10 CULTURAL HERITAGE

10.1 INTRODUCTION

This chapter assesses the direct and indirect likely significant effects on cultural heritage associated with the proposed River Deel (Crossmolina) Drainage Scheme and, based on this assessment, a number of appropriate mitigation measures are presented. UNESCO define the term 'Cultural Heritage' as encompassing several aspects of tangible assets, including archaeological sites, monuments, artefacts, and architectural heritage structures along with intangible assets such as folklore, oral tradition, and historical associations. The scheme has been designed to avoid direct impacts on cultural heritage assets.

This chapter was prepared by John Cronin, Colm Chambers and Martin McGonigle of John Cronin & Associates. Mr Cronin holds qualifications in archaeology (B.A. (University College Cork (UCC)), 1991), regional and urban planning (MRUP (UCD) 1993) and urban and building conservation (MUBC (UCD), 1999). Mr Chambers holds a primary degree in archaeology (B.A. (UCC) 2008), a Master's degree in maritime archaeology (M.A. (University College London) 2009) and a Master's degree in archaeological excavation (M.A. (UCC) 2011). Mr McGonigle holds a BA degree in heritage studies (Galway-Mayo Institute of Technology, 2001) and a MSc. (University of Ulster, 2002) degree in maritime archaeology. All three individuals have each amassed a wide range of postgraduate experience in the preparation of archaeological and cultural heritage assessments.

10.2 ASSESSMENT METHODOLOGY

10.2.1 Introduction

The methodology used for this assessment is based on (draft) guidance methods per Environmental Protection Agency (2015) *Draft Advice Notes for Preparing an EIS* and (2017) *Draft Guidelines for Information to be Contained in EIAR*, and *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (DHPLG - August 2018). The EIAR seeks to comply with the requirements of Directive 2011/92/EU as amended by Directive 2014/52/EU, and the Planning and Development Act, 2000 (as amended) and Planning and Development Regulations, 2001 (as amended).

This chapter presents the results of a desk top study and site inspection which aims to identify all recorded and potential archaeological, architectural, and other cultural heritage sites within the study area. All identified cultural heritage sites within the environs of the proposed scheme have been assigned Cultural Heritage Site (CHS) numbers for the purposes of this assessment. These are identified in table format within the chapter (Table 10.4) which provides locational information and cross-references the assigned CHS numbers with any relevant legal designations.

A study area comprising the footprint of the proposed development and extending 250m from proposed works locations and the associated washlands was reviewed in order to assess the potential for impacts and likely significant effects on the cultural heritage resource. The study area was chosen based on professional industry experience. It is deemed that these parameters provide a sufficient area around the proposed works to assess the cultural heritage constraints and the direct and indirect impacts on same.

10.2.2 Desktop Study

The principal sources reviewed for the assessment of the known archaeological resource were the Sites and Monuments Record (SMR) and the Record of Monuments and Places (RMP) for County Mayo. These provide

comprehensive lists of the known archaeological resource and their legislative basis is outlined below (Section 10.3.2). The Record of Protected Structures (RPS) as published in the County Mayo Development Plan (2014-2020) and the National Inventory of Architectural Heritage (NIAH) were the main sources consulted for assessing the recorded architectural heritage resource. The following sources were also consulted:

Database of Irish Excavation Reports

The Database of Irish Excavation Reports contains summary accounts of all archaeological excavations carried out in Ireland – North and South – from the 1960s to present.

Development Plan

The relevant development plan for the proposed scheme comprises the County Mayo Development Plan (2014-2020). The County Mayo Heritage Plan 2011-2016 was also consulted.

Cartographic and Photographic Sources

The detail on cartographic sources can indicate past settlement and land use patterns in recent centuries and can highlight the increased impact of modern developments. This information can aid in the identification of the location and extent of unrecorded, or partially levelled, features of archaeological or architectural interest. A range of available cartographic sources were examined for the study area and included the 1st editions of the 6-inch Ordnance Survey (OS) maps (surveyed in 1840) and the 25-inch OS map (surveyed in 1900). A number of photographic sources, including aerial images, were consulted as a means of identifying possible cultural heritage sites, including the Digital Photographs database of the National Library of Ireland (http://www.nli.ie/).

Literary Sources

Literary sources are a valuable means of completing the written archaeological, historical and architectural record of study area and gaining insight into the history of the environs of the proposed scheme. A list of all literary sources consulted is provided in the bibliography.

Placenames Database of Ireland

This database provides a comprehensive management system for data, archival records and placenames research conducted by the State. Its primary function is to undertake research in order to establish the correct Irish language forms of the placenames of Ireland and to publish them on a public website (www.logainm.ie).

National Museum of Ireland Topographical Files

An inspection of the NMI topographical files was undertaken and no entries for artefact discoveries in the vicinity of the proposed scheme were noted.

10.2.3 Site Inspection

The areas proposed for development were inspected in March 2018 and May 2020 in clear weather conditions that afforded good visibility of both the scheme footprint and its environs. This entailed an inspection of all areas and buildings within the proposed scheme area and an assessment of the existing environment in terms of landscape, existing land use and potential presence of unrecorded archaeological and architectural heritage sites. A photographic record of the inspection was compiled, and annotated extracts are presented in Appendix 10A.

10.2.4 Cultural Heritage Impact Criteria

The assessment of impacts and in particular likely significant effects on identified cultural heritage assets was carried out in accordance with guidelines published by the Environmental Protection Agency (EPA 2017) and the International Council of Monuments and Sites (ICOMOS 2011). The criteria outlined in these guidelines is summarised hereafter.

Level of Impact

The following summation of the criteria used to assess impacts is provided in order to clearly and concisely outline the methodology specifically applied to the cultural heritage resource.

Duration of Effect

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

- Momentary (seconds to minutes)
- Brief < 1 day
- Temporary <1 year
- Short-term 1-7 years
- Medium Term 7-15 years
- Long Term 15-60 years
- Permanent > 60 years
- Reversible: Effects that can be undone, for example through remediation or restoration

Quality of Effect

The quality of an effect on the cultural heritage resource can be positive, neutral or negative:

- Positive Effect: a change which improves the quality of the cultural heritage environment (e.g. increasing amenity value of a site in terms of managed access, signage, presentation etc. or high-quality conservation/restoration and re-use of an otherwise vulnerable derelict structure).
- Neutral Effect: no change or effects that are imperceptible, within the normal bounds of variation for the cultural heritage environment.
- Negative Effect: a change which reduces the quality of the cultural heritage resource (e.g. visual intrusion on the setting of an asset, physical intrusion on features/setting of a site etc).

Type of Effect

The type of effect on the cultural heritage resource can be direct, indirect or no predicted impact.

- Direct Impact: where a cultural heritage site is physically located within the footprint of the proposed development, which will result in its complete or partial removal.
- Indirect Impact – where a cultural heritage site or its setting is located in close proximity to the footprint of the proposed development.
- No predicted impact – where the proposed development will not adversely or positively affect a cultural heritage site.

Magnitude

This is assessed based on the degree of change, incorporating any mitigation measures. The magnitude can be negative or positive and is ranked without regard to the value of the asset according to the following scale: *High*; *Medium*; *Low* and *Negligible*.

Value assessment criteria

The evaluation of the Value of a cultural heritage asset used for the purposes of assessment is not intended as definitive, but rather an indicator which contributes to a wider judgment based on the individual circumstances of each asset. Generally, the more criteria that are evident for a given asset, the higher in scale its respective Value is deemed to be. Criteria considered in addition to any legal designations include the condition/preservation; documentary/historical significance; group value; rarity; visibility in the landscape; fragility/vulnerability and amenity value.

The Value of all known or potential assets within the study area are ranked according to the following scale: Very High; High; Medium; Low and Negligible. Other than the level of legal designations, e.g. National Monuments, and recognition as World Heritage sites, there is no formal grading or rating system for Irish archaeological monuments. The factors for assessing the value of archaeology as part of this assessment has, therefore, been informed by ICOMOS (2011) guidelines on value criteria (Table 10-1). The National Inventory of Architectural Heritage (NIAH) does include a rating system for listed structures and this has been used as a guidance criterion as part of the assessment.

Indicative Value	Example of Asset Types
Very High	• World Heritage Sites (including Tentative List properties)+ • Assets of acknowledged international importance • Assets that can contribute significantly to international research objectives
High	• Designated *National Monuments* (archaeological) • Assets of significant quality and importance, including designated RMP sites • Assets that can contribute significantly to acknowledged national research objectives • Protected Structures/National NIAH Grade Buildings • Conservation Areas containing significant buildings of importance, including group value • Archaeological Landscapes with significant inter-group value
Medium	• Assets of good quality and importance, including designated RMP sites • Assets that can contribute significantly to acknowledged regional research objectives

Indicative Value	Example of Asset Types
	• Regional Grade NIAH Buildings • Other undesignated buildings that can be shown to have exceptional qualities in their fabric or historical associations • Undesignated structures of potential national importance (archaeological, potential 'new sites') • Conservation Areas containing buildings that contribute significantly to its historic character • Historic townscape or built-up areas with important historic integrity in their buildings, or built settings (e.g. including street furniture and other structures)
Low	• Designated and undesignated assets of local importance, including buildings • Assets compromised by poor preservation and/or poor survival of contextual associations • Assets of limited value, but with potential to contribute to local research objectives • Historic Townscape or built-up areas of limited historic integrity in their buildings, or built settings (e.g. including street furniture and other structures)
Negligible	• Assets with very little or no surviving archaeological interest • Buildings of no architectural or historical note; buildings of an intrusive character

Table 10-1: Value of Cultural Heritage Assets (adapted from ICOMOS 2011)[1]

Significance of Effects

This is based on an assessment largely of the Magnitude of the Impact (graded from High to Negligible, based on a consideration of character, duration, probability and consequences) combined with the Value (graded from Very High to Negligible, based on a consideration of significance/sensitivity) of the cultural heritage asset. The Significance can be described as Profound, Very Significant, Significant, Moderate, Slight, Not Significant or Imperceptible (Table 10-2) and is assigned based on a combined evaluation of effect magnitude and asset significance (Table 10-3).

Significance	Description
Imperceptible	An effect capable of measurement but without significant consequences
Not Significant	An effect which causes noticeable changes in the character of the environment but without significant consequences
Slight	An effect which causes noticeable changes in the character of the environment but without affecting its sensitivities

[1] This table is intended to be used as guidance for assessment of values which is to be combined with a consideration of the condition/preservation; documentary/historical significance; group value; rarity; visibility in the landscape; fragility/vulnerability and amenity value of individual Cultural Heritage assets on a case-by-case basis

Significance	Description
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends
Significant	An effect which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment
Very Significant	An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment
Profound	An effect which obliterates sensitive characteristics

Table 10-2: Significance of Effects (per EPA Draft EIAR Guidelines 2017)

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

Table 10-3: Significance of Effects Matrix (after EPA Draft EIAR Guidelines 2017)

10.3 THE EXISTING ENVIRONMENT

10.3.1 Introduction

The proposed scheme will primarily comprise a diversion channel to be excavated through a number of pasture fields in the townlands of Cartrongilbert and Mullenmore North, associated tracks, alterations to the layout of a number of local roads and a river flow control system to be constructed across the river channel. The scheme area is located approximately 800m to the south of Crossmolina Town and 700m to the west of Lough Conn. The soils in this area are dominated by grey-brown podzolic earths, over carboniferous limestone geology, and these support a limited land use capability with grazing as the main agricultural practice (Aalen *et al* 2011). Further details on the physical environment within the study area are provided in the Site Inspection (10.3.4).

10.3.2 Legal and Planning Context

The EIA Directives (from 1985 to 2014) set out the requirement for an EIA in European law. This EIAR has been prepared in accordance with EIA requirements of codified Council Directive 2011/92/EU as amended by EIA Council Directive 2014/52/EU

The management and protection of cultural heritage in Ireland is overseen by a number of state and local authorities under a framework of national laws and policies drafted in accordance with the provisions of various international conventions and treaties ratified by the Irish state. This framework is in accordance with

the provisions of the 'European Convention on the Protection of the Archaeological Heritage' (the Valletta Convention) and 'European Convention on the Protection of Architectural Heritage' (Grenada Convention).

Cultural heritage can be divided loosely into the archaeological resource covering sites and monuments from the prehistoric period until the post-medieval period and the architectural heritage resource, encompassing standing structures and sites of cultural importance dating from the post-medieval and modern period. In addition, local place-names, folklore and traditions are considered part of our cultural heritage.

The EIAR has been prepared in accordance with relevant legislation, national policy statements, guidelines and advice notes relevant to this assessment, which include:

- National Monuments Act 1930, as amended
- Heritage Act (1995), as amended
- National Cultural Institutions Act (1997), as amended
- Policy for the Protection of the Archaeological Heritage (Department of Arts, Heritage, Gaeltacht and the Islands 1999).
- Architectural Heritage (National Inventory) and National Monuments (Misc. Provisions) Act (1999).
- Planning and Development Act (2000), as amended.
- Department of Environment, Heritage, and Local Government's Architectural Heritage Protection: Guidelines for Planning Authorities (2004).
- (Draft) guidance methods per Environmental Protection Agency (2015) *Draft Advice Notes for Preparing an EIS* and (2017).
- *Draft Guidelines for Information to be Contained in EIAR*, and *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment* (DHPLG - August 2018).

Archaeological Heritage

The National Monuments Act of 1930 and its Amendments are the primary means of ensuring the satisfactory protection of the archaeological resource. A number of mechanisms under these Acts are applied to secure the protection of archaeological monuments including the designation of National Monuments, Register of Historic Monuments, the Record of Monuments and Places (RMP), the Sites and Monuments Record (SMR) and placing Preservation Orders and Temporary Preservation Orders on endangered sites.

Section 2 of the National Monuments Act, 1930 defines a National Monument as 'a monument or the remains of a monument, the preservation of which is a matter of national importance'. The State may acquire or assume guardianship of National Monuments by agreement with site owners or under compulsory orders and archaeological sites in the ownership of individual local authorities are also considered to be National Monuments. There are no National Monuments located within the study area.

The National Monuments (Amendment) Act, 1994 made provision for the establishment of the Record of Monuments and Places (RMP) which comprises the known archaeological sites and places within the State. This record comprises county-based lists of all recorded archaeological monuments with accompanying maps. All recorded archaeological sites receive statutory protection and the National Monuments Service (NMS) must be given two months' notice in advance of any work proposed at their locations. There are no recorded archaeological sites located within close proximity to the proposed scheme while there is one example

located within the surrounding study area: an unclassified enclosure (MA038-159----) located approximately 225m to the south of the west end of the diversion channel.

The County Mayo Development Plan (2014 -2020) also outlines a number of objectives in relation to the protection of the archaeological resource within the county and the example relevant to the proposed scheme is AoH-01 (c), which requires an archaeological assessment of all developments measuring 1km or more in length.

Architectural Heritage

The Planning and Development Act 2000 obliges planning authorities to keep a Record of Protected Structures (RPS) of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. The County Mayo Development Plan (2014-2020) does not list any of the buildings within the study area as Protected Structures.

The Architectural Heritage Act 1999 (National Inventory) established the National Inventory of Architectural Heritage (NIAH) to record built heritage structures within the Republic of Ireland. While inclusion in the NIAH does not provide statutory protection to a structure the inventory is used to advise local authorities on compilation of their Record of Protected Structures. There are no NIAH structures located within the study area.

The County Mayo Development Plan (2014-2020) also outlines a number of objectives in relation to the protection of the architectural heritage resource within the county and the example relevant to the proposed scheme is AH-09, which includes the protection of industrial buildings as an objective of the Council.

10.3.3 Desktop Study

The following section presents the results of a desktop study on the archaeological, architectural and historical heritage within the environs of the scheme which was undertaken in order to inform assessment of the impacts of the proposed scheme. The study aims to provide a context for the development of the general area and to identify the recorded archaeological and architectural heritage sites located within a study area extending 250m from proposed works locations and the associated washlands. Cultural Heritage Site (CHS) numbers have been assigned to the identified features within this study area (see Table 10.4).

As noted above, there are no recorded archaeological sites on the footprint of the proposed scheme, or within the washlands to the east, and the nearest recorded example is an unclassified enclosure (CHS 1; MA038-159----) located approximately 225m to the south of the west end of the diversion channel. A hydrogeological assessment of the study area has suggested that the enclosure may actually be a natural feature known as a doline: a conical depression caused by karst activity. There are no buildings or other structures within the study area listed as protected structures or included in the NIAH and the nearest example is Gortnaraby House, an 18th century country house (NIAH ref. 31303801) located outside the study area, approximately 1km to the northeast of the nearest section of the diversion channel. The consulted historic OS maps do not show any demesne or curtilage features associated with this house located within footprint of the proposed channel or washlands.

A review of the Excavations Database (www.excavations.ie) has revealed that no licensed excavations have taken place within study area.

The proposed scheme is located within the Baronry of Tirawley and extends through the Civil Parish of Crossmolina. Baronies were established by the Anglo-Normans and it has been postulated, in an Irish context, that some of these land divisions may reflect the layout of earlier *tuath* boundaries (Nolan 1982). Parishes

comprise ecclesiastical administrative divisions originally introduced to Ireland in the 13th century and were adapted as the basis of civil divisions during 17th century land surveys. Townlands are the smallest unit of land division in the Irish landscape and many may preserve early Gaelic territorial boundaries that pre-date the Anglo-Norman conquest. The layout and nomenclature of the Irish townlands was recorded and standardised by the work of the Ordnance Survey in the 19th century. The proposed scheme extends through the townlands of Mullenmore North (An Muileann Mór: great mill) and Cartrongilbert (Chartún Ghilbeirt: Gilbert's quarter).

The townland name Mullenmore is recorded in the 1604 Calendar of Patent Rolls of James I and it is, therefore, likely that a mill was operating in the locality from at least that time. An iron mill is believed to have been located at this site as early as the mid-18th century[2]. This ceased production when the timber in the vicinity was exhausted and was in a state of ruin by 1800.

The Down Survey of 1641 records that the townland of Mullenmore North was in the ownership of Sir Richard Blake while the 1670 Down Survey lists Richard Franklin as the landowner. The 1641 Survey records that Cartrongilbert townland was common land at the time while it is listed as a possession of Andrew Ram on the 1670 Survey. The area is named Mullinmore on the Down Survey map and no traces of a mill or any other structures are depicted (Figure 10.1).

Figure 10.1: Down Survey map showing Mullinmore in centre (arrow indicates north)

[2] During consultation for this scheme, email correspondence was received from both Dr Matthew A Parkes, National Museum of Ireland, and Dr Paul Rondelez, Mining Heritage Trust Ireland; Dr Parkes noted that Geological Survey of Ireland had records of old furnaces, slag and iron ore from the immediate area at the end of the proposed diversion channel at the site of the extant corn mill, while Dr Rondelez stated that there was "a charcoal-fired blast furnace for smelting iron ore was active in 'Mullinamore, Co. Mayo' (Mullenmore North/South)". Dr Rondelez stated that "The exact location of this furnace is not known but the pond with adjacent corn mill depicted on the 1830s OS Map at http://maps.osi.ie/publicviewer/#V2,514326,816539,11,9 would be the most very likely place."

The Griffith's Valuation (1848-1864) records that Mullenmore North was in the ownership of Sir William Palmer in the mid-19th century who was leasing the lands to tenants. It also records that an iron mill had formerly been located within the townland and that the existing mill had an annual rent of £30.10s. The soils in the townland are described as heavy clays and the tenants were recorded as being of middling circumstances and residing in stone houses.

The 6-inch OS map of 1840 (Figure 10.3) shows a corn mill (CHS 2), with two corn kilns to the north, within the proposed area of washland to the south of the eastern terminal of the diversion channel. The 25-inch OS map of 1900 shows a number of unnamed buildings at this location and, while a lime kiln is indicated to the southeast, there are no traces of the two corn kilns previously indicated in the area to the north. The existing remains of the corn mill are not listed as a recorded archaeological site or as a protected structure and are described in the Site Inspection section of this chapter (Section 10.3.4). There are no buildings, structures or potential archaeological features indicated on the line of the diversion channel and proposed local road diversions on either of these maps (Figure 10.2). The diversion channel does extend along a section of the townland boundary (CHS 3) between Mullenmore North and Cartrongilbert to the north.

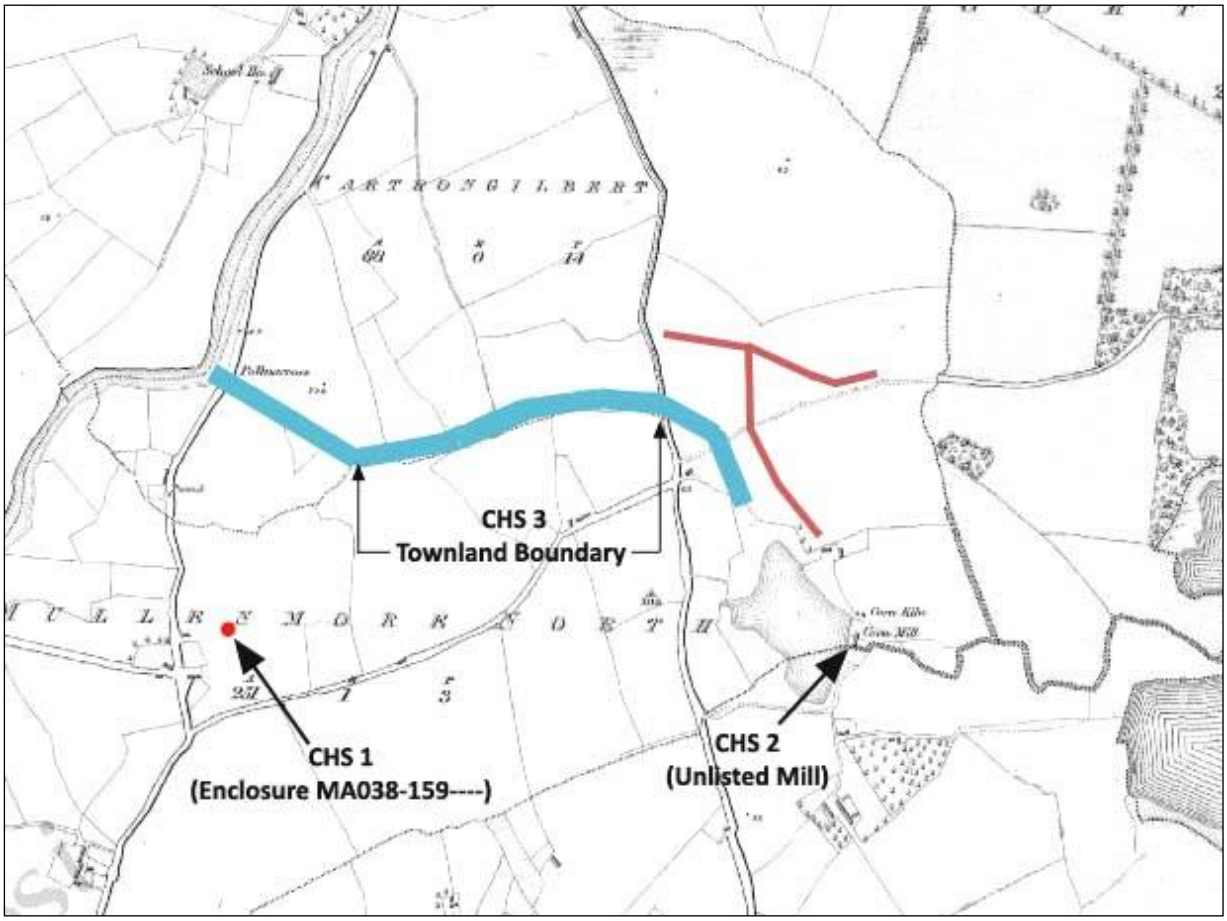

Figure 10.2: Extract from 1st edition OS map (survey date 1840) showing CHS locations and approximately lines of diversion channel (blue) and local road diversions (red) [OSI Licence SU 0003318]

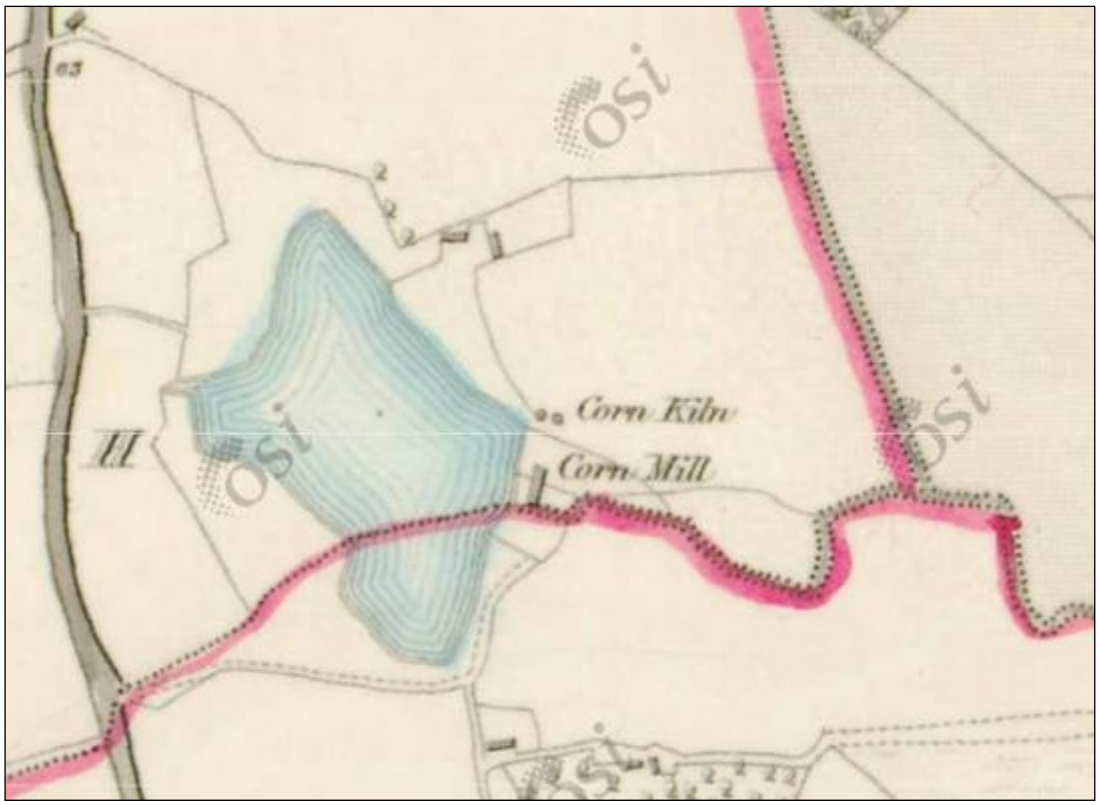

Figure 10.3: ***Extract from 1st edition OS map (survey date 1840), showing corn mill (CHS 2) and two corn kilns [OSI Licence SU 0003318]***

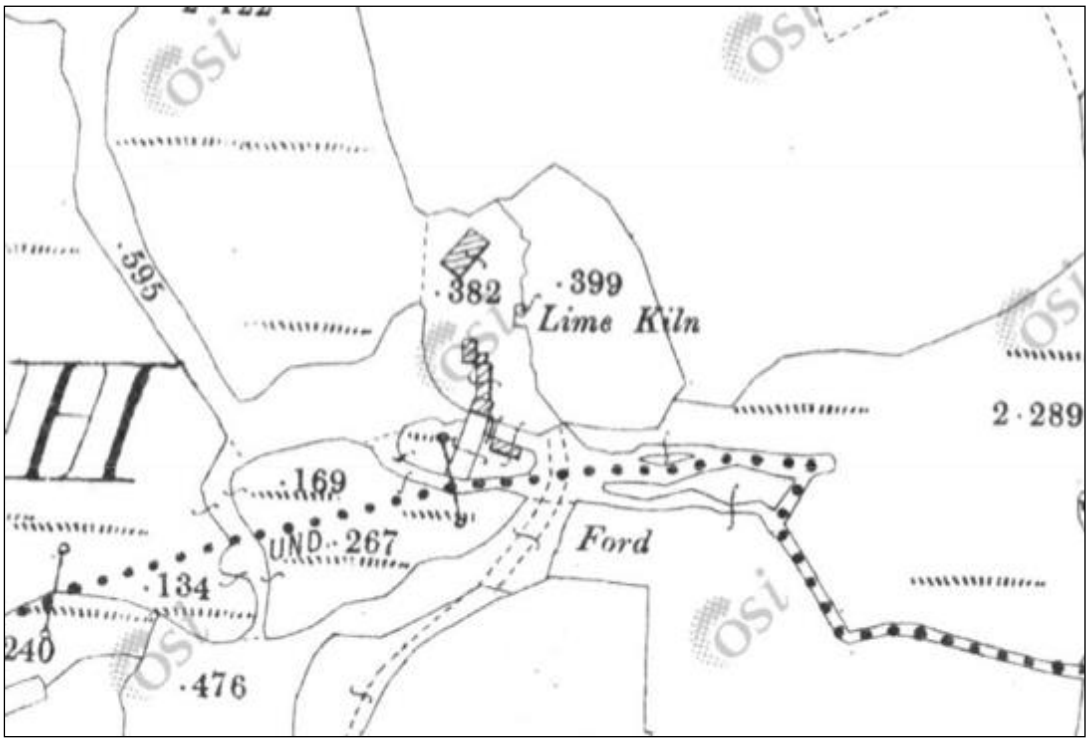

Figure 10.4: Extract from 25-inch edition OS map (survey date 1900) showing mill buildings (CHS 2) and lime kiln [OSI Licence SU 0003318]

CHS	Legal Status	Classification	ITM Ref.
1	MA038-159	Enclosure	513470, 816499
2	None	Corn Mill site	514310, 816492
3	None	Townland boundary between Mullenmore North and Cartrongilbert	513587, 816672 to 514049, 816794

Table 10.4 Identified Cultural Heritage Sites within study area

10.3.4 Site Inspection

This section presents the results of the inspections of the lands to be used in the proposed scheme. A field survey of the proposed diversion channel was undertaken in March 2018 and a visual inspection from the roadside was undertaken in May 2020. The survey description begins at the west end of the proposed works adjacent to the River Deel and then continues eastwards along the sections of fields on the route of the proposed diversion channel, local road diversions and the area of washlands to the west of the channel. The field descriptions presented below (Table 10.5) incorporate details shown on the historic OS maps in order to provide an assessment of any modern interventions along the footprint of the proposed works.

A c.300m section of the riverbed was inspected from a point to the west of the proposed intake structure as far as a point to the north of the proposed river flow control structure. The banks, riverbed and lands directly adjoining were inspected. The site of the proposed access track to the west of the proposed river flow control structure was also inspected. The survey was carried out on Tuesday 12th May in sunny and warm weather conditions. The riverbed was dry at the time of inspection.

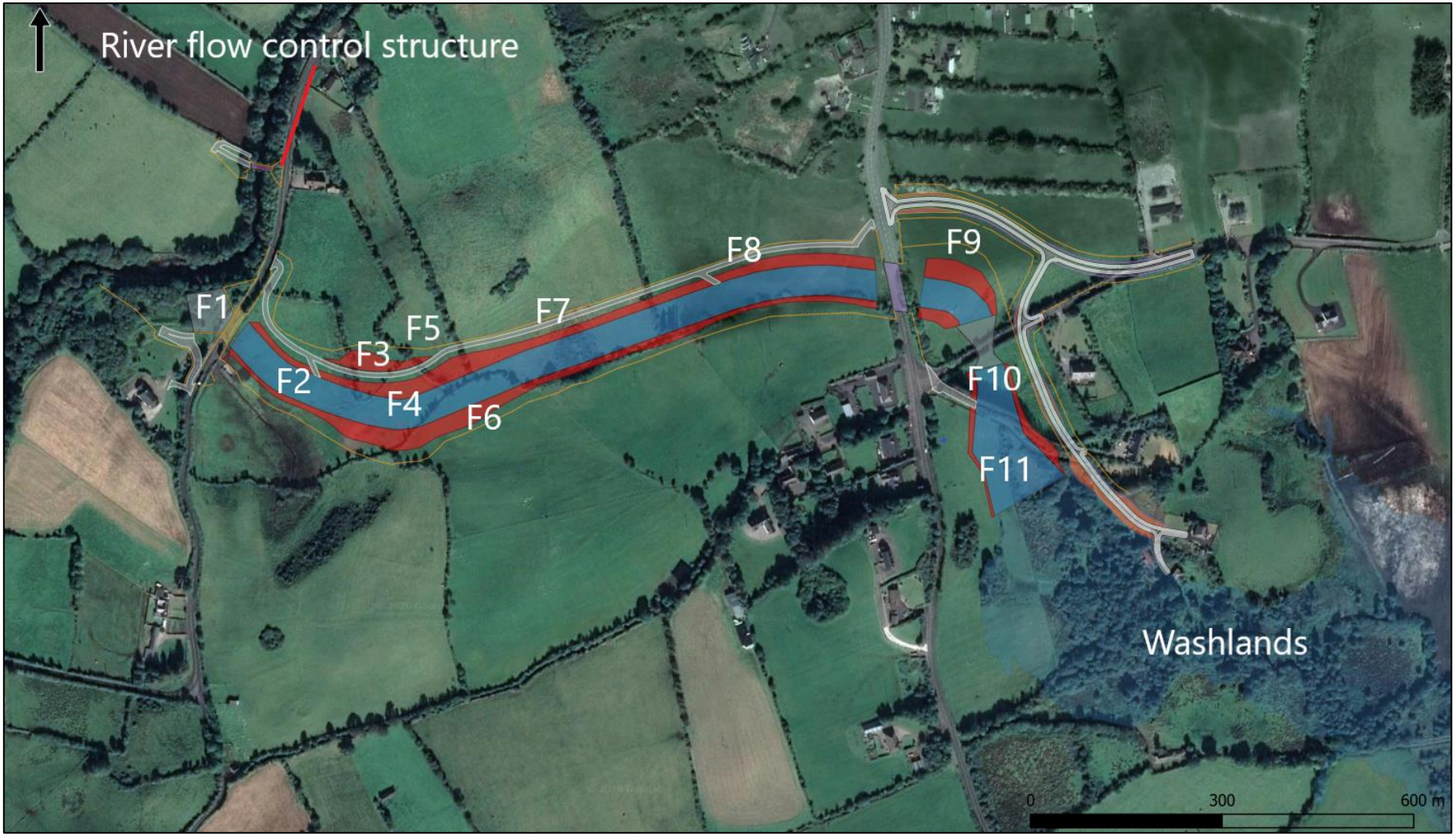

Figure 10.5: Layout of proposed scheme with field numbers indicated

Field/Area	Description
F1	This riverside field is shown as two fields on the historic OS maps and the existing layout was created by the removal of a central N-S boundary in the 20th century. A modern dwelling house in the south end of the field was constructed in the early 2000s. There are no features indicated in the adjacent section of the river on the historic maps, both of which show the existing public road that extends outside the east field boundary. This area is generally level with grass to the south and sally trees along the river side to the north. A modern cairn formed of large limestone boulders is located on the side of the driveway leading to a modern house to the south. The field slopes gently to the river bank with a low (c.0.7m tall) earthen bank separating it from the river. The river channel was inspected from the east bank and nothing of an archaeological nature was noted.
F2	This field is shown as part of a larger field on the 6-inch map and the existing southern boundary, shown on the 25-inch map, was created in the second half of the 19th century. This field is level along the south and east sides and rises to the north and east. The ground surface is very boggy at the south with a large pool of standing water. Rushes evident throughout this field with horse grazing at the time of inspection. A large boulder (c.3mx2mx1m) is located at the boundary to the southeast. This field is enclosed by a low hedge to all sides, this is thin and intermittent to the south. Nothing of an archaeological nature was noted.
F3	This field is shown as part of a larger field on the 6-inch map and the existing eastern boundary, shown on the 25-inch map, was created in the second half of the 19th century. This is a rolling field with the south end falling gently to the south. No standing water or boggy areas were noted within this field, unlike others in the vicinity which may indicate land improvement works. It was in use as sheep grazing at the time of inspection and is enclosed with a thin hedge. Nothing of an archaeological nature was noted.
F4	This field is shown as part of a larger field on the 6-inch map and the existing northern boundary, shown on the 25-inch map, was created in the second half of the 19th century. The southern field bank forms part of the townland boundary (CHS 3) between Mullenmore North and Cartrongilbert to the north and is on the line of the proposed diversion channel. This field is very wet in the west end and a steep west facing-slope is located at the centre with a rolling plateau to the east. A small round pool was located on the upper portion of the field to the east of the centre. Several large rounded boulders, or bedrock outcrops, were evident in the west end of the field. The townland boundary to the south is formed by a low earthen bank (c.0.5m tall) topped by a hedge formed of bramble and small bushes and trees. No surface traces of a flanking ditch or drain were noted. This field was open to horses at the time of the inspection. Nothing of an archaeological nature was noted.
F5	This field is shown as part of a larger field on the 6-inch map and the existing eastern boundary, shown on the 25-inch map, was created in the second half of the 19th century. The southern field bank forms part of the townland boundary (CHS 3) and is on the line of the proposed diversion channel. This field slopes to the south at the south and contains occasional large rounded boulders. Horses were grazing the field at the time of inspection. This field was enclosed by thick bramble hedges with some trees and bushes. Nothing of an archaeological nature was noted.
F6	The existing layout of this large, irregular field is present on the historic OS maps. The northern field bank forms part of the townland boundary (CHS 3) and is on the line of the proposed diversion channel. This rolling field falls moderately to the north at the north end. Sheep were grazing the field at the time of inspection. The townland boundary to the north is formed of a low earthen bank (c.0.5m tall) topped by a hedge formed of bramble and small bushes and trees. No surface

Field/Area	Description
	traces of a flanking ditch or drain were noted. Nothing of an archaeological nature was noted.
F7	This large field is shown as two fields on the historic OS maps and the existing layout was created by the removal of a central N-S boundary in the 20th century. The southern field bank forms part of the townland boundary (CHS 3) and is on the line of the proposed diversion channel. The central section of the field adjacent to this boundary is indicated as a localised area of marginal, marshy ground on the 25-inch map. This pasture field slopes moderately down from the boundary to the west towards the east before levelling while there is a steeper south-facing slope further to the north. Some large areas of reed growth were evident and east to west cropmarks representing ridge and furrow cultivation were evident within this field in drone images. Nothing of an archaeological nature was noted.
F8	The existing layout of this large, irregular field present on the 6-inch map and there is now no surface trace of an N-S sub-division boundary shown in the eastern half on the 25-inch map. The R315 road extends N-S outside the east side of the field and is present on the historic OS maps. The OS aerial images show topsoil stripping in the southeast corner of the field and this undeveloped area, which is shown as marshy ground on the 25-inch map, appears to have undergone modern land improvement works. The southern field bank forms part of the townland boundary (CHS 3) as does the roadside section of the field in the area where the boundary turns to the north. The southern field boundary is on the line of the proposed diversion channel and there is no extant field bank along the east side of the field where a low concrete fence delimits the roadside. This field is rolling with sheep grazing at the time of inspection. Some rushes growing within this field, especially at the south. The eastern portion of this field was disturbed by ongoing land improvement works at the time of inspection. The townland boundary to the south is formed of a low earthen bank (c.0.5m tall) topped by a hedge formed of bramble and small bushes and trees. No surface traces of a flanking ditch or drain were evident. Nothing of an archaeological nature was noted.
F9	This rolling pasture field formed part of a large, irregular field shown on the historic OS maps which was sub-divided into a number of smaller fields during the 20th century. Lake Road, which extends E-W outside the southern boundary, is shown as a laneway leading into a property in Gortnaraby townland to the east on the 6-inch map. The 25-inch map shows a spring in area now located in the south end of the field with a narrow drainage channel extending south towards the mill site (CHS 2). The line of this channel is now truncated by Lake Road and there are no surface traces of the spring. The line of the diversion channel extends through the southwest corner of the field while the diverted local access road is located in the northern half. Nothing of an archaeological nature was noted within this area during the field inspection.
F10	The northern half of this field formed part of the same large plot as Field 9 to the north until the area was sub-divided into smaller fields in the 20th century. The driveway extending NW-SE towards a modern house located to the east follows the line of a field boundary present on the historic OS maps. The line of the drainage channel shown extending south from the spring on the 25-inch map extends through the proposed route of the drainage channel in this field. This field appears to have been recently disturbed by land improvement works along the northern side and a mound in this area is likely a result of this activity. An east to west band of standing water at the low point in the centre of the field mirrors the line of a former stream. Nothing of an archaeological nature was noted within this area during the field inspection.

Field/Area	Description
F11	The existing layout of this field is present on the historic OS maps and the former line of the spring drain is evident as an overgrown area on the line of the proposed diversion channel which terminates in this field. The line of the stream in this field was evident as a water filled channel within this field. The field is rolling with sheep grazing at the time of inspection. Nothing of an archaeological nature was noted within this area during field inspection. A pond, likely the former mill pond, is located in the southern portion of this field near the point where the diversion channel transitions to the proposed washlands.
Mill Site (CHS 2)	The extant remains of the corn mill complex are broadly of the same layout as that shown on the 25-inch OS map with the remains of an additional structure incorporated into a farm yard on the north side. The mill complex is in a very ruinous state, heavily overgrown and active collapse was noted within a number of the structures, all of which are of random rubble construction. The following description should be read in consultation with the photographic record presented in **Appendix 10A** and is not intended as a detailed building survey, which will be undertaken as part of the scheme mitigation strategy. A mill building at the south end of a north/south range of buildings was shown as unroofed on the 25-inch map and recent structure collapse was noted during the inspection. This structure is formed of two rooms and is intersected by a mill race at the north. This mill race emerges from beneath the building to the east. The stream and mill race flow within channels through this structure at four locations. In a number of areas, the water from the stream and mill race was evident flowing through the walls of the building. A large millstone is located within this structure. The very ruinous and roofless remains of a freestanding structure are located to the east of the main mill building, to the south of the mill race and the north of the stream. Adjoining the southernmost mill building to the north are the very ruinous and roofless remains of the former mill. A channel along the southern wall contained moving water and a large mill stone was located within this structure. Adjoining to the north was another ruinous and roofless structure. Adjoining to the north was a small structure which was roofed by corrugated iron sheeting, a recent collapse in the west wall was evident within this structure. Some farm materials were stored within this structure at the time of inspection. Some overgrown rubble to the north may represent the demolished remains of further structures adjoining this range of buildings to the north. A large freestanding building was located to the northeast of the north/south range of buildings. This was roofed by corrugated iron sheeting and was in use for agricultural storage at the time of inspection. To the northwest of the large freestanding building was the wall of a structure shown on the mid-20th century Cassini 6-inch map. This building has largely been removed but the southern wall had been incorporated into a yard to the north. A limekiln, shown on the 25-inch OS map, to the east of the north/south range of buildings and to the south of the large free standing building, was not located. A mound of demolition rubble was noted at its approximate location. No buildings or other features associated with the recorded historic iron work activity at this site were noted during the inspection.

Field/Area	Description
Washlands	The former mill pond area is located near the point where the diversion channel transitions to the proposed washlands. The hydrogeological assessment of the proposed scheme notes that the water source is formed by two karst springs that are predominantly fed by swallow holes in the River Deel. The springs continue to flow even at times when the Deel is low and the mill appears to have been sited to take advantage of this consistent water supply. The field drain indicated extending south from a spring to the north of the mill on the 25-inch OS map appears to have formed a channel that fed into the millpond area. It is probable that drainage works on the stream flowing from the larger 'pond' shown on the 6-inch OS map lowered the water level generally and created the two water bodies shown on the 25 inch map. The OPW have also carried out drainage works on this stream and also extending from the western bank of the southern pond along a drainage ditch which crosses under the R315. The northern spring has a high water level than the southern spring. The southern spring is better served by the stream, while the water level at the northern spring is held back by the lip of elevated ground around the mill buildings and between the two springs. The proposed washlands extending to the east encompass the line of the mill stream as it meanders to the south and east towards Lough Conn, which is located c.400m to the east of the mill buildings. This area is generally level with some scrubby fields with occasional trees and is labelled as 'liable to flooding' on the 1st edition OS map. Nothing of an archaeological nature was noted within the wider washlands area during inspection.
River flow control system	Historic mapping shows this area as largely the same as its current form. The bank to the east of the river is shown as a low cliff within an overgrown area while the location of the proposed access track to the west of the river is within an agricultural field. No features of an archaeological nature were noted within the vicinity on historic maps or aerial images of this area. The riverbed is generally formed of medium to large water rolled stones and cobbles mixed with sand and gravel. Some small infrequent areas of clay were also evident in the riverbed. Some large outcrops of eroding limestone were also noted. Very infrequent fragments of modern pottery, glass, corroded iron, animal bone and plastic were noted within the dry riverbed. The western bank of the river in this area is generally c.1-1.8m high and formed of earth and stone. The bank is tree-lined and slightly overgrown. The eastern bank of the river was formed of a low gently sloping earthen bank at the site of the proposed weir. Further to the west and north this bank was taller, up to c.2m in places and formed of earth and stone. At the site of the proposed river flow control system the bank was steeply sloped and overgrown. The site of the proposed access track to the west of the proposed river flow control system is within a rolling pasture field which slopes gently down to the river to the east. Nothing of archaeological significance was noted during inspection.

Table 10.5: Summary of site inspection results

10.4 PREDICTED IMPACTS

Do-Nothing Scenario

A 'Do Nothing Scenario' will see to the continued preservation of recorded and potential cultural heritage features within the study area albeit with the continuation of potential flooding risks to the built heritage resource within Crossmolina Town.

Construction Phase

The following section presents the assessment of construction phase impacts on the identified cultural heritage resource within the environs of the proposed scheme.

No previously unrecorded potential features or sites of an archaeological nature were noted on the line of the proposed works. The nearest known archaeological monument to the proposed works is an unclassified enclosure (CHS 1; MA038-159----) located approximately 225m to the south of the west end of the diversion channel. The site of the mill complex (CHS 2) is located outside beyond the east end of the proposed diversion channel and will not be impacted by ground works during its construction. A section of a townland boundary (CHS 3) is located on the proposed line of the diversion channel and the extant remains of this land division feature are similar in morphology to other field boundaries within the area. The removal of part of the townland boundary, which as an undesignated cultural heritage asset of low value will result in a 'Not Significant' Significance of effects.

In summary, the proposed scheme will not have any likely significant adverse effects on the cultural heritage resource during the construction phase.

The following assessment of the construction phase impacts are based on criteria published by the EPA (2017) and ICOMOS (2011).

CHS	Site Type/Name	Legal Status	Significance	Intervention	Level of Impact
1	Enclosure	MA038-159	Medium	None	Neutral
2	Corn Mill site	None	Medium	No proposed ground works but will be located within washland	Neutral
3	Townland boundary between Mullenmore North and Cartrongilbert	None	Low	Removal of section of boundary on the line of diversion channel	Likely direct, slight negative impact of permanent duration

Table 10.6: Predicted construction phase impacts to identified Cultural Heritage Sites

Operational Phase

The periodic increased flow resulting from the proposed scheme may contribute to an acceleration of the ongoing degeneration of the unlisted corn mill ruins buildings (CHS 2) within the washland area in the east end of the scheme during the operational phase. The proposed scheme will, therefore, have a likely direct, moderate negative impact of permanent duration on the corn mill site during the operational phase. The proposed scheme will result in an alleviation of flooding events in Crossmolina Town which will result in an indirect positive impact on the cultural heritage resource within the town.

10.5 MITIGATION AND MONITORING

Pre-construction archaeological test trenching will be undertaken within the accessible green field areas to be impacted by ground reduction works to create the diversion channel and local road diversions. This will include investigations on the line of the townland boundary between Mullenmore North and Cartrongilbert (CHS 3). In the event that any unrecorded features of archaeological significance are encountered the archaeologist will consult with Mayo County Council (MCC) and NMS in order to determine appropriate mitigation measures. A report detailing the results of the archaeological site investigations will be submitted to the NMS and MCC at the completion of works as part of the process of monitoring potential impacts during the scheme. In the event that any areas are not accessible during pre-construction site investigation topsoil stripping works will be undertaken at these locations during the construction phase.

It is proposed to carry out works within the channel of the River Deel at the location of the River flow control system (RFCS). Works in this area will be subject to archaeological monitoring.

There are no excavation works proposed within the environs of the mill site (CHS 2) and no archaeological investigations to assess potential impacts of ground reduction interventions are required at this location. A detailed building survey of the mill ruins will be undertaken by a suitably-qualified and experienced archaeologist in order to compile a full record of the extant structures in written, drawn and photographic formats.

CHS	Feature Type	Intervention	Mitigation	Monitoring of Process
1	Enclosure	None	No mitigation required	None required
2	Mill site	Located within washland	Level 3 Building Survey	Level 3 Building Survey report will be compiled and submitted to MCC and NMS
3	Townland boundary	Removal of section along route of channel	Pre-construction test trenching	Testing to be carried out under licence issued by NMS. A report will be compiled and submitted to NMS and OPW Project Archaeologists

Table 10.7: Mitigation measures and monitoring of process for Cultural Heritage Sites

The implementation of the mitigation measures outlined above will provide for either the avoidance of the cultural heritage resource or the proper and adequate recording of this resource (including currently unknown archaeological features).

Monitoring

There a number of obligatory licensing processes required to be undertaken as part of archaeological investigations within the Republic of Ireland and these will allow for monitoring of the successful implementation of the archaeological mitigation measures. Advance method statements detailing the proposed strategy for all site investigations will submitted for approval to the National Monuments Service, currently based in the Department of Housing, Local Government and Heritage, as part of the licence application. These will clearly outline the extent of works and outline the onsite and consultation processes to be enacted in the event that any unrecorded archaeological sites or features are identified. A report will be compiled following the completion of all required site investigations which will clearly present the results in written, drawn and photographic formats and copies will be submitted to the National Monuments Service and the National Museum of Ireland.

10.6 RESIDUAL IMPACTS

Post-construction impacts to the mill site (CHS 2) are addressed in the assessment of Operational Phase impacts. All identified impacts will be addressed by mitigation during the pre-construction and construction phases of the proposed scheme which will provide for the recording and/or avoidance of known and potential cultural heritage features. As a result, there shall be no likely significant adverse residual impacts on the cultural heritage resource.

10.7 CUMULATIVE AND IN-COMBINATION IMPACT ASSESSMENT

Cumulative Impact Assessment

Archaeological investigations including test trenching have the potential to result in impacts on the habitats upon which the tests are being carried out and downstream watercourses. As such these procedures are either assessed as part of the project or are assessed in their own right with mitigation included where necessary to avoid any harmful impacts on biodiversity and or water quality.

There are no predicted Cumulative Impacts on the Cultural Heritage resource associated with the proposed Drainage Scheme.

Accordingly, based on the assessment of all elements of the proposed Scheme, no significant cumulative effects are anticipated.

In Combination Assessment

A review of projects in the townlands of Cartrongilbert and Mullenmore North for assessment of cumulative or in combination effects was undertaken as part of the assessment (see Chapter 2 for details). This review entailed consulting with the online planning system for Mayo County Council. None of the planning applications identified contained conditions relating to archaeology/cultural heritage.

Following a detailed assessment of the receiving environment, the potential for any further impact when considered in combination with any or all of the above plans and projects, was found to have no potential for significant in-combination cumulative effects on cultural heritage.