) 'Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)'
- Department of Arts, Heritage, Gaeltacht and the Islands (DAHGI) (1999) 'Frameworks and Principles for the Protection of the Archaeological Heritage'
- Department of the Environment, Heritage and Local Government (2004) 'Architectural Heritage Guidelines'
- National Monument Service (2016)- Solar Farm developments; Internal Guidance Documents.

2.2 Desktop study methodology

The present assessment of the archaeological, architectural and cultural heritage of the proposed development area is based on a desktop study of a number of documentary and cartographic sources. The desktop study was further augmented by an examination of aerial photography as well as a field survey. The main sources consulted in completing the desktop study are listed here.

- Sites and Monuments Record (SMR) and Record of Monuments and Places (RMP)
- National Inventory of Architectural Heritage
- Cork County Development Plan (2014)
- Lewis' Topographical Dictionary of Ireland (1837)
- Excavations Bulletin
- Aerial Photographs
- Cartographic Sources

2.3 Field inspection methodology

A field inspection of the proposed development site was undertaken by Rubicon Heritage Services Ltd on 30 May 2018 (Plates 1–10). The fields within the site were numbered Field 1 to Field 12 (see Figure 2).

The primary purpose of a field inspection is to assess local topography in order to identify any potential low-visibility archaeological and/or historical sites that are not currently recorded, and which may be impacted upon negatively by the proposed development. It is also the purpose of the field inspection to survey any known monuments or sites and to consider the relationship between them and the surrounding landscape, all of which need to be considered during the assessment process.

The methodology used during the field inspection involved recording the present land use as well as the existing topography for the entire area comprising the proposed development site. A photographic record and written description were compiled for any known and/or potential sites of archaeological, architectural and/or cultural significance.

2.4 Methodology used for assessing baseline value of sites

In order to categorise the baseline environment in a systemised manner, ‘baseline values’ have been assigned to each identified site of cultural heritage significance and/or potential within the study area. The baseline value of a site is determined with reference to the ‘importance’ and ‘sensitivity’ of the site.

The importance of a site is determined based on the following criteria: legal status, condition, historical associations, amenity value, ritual value, specimen value, group value and rarity.

The sensitivity of a site is determined based on the presence of extant remains and/or the potential for associated sub-surface remains of the feature to be present *in situ*.

It should be noted that the National Monuments Act 1930-2004 does not differentiate between recorded archaeological sites on the basis of relative importance or sensitivity. In addition, the Local Government (Planning and Development) Act, 2000 does not differentiate between Protected Structures or Areas of Architectural Conservation on the basis of relative importance or sensitivity either. Consequently, professional judgement has been exercised to rate these features based on their perceived importance and sensitivity in relation to physical impacts and impacts on setting.

Taking the above factors into consideration, the criteria that have been defined are provided in Table 2 below.

Subject	Baseline Value
<ul style="list-style-type: none"> - Recorded Archaeological Monuments - Protected Structures - Architectural Conservation Areas (ACAs) 	Very High
<ul style="list-style-type: none"> - Sites listed in the NIAH that are not Protected Structures - Unregistered built heritage sites that comprise extant remains which are in good condition and/or which are regarded as constituting significant cultural heritage features - Unrecorded features of archaeological potential 	High
<ul style="list-style-type: none"> - Unregistered built heritage sites that comprise extant remains which are in poor condition - Unregistered cultural heritage sites (not including built heritage sites) that comprise extant remains - Townland boundaries that comprise extant remains - Marshy/wetland areas 	Medium/High

Subject	Baseline Value
<ul style="list-style-type: none"> - Unregistered cultural heritage sites for which there are no extant remains but where there is potential for associated subsurface evidence - Townland boundaries for which there are no extant remains 	Medium/Low
<ul style="list-style-type: none"> - Unregistered cultural heritage sites for which there are no extant remains and where there is little or no potential for associated subsurface evidence 	Low

Table 2 – Baseline values of sites

Caution should be exercised when assessing the perceived significance of an archaeological, architectural or cultural heritage site as such categorisation is open to subjectivity. In addition, the perceived levels of importance as identified in this report are liable to future revision in the instance where new information, through the undertaking of further archaeological investigations, is provided.

2.5 Type of impacts

The following table lists the type of impacts that a proposed development may have on the cultural heritage resource:

Type of Impacts	Definition
Direct	Direct impacts arise where an archaeological, architectural and/or cultural heritage feature or site is physically located within the footprint of the proposed development, or its associated physical impact zone, whereby the removal of part, or all of the feature or site is thus required.
Indirect	Indirect impacts arise when an archaeological, architectural or cultural heritage feature is not located within the footprint of the proposed development, or its associated physical impact zone, and thus is not impacted directly. Such an impact could include impact on setting or impact on the zone of archaeological potential of site whereby the actual site itself is not physically affected.
Cumulative	The addition of many impacts to create a large, significant impact.
Undeterminable	Whereby the full consequence that the proposed development may have on the cultural heritage resource is not known
Residual	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.

Table 3 – Type of impacts

2.6 Methodology used for assessing magnitude of impacts

The methodology used to assess the magnitude of potential pre-mitigation impacts, as well as residual impacts, of the proposed development on the baseline environment is presented in Table 4 below.

Impact magnitude	Criteria
Severe	<ul style="list-style-type: none"> - Applies where mitigation would be unlikely to remove adverse effects. Reserved for adverse, negative effects only. These effects arise where an archaeology site is completely and irreversibly destroyed. - An impact that obliterates the architectural heritage of a structure or feature of national or international importance. These effects arise where an architectural structure or feature is completely and irreversibly destroyed by the proposed development. Mitigation is unlikely to remove adverse effects.
Major	<ul style="list-style-type: none"> - An impact which, by its magnitude, duration or intensity, alters an important aspect of the environment. An impact like this would be where part of a site would be permanently impacted upon, leading to a loss of character, integrity and data about an archaeological feature/site. - An impact that by its magnitude, duration or intensity alters the character and/or the setting of the architectural heritage. These effects arise where an aspect or aspects of the architectural heritage is/are permanently impacted upon leading to a loss of character and integrity in the architectural structure or feature. Appropriate mitigate is likely to reduce the impact - A beneficial or positive effect that permanently enhances or restores the character and/or setting of a feature of archaeological or cultural heritage significance in a clearly noticeable manner.
Moderate	<ul style="list-style-type: none"> - A medium impact arises where a change to a site/monument is proposed which though noticeable, is not such that the archaeological integrity of the site is compromised, and which is reversible. This arises where an archaeological feature can be incorporated into a modern-day development without damage and that all procedures used to facilitate this are reversible. - A medium impact to a site/monument may also arise when a site is fully or partly excavated under license and all recovered data is preserved by record. - An impact that results in a change to the architectural heritage which, although noticeable is not such that alters the integrity of the heritage. The change is likely to be consistent with existing and emerging trends. Impacts are probably reversible and may be of relatively short duration. Appropriate mitigation is very likely to reduce the impact. - A beneficial or positive effect that results in partial or temporary enhancement of the character and/or setting of a feature of archaeological or cultural heritage significance in a clearly noticeable manner.

Impact magnitude	Criteria
Minor	<ul style="list-style-type: none"> - An impact which causes changes in the character of the environment, such as visual impact, which are not high or very high and do not directly impact or affect an archaeological feature or monument. - An impact that causes some minor change in the character of architectural heritage of local or regional importance without affecting its integrity or sensitivities. Although noticeable, the effects do not directly impact on the architectural structure or feature. Impacts are reversible and of relatively short duration. Appropriate mitigation will reduce the impact. - A beneficial or positive effect that causes some minor or temporary enhancement of the character of an architectural heritage significance which, although positive, is unlikely to be readily noticeable.
Negligible	<ul style="list-style-type: none"> - An impact on archaeological features or monument capable of measurement but without noticeable consequences. - An impact on architectural heritage of local importance that is capable of measure merit but without noticeable consequences. - A beneficial or positive effect on architectural heritage of local importance that is capable of measurement but without noticeable consequences.

Table 4 – Criteria used for rating magnitude of impacts

2.7 Methodology used for assessing significance level of impacts

The significance level of a construction or operation impact on a feature is assessed by combining the magnitude of the impact and baseline value of the feature. The matrix in Table 5 provides a guide to decision-making but is not a substitute for professional judgement and interpretation, particularly where the baseline value or impact magnitude levels are not clear or are borderline between categories. The permanence of the effects is also taken into account, with irreversible effects being more significant while temporary or reversible changes are likely to be less significant.

Magnitude of Impact	Baseline Value				
	Very High	High	Medium/High	Medium/Low	Low
Severe	Very significant	Very significant	Significant	Moderate	Slight
Major	Significant	Significant	Moderate	Slight	Slight
Moderate	Moderate	Moderate	Slight	Slight	Negligible
Minor	Moderate	Slight	Slight	Negligible	Negligible
Negligible	Slight	Slight	Negligible	Negligible	Negligible

Table 5 – Criteria for assessing significance level of impacts

2.8 Difficulties experienced during compilation of assessment

There were no difficulties or limitations encountered during the compilation of this report.

3 BASELINE/RECEIVING ENVIRONMENT

3.1 Designated archaeological sites

3.1.1 Record of Monuments and Places (RMPs)

Section 12 (1) of the National Monuments Act 1994 made provision the establishment and maintenance of a Record of Monuments & Places (RMP). Under this Act, each site recorded in the Record of Monuments and Places is granted statutory protection. When the owner or occupier of a property, or any other person proposes to carry out, or to cause, or to permit the carrying out of any work at or in relation to a recorded archaeological monument they are required to give notice in writing to the Minister for Culture, Heritage and the Gaeltacht two months before commencing that work.

There no RMPs located within the proposed development site but there seven RMPs located within 1 km of it (Figure 2; Appendix 1). These include four ringforts (CH001–003; CH006), an enclosure (CH004), a souterrain (CH006) and a hilltop enclosure (CH007).

3.1.2 National Monuments

National Monuments are broken into two categories; National Monuments in the ownership or guardianship of the state and National Monuments in the ownership or guardianship of a local authority. Section 8 of the National Monuments (Amendment) Act 1954 provides for the publication of a list of monuments, the preservation, of which, are considered to be of national importance. Two months' notice must be given to the Minister for Culture, Heritage and the Gaeltacht where work is proposed to be carried out at or in relation to any National Monument.

There are no National Monuments sites incorporated by the study area.

3.1.3 Sites with Preservation Orders

The National Monuments Act 1930-2004 provide for the making of Preservation Orders and Temporary Preservation Orders in respect of National Monuments. Under Section 8 of the National Monument Act 1930 (as amended) the Minister for Culture, Heritage and the Gaeltacht A, can place a Preservation Order on a monument if, in the Ministers' opinion, it is a National Monument in danger of being or is actually being destroyed, injured or removed or is falling into decay through neglect. The Preservation Order ensures that the monument shall be safeguarded from destruction, alteration, injury, or removal, by any person or persons without the written consent of the Minister.

There are no sites with preservation orders incorporated by the study area.

3.2 Designated architectural heritage sites

In 1997 Ireland ratified the Granada Convention on architectural heritage. This provided the basis for a national commitment to the protection of the architectural heritage throughout the country. The Local Government (Planning and Development) Act 2000, and the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999, made the legislative changes necessary to provide for a strengthening of the protection of architectural heritage.

3.2.1 Record of Protected Structures

The Cork County Development Plan (2015-2021) was consulted for schedules of Protected Structures. These are buildings that a planning authority considers to be of special interest from an architectural, historical, archaeological, artistic, cultural, scientific, social, and/or technical point of view. Protected

Structures receive statutory protection from injury or demolition under Section 57 (1) of the Local Government (Planning and Development) Act 2000. Protected structure status does not exclude development or alteration but requires the developer to consult with the relevant planning authority to ensure that elements which make the structure significant are not lost during development.

There are no Protected Structures listed within the study area.

3.2.2 *Architectural Conservation Areas*

The Cork County Development Plan (2015-2021) was consulted for records relating to Architectural Conservation Areas (hereinafter 'ACAs'). The stated objective of ACAs is to conserve and enhance the special character of the area, including traditional building stock and material finishes, spaces, streetscapes, landscape and setting.

There are no ACAs within the study area.

3.2.3 *National Inventory of Architectural Heritage (NIAH)*

The National Inventory of Architectural Heritage (hereinafter the 'NIAH') is a state initiative under the administration of the DoCHG and was established on a statutory basis under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999. Its purpose is to identify, record and evaluate the post-1700 architectural heritage of Ireland, uniformly and consistently, as an aid in the protection and conservation of the built heritage. NIAH surveys provide the basis for the recommendations of the Minister for Culture, Heritage and the Gaeltacht to the planning authorities for the inclusion of particular structures in their Record of Protected Structures (RPS).

There are no sites listed in the NIAH within the study area.

3.3 **Undesignated cultural heritage sites within the proposed development site**

This section deals with sites that are considered to be of cultural heritage value, but which do not fall within the above categories as they are not registered. Such sites may include lime kilns, dwellings/outhouses, trackways or townland boundaries etc. identifiable on the First Edition 6/25-inch OS maps and/or noted during the field visit.

3.3.1 *Sites identifiable on cartographic sources*

The cartographic record for the study area was examined for the purposes of this report (Figures 4 and 5). Both the First Edition 6-inch Ordnance Survey Sheet and the Second Edition 25-inch Ordnance Survey Sheet show little or no changes to the field divisions within the proposed development site. The 6-inch map shows approximately 26 small enclosed fields. The 25-inch map depicts just approximately 20 small enclosed fields also. In the present day, there are just 12 fields within the site boundary.

Vernacular settlement is noted on the both maps within the proposed site boundary. There are individual buildings shown in Fields 7, 8 and 9 (CH012–016), while a cluster of buildings is shown at the eastern end of Fields 1 and 2 opposite the current farmyard (CH017–019). None of these buildings are now visible on the ground.

Townland boundaries form the development boundary for most of its circuit and include the boundaries between:

- Lysaghtstown and Ballyleary (CH008)

- Lysaghtstown and Curragh (CH009)
- Lysaghtstown and Ballyrichard Beg (CH010)
- Lysaghtstown and Carrigane (CH011)

3.3.2 Sites identifiable on aerial photography and satellite imagery

Ortho-rectified aerial photography available from the Ordnance Survey of Ireland was inspected in order to identify possible features of cultural and heritage significance. Aerial photography from the 1995, 2000, and 2005 fly-overs was inspected, as well as the latest OSI images, Google Earth and Bing Maps satellite imagery.

No additional undesignated cultural heritage sites were identified on aerial photography and satellite imagery within the PDS.

3.3.3 Sites identified during field inspection

The proposed development site and surrounding lands were inspected by Dawn Gooney of Rubicon Heritage on 30 May 2018. No further sites were identified during the site visit. The results of the site inspection are described in detail in Section 1.1 above.

3.4 Archaeological and historical background

3.4.1 Prehistoric Period

There is abundant evidence for prehistoric settlement in Co. Cork, though few sites of this date are evident in the study area.

Archaeological excavations at Ballyadam (see below Section 3.6) identified a number of burnt mounds or *fulachtaí fia* sites that were radiocarbon dates to the Bronze Age. *Fulachtaí fia* survive as low mounds, usually horse-shoe shaped, of charcoal-enriched soil packed with fragments of heat-shattered stones (termed 'burnt mound'); when levelled, they are often noticeable as black spreads in ploughed fields. They were usually situated close to a water source, like a stream, or in wet marshy areas. It is generally accepted that they were probably used as cooking places (Ó Drisceóil 1988). Water was boiled in a regular pit (lined with wooden planks or stone slabs to form a trough) by the addition of hot stones from a fire close by. O'Kelly (1954, 105–55) showed by experiment that the large quantities of water can be boiled in this way in about twenty minutes. He also demonstrated that meat, wrapped in straw and immersed in the boiling water, cooked at a rate of twenty minutes per pound weight. When the cooking was over the remnants of heat-shattered stones in the trough were discarded to one side. Eventually, after many episodes of use, these would form a mound curving round three sides of the trough, hence the horse-shape mound (Power *et al.* 1997, 75). It is not certain whether *fulachtaí fia* were elements temporary hunting camps or of permanent settlements. The majority of radiocarbon dates place these monuments in the Bronze Age (Brindley and Lanting 1990, 55–6). They are the most numerous prehistoric sites in Ireland, with over 4,500 known examples, some 2,000 of these in Co. Cork (Power 1990, 13–17).

A review of the use of the term '*fulacht*' in early Irish literature and of references to 'activities that may have taken place at such sites', suggest associations with 'the cooking and eating of food, washing and bathing, music and sex' (Ó Drisceóil 1990, 157–64). The word '*fulacht*' means a pit used for cooking. The second element can be interpreted as either '*fiadh*' meaning 'of the deer' or 'of the wild' or '*fian*' meaning 'of a roving band of hunters or warriors' or 'of Fianna or Fionn Mac Cumhail' (Ó Drisceóil 1988, 671–80).

The investigations at Ballyadam also uncovered a number of features that were radiocarbon dated to the Later Iron Age. It is possible that the hilltop enclosure (CH007) is also late prehistoric (Bronze Age or Iron Age) though an early medieval date cannot be fully discounted.

3.4.2 *Medieval period (AD 400–1540)*

The early medieval period (AD 400 – c. 1169) was a time of rapid expansion of agriculture. Throughout this period Ireland was a predominantly rural society characterised by dispersed settlement. The economy was based on mixed agriculture though the rearing of cattle was seen as very important. Ringforts and enclosures are indicative of settlement at this time. Most of the known archaeological sites—the four ringforts (CH001–003; CH006), enclosure (CH004) and souterrain (CH006)—reflect settlement from this period.

Ringforts are undoubtedly the most widespread and characteristic archaeological field monument in the Irish countryside. There are three known with the study area (CH004–005 and CH020) as well as one souterrain (CH018). They are usually known by the names *ráth* or *lios*, forming some of the most common place name elements in the countryside. The ringfort is basically a circular or roughly circular area enclosed by an earthen bank formed of material thrown up from concentric fosse (ditch) on its outside. Generally, the diameter of the enclosure is between 25 m and 50 m. A single bank and fosse (univallate) is the most usual form; double rings (bivallate) or triple rings (trivallate) are rarer. The number of rings of defence are thought to reflect on the status of the site, rather than the strengthening of its defences. These sites have endured centuries of erosion, reuse and sometimes deliberate destruction and it is not always possible to distinguish original features; the overgrown nature of many sites compound the problem of field recording. However, entrances may be detected where a clear break in the bank is in line with an uncut causeway over the fosse. Souterrains are often found in association with ringforts (Power 1992, 131).

Archaeological excavation has shown that the majority of ringforts were enclosed farmsteads, built in the early medieval period. Though not forts in the military sense, the earthworks acted as a defence against natural predators like wolves, as well as human predators. Local warfare and cattle raiding were commonplace at this time. The construction of so many throughout the country, in a relatively short period (400–500 years), reflects on the stability and wealth of society at the time, and also its homogeneity. As well as farming-related activities like corn-grinding and animal husbandry, the ringfort was home to a wide variety of craft industries, including spinning, weaving, metal- and glass-working. A lime-kiln (CH004) was also record in association with ringfort CH002. Dwellings and outhouses were built on timber posts, with walls of wattle, mud or sods, which usually leave no trace above ground today. Excavation can trace the remains of these structures by revealing features like post-holes, stake-holes and sunken hearths. The favoured locations for ringforts are on the shoulder of ridges or at breaks of slopes. Many have level interiors created by scarping-up on the downslope and cutting into the upslope. The enclosing element can change dramatically from a downslope scarped edge to a well-defined bank and fosse on the upslope. Thus sited, they are often overlooked close-in on one side but otherwise command an extensive view (Power 1992, 131).

3.4.3 *Post-medieval (AD 1540–1700) & early modern period (AD 1700–1850)*

The single-arch bridge (CH020) was built c. 1820 and it carries the road over Owennacurra River.

3.5 Toponymy of townland/s

The Irish landscape is divided into approximately 60,000 townlands and the system of landholding is unique in Western Europe for its scale and antiquity. Many townlands predate the arrival of the Anglo Normans, and Irish historical documents consistently use townland names throughout the historic period to describe areas and locate events accurately in their geographical context. The townland names and boundaries were standardised in the nineteenth century when the Ordnance Survey began to produce large-scale maps of the country. The original Irish names were eventually anglicised to varying degrees, depending in part upon the linguistic skills of the surveyors and recorders. A study of the townland names can provide information on aspects of cultural heritage including descriptions of the use of the landscape by man and the potential presence of archaeological or cultural heritage sites or features.

There are 12 townlands bordering Lysaghtstown that are included in the study area:

English Name	Irish Name	Glossary
Lysaghtstown	<i>Bhaile Mhic Giolla Iasachta</i>	baile townland, town, homestead
Curragh	<i>An Currach</i>	currach marsh
Ballyrichard Beg	<i>Baile Risteaird Beag</i>	baile townland, town, homestead beag (also: big) small
Carrigane	<i>An Carragán</i>	
Woodstock	<i>Bun an Stó</i>	bun (river-)mouth, bottom(-land)
Ballyleary	<i>Baile Uí Laoire</i>	baile townland, town, homestead
Lackenbehy	<i>Leacain Bheithe</i>	leaca (also: leacain, leacan) hillside beith birch
Ballyrichard More	<i>Baile Risteaird Mór</i>	baile townland, town, homestead mór great, big
Water-rock	<i>Carraig an Uisce</i>	carraig rock uisce water
Ballyadam	<i>Baile Adaim</i>	baile townland, town, homestead
Ballycurrany West	<i>Baile Charránaigh Thiar</i>	baile townland, town, homestead
Ballynaclashy	<i>Baile na Claise</i>	baile townland, town, homestead clais trench, ravine

Table 6– Townland place name evidence (after Irish Placenames Committee 2013)

3.6 Recent excavations

The Excavations Bulletin is an annual account of all excavations carried out under license. The database is available online at www.excavations.ie and includes excavations from 1985 to 2017. This database was consulted as part of the desktop research for this report to establish if any archaeological investigations had been carried out within the study area. The database produced one result for archaeological excavations undertaken within the study area.

County: Cork

Site name: Carrigane Road, Carrigtwohill

Sites and Monuments Record No.: SMR 76:02

Licence number: 03E0265

Author: Sheila Lane, AE House, Monahan Road, Cork.

Site type: No archaeological significance

ITM: E 582607m, N 573405m

Latitude, Longitude (decimal degrees): 51.912507, -8.252811

Planning permission was granted for the development of 317 dwelling-houses at Carrigane Road, Carrigtwohill, Co. Cork, with a condition which required monitoring. The southern edge of the development site lies within the zone of archaeological potential for a linear earthwork. Topsoil was stripped by machine to a depth of 0.3m, as the houses are to be constructed on a platform foundation. No finds or features of archaeological significance were noted during monitoring.

County: Cork

Site name: Ballyadam

Licence number: 06E0612

Author: Rose M. Cleary, Department of Archaeology, University College, Cork.

Site type: Fulachta fiadh and pits

ITM: E 584668m, N 573680m

Latitude, Longitude (decimal degrees): 51.915039, -8.222858

Ballyadam 1 – pits and post-hole

Five pits were recorded in close proximity to each other and a post-hole was recorded 0.15m to the east. Two pits (C3A and B) had lenses of charcoal-enriched soil and oxidised clay in the fills and the general impression was that the material was dumped into the pits from activity elsewhere rather than in situ burning. Burnt animal bone, a stone axehead fragment and a shaped stone were recovered from C3A. The overall length of C3A–B was 1.6m and the long axis was north–south. The pits were conjoined and probably dug at the same time. A thin layer of sandy clay extended across both pits and covered the charcoal-enriched clay in C3A and abutted the oxidised clay in C3B. Blackthorn/cherry (*Prunus* spp) charcoal from the basal fill of C3B returned a 14C determination of 94–231 cal ad; 1847645 (uba 8450). A 0.05–0.08m thick layer of oxidised clay and charcoal occurred on the southern lip of C3B and is interpreted as in situ burning. Hazel (*corylus avellana*) charcoal from C11 yielded a 14C determination of 88–178 cal ad; 1862629 bp (uba-8448).

Three other pits were excavated in close proximity. One pit measured 0.62m wide (maximum) by 0.2m deep and the fill was charcoal-enriched soil with minute burnt-bone fragments. Two other pits were of similar size (0.6m diameter) and had charcoal-enriched stony soil fill. The post-hole was circular in plan: diameter 0.12m, depth 0.08m.

Ballyadam 2 – fulacht fiadh

The shattered stone spread was dispersed over an area measuring 20m east–west by 15m. A mixture of alder (*Alnus glutinosa*), hazel and apple-type (*Pomoideae*) returned a 14C determination of 2283–2146 cal bc; 3788630 bp (uba 8449). The maximum extant height towards the north end was 0.4m and the stone tailed off towards the south. The stone was predominately sandstone that was sourced at some distance from the site. The southern area of the stone spread overlay charcoal-rich peaty clay that extended into a pond. This clay appeared natural in origin and may reflect localised wet ground conditions when the site was in use. This low-lying area is interpreted as a natural pond and this was probably the water source for the activity on site. The pond was 10m east–west by 8m and was infilled with peat lenses and heat-shattered stone. The maximum depth was 0.9m and this was due to the natural topography of the landscape rather than an artificially enhanced feature. The stone infilling may be a post-use phase when the mound material was dispersed.

Twelve pits were recorded on the site and three were outside the limit of the stone spread. Two large pits are interpreted as the locations of troughs. The pits were in two main clusters to the north of the pond; two pits were to the east and a single pit lay to the west. It is possible that each concentration of pit activity is related to discrete use of the troughs.

Ballyadam 3 – fulacht fiadh

This site was 250m to the south-east of Ballyadam 2 (fulacht fiadh 1) and was similarly located in low-lying wet ground. Ballyadam 3 comprised a dispersed spread of heat-shattered stones over a series of pits, including a trough, to the south of a naturally occurring pond. The pond had been infilled in modern times with gravel. Three post-holes were recorded to the north-west of the trough and ten stake-holes were to the south of a pit. The trough was due south of the pond at a distance of c. 4m. The pit was the largest on site, irregular in plan, and the edges sloped into a second steep-sided pit that probably housed the trough lining. The fill comprised layers of heat-shattered stones and charcoal-rich silt and charcoal. Alder charcoal from the basal layer yielded a 14C determination of 996–920 cal bc; 2804631 (uba 8452).

Ballyadam 4 – burnt-stone spread

This site was located 50m to the south of a fulacht fiadh (Ballyadam 5) and comprised a spread of heat-shattered stone and three pits. The site was relatively small-scale in comparison to the fulachta fiadh at Ballyadam 2, 3 and 5 and, although heating of stones and other activity took place, the site did not have a feature that can be identified as a trough. The stone spread was irregular in plan and measured 6.8m east–west by 6.3m with a maximum central thickness of 0.25m. The spread tailed off around the edges. The basal layer comprised a charcoal-enriched soil with some heat-shattered stones; this was overlain by a thin (0.05m thick) layer of charcoal-enriched silt. Two pits were recorded under the stone spread. One was oval in plan, 1.1m east–west by 1.6m by 0.5m deep. The basal fill was a 0.1m-thick layer of charcoal-enriched silt with infrequent heat-shattered stones. This layer may have accumulated naturally when the pit was open. Hazel charcoal returned a 14C date of 2197–2042 cal bc; 3726633 bp (uba 8453). The upper layers appeared to be deliberate infill of heat-shattered stones with variations in the amount of charcoal and stones between the layers. The other pits were in a figure-of-eight plan with the northern section being wider. The overall length was 2m and the maximum width was 1.1m. The pit was 0.15m deep but was shallower in the central section. There was a single fill of heat-shattered stones.

Ballyadam 5 – fulacht fiadh 3

Similar to the other fulachta fiadh at Ballyadam, this was located in low-lying ground and comprised a spread of heat-shattered stones over a trough and eight pits. The pits were located to the north and south of the trough.

The trough was the largest on site, was roughly oval in plan and the edges were irregular on the north side. The overall length was 2.65m (east–west) and the width varied from 1.6m to 2.2m. The depth was at maximum 0.45m and the sides were vertical down to a flat base. The trough fill comprised a layer of heat-shattered stones and charcoal that represented a single infill. This may be mound slippage rather than the final cooking activity at the site, where it is unlikely that the amount of stones used filled the trough in entirety. Six stake-holes were recorded at the base of the trough. Three occurred on the north and south sides and one stake-hole was recorded adjacent to the southern trough pit edge. The stake-holes were all V-shaped in profile, with diameters of 0.08–0.11m and driven to depths of 0.08–0.13m. The stake-hole at the edge was 0.08m in diameter and 0.09m deep. The fills were stony charcoal-flecked silt. It is probable that the stake-holes within the trough pit functioned as pegs to secure the trough lining in place. A post-hole was located 0.3m from the north-western edge of the trough pit (C3) and may have held a post related to trough use. The post-hole was oval in plan, 0.3m north–south by 0.5m

by 0.31m deep, U-shaped in profile with a silt fill. Two large packing stones remained in situ on the north side and a series of smaller stones along the remaining edges may also have held the post in place. A second post-hole was located 0.45m from the trough edge. This was oval in plan, 0.26m east-west by 0.31m by 0.21m deep, U-shaped in profile and had charcoal-enriched clay fills. A mixture of hazel, apple-type and birch (*Betula* spp) charcoal returned a 14C determination of 2192–2938 cal bc; 3714634 bp (uba 8454).

3.7 Topography and soils

The site is located on arable lands (70–120 m OD). According to the Teagasc Soil Information System (<http://gis.teagasc.ie/soils/index.php>) the soil association on the site is a coarse loamy drift with siliceous stones which are generally well drained and suitable for agriculture. Overall this is the type of ground that has been well utilised in the past.

4 IMPACT ASSESSMENT

4.1 Summary of baseline environment (Figure 2)

The proposed development site extends through sloping farmland in the townland of Lysaghtstown, Co. Cork.

Site Type	Summary
<ul style="list-style-type: none"> - RMPs - National Monuments - Sites with Preservation Orders - Sites listed in the Register of Historic Monuments 	There are seven RMPs incorporated by the study area. None of these RMPs are National Monuments or has a Preservation Order placed on it. None of these sites is within the proposed development boundary.
<ul style="list-style-type: none"> - Protected Structures 	There are no Protected Structures incorporated by the study area.
<ul style="list-style-type: none"> - Architectural Conservation Areas (ACAs) 	There is no Architectural Conservation Area incorporated by the study area.
<ul style="list-style-type: none"> - Sites Listed in the NIAH 	There are no sites listed in the NIAH incorporated by the study area.
<ul style="list-style-type: none"> - Unregistered Cultural Heritage Sites 	There are 12 unregistered cultural heritage sites incorporated by proposed development site – four are townland boundaries forming the perimeter of the development site; eight are the sites of vernacular structures (no longer extant) identified on the cartographic sources within the proposed development site.
<ul style="list-style-type: none"> - Areas/features of archaeological potential 	There is a moderate potential for unknown buried archaeological remains within the site due to the presence of prehistoric and medieval monuments located within the surrounding area.

Table 7 – Summary of baseline environment

4.2 Impact assessment

This section assesses the likely significant impacts that the proposed development will have on the baseline/receiving environment, prior to the implementation of any mitigation measures. The methodology used in ascertaining the baseline value of sites, the type, magnitude and significance level of impacts is set out in Section 2 above. Suggested archaeological mitigation measures are provided in Sections 5 below to reduce potential impacts on any known or unknown remains within the site.

CH No.	Category	Summary	Baseline Value	Impact Type	Description of Impact	Impact Magnitude	Significance of Impact
CH001	RMP	Ringfort - rath	Very High	None	No physical, visual impact not a consideration	Negligible	Negligible
CH002	RMP	Ringfort - rath	Very High	None	No physical or visual impact	Negligible	Negligible
CH003	RMP	Ringfort - rath	Very High	None	No physical or visual impact	Negligible	Negligible
CH004	RMP	Enclosure	Very High	None	No physical or visual impact	Negligible	Negligible
CH005	RMP	Souterrain	Very High	None	No physical or visual impact	Negligible	Negligible
CH006	RMP	Ringfort - rath	Very High	None	No physical or visual impact	Negligible	Negligible
CH007	RMP	Hilltop enclosure	Very High	None	No physical or visual impact	Negligible	Negligible
CH008	N/A	Townland Boundary	Medium /Low	None	No physical or visual impact	Negligible	Negligible
CH009	N/A	Townland Boundary	Medium /Low	None	No physical or visual impact	Negligible	Negligible
CH010	N/A	Townland Boundary	Medium /Low	None	No physical or visual impact	Negligible	Negligible
CH011	N/A	Townland Boundary	Medium /Low	None	No physical or visual impact	Negligible	Negligible
CH012	N/A	Vernacular Building	Medium /Low	None	No physical, visual impact not a consideration	Negligible	Negligible
CH013	N/A	Vernacular Building	Medium /Low	None	No physical, visual impact not a consideration	Negligible	Negligible
CH014	N/A	Vernacular Building	Medium /Low	None	No physical, visual impact not a consideration	Negligible	Negligible
CH015	N/A	Vernacular Building	Medium /Low	None	No physical, visual impact not a consideration	Negligible	Negligible
CH016	N/A	Vernacular Building	Medium /Low	None	No physical, visual impact not a consideration	Negligible	Negligible
CH017	N/A	Vernacular Building	Medium /Low	None	No physical, visual impact not a consideration	Negligible	Negligible

CH No.	Category	Summary	Baseline Value	Impact Type	Description of Impact	Impact Magnitude	Significance of Impact
CH018	N/A	Vernacular Building	Medium /Low	None	No physical, visual impact not a consideration	Negligible	Negligible
CH019	N/A	Vernacular Building	Medium /Low	None	No physical, visual impact not a consideration	Negligible	Negligible

Table 8 – Summary of impacts and impact magnitude prior to mitigation

4.3 Details of the development

4.3.1 110kV Substation

The proposed substation will be located within the western half of Field 1. The main construction elements will be two substation buildings of concrete block construct with slate roof, electrical infrastructure, plinths, bunds, lightning masts, surface water and foul drainage works and lighting. The compound facility will be secured with fencing to full EirGrid specification. Cables connecting the substation to the associated solar farm development will be underground to a depth of approximately 1 m. Existing site levels will be reprofiled for the purposes of accommodating the substation following detailed pre-commencement site investigations. In order to connect the substation to the transmission network, it is proposed to break the existing 110kV overhead line and divert it underground via two new end mast steel lattice structures of approximately 21 m in height. These new masts will allow for approximately 574 m of new underground cable which will be routed into and out of the substation.

These will have no know impact on archaeology.

4.3.2 Panels

While the exact details of the Solar PV array are still subject to slight change it will contain circa 14,600 m² of solar panels on ground mounted frames. Depending on the soil conditions, either earth screws or rammed profiles will be used to an approximate depth of 2 m below ground level. Typically, each of these anchors measures a maximum of 10 cm x 14 cm, but they are hollow and only 3.5 mm thick.

The impact from the panel anchors will be less 0.2% of total site area.

As currently designed the panel anchors will not impact directly on any sub-surface remains there may be of CH013–CH019 as suitable buffer zones have been designed in.

There are no other specific archaeological impacts known from the panel anchors.

4.3.3 Cables and structures

Excavation trenches for cabling will be 1 to 1.5 metres in depth—typically 0.8 metres in width. Confined principally and where possible to access tracks. There is no known impact on archaeology from the proposed cabling.

The following structures are proposed:

1 no. Battery Storage Container (29.4 m² in area);

2 no. Inverter/Transformer (x 2 options):

- Combined (29.8 m²);
- Separate (23.4 m²)

Total area of structures = 89 m² (assumes combined inverter/transformer).

There is no known impact on archaeology from the proposed structures.

4.3.4 Other elements

The other elements of the development that may involve some ground reduction/ disturbance to facilitate are the following:

- boundary security fence
- site entrance

- access tracks
- communications mast/ CCTV pole
- temporary construction compound
- construction traffic

The security fence will involve the insertion of timber posts to a depth of approx. 1.2 m at 2-4 m intervals. It will not impact on CH013–CH019, which are located adjacent to the site boundaries as a suitable buffer zones have been incorporated into the design. The alignment of the security fencing will respect these buffer zones.

The access tracks and construction compound will only involve stripping 0.2 m of topsoil and replacing it a layer of coarse gravel/ suitable substrate. In most cases the topsoil itself will exceed this depth. Approximately 8 linear metres of existing hedgerow will be removed to facilitate access tracks.

The site entrance, access tracks, masts or compounds have no known impact on archaeology.

4.4 Visual amenity

The site visit did not indicate and potential visual impacts in relation to any of the identified CH sites, all appear to be screened from the development by topography and/or vegetation.

5 MITIGATION STRATEGY

The following mitigation measures proposed are subject to approval by the National Monuments Service and the local planning authority. They have been compiled with reference to the Framework and Principles for the Protection of the Archaeological Heritage (1999) as well as the National Monuments Service Solar Farm Developments- Internal Guidance Document (2016).

The current state policy is that preservation *in situ* of archaeological material is the preferred option. Where this cannot be achieved then appropriate measures need to be adopted to ameliorate the impacts that the proposed development may have on features of archaeological, architectural and/or cultural heritage within the study area during both the construction and operational phases of the works.

The following measures have already been incorporated by the design team to minimise the amount of ground disturbance caused by the construction process (and by extension any possible impact on sub-surface remains):

- To minimise damage to the soil structure within the solar farm site, where possible the installation works will typically be carried out in dry weather.
- Equipment will be delivered to site by medium articulated vehicles and offloaded in packs by tracked machines or low ground pressure machines, which reduces the risk of compaction. The constructed access tracks which extend to all areas of the site will be the principal means to navigate the site for construction purposes, with higher pressure machines confined to same. A delivery sequence of lower pressure vehicles will be devised which minimises repeated journeys over the pasture to reduce rutting and damage to the pasture and soil structure.
- On completion of the works, the pasture will be restored using light farming machines and prepared appropriately for seeding to encourage early growth, restoration of the soil structure and natural creation of meadow grass.

The following mitigation is also proposed:

- A buffer zone of at least 10 m around has been incorporated in the design around each of the unregistered cultural heritage sites (CH013-019; Figure 1). These buffers should be physically demarcated on the ground for the duration of the construction works.
- All groundworks including those related to the access tracks, cables, substation, boundary fences and the solar panel supports be monitored by a suitably qualified archaeologist under licence. Provision will be made in the construction programme for dealing with any archaeological remains that may be encountered during this monitoring, which is likely to involve archaeological excavation.

6 CONCLUSIONS

6.1 Summary of archaeological findings

The archaeological assessment of the proposed works at Lysaghtstown, Co. Cork has identified 19 sites of archaeological, and/or cultural heritage significance within the study area. These include seven RMPs none of which are located within the proposed development site. In addition, 12 undesignated cultural heritage sites were found within the proposed development site. Four of these sites are townland boundaries forming the perimeter of the development site (CH008–011). The remaining eight are the sites of vernacular buildings (CH012–019) with no upstanding remains.

Buffer zones have been designed in to avoid a direct impact on seven of the vernacular building sites within the proposed development site (CH013–019; Figure 1). The eighth should not be impacted by the development due to its position within the site.

6.2 Recommendations

It is recommended that the mitigation strategy outlined in Section 5 above be adopted. If the design of the proposed development is altered this assessment will need to be updated accordingly.

Please note all the recommendations in this report are subject to approval of the National Monuments Service and the Local Planning Authority.

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APPENDIX 1 – INVENTORY OF IDENTIFIED SITES OF CULTURAL HERITAGE SIGNIFICANCE AND/OR POTENTIAL WITHIN STUDY AREA

CH No.	Category	ID	Summary	Description	Townland	Baseline Value	ITM E	ITM N
CH001	RMP	CO065-056----	Ringfort - rath	In rough grazing, on N-facing slope. Shown on 1842 OS 6-inch map as circular enclosure (diam. c. 30m). Levelled; no visible surface trace.	BALLYLEARY (Barrymore, By., Carrigtwohill Par.)	Very High	583657	576992
CH002	RMP	CO065-057----	Ringfort - rath	In pasture, on E-facing slope. Circular area (29.5m N-S; 29m E-W) enclosed by two earthen banks with intervening fosse. Inner bank (int. H 1.3m) heavily overgrown; gap to E. Outer bank (H 0.85m) stone faced in parts. Interior slopes down to NE.	BALLYLEARY (Barrymore, By., Carrigtwohill Par.)	Very High	583836	576914
CH003	RMP	CO065-059001-	Ringfort - rath	In pasture, on SW-facing slope. Extensive views to NW and SSW. Raised circular area (32.6m E-W; 30.75m N-S) enclosed by steep-sided inner bank (max. int. H 1.55m; ext. H 4.05m); rock-cut intervening fosse with possible well to NE; berm (Wth 3.5m); outer bank (H 2.25m), inner face quarried into to E; shallow external fosse N->SSW, formerly deep but recently infilled with debris SSW->N. Interior split levelled, with E half c. 1.25m higher than W. At centre, depression and spoil heap indicated disturbance due to digging. According to local information O'Neill, Earl of Tyrone, camped here in 1599.	WOODSTOCK	Very High	583026	576106
CH004	RMP	CO065-108----	Enclosure	In Currage Wood, on a break in a SW-facing slope and near the top of a hill. A circular area (27m N-S; 25m E-W) is defined by a low, rounded, earthen bank (Wth	CURRAGH (Barrymore By.)	Very High	585163	576585

CH No.	Category	ID	Summary	Description	Townland	Baseline Value	ITM E	ITM N
				5.5m; int. H 0.4m; ext. H 0.7m). The bank is broken at NNE and NNW (Wth 3m) due to a forest path which crossed E-W through the N half of the interior. The bank and interior are planted with trees. The interior slopes gently down to the W.				
CH005	RMP	CO065-059002-	Souterrain	In ringfort (CO065-05901-). Hackett (1854, 55) records local tradition of passage associated with ringfort, leading 'a considerable distance underground to an open space'. Explorations by Hackett uncovered a passage (H 0.35m; Wth 0.35m) with a circular enlargement (diam. 0.6m; H 0.35m) at each end; this was possibly a drain as dimensions appear small for a souterrain. Depression and spoil heap noted in interior of ringfort.	WOODSTOCK	Very High	583026	576106
CH006	RMP	CO065-060----	Ringfort - rath	In pasture, on break in SSW-facing slope. Roughly circular area (c. 35.4m N-S; 30.4m E-W) defined by earthen bank (H 1.6m) NNW->E; low rise elsewhere.	WOODSTOCK	Very High	582945	575816
CH007	RMP	CO065-061----	Hilltop enclosure	On top of a hill, in commanding position; land falls away steeply to S and E; extensive view to S. Circular area (75m N-S; 74.9m E-W) enclosed by bivallate earthen defences: inner bank (int. H 0.55m; ext. H 1.7m) separated from outer bank (int. H 1.2m; ext. H 1.6m) by flattened U-shaped fosse; outer fosse (D 0.5m) evident all around but survives best SSW->NE. Entrance to NW. Interior slopes up to N; N end is summit of	CURRAGH (Barrymore By.)	Very High	584116	576419

CH No.	Category	ID	Summary	Description	Townland	Baseline Value	ITM E	ITM N
				hill; numerous tree boles covered by sparse scrub vegetation. To SE scarp (H 1m; L c. 21m) runs from inner bank face in WNW direction, may be recent feature. On edge of coniferous plantation which skirts enclosure W->E. Unlikely to be hillfort as "the area enclosed falls well short of an average hillfort and bivallate defences are not typical of Irish hillforts (pers. comm. Dr. Barry Raftery).				
CH008	Cartographic Source	N/A	Townland boundary	Townland boundary between the townlands of Lysaghtstown and Ballyleary – boards the proposed development on its NNW side.	LYSAGHTSTOWN/ BALLYLEARY	Medium /Low	583906	576176
CH009	Cartographic Source	N/A	Townland boundary	Townland boundary between the townlands of Lysaghtstown and Curragh – boards the proposed development on its north and east sides.	LYSAGHTSTOWN/ CURRAGH	Medium /Low	585144	575731
CH010	Cartographic Source	N/A	Townland boundary	Townland boundary between the townlands of Lysaghtstown and Ballyrichard Beg – boards the proposed development on its SW side.	LYSAGHTSTOWN/ BALLYRICHARD BEG	Medium /Low	584120	576168
CH011	Cartographic Source	N/A	Townland boundary	Townland boundary between the townlands of Lysaghtstown and Carrigane – boards the proposed development on its south side.	LYSAGHTSTOWN/ CARRIGANE	Medium /Low	584683	575272
CH012	UCH	N/A	Vernacular Building	Vernacular building appearing on 1st edition OS 6-inch series map	LYSAGHTSTOWN	Medium /Low	584104	576167
CH013	UCH	N/A	Vernacular Building	Vernacular building appearing on 1st edition OS 6-inch series map	LYSAGHTSTOWN	Medium /Low	584152	576150

CH No.	Category	ID	Summary	Description	Townland	Baseline Value	ITM E	ITM N
CH014	UCH	N/A	Vernacular Building	Vernacular building appearing on 1st edition OS 6-inch series map	LYSAGHTSTOWN	Medium /Low	584348	576094
CH015	UCH	N/A	Vernacular Building	Vernacular building appearing on 1st edition OS 6-inch series map	LYSAGHTSTOWN	Medium /Low	584543	576065
CH016	UCH	N/A	Vernacular Building	Vernacular building appearing on 1st edition OS 6-inch series map	LYSAGHTSTOWN	Medium /Low	584561	575980
CH017	UCH	N/A	Vernacular Building	Vernacular building appearing on 1st edition OS 6-inch series map	LYSAGHTSTOWN	Medium /Low	584897	575731
CH018	UCH	N/A	Vernacular Building	Vernacular building appearing on 1st edition OS 6-inch series map	LYSAGHTSTOWN	Medium /Low	584898	575715
CH019	UCH	N/A	Vernacular Building	Vernacular building appearing on 1st edition OS 6-inch series map	LYSAGHTSTOWN	Medium /Low	584931	575697

Note: The abbreviations that have been used for the 'Category' section are as follows:

- RMP: Recorded archaeological monument
- NIAH: National Inventory of Architectural Heritage
- UCH: Unregistered Cultural Heritage Site

APPENDIX 2 LEGISLATIVE AND POLICY FRAMEWORK

EIA Legislation

EIA Directive 85/337/EEC as amended by 97/11/EC, 2003/35/EC and 2009/31/EC requires that certain developments be assessed for likely environmental effects before planning permission can be granted. This original directive and its amendments were consolidated informally in EIA Directive 2011/92/EU and further amended 2014/52/EU.

Directive 2014/52/EU that among other factors, information is to be provided on:

‘cultural heritage, including architectural and archaeological aspects’ (Annex IV, Section 3)

Each of these assets is addressed within this assessment report.

Cultural Heritage Legislation

Archaeological Monuments/Sites

Archaeological heritage is protected primarily under the National Monuments Acts 1930-2004. Section 2 of the 1930 National Monuments Act defines the word ‘monument’ as including:

‘any artificial or partly artificial building, structure, or erection whether above or below the surface of the ground and whether affixed or not affixed to the ground and any cave, stone, or other natural product whether forming part of or attached to or not attached to the ground which has been artificially carved, sculptured or worked upon or which (where it does not form part of the ground) appears to have been purposely put or arranged in position and any prehistoric or ancient tomb, grave or burial deposit, but does not include any building which is for the time being habitually used for ecclesiastical purposes’

Under the 1994 Act, provision was made for a Record of Monuments & Places (RMP). The RMP is a revised set of SMR (Sites and Monuments Record) maps, on which newly-discovered sites have been added and locations which proved not to be of antiquity have been de-listed by the National Monuments Service.

In effect, the National Monuments Acts 1930-2004 provide a statutory basis for:

- Protection of sites and monuments (RMPs)
- Sites with Preservation Orders
- Ownership and Guardianship of National Monuments
- Register of Historic Monuments (pre-dating AD 1700)
- Licensing of archaeological excavations
- Licensing of Detection Devices
- Protection of archaeological objects
- Protection of wrecks and underwater heritage (more than 100 years old)

In relation to proposed works at or in the vicinity of a recorded archaeological monument, Section 12 (3) of the National Monuments (Amendment) Act 1994 states:

‘When the owner or occupier (not being the Commissioners) of a monument or place which has been recorded [in the Record of Monuments and Places] 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 Commissioners and shall not, except in the case of

urgent necessity and with the consent of the Commissioners, commence the work for a period of two months after having given the notice.'

Archaeological artefacts

Section 2 of the 1930 National Monuments Act (amended) defines an archaeological object as (in summary) any chattel in a manufactured or partly manufactured state or an unmanufactured state but with an archaeological or historical association. This includes ancient human, animal or plant remains.

Section 9 (1) of the National Monuments (Amendment) Act 1994 states that any such artefact recovered during archaeological investigations should be taken into possession by the licensed archaeological director and held on behalf of the state until such a time as they are deposited accordingly subsequent to consultation with the National Museum of Ireland.

Architectural Sites

In 1997 Ireland ratified the Granada Convention on architectural heritage. This provided the basis for a national commitment to the protection of the architectural heritage throughout the country. The Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999 and Local Government (Planning and Development) Act 2000 made the legislative changes necessary to provide for a strengthening of the protection of architectural heritage. The former Act has helped to provide for a forum for the strengthening of architectural heritage protection as it called for the creation of a National Inventory of Architectural Heritage which is used by local authorities for compiling the Record of Protected Structures (RPS). The Record of Protected Structures (RPS) is set out in each respective county's Development Plan and provides statutory protection for these monuments.

Section 1 (1) of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999 states:

'architectural heritage means all—

- (a) structures and buildings together with their settings and attendant grounds, fixtures and fittings,
- (b) groups of such structures and buildings, and
- (c) sites, which are of architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest"

The 1999 Act was replaced by the Local Government (Planning and Development) Act 2000 where the conditions relating to the protection of architectural heritage are set out in Part IV of the Act. Section 57 (1) of the 2000 Act states that:

'...the carrying out of works to a protected structure, or a proposed protected structure, shall be exempted development only if those works would not materially affect the character of –

- (a) the structure, or
- (b) any element of the structure which contributes to its special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest'

APPENDIX 3 TERMS AND DEFINITIONS USED

The following sets out the definitions of the terms which are used throughout the report:

- (i) The phrase 'cultural heritage' is a generic term used in reference to a multitude of cultural, archaeological and architectural sites and monuments. The term 'cultural heritage', in compliance with Section 2(1) of the Heritage Act (1995), is used throughout this report in relation to archaeological objects, features, monuments and landscapes as well as all structures and buildings which are considered to be of historical, archaeological, artistic, engineering, scientific, social or technical interest.

For the purpose of this assessment, each identified cultural heritage site is assigned a unique cultural heritage number with the prefix 'CH'.

- (ii) A feature recorded in the 'Record of Monuments and Places' (RMP) refers to a recorded archaeological site that is granted statutory protection under the National Monuments Act 1930-2004. When reference is made to the distance between an RMP and the proposed development site (see below), this relates to the minimal distance separating the site from the known edge of the RMP. Where the edge of the RMP is not precisely known, the distance relates to that which separates the site from the boundary of the RMP zone of archaeological potential as represented on the respective RMP map; where this is applied, it is stated accordingly.
- (iii) An 'area of archaeological potential' refers to an area of ground that is deemed to constitute one where archaeological sites, features or objects may be present in consequence of location, association with identified/recorded archaeological sites and/or identifiable characteristics.
- (iv) The term 'proposed development site' refers to the defined area of land within which the proposed development, including access tracks etc, may be constructed.
- (v) In relation to the term 'study area' please see Section 1.3 above.
- (vi) The term 'receiving environment' refers to the broader landscape within which the study area is situated. Examination of the site's receiving environment allows the study area to be analysed in its wider cultural context.
- (vii) The terms 'baseline environment' and 'cultural heritage resource' refer to the existing, identifiable environment against which potential impacts of the proposed scheme may be measured.

Note: Information regarding archaeological site types and periods is provided in a glossary in Appendix 4.

APPENDIX 4 GLOSSARY AND DEFINITION OF ARCHAEOLOGICAL TERMS

Bridge A structure of wood, stone, iron, brick or concrete, etc., built to span a river or ravine in order to facilitate the crossing of pedestrians or vehicles. These date from the medieval period (5th - 12th centuries AD) onwards.

Castle – motte An artificial, steep-sided, earthen mound on or in which is set the principal tower of a castle. Constructed by the Anglo-Normans in the late 12th and early 13th century AD.

Castle - tower house A fortified residence in the form of a tower, usually four or five storeys high, and for the most part slightly more rectangular than square in plan. They were constructed by a lord or landholder and were often partially or completely enclosed by a bawn. The majority date to the 15th and 16th centuries AD.

Cathedral The principal church of a diocese in which the cathedra or bishop's throne may be found. These date from the 12th to the 19th century AD.

Church A building used for public Christian worship. These can be of any date from c. AD 500 onwards.

Cist A rectangular or polygonal structure used for burial purposes, constructed from stone slabs set on edge and covered by one or more horizontal slabs or capstones. Cists may be built on the surface or sunk into the ground or set within a cemetery cairn or cemetery mound. They date to the Bronze/Iron Ages (c. 2400 BC – AD 400).

Coffin-resting stone A stone found on route to a graveyard on which the coffin is rested during transportation. These can date from the late medieval period (c. 1400 AD) onwards.

Burnt mound A circular or irregularly shaped mound of material consisting of burnt stones, ash and charcoal with no surface evidence of a trough or depression. Levelled examples can appear as a spread containing burnt stones. These can be of any date from the Bronze Age (c. 2400-500 BC) to the early medieval period (5th - 12th century AD). See also *Fulacht fia*.

Earthwork An anomalous earthen structure, usually raised and occurring in a variety of shapes and sizes, that on field inspection was found to possess no diagnostic features which would allow classification within another monument category. These may date to any period from prehistory onwards.

Enclosure An area defined by an enclosing element (e.g. bank, wall, fosse, scarp), or indicated as such cartographically, and occurring in a variety of shapes and sizes, possessing no diagnostic features which would allow classification within another monument category. These may date to any period from prehistory onwards

Field boundary A continuous linear or curving bank, wall or drain which defines the limits of a field. These date to any period from the Neolithic (c. 4000-2400 BC) onwards.

Fulacht fia A horseshoe-shaped or kidney-shaped mound consisting of fire-cracked stone and charcoal-enriched soil built up around a sunken trough located near or adjacent to a water supply, such as a stream or spring, or in wet marshy areas. The first recorded use of the Irish term '*fulacht fiadh/fia*' (cooking pit of the deer or of the wild) as relating to ancient cooking sites was in the 17th century. These

are generally interpreted to have been associated with cooking and date primarily to the Bronze Age (c. 2400-500 BC).

Furnace

A chamber in which minerals, metals, etc., are subjected to continuous intense heat. These can date from the Bronze Age (c. 2400-500 BC) to the 17th century AD.

Hearth A place where a fire is made but where there is insufficient evidence to indicate habitation. These may date to any period from prehistory (c. 8000 BC – AD 400) to the medieval period (5th-16th centuries AD).

Hillfort A large area, from 3 to 22 hectares, located on and often following the natural contours of a hill, enclosed by an earth or stone bank/banks and fosse/fosses which can be internal or external. They may have been important ceremonial tribal centres and/or permanent or temporary settlements. They have been dated to the Late Bronze Age (c. 1000-500 BC) with examples of reoccupation in the later Iron Age (c. AD 100-400).

House – vernacular house A house which is non-formal, built of local materials using local skills and craftsmen within the parameters of their own local building tradition. In Ireland the majority are single storey, rectangular in plan and only one room deep, with the main hearth/kitchen forming the core of the house for domestic and social activities. These date from the AD 17th to the early 20th century.

Megalithic tomb - passage tomb A round mound, usually surrounded by a kerb of large stones, enclosing a burial chamber, usually with a corbelled roof, which is entered by a passage, usually lintelled. Many tombs have side and end recesses opening off a central chamber, resulting in a cruciform plan. Cremation was the predominant burial rite in passage tombs which primarily date from 3300 to 2900 BC though some simpler tombs in Carrowmore, Co. Sligo have produced radiocarbon dates suggesting use even earlier in the Neolithic, c. 4000 BC.

Metalworking site A place where metal is produced. These may date from the Bronze Age (c. 2400-500 BC) onwards.

Midden A refuse heap sometimes surviving as a layer or spread. These may be of any date from prehistory (c. 8000 BC – AD c. 400) up to the medieval period (5th-16th centuries AD).

Pit A circular or sub-circular cropmark/maculae or soil-mark, usually identified from aerial photography, which appears to be the visible evidence of a filled-in excavated hole or cavity in the ground. These may date to any period from prehistory onwards.

Ringfort – cashel A roughly circular or oval area surrounded by a stone wall or walls. They functioned as residences and/or farmsteads and broadly date from 500 to 1000 AD. See Ringfort - rath for earthen equivalent.

Ringfort – rath A roughly circular or oval area surrounded by an earthen bank with an external fosse. Some examples have two (bivallate) or three (trivallate) banks and fosses, but these are less common and have been equated with higher status sites belonging to upper grades of society. They functioned as residences and/or farmsteads and broadly date from AD 500 to 1000.

Ringfort – unclassified A roughly circular or oval area surrounded by an earthen bank with an external fosse (see Ringfort - rath) or a stone wall (see Ringfort - cashel). The term Ringfort - unclassified is used

in instances where the surviving remains are insufficient to determine whether the monument was originally a rath or cashel. They functioned as residences and/or farmsteads and broadly date from 500 to 1000 AD.

Road - road/trackway A way, or section thereof, which has been deliberately constructed between places. These may be of any date from prehistory onwards.

School An establishment in which people, usually children, are taught. These date from the late medieval period (c. 1400 to the 16th century AD) onwards.

Settlement deserted – medieval An abandoned medieval settlement dating from the 13th century to 1550 AD consisting of a group of houses in close proximity with associated land plots, associated with a parish church and/or castle or tower house, often evident as earthworks.

Souterrain An underground structure consisting of one or more chambers connected by narrow passages or creepways, usually constructed of drystone-walling with a lintelled roof over the passages and a corbelled roof over the chambers. Most souterrains appear to have been built in the early medieval period by ringfort inhabitants (c. 500 – 1000 AD) as a defensive feature and/or for storage.

Standing stone A stone which has been deliberately set upright in the ground, usually orientated on a north-east-south-west axis, although other orientations do occur, and varying in height from 0.5m up to 6m. They functioned as prehistoric burial markers, commemorative monuments, indicators of routeways or boundaries and date from the Bronze and Iron Ages (c. 2400 BC - AD 500), with some associated with early medieval ecclesiastical and burial contexts (c. 5th-12th centuries).

