

## 12 Cultural Heritage

### 12.1 Introduction

This chapter of the Environmental Impact Statement describes the existing environment directly relating to cultural heritage in the vicinity of the proposed development, the predicted and potential impacts of the proposed development and the mitigation measures needed to address the potential significant impacts. It is divided into the following sub-sections:

#### 12.1 Introduction

#### 12.2 Methodology

- *Archaeology*
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- *Non-Invasive Investigations*
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#### 12.3 Existing Environment

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- *Previous Excavations and Assessments*
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#### 12.4 Cultural Heritage Impacts

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## 12.5 Cultural Heritage Mitigation Measures

- *Construction and Operational Phase Mitigation*

## 12.6 Residual Impacts

## 12.2 Methodology

### 12.2.1 Archaeology

The assessment of archaeological and cultural heritage was based on a desk study utilising a number of sources of information, including the Record of Monuments and Places, the National Museum of Ireland Topographical Files, the *Draft County Development Plan for Offaly 2009-2015*, documentary, cartographic and aerial photographic sources. This information was further supplemented by a field inspection of the proposed development site.

### 12.2.2 Architectural Heritage

The assessment of architectural heritage was based on a desk study utilising a number of sources of information, including the *Draft County Development Plan for Offaly 2009-2015*, the Irish Architectural Archive, the National Inventory of Architectural Heritage (NIAH), the Record of Monuments and Places, documentary, cartographic and aerial photographic sources. This information was supplemented by a field inspection of the proposed development site.

### 12.2.3 Desk Study

#### (i) Archaeology

##### **Recorded Archaeological Sites and Monuments**

The Record of Monuments and Places (RMP) was established under the National Monuments Acts 1930 - 1994. It is based upon the older non-statutory Sites and Monuments Record and information from county archaeological inventories. It records known upstanding archaeological monuments, the location of destroyed monuments and the location of possible sites identified through documentary, cartographic, photographic research and field inspections. The RMP data is compiled from the files of the Archaeological Survey, which combines cartographic sources and all published and publicly available documentary sources including periodicals, the records of the National Museum of Ireland (NMI) and the aerial photographs of the Geological Survey of Ireland (GSI).

The RMP consists of a numbered list, organised by county and subdivided by 6 inch map sheets, showing the location of each site. Each recorded monument has been allocated a unique identifying number given in the form, for example, 'RO001-001---'. In this example 'RO' is the two letter county identifying code, the next element '001-' is the number of the Ordnance Survey 6 Inch map on which the monument is located, and the last element '001---' gives the specific number of the monument within the sequence on the relevant Ordnance Survey 6 Inch Sheet. The first two of the

three dashes at the end allow monuments or places, situated in close proximity to each other or closely associated with each other, to be given one overall monument number, but at the same time be individually identified through the use of sub-numbering in the form, for example, 00101, 00102, 00103, etc., as appropriate.

### **Topographic Files of the National Museum of Ireland**

The topographical files of the National Museum of Ireland (NMI) identify all recorded finds held in the NMI archive that have been donated to the State in accordance with national monuments legislation. The files sometimes include reports on excavations undertaken by NMI archaeologists in the early 20<sup>th</sup> century. Valuable information that can be gleaned might include the exact location, ground type, depth below ground level and condition when found, of each find. The discovery of a find or finds may indicate that human activity or settlement once existed in or around the findspot. However, the amount and the usefulness of the information available on each find can vary considerably, often the exact location of the findspot is not known and it is only the general townland which is given as its original location. The topographical files are listed by county and townland and/or street name.

### **Cartographic Sources**

Analysis of historic mapping shows the human impact on the landscape and its evolving nature over clearly defined time intervals. The comparison of editions of historic maps can show how some landscape features have been created, altered or removed over a period of time. Depicted landscape features of interest include: archaeological sites, e.g. ringforts, cashels, cairns, megaliths; historical structures, e.g. castles, tower houses, churches, and graveyards; vernacular structures, e.g. dwellings and farms; industrial archaeology, e.g. limekilns, forges, mills and quarries; townland and field boundaries, drainage ditches, lakes, rivers and streams.

The Bog Commissioners Map (1811) and the first edition of the Ordnance Survey 6" Map (1837) for Offaly (Sheet 3) were examined. All maps were viewed and sourced from the Trinity College Map Library, Dublin.

### **Previous Excavations and Assessments**

The Excavations Bulletin, published each year, and its online database contains summary accounts of all the excavations carried out in Ireland – North and South – from 1970 to 2004, currently the latest edition. It has been compiled from the published Excavations Bulletins from those years, with a similar format. The number of excavations carried out annually in Ireland has increased enormously during this period. To illustrate, Excavations 1970 has 41 reports, while Excavations 2000 contains over 1100. The database gives access to almost 6000 reports and can be browsed or searched over the internet using multiple fields, including Year, County, Site Type, Grid Reference, Licence No., Sites and Monuments Record No. and Author.

### **Aerial Photography**

Aerial photographs allow for a different perspective, 'the distant view'. From the air low visibility archaeological sites may show up on the ground surface, depending on their state of preservation, by light and shadow contrasts, "shadow marks", tonal differences in the soil, "soil marks" or differences in height and colour of the cultivated cereal, "crop marks". The aerial photographs examined were sourced from the Geological Survey of Ireland. The survey was flown at a height of 15,000 ft to give a

nominal scale of 1:30,000. The survey was carried out by the Irish Air Corp between 1973 and 1977. It is not permitted to reproduce these photographs.

## **Historical Research**

Various published sources, including local and national journals, were consulted to establish a historical background for the proposed development site. Various unpublished sources were also consulted, including local studies, theses and archaeological corpora.

### **(ii) Architectural Heritage**

#### **National Inventory of Architectural Heritage**

The National Inventory of Architectural Heritage (NIAH) is a State initiative under the administration of the Department of the Environment, Heritage and Local Government and established on a statutory basis under the provisions of the Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999.

*The purpose of the NIAH 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 the Environment, Heritage and Local Government to the planning authorities for the inclusion of particular structures in their Record of Protected Structures (RPS). The published surveys are a source of information on the selected structures for relevant planning authorities.*

#### **County Development Plan**

The *Draft Offaly County Development Plan 2009-2015* was consulted. The development plan includes a Record of Protected Structures, which lists every structure which is of special architectural, archaeological, artistic, cultural, scientific, social or technical interest within the county.

Each Planning Authority has a statutory responsibility, under Section 51 of the *Planning and Development Act of 2000*, to include an RPS in its Development Plan. The effect of Protected Structure Status is to seek to retain the special character and features that make these structures significant. Therefore, any works that would have a material effect on the character of a protected structure require planning permission. The Act also places an obligation on owners and occupiers of a protected structure to ensure that it, or any element of it, is not endangered.

#### **Aerial Photography**

Aerial photographs were examined to establish if any features of architectural heritage interest were visible.

#### **12.2.4 Non-Invasive Investigations**

The field inspection survey sought to verify the location and extent of known features and to record the location and extent of any new features. Areas of archaeological potential, with no above ground visibility, were also identified such as wetland areas, river crossings, areas between concentrations of upstanding feature and so on. The field inspection was carried out on 9 April 2008.

## 12.2.5 Legislation, Standards & Guidelines

The following legislation, including all relevant statutory instruments and orders made thereunder, standards and guidelines were taken into account during the assessment

### (i) Archaeology Legislation

- *The National Monuments Acts 1930 to 2004.*
- *Heritage Act, 1995.*
- *National Cultural Institutions Act, 1997.*
- *The Architectural Heritage (National Inventory) and Historic Properties (Miscellaneous Provisions) Act, 1999.*
- *Framework and Principles for the Protection of the Archaeological Heritage, 1999, Department of the Arts, Heritage, Gaeltacht and the Islands.*
- *Draft Offaly County Development Plan 2009-2015*
- *European Convention Concerning the Protection of the Archaeological Heritage (the ‘Valetta Convention’) ratified by the Republic of Ireland in 1997.*
- *Council of Europe Convention on the Protection of the Architectural Heritage of Europe, (the ‘Granada Convention’) ratified by Ireland in 1997.*

### (ii) Architectural Heritage Legislation

- *The National Monuments Acts 1930 to 2004*
- *Heritage Act, 1995.*
- *The Architectural Heritage (National Inventory) and Historic Properties (Miscellaneous Provisions) Act, 1999.*
- *Draft Offaly County Development Plan 2009-2015*
- *Local Government (Planning and Development) Acts, 2000 to 2006.*
- *Council of Europe Convention on the Protection of the Architectural Heritage of Europe, (the ‘Granada Convention 1984’) ratified by Ireland in 1997.*
- *European Council Directive on Environmental Impact Assessment (85/337/EEC), 1985 amended by Directive (97/11/EC), 1997 and Directive 2003/35/EC.*
- *Charter for the Conservation and Restoration of Monuments and Sites (Venice 1964).*
- *Convention for the Protection of World Cultural and National Heritage.*

### (iii) Standards / Guidelines – Archaeology

- *Advice notes on Current Practice (in the preparation of Environmental Impact Statements), 2003, Environmental Protection Agency.*
- *Guidelines on the information to be contained in Environmental Impact Statements, 2002, Environmental Protection Agency.*
- *Guidelines for the Assessment of Archaeological Heritage Impacts of National Roads Schemes, 2005, National Roads Authority.*

### (iv) Standards / Guidelines – Architectural Heritage

- *Advice notes on Current Practice (in the preparation of Environmental Impact Statements), 2003, Environmental Protection Agency.*

- *Guidelines on the information to be contained in Environmental Impact Statements, 2002*, Environmental Protection Agency.
- *Architectural Heritage Protection Guidelines for Planning Authorities*, Department of the Environment, Heritage and Local Government, 2004.
- *Guidelines for the assessment of Architectural Heritage Impacts of National Roads Schemes, 2005*, National Roads Authority.

## 12.2.6 Description of Potential Impacts

### (i) Description of the Site

The proposed development is located on Derrygreenagh Hill, in Derrygreenagh townland, c. 4 km southeast of Rochfortbridge. The western side of the Hill is traversed by the R400, which is orientated northwest/southeast. There is a high density of raised bogs throughout these regions, many of which are industrial and are currently under production by Bord na Móna, or have been in the past.

A distinctive feature of this area is the bog islands, which are areas of dry upland or partially drowned drumlins, that over time have been surrounded on all sides by raised bog. Derrygreenagh Hill is such a feature, surrounded by bog with Drumman Bog to the east, Derryarkin Bog to the west and Ballybeg Bog to the southwest. These bogs formed an extensive area of wetland, flanked by the elevated dryland to the north and south. To the northwest, beyond Derryarkin and Drumman Bogs, is a dryland ridge with an elevation of between 100 m and 130 m that stretches between the villages of Tyrrellspass and Milltownpass. The county boundary between Offaly and Westmeath is located 1.2 km north of Derrygreenagh Hill, where it follows the line of the Mongagh River to the northeast. It is orientated northeast/southwest along the southern side of the above mentioned ridge through Derryarkin Bog along townland boundaries. The bogs surrounding the site are drained by two main river systems, the Yellow River to the south and the Mongagh River to the north.

The proposed development site at Derrygreenagh Hill is the site of the Bord na Móna Derrygreenagh Works - See Figure 3.2 *Proposed Site Layout*. The majority of the site is located on the elevated area of the “mineral island”, with some minor intrusion onto the area of the surrounding peat bog.

This study shows that there are no recorded archaeological sites (RMPs) within the study area, or within a one kilometre radius of same. There are no buildings of architectural heritage merit within the study area.

The site is, however, located within an area of moderate to high archaeological potential. The Irish Archaeological Wetland Unit (IAWU) Survey of Derryarkin and Drumman Bogs, in 2002, identified a significant number of prehistoric archaeological sites and artefacts from the bogs surrounding Derrygreenagh Hill. Twenty-seven sites, two of which were dated to the Bronze Age, were recorded 300 - 600 m south of the proposed development site. The potential therefore exists that archaeological subsurface remains may be located *in situ* within the proposed development site.

Dryland islands are natural phenomena that have attracted human activity and settlement over several millennia and there are many examples of such sites throughout the country, where previously unknown archaeological sites have been discovered. The relatively fertile land of dryland islands could be used for grazing and some crop growth. Archaeological sites can be located on both the interface areas between wetland and dryland and also on the dryland itself. There is a moderate to high potential that archaeological features, deposits or artefacts survive sub-surface within the study area.

## (ii) Archaeology

Impacts may be categorised as either:

- Direct impact
- Indirect impact
- No predicted impact

*Direct impacts* – where an archaeological or cultural heritage feature or site is physically located within the footprint of the proposed development and entails the removal of part, or all of the monument or feature.

*Indirect impacts* – where a feature or site of archaeological heritage merit or its setting is located in close proximity to the footprint of a potential development. These impacts may be ameliorated at the detailed design stage and with the implementation of mitigation strategies.

*No predicted impact* - where the proposed development does not adversely or positively affect an archaeological heritage site.

The assessment of the terrain and the examination of the type, density and distribution of archaeological sites within the landscape give rise to the identification of areas and sites of archaeological potential. These areas may be included given their:

- Close proximity to recorded archaeological monuments;
- Association with either topographic features or wetland terrain;
- Placename evidence; and
- Find spots of stray finds.

Avoidance is the preferred mitigation measure. Early recognition of the type and level of impact should make it possible to minimise and reduce the loss of archaeological and architectural heritage features and provide suitable mitigation measures.

The significance of each impact is given as follows: profound, significant, moderate, slight or imperceptible:

- *Profound* - Applies where mitigation would be unlikely to remove adverse effects. Reserved for adverse, negative effects only. These effects arise where an archaeological site is completely and irreversibly destroyed by a proposed development.
- *Significant* - 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 the archaeological feature/site.

- *Moderate* - A moderate direct impact arises where a change to the site 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 where all procedures used to facilitate this are reversible.
- *Slight* - An impact which causes changes in the character of the environment which are not significant or profound and do not directly impact or affect an archaeological feature or monument.
- *Imperceptible* - An impact capable of measurement without noticeable consequences.

### **(iii) Architectural Heritage**

Impacts may be categorised as either:

- Direct impact
- Indirect impact
- No predicted impact

*Direct impacts* – where a feature or site of architectural heritage merit is physically located in whole or in part within the footprint of a potential development. In this case the main form of mitigation would be avoidance, where feasible, and having regard to the significance of the feature or site concerned.

*Indirect impacts* – where a feature or site of architectural heritage merit or its setting is located in close proximity to the footprint of the proposed development. In this case mitigation could ameliorate and reduce potential negative impacts.

*No predicted impact* - where the proposed development does not adversely or positively affect an architectural heritage site.

The level of impact is defined in accordance with the criteria provided in the published Environmental Protection Agency Guidelines (Environmental Protection Agency, 2003):

- *Profound* – 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.
- *Significant* – An impact that, by its magnitude, duration or intensity alters the character and / or 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 mitigation is likely to reduce the impact.
- *Moderate* – An impact that results in a change to the architectural heritage which, although noticeable, is not such that it 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 will reduce the impact.

- *Slight* – 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.
- *Imperceptible* – An impact on architectural heritage of local importance that is capable of measurement but without noticeable consequences.

## 12.3 Existing Environment

### 12.3.1 Archaeological and Historical Background

The general area in which the proposed development is located is an archaeologically rich landscape as evident by the numerous surviving monuments. Croghan Hill, the most prominent natural feature in east Offaly, located 4.5 km southwest of Derrygreenagh Hill, has been the focus for human activity since the Neolithic and possibly earlier. In addition to the monuments recorded on the dryland surrounding the bog around Derrygreenagh Hill, a significant number of sites have been identified within the bogs during surveys carried out by the Irish Archaeological Wetland Unit (IAWU) and excavations carried out by Archaeological Development Services Ltd (ADS). The information attained from the wetland context fills gaps in the archaeological record where there is a scarcity of datable remains. The following section provides an archaeological and historical background to Derrygreenagh Hill and its hinterland.

#### (i) Mesolithic Period (7000 BC – 4000 BC)

There is very little evidence for Mesolithic (7000 – 4000 BC) activity in the Midlands, with the exception of the Early Mesolithic settlement site at Lough Boora, Co. Offaly located 40 km southwest of Derrygreenagh Hill. This site was dated to 7000 – 6500 BC and represents the earliest evidence for human activity in the Midlands. No Late Mesolithic settlement sites have been found in Co. Offaly, however the recovery of a Bann Flake and a possible Bann Flake from wetland contexts in proximity to Derrygreenagh Hill enhances our knowledge of human activity in the area during this period (IAWU 2003, 8). The chert Bann Flake (92E0148:94/ OF-DYN 0001) was discovered by the IAWU, in 2000, during survey of Derryarkin Bog (*Ibid.*). The find was recovered from Derryarkin townland to the west of Derrygreenagh Hill. A possible Bann Flake was recovered, approximately 4 km southeast of the Bann Flake, during an excavation carried out on Ballybeg Bog (02E1202) by ADS Ltd. in 2002.

#### (ii) Neolithic Period (4000 BC – 2500 BC)

There is significant evidence for Neolithic (4000 – 2400 BC) activity both from dryland and wetland contexts in the landscape surrounding Derrygreenagh Hill. The large circular mound (OF010-00401) that occupies the summit of Croghan Hill (234m OD) has been classified as a cairn, a tumulus and a barrow in the past. It is listed as a 'Tumulus' in the Archaeological Inventory of County Offaly and is undoubtedly the earliest archaeological monument visible on the hill (O'Brien & Sweetman 1997 9). Without excavation it is impossible to state, with certainty, what type of funerary deposit or structure the mound covers. However, based on its location and morphology, it has been argued that it is most likely a Neolithic cairn that possibly covers a passage tomb, which generally date to the period 3500 BC to 2500 BC (Rohan 2005 24).

A significant number of Neolithic sites have been identified within the peatlands surrounding the proposed development site. In Offaly, evidence for human activity recorded from this wetland context dates from the Mesolithic period right through to modern times. Archaeological evidence of this occupation is often uncovered during the process of peat extraction, either mechanical or by hand. The most common archaeological material identified during wetland archaeological survey is wood, and the most common site type is the togher or wooden trackway. These trackways can be made from

planks, roundwoods or brushwood. The presence of a togher indicates human activity has taken place at some stage in the past. The narrow stretches between wetland and dryland have been shown to contain high concentrations of toghers, showing they were clearly recognised crossing points throughout prehistory.

Twenty-eight sites were identified by the IAWU in Derryarkin Bog during their survey in 2002. One of the sites was an Early Neolithic trackway (OF-DHG0002), the trees used in the construction were felled between 3640 - 3625 BC. This primary togher is the earliest dated trackway in Ireland. It was traced for 68m from beyond the southern fringes of Derrygreenagh Hill and was orientated towards Croghan Hill (IAWU 2003 6). It also represents the earliest dendrochronologically dated archaeological structure in Ireland (Ibid.). A dendrochronological sample taken from a fallen oak tree, located 0.30 m above the subsoil, on a gravel ridge that extended from Derrygreenagh Hill into Derryarkin Bog was dated to 3811 ± 9 BC (Ibid.). This indicates that Derrygreenagh Hill was significantly larger in the Late Mesolithic/Early Neolithic before the western extent of the ridge was encroached by bog. These findings increase our knowledge of the landscape encountered by the inhabitants of this area during the early prehistoric period.

A total of 105 sites were identified in Ballybeg Bog by the IAWU during survey work in 2001. A number of the sites, which ranged in date from Neolithic to Iron Age were excavated by ADS Ltd. in 2002. The earliest dated sites in Ballybeg Bog included an area of stone lined hearths and a stone enclosure that were subsequently dated to 3640 - 3370 BC and 3880 - 3800 BC, respectively (Jane Whitaker pers. comm.). This site was only partially excavated but possible suggested functions include a hide for the exploitation of animals and wildfowl living on the surrounding fen (O'Carroll 2003 56). A complex of platforms and toghers, located 100 m southeast of the stone enclosure, was dated to 2576 - 2294 BC and therefore date to the Late Neolithic/Early Bronze Age transition.

An unusually high number of artefacts dateable to the Neolithic were also recovered from Ballybeg Bog. The finds assemblage associated with the hearths and stone enclosure included a significant number of flint flakes and debitage suggesting that flint knapping took place on site. One of the most interesting finds from the bog was a bow stave dating to 2404 - 2399 BC, which places it in the Late Neolithic/Early Bronze Age transition period. This was an unusual find and represents the earliest dated long bow in Ireland thus providing an informative glimpse at hunting implements, technique and craftsmanship during this period (Rohan 2005 73).

Two artefacts dating to the Neolithic have been previously recovered from Derryarkin and Derrygreenagh townlands. A stone adze-head (1969:863) recovered from Derryarkin was recorded as being found in Derrygreenagh Works, on Derrygreenagh Hill (IAWU 2003 4). A stone axe-head (1959:751) was recovered from Derrygreenagh townland. The find spot is unknown and since the townland extends into Drumman and Derryarkin Bogs it may come from either. Both finds indicate Neolithic activity in proximity to the proposed development site.

### **(iii) Bronze Age (2500 BC – 500 BC)**

A considerable number of archaeological sites from a dryland and wetland context indicate extensive human occupation in the vicinity of the proposed development site during the Bronze Age (2500 -500 BC). A total of twenty-seven sites were identified in Drumman Bog during the IAWU 2002 survey of Derryarkin and Derrygreenagh Bogs. The majority of the sites were located 300 - 600 m southeast of the proposed development within a narrow neck of bog between Derrygreenagh Hill and the dryland on the northern side of Knockdrin Hill. The sites include small toghers, post rows and archaeological

wood and were for the most part composed of roundwoods, brushwoods and twigs. Two of the sites were subsequently dated to 1683 - 1409 BC and 1187 - 830 BC, thereby signifying Bronze Age activity in proximity to the proposed development. A single togher (OF003-002) was known from Derryarkin Bog prior to the IAWU survey. It is located in Derrycoffey townland beyond the southwest boundary of the Bord na Móna bog in an area now given over to forestry. It was reported in 1942 when it was described as a timber road constructed of large timber planks (O'Brien & Sweetman 1997 52). A Bronze Age spearhead (1937:3666) found nearby indicates that Bronze Age peat horizons were exposed at this time and therefore suggests that the togher may be Bronze Age in date (IAWU 2003 3).

Evidence for further Bronze Age activity to the south of Derrygreenagh Hill is implied by the presence of five recorded *fulachta fiadh* (OF004-017021). These features are located in Garr townland 3.5 km east of the proposed development. *Fulachta fiadh* or burnt mounds largely date to the Bronze Age although some examples have been shown to date to the medieval period (Fredengren 2002 171).

Some typically Bronze Age artefacts have been recovered from the bogs surrounding Derrygreenagh Hill. A spearhead (1937:3666), which is thought to date to the Late Bronze Age was recovered from Derrycoffey townland on the southern side of Derryarkin Bog. A late Bronze Age bronze spearhead (P1951:51) was also recorded as being recovered from the bog in Rathgarret townland, in Co. Westmeath.

Other possible Bronze Age monuments identified in the landscape around the proposed development include standing stones, barrows, mounds and tumuli. Many of these monuments are elements in a complex prehistoric landscape with the cairn on Croghan Hill as its focus (Rohan 2005). Standing stones are found throughout the country but their exact function is unknown. It is widely believed that standing stones were erected for ritual and ceremonial purposes. A relatively small number have been excavated indicating that burials are associated with some sites. It is also possible that some examples functioned as boundary markers or routeway markers (Waddell 1998). When considering the function of such elusive monuments it is important to consider all possibilities. In terms of dating it has been argued that many standing stones date to the second millennium BC and are therefore Bronze Age. A number may be attributed from the third millennium BC through to the early centuries AD (*ibid* 174).

A standing stone and the site of a standing stone are located in Barrysbrook townland on the south eastern slopes of Croghan Hill. The standing stone is known as 'Clustucka' (OF010-014) and is located in an elevated position. Local tradition states that this stone marks the burial of a chieftain or the site of an earlier church (Byrne & Scully 1974 5). The site of a possible standing stone (OF010-015) is located 150 m to the northeast of Clustucka. Local tradition states that the stone is buried in the field in which it stood (*Ibid.*). There is also a standing stone (OF011-002) in Ballyburly townland to the southeast of Derrygreenagh Hill. The standing stone in Ballyburley is located on an elevated ridge with extensive views in all directions. The cairn on the summit of Croghan Hill and the ring-barrow (OF011-001) known as the 'Bull Ring', which commands the summit of Clonin Hill are clearly visible to the west.

Barrows, tumuli and mounds were constructed, most often in prehistory, to cover or seal burials. They have been found to date from the Neolithic through the Bronze Age and into the Iron Age (O'Brien & Sweetman 1997 6). Two ring-barrows are located on the elevated dryland further south of the proposed development site. The first is the aforementioned ring-barrow (OF011-001), on the summit of Clonin Hill in Clonin townland. This impressive barrow commands extensive views of the surrounding landscape and is composed of a circular flat topped mound enclosed by an inner fosse and

an external bank. The other ring-barrow (OF011-055) is located in Ballymorán townland to the southwest of the standing stone in Ballyburley (OF011-002). The site of a mound (OF011-003) is located between these two monuments, also in Ballyburley townland. Two tumuli are recorded in Cannakill and Oldcroghan townlands on the lower southern slopes of Croghan Hill. The mound feature within the confines of the deserted village in Cannakill townland is classified as a ‘Tumulus’ (OF010-01002). This feature is not a prehistoric burial mound but in fact a grass covered spoil heap associated with the quarry on its eastern side (Rohan 2005 39). Further east, in Oldcroghan, is a feature, known as ‘Gunnamore Mound’ (OF010-01008). This site is also classified as a ring-barrow, but its morphology and the site’s proximity to the fortified house, Togher of Croghan, and the deserted village suggest that it is the remnants of a feature associated with either or both of these sites. It could, therefore, be medieval or post-medieval in date (*Ibid.*).

A number of sites excavated in Ballybeg Bog in 2002 also date to the Bronze Age. A palaeo-channel that was orientated north/south in the centre of the bog was traversed by a number of small foot holdings that crossed this feature as well as a togher running along part of its length. The sites found within this natural feature yielded dates between 2400 and 1100 BC and the platform located at the northern end of the palaeo-channel was dated to 2282 - 1952 BC. It was located in sediment rich peat, which possibly represents the former southern extent of Lough Nashade or an area that flooded seasonally (IAWU 2002 8). This site was possibly used for the exploitation of flora and fauna indigenous to this type of habitat (OCarroll 2003).

#### **(iv) Iron Age (500 BC – AD 400)**

A small number of sites, in the wider landscape around the proposed development site, have been dated to the Iron Age (500 BC – AD 400). A single hurdle panel located close to the southern edge of Ballybeg bog was dated to 280 - 260 BC (*Ibid.*). This feature was laid down over a particularly wet area of peat bog, which may indicate the southern end of the palaeo-channel. A wooden yoke dating to the Late Bronze Age/Early Iron Age (889 - 543 BC) was found in situ during the IAWU Peatland Survey of Ballybeg Bog (2002). The yoke, one of only six recovered from bogs, appears to form part of a double wither yoke (*Ibid.* 14).

#### **(v) Early Medieval Period (AD 400 – AD 1000)**

There are a high number of visible archaeological monuments and sites dating to the early medieval period (AD 400 - 1100) in the wider landscape around the proposed development site. In particular, ringfort and ecclesiastical sites are well represented in the archaeological record. During this period Derrygreenagh Hill was set behind the borders of the territory of the Uí Failge, a free tribe with territory in the northwest corner of the Kingdom of Leinster. At the beginning of the sixth century the Uí Failge occupied a prominent position in the Leinster confederacy as dominant overlords in the north of the province (Rohan 2005 50). In the fifth and early sixth centuries their territory is thought to have extended north to include the Plain of Mide, south of Uisneach and east to the Liffey Plain. The southern Uí Neill aggressively attempted to expand their territory into northern Leinster. Their endeavours paid off when the Uí Failge were defeated, in the Battle of Druim Derge in AD 516 (*Ibid.*). The Uí Failge suffered serious losses as Uí Neill expansion pushed south. According to a poem in *The Book of Leinster* the new border between the two provinces was ‘a line drawn across Croghan Brí Éile’ (FitzPatrick 1998 95). The redrawn provincial border, which separated Leinster from Mide is thought to have hugged the modern Westmeath/Offaly border north of Croghan Hill (Smyth 1982 68).

Ringforts are a prominent feature in the Irish archaeological record. It is widely accepted that ringforts date to *c.* AD 500 - 1200 and therefore are a feature of the early medieval period. However, some examples have been shown to fall outside of these dates. Ringforts are generally defined by an enclosing earthen bank and ditch or fosse. In general ringforts functioned as defensive farmsteads and also corrals for animals. The elevated ridge to the north of Derrygreenagh Hill, between the towns of Tyrrellspass and Rochfortbridge, in modern Co. Westmeath has a particularly high number of ringforts on its slopes. There are twenty-five ringforts in this area, thirteen of which are located on the southern slope facing Derryarkin Bog (Rohan 2005 87). The ringforts were also located within the greater boundary zone between the provinces of Mide and Leinster and were, therefore, well positioned to defend the border and observe the bog that divided them from Leinster. According to Stout's work on ringforts in this area, the number of ringforts per square kilometre is 1.44, a figure that far exceeds the national average of 0.55/ km<sup>2</sup> (1998 39).

In contrast, the dryland to the south of Derrygreenagh Hill has very few ringforts suggesting that the area was particularly thinly populated with settlement obviously influenced and deterred by the extensive tracts of raised bog (*Ibid.*). There are two ringforts and a hilltop enclosure to the southwest, in proximity to Croghan Hill. The two ringforts are located in Barrybrook townland and are composed of a univallate (OF010-005) and bi-vallate example (OF010-01602) on low-lying ground. Local tradition states that a children's burial ground (OF010-01601) is located on the site of the former. The remains of a hilltop enclosure (OF010-017) are located east of the aforementioned ringfort on the summit of a rounded hill in Togher townland. The site has extensive views to the north, east and south.

This area was also of strategic importance during the early medieval period as the Slighe Mhór, one of the five major routeways in Ireland, is thought to have run along the ridge, to the northwest of Derrygreenagh Hill, between the towns of Tyrrellspass and Rochfortbridge (O Lochlainn 1995 470). The Slighe Mhór is thought to have run from Dublin to Clarinbridge in County Galway (*Ibid.*). It entered Offaly near Clonard and from there passed north of Croghan Hill, along raised dryland, and on to Kilclonfert and Rahugh in County Westmeath (FitzPatrick 1998 6).

An early reference to Croghan Hill in the *Annals of the Four Masters* records 'the boxing battle of Bri-Éile' in AD 468. This may have been an event of note as it was also recorded in *the Annals of Ulster* (AU) for the year AD 473 (Rohan 2005 51). The occurrence of such an event perhaps represents a throw back to earlier times and possibly hints at the hill as a place of gathering. The hill was located close to the confluence of Leinster, Mide, Munster and Connaught and therefore centrally located for inter-provincial gatherings (*Ibid.*).

Croghan Hill was of major importance during the spread of Christianity in Offaly. It is reputedly the site of the fifth century Bishop Mac Caille's church, established some time before his death in AD 490 (FitzPatrick 1998 109). The site of the church (OF010-00402) is believed to be in proximity to the graveyard found on the upper eastern slopes of the hill. The *Irish Calendar* records 'Mac Caille Bishop. In Croghan Brigh Eile his church is AD 489' (Flanagan 1933 39). The fifth century bishop is accredited in many early sources with placing the veil on St Brigid's head before she received her holy orders from Bishop Mel and some speculate that this event occurred *c.* AD 467 (*Ibid.* 37). Bishop Mac Caille's death is recorded in the *Annals of the Four Masters* for AD 489.

The foundation of a church on Croghan Hill, possibly sometime in the latter half of the fifth century occurred during the early stages of the spread of Christianity in Ireland (Rohan 2005). A D-shaped enclosure, which is classified as a possible hillfort (OF010-00409), is located on the eastern upper slopes of Croghan Hill. It is visible as an earthen bank roughly enclosing the graveyard and site of the early church. Without excavation it is impossible to date and interpret this feature. However, the manner in which it encloses the church site would suggest that the two were associated with each other and the enclosing bank is more likely to be the *vallum* associated with the early church (Rohan 2005).

Croghan Hill may have been specifically chosen due to the presence of a pre-existing cult centre on the hill (FitzPatrick 1998 109). In total, six holy wells have been recorded on the hill, however the exact location of only four is known. Of the six, only 'St. Patrick's Well' (OF010-00407), located on the lower eastern slope, remains venerated to the present day. 'Finneenashark Holy Well' (OF010-012), which is no longer visible at ground level, was located on the lower southern slopes and was believed to have the ability to cure headaches. Approximately 170 m west of 'Finneenashark Holy Well' is the site of another holy well in Cannakill townland. It is also no longer visible and was excluded from the Archaeological Inventory of County Offaly (1997). 'Fooran Well' (OF010-01005) is located southwest of the above mentioned holy wells at the base of Croghan Hill. However, there are no visible remains of the well today. Holy wells are undateable but it is widely believed that their origins lie in pre-Christian ritual (O'Brien & Sweetman 1997 115).

It has been suggested that the foundation of the early church at Croghan Hill 'may represent the first identifiable wave of Christian activity in Uí Failge' (FitzPatrick 1998 109). By locating the church on the upper slopes of the hill it achieved maximum visibility and would no doubt have been clearly visible from the proposed development site at Derrygreenagh Hill. This was possibly a deliberate act of appropriating the landmark, namely the hill that had previously been associated with the 'pagan' cairn on its summit. If so, the early Christians were successful in their attempts as the hill subsequently became identified with the church and St Brigid (Rohan 2005). *Bethu Brigitte*, a hagiographical work relating to St Brigid and written some time after the seventh century, credits the saint with the miracle of creating a bridge across the treacherous bog to the north of Croghan Hill in order to reach Bishop Mel in Fartullagh (*Ibid.*, 58). The *Martyrology of Oengus the Culdee*, written around AD 800, also recounts this story but in this version of events the bog was transformed into a 'smooth flowery plain for them' (*Ibid.*). Other church sites associated with the saint include the church site (WM034-00201) and Holy Well, known as *St Bridget's Well* (WM034-001), at the Pass of Kilbride 6 km northeast of the proposed development. Little is known about this church but the earthworks (WM034:002(02)) associated with it suggest an early medieval date for the site.

#### **(vi) Medieval Period (AD 1000 – AD 1600)**

The O'Conors or O'Conor Falys ruled the territory of Uí Failge from the mid-eleventh century until the mid-sixteenth century. They were direct descendants of the ninth century Uí Failge aristocracy and one of the last Gaelic lordships to fall to the English Crown (Rohan 2005). The O'Conors resisted all Anglo-Norman attempts to colonise their lands including those made by Strongbow, as lord of Leinster. Their defence was helped, in no small part, by their territory, which was heavily forested until the eighteenth century and was also interspersed with treacherous bogs (*Ibid.*). The 'Derry' found in the townland names Derryarkin, Derrygreenagh and Derrycoffey, testify to the presence of oak forests in Uí Failge territory (*Ibid.*). The protection afforded by these natural features allowed the Uí Failge and their successors the O'Conors to resist Anglo-Norman and crown advances until the mid-sixteenth century.

A deserted village (OF010-01001), which may be medieval in date, is located in Cannakill townland on the lower southern slopes of Croghan hill. It covers an acre and is composed of the wall footings of four houses. Quarrying led to the discovery of medieval pottery and animal bone to the south of the village during the 1940s (O'Brien & Sweetman 1997). Many examples of deserted villages date from the twelfth century to the post-medieval period (O'Connor 1998, 49). Without excavation it is impossible to date the deserted village but it may represent the vestiges of an O'Connor village before the construction of the later castle (IAWU 2002, 3).

'O'Connor Faly's or Croghan Castle' (OF010-01003) is situated at the foot of the western slopes of Croghan Hill. The remains of the fortified house, which is most likely late sixteenth or early seventeenth century in date are now incorporated into farm buildings. Approximately 120 m north of the fortified house is the site of a church (OF010-01006) and graveyard (OF010-01007). According to local tradition, an underground passage (OF010-01011) runs from the fortified house to the church. The church is no longer extant but is visible as grass covered wall footings. This site probably dates to the medieval or post medieval period given its proximity to the fortified house. A single grave slab (OF010-01010) indicates the graveyard was still in use in the early part of the nineteenth century.

Two sections of the 'Togher of Croghan' or 'Tóchar Cruachain Brí Éile' (OF010-01004 and OF010-018 and OF011-012) are recorded to the south and southeast of Croghan Hill. The western section is visible, on the field surface, 200 m southeast of the deserted village, discussed above. It runs along the townland boundary between Oldcroghan and Cannakill. To the southwest of Croghan Hill the eastern side of the 'Togher of Croghan' (OF010-018 and OF012-012) reputedly runs under the modern road connecting Togher and Toberdaly townlands. This stretch of the togher was also recorded on a map of Offaly dating to 1563. The two sections of togher probably formed a continuous routeway across the landscape on the southern side of Croghan Hill. It is believed to have continued westwards to the ecclesiastical sites at Kilclonfert, Durrow and Clonmacnoise (FitzPatrick 1998, 6). The 'Togher of Croghan' was mentioned in the *Annals of the Four Masters* in 1385 AD and 1395 AD recording O'Connor victories over the English. It was also referred to in a Civil Survey description of the barony boundary of Phillipstown and again in the *Annals of the Four Masters* for 1546 AD, when the Lord Justice burned and plundered Offaly 'as far as the Togher of Croghan' (IAWU 2002b 4).

During the three hundred and fifty years before the Plantation, O'Connor resistance is well documented in the annals with many references to battles at the Togher of Croghan (Scully & Byrne 1974). A mid-sixteenth century survey to compose maps of the lands forfeited by the O'Connors recorded the tuathas under the O'Connor lordship thus allowing a valuable glimpse of the old Gaelic order. Eight lordships or tuathas were recorded which subsequently became the five baronies of east County Offaly (Smyth 1982 70). The O'Connor Falys had Tuath Cruacháin as their mensal lands, which with Tuath Rátha Droma was incorporated into the modern barony of Lower Phillipstown.

It has been suggested that the cairn on the summit of Croghan Hill served as inauguration site of the O'Connor's of Uí Failge and possibly the Uí Failge before them (FitzPatrick 2004). It was an ideal location for inauguration, if so used, as the O'Connor chief could view all his territory at once from the summit of the hill. The identity of the hill and cairn would have been altered once more, standing as a symbol of kingship and authority (Rohan 2005 107). There is an unbroken line of sight between Cnoc Buadha, the inauguration site of the Geoghegan chiefs of Cineál bhFhiachach at Rahugh, and the cairn on the summit of Croghan Hill. The intervisibility between the sites has its origins in prehistoric times but one can imagine the Uí Failge looking down upon the lands and inauguration site of their adversaries (*Ibid.*).

The events leading up to the Leix/Offaly Plantation and the later medieval period saw the crown representatives taking an aggressive stance against the O’Conors who were seen as a serious threat to the Pale (Byrne & Scully 1974). Before the Plantation began in 1551, and for almost a century after its implementation, the O’Conors and their allies carried out numerous attacks on the English. However, the English succeeded in defeating them and the O’Conor lands, surveyed by Walter Cowley in 1550, were leased to one Nicholas Burrell in 1551. However, his tenure was short lived and two years later the lands were given to Robert Cowley, son of the king’s surveyor (*Ibid.*). The inhabitants of Croghan Hill and the former territory of the Uí Failge were now subjects of the English crown until the early twentieth century.

**(vii) (Eighteenth Century – Present)**

There are a number of eighteenth and nineteenth century references to Croghan Hill. Arthur Young, writing in his *Tour in Ireland* in 1777, reported that Croghan Hill was famous for the fleece yielded by its sheep (Byrne & Scully 1974 29). Coote, in his *Statistical Survey of Kings County*, noted the use of the hill as a sheepwalk. However, sometime shortly after this the hill was converted to tillage. In 1811, Griffith, working for the Bogs Commission, noted that the fertile soil on the hill yielded excellent oat and potato crops (*Ibid.*). The cultivation ridges (OF010-00408) found on the upper slopes of Croghan Hill are likely to be associated with this agricultural practice and are therefore most likely late eighteenth to early nineteenth century in date (Rohan 2005 44).

**12.3.2 Record of Monuments and Places**

The proposed development does not impact directly on any known monuments (See Figure 12.1 *Site Location on RMP Map, Sheet 3 for Offaly*). Recorded monuments within a 3 km radius of the proposed development are outlined in Table 12.1 *Recorded Monuments within a 3 km of the Proposed Development Site* - see also Appendix 8A *Records of Monuments and Places* for further details of RMP sites.

**Table 12.1: Recorded Monuments within 3 km of the Proposed Development Site**

| RMP No.   | Townland      | Classification                     | Distance from the proposed development |
|-----------|---------------|------------------------------------|--|
| WM033:070 | Farthingstown | Ringfort                           | 2.5 km                                 |
| OF003:003 | Ballyfore     | Potential site – aerial photograph | 2.5 km                                 |
| OF003:004 | Ballyfore     | Potential site – aerial photograph | 2.75 km                                |

**12.3.3 Topographical Files, National Museum of Ireland**

The topographic files at the Irish Antiquities Department, National Museum of Ireland were inspected with regard to the following townlands within 3 km of the proposed development: Derrygreenagh, Derryarkin, Drumman, Knockdrin, Garr, Carrick, Derrycoffey, Derryiron, Ballybeg Farthingstown,

Rahanine - see Appendix 8B *Topographical Files* for further details of topographical files from the National Museum of Ireland.

Two topographic files relating to Derrygreenagh Hill and townland were noted:

- In Derryarkin, a stone adze-head (1969:863) recovered from Derryarkin was recorded as being found in Derrygreenagh Works.
- In Derrygreenagh, a stone axehead (1959:751) and a wooden comb (1985:81) were found in the bog, the latter at a depth of c.5-6 feet. The precise locations of the findspots are unknown.

Two topographic files were also noted from the townlands in the wider landscape:

- A wooden shovel blade was found in a bog in Derryiron (1987:40).
- The upper stone of a rotary quern, a cut timber log, two notched timbers and roughouts for wooden goblets were found in the bog in Carrick (1966:151, ).

#### **12.3.4 Previous Excavations and Assessments**

The Excavation Bulletins 1970-2004 were checked for archaeological excavation work undertaken in proximity to the proposed development site. The following townlands were checked: Derrygreenagh, Derryarkin, Drumman, Knockdrin, Garr, Carrick, Derrycoffey, Derryiron, Ballybeg Farthingstown, Rahanine - see Appendix 8C *Excavation Bulletins* for full details from Excavation Bulletins.

Three references were found to previous archaeological work undertaken in the above townlands:

- Ballybeg Bog, to the southwest of the proposed development, was surveyed by the IAWU in 2001. A total of 105 sites and 25 artefacts were recorded in the bog. The dates from a sample of the sites dated from the Late Neolithic to the Iron Age.
- Drumman and Derryarkin Bogs were surveyed by the IAWU in 2001 and 2002. A total of 65 sites, 7 artefacts and 2 possible artefacts were recorded in the bogs. A small sample of sites were dated to the Early Neolithic and the Middle to Late Bronze Age while the Bann Flake dated to the Late Mesolithic.
- Ballybeg Bog was excavated by Ellen OCarroll, on behalf of Archaeological Development Services Ltd in 2002. A number of the sites identified by the IAWU in 2001 were excavated, including platforms, toghers, a stone enclosure and stone lined hearths. Subsequent dating has revealed that the stone enclosure and possible occupation site dates to the Early Neolithic (Jane Whitaker, pers. comm.).

#### **12.3.5 Cartographic Analysis**

##### **(i) Bog Commissioners Map, Co. Offaly (1810)**

The first comprehensive mapping of bogs in Ireland was carried out in the early nineteenth century by the government appointed Commissioners for Bogs with the declared purpose “*to Enquire into the Nature and Extent of Several Bogs in Ireland; And the Practicality of Draining and Cultivating Them*”. The work of the Bog Commission in Co. Offaly was undertaken by J. Alex Jones and published in 1811. The exploitation of the bogs for economic purposes was the main objective of this survey. However, the Commission’s reclamation works were never undertaken. The Bog Commission maps give valuable information about a time when the bogs were relatively undisturbed and therefore at their maximum extent. The maps provide valuable information about the nature of natural and artificial drainage, the different peat types, land area, property divisions and ownership (Doyle & Whitaker 2005).

The Bog Commissioner’s map of Derryarkin Bog shows clearly that the defining landscape characteristic of this part of County Offaly is wetland interspersed with dry land hills and islands. The map illustrates the wide expanse of bog surrounding Derrygreenagh Hill, which it records as ‘Derrygreen’. It also depicts Knockdrin dry land island, to the southeast.

## (ii) Ordnance Survey Maps, Co. Offaly (1838) Sheet 3

The 1<sup>st</sup> edition OS map (1838) shows Derrygreenagh as a dry land island surrounded by bog with the road, still in use today, traversing it from the northwest to the southeast - see Figure 12.2 *Site Location on 1<sup>st</sup> Edition Ordnance Survey, 6” (1829-1841), Sheet 3 for Offaly*. The area of proposed development was occupied by three large fields with a cluster of four buildings connected to the road by a short laneway. This area is now occupied by the Bord na Móna Derrygreenagh Works and the field boundaries or structures are no longer visible. The former layout of the mineral island is shown in more detail on Figure 12.3 *Site Location on Ordnance Survey, 25” (1897-1913), Sheet 3 for Offaly*.

### 12.3.6 Toponyms (Place Names)

The placenames of the townlands within and around the development reflect past environmental conditions.

- Drumman                      *Droimín*                      little ridge or drumlin
- Derryarkin                      *Doire Árainn*                      ridge of the oaks
- Derrygreenagh                      *Doire Greanach*                      sandy or gravelly place of oaks

### 12.3.7 Inventory of Archaeological & Architectural Heritage Sites

There are no recorded archaeological monuments (RMPs) within or less than one kilometre from the study area.

There are no architectural heritage sites identified during the assessment that are within or less than one kilometre from the study area.

### 12.3.8 Aerial Photographs

An aerial photograph of Derrygreenagh Hill, supplied by the client, was inspected for any features of archaeological interest that may have been visible as crop marks. Nothing of archaeological significance was noted on the photograph

### 12.3.9 Field Inspection

The field inspection was carried, on 9<sup>th</sup> April 2008. The weather was recorded as being dry and bright. This inspection consisted of examining the surface of the proposed development areas and sections of the drains on the northern and eastern side of the site in order to identify any previously unrecorded sites of archaeological potential within, and in the immediate vicinity of, the proposed development areas.

The inspection undertaken refers to the entire extent of the site. The current site is used as a Bord Na Móna Works and is located on the mineral island that is elevated above the surrounding bog land and slopes away to the north and east. The area immediately north, east and southeast of the current workshops is original ground that has been stripped and covered with compacted gravel and hardcore (See Plate 12.1 *Area Immediately to the North of the Current Derrygreenagh Works looking East*). At the time of field inspection these areas were used to park old Bord na Móna machinery - see Plate 12.2 *Area Immediately to the East of the Current Derrygreenagh Works looking West*



Plate 12.1 Area Immediately to the North of the Current Derrygreenagh Works looking East



Plate 12.2 Area Immediately to the East of the Current Derrygreenagh Works looking West



Plate 12.3 Greenfield Area on the Southern Side of the Site looking West.

The ground to the south of the current Bord Na Móna Works is also part of the mineral island and constitutes the southern edge of the proposed development site which is undisturbed green field - see Plate 12.3 *Greenfield Area on the Southern Side of the Site looking West*. The northern and eastern sides of the proposed development site are grass-covered bog areas - see Plates 12.4 *North-Eastern Corner of the Site Looking South* and 12.5 *Eastern Edge of the Site Looking North*. The sections of a

drain that ran south of and parallel to the railway line at the northern side of the site, and the drain running along the railway line at the eastern side of the site, were examined for archaeological features such as toghers and archaeological wood. The drains revealed that this area is composed of undisturbed bog that continued below the water level in the drains approximately 1m below the field surface. The dryland/wetland interface was not visible as the likely location for it on the ground is covered with gravel. Nothing of archaeological interest was identified during the site inspection.



Plate 12.4 North Eastern Corner of the Site Looking South.



Plate 12.5 Eastern Edge of the Site Looking North.

## **12.4 Cultural Heritage Impacts**

### **12.4.1 Archaeology**

An assessment was undertaken of the impact of the proposed development on Recorded Archaeological Monuments and Places. The proposed development will have no direct or indirect impacts on any recorded archaeological sites (RMPs).

### **12.4.2 Architectural Heritage**

An assessment was undertaken of the impact of the proposed development on the Architectural Heritage sites and features. The proposed development will have no direct or indirect impact on the architectural heritage.

The proposed development site is located on a mineral island surrounded on all sides by bog. These natural phenomena have attracted human activity and settlement over several millennia and there are many examples of such sites throughout the country. The relatively fertile land of dryland islands could be used for grazing and some crop growth. Archaeological sites can be located on both the interface areas between wetland and dryland and also on the dryland itself. There is a moderate to high potential that archaeological features, deposits or artefacts survive sub-surface within the site. The size of the proposed development site is also to be considered as this increases the likelihood of uncovering archaeological features.

The archaeological remains that might typically be discovered within the peat on the eastern and northern sides of the site, and at the interface between the wetland and dryland in this area, are toghers or wooden trackways. There is also the potential to uncover archaeological features on the dryland immediately north, east, southeast and south of the workshops at the rear of the works. The northern, eastern and southern edges of the site appear to be entirely or relatively undisturbed and therefore also have potential for archaeological remains. It is impossible to establish to what level the areas with gravel and hardcore surfaces were disturbed in the past, but the fact that the construction of the Derrygreenagh Works disturbed ground in the past does not remove the possibility that archaeology, if present, may survive as subsurface features.

The route for the discharge pipeline begins within the proposed development site and continues into the bog before turning south along the western side Derrygreenagh Hill, where it runs parallel to the R400 and continues along the edge of the bog to the southeast, before turning southwest. The groundworks associated with it could potentially uncover archaeological remains, given the number of sites recorded in the bog surrounding Derrygreenagh Hill. There are sixteen archaeological sites located on the eastern side of the R400 and within 300m of the pipeline route. It will also connect with a river, which is also considered an area of archaeological potential.

## **12.5 Cultural Heritage Mitigation**

### **12.5.1 Construction and Operational Phase Mitigation**

All necessary licences as specified by the *National Monuments Acts 1930-2004* will be complied with, should they be required. All archaeological finds and features revealed will be recorded appropriately, prior to construction of the proposed development, in agreement with the National Monuments Service of the Department of the Environment, Heritage and Local Government and under the direction of the Minister.

Mitigation measures will involve either preservation in-situ or preservation by record. All mitigation measures will be carried out in accordance with current best practice.

### **(i) Archaeological Test Excavations**

Targeted test excavation will take place along the footprints of buildings associated with the proposed development where these locations are on dry land. This will include for example, the turbine hall, the stores and workshop building, water treatment plant and distillate storage area. Targeted testing then allows an assessment to be made on the extent of any surviving archaeology before any further mitigation is decided upon. Should any archaeological material be uncovered, excavation would then be required, subject to approval by the National Monuments Service of the Department of Environment, Heritage and Local Government.

### **(ii) Archaeological Excavation**

Archaeological excavation involves the preservation by record of archaeological remains. It would normally be undertaken following the discovery of archaeological material that cannot be preserved by being left in-situ in the ground. Should archaeological material be discovered by test excavations, a time period should be factored in to facilitate these excavations being completed well ahead of the construction phase of the project.

### **(iii) Archaeological Monitoring**

Archaeological monitoring involves a watching brief during the construction stage where ground levels are reduced by mechanical excavators. There are a number of areas as part of the proposed development where the underlying ground is bog. This ground is not suitable for archaeological testing and will therefore require archaeological monitoring. The areas required for monitoring will include those designated for: the air cooled condenser, the Contractor's compound, the Contractor's car park, the AGI the process water and storm-water tanks and the process water discharge pipeline.

As testing is limited to exposing small areas of the development, it is recommended that archaeological monitoring of all additional groundworks associated with the development, including the construction of access or haul roads and compounds, and the proposed discharge pipeline, be carried out in advance of and during construction works.

## **12.6 Residual Impacts**

It is not anticipated that any residual impacts will remain if the appropriate archaeological mitigation measures are put in place.