LOUTH COUNTY COUNCIL

NATURA IMPACT STATEMENT

FOR

PROPOSED COASTAL PROTECTION WORKS, DRUMMULLAGH, OMEATH, CO. LOUTH

VOLUME I. REPORT

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1 INTRODUCTION

1.1 Project Planning Background

Louth County Council wishes to carry out coastal protection works at a site located at Drummullagh, Omeath, County Louth (see Figures 1-5 and Plate 1 below). It is understood that rock armour was constructed at Drummullagh at some point in the past along the foreshore which extends from the southeastern corner of the existing residence to a location approximately 150m to the north of the site. A section of this rock armour adjacent to a residence has been damaged in recent years with boulders moved by wave action during storm conditions away from their original location adjacent to the eastern boundary wall of the residence. Louth County Council proposes to provide additional coastal protection at this location in order to improve and augment the existing rock armour. The proposed works are intended to have a lifespan in excess of 50 years, thereby providing long term protection to the existing residence. Subject to planning approval, the proposed works are likely to take 2 – 4 weeks to construct.

Plate 1. 4K Aerial photograph taken at an elevation of 40m above ground level approximately 100m to the east of the site facing in a westerly direction towards the location for the proposed coastal protection works located to the east of the residence

In order to proceed with the proposed coastal protection works, Louth County Council are required to submit a planning application to An Bord Pleanála under Section 177AE (relating to Appropriate Assessment (AA)) of the Planning and Development Act, 2000, as amended. Given the location of the site proposed for the coastal protection works, which is inside a Natura 2000 site, an appropriate assessment screening process is required with a natura impact statement prepared for the application. The results of the appropriate assessment screening process are discussed in the following section,

Section 3. This document provides information to allow the planning authority (An Bord Pleanála) to carry out a planning assessment of the proposed project. This document will assess whether significant effects to the integrity of the Natura 2000 network are likely to occur as a result of granting planning permission in accordance with Article 6(3) of the Habitats Directive and the Planning and Development (Amendment) Act. It will determine whether mitigation measures are required to ensure that negative effects can be avoided to the Natura 2000 network. Article 6(3) of the Habitats Directive and the Planning and Development (Amendment) Act states the following:

'6. Appropriate Assessment screening
On the basis of the information provided with the application and in the absence of screening for Appropriate Assessment /Natura Impact Statement the Planning Authority cannot be satisfied that the proposed development (which is within Carlingford Shore SAC) individually, or in combination with other plans or projects would not be likely to have a significant effect on the designated Natura 2000 site or any other European site, in view of the site's Conservation Objectives. The applicant is therefore requested to undertake and submit a screening report for Appropriate Assessment and /or Stage 2 AA (NIS) in order to determine the likelihood of any significant adverse effects on the integrity of the aforementioned European sites in view of the sites' conservation objectives. (6 copies)'

This document provides information to allow the local authority (Louth County Council) to carry out an Appropriate Assessment of the proposed project. This document will assess whether significant effects to the integrity of the Natura 2000 network are likely to occur as a result of granting planning permission in accordance with Article 6(3) of the Habitats Directive and the Planning and Development (Amendment) Acts. It will determine whether mitigation measures are required to ensure that negative effects to the Natura 2000 network can be avoided.

A review of the Omeath Town Zoning Map for Omeath within Volume II. Small Towns and Villages of the Louth County Development Plan 2021-2027 indicates that the site is zoned as *L1-Strategic Reserve.*

1.2 Project Works Description

The objective of the proposed works at Drummullagh is to provide coastal defences to an existing residential property. The proposed works can be summarised as follows:

- 40 linear meters of basic excavation works to approximately 1m deep x c.3m wide;
- Placement of a concrete strip foundation; and
- Installation of a geotextile membrane and rock armour over a length of 40m.

It is proposed to construct a concrete footing at the base of the existing boundary wall of the residence in order to provide additional foundation support to the wall which consists of cut stone. These works will be carried out first, and the concrete will be allowed to set for a sufficient time before the boulders

for the rock armour are put in place. These works will be carried out during a suitable time of the year to allow the concrete to cure properly (i.e., when the highest tides will not reach the proposed works).

The positive outcome of the proposed works will be a vastly increased level of protection for the existing residence, thereby preventing wave damage and possible irrevocable flood and structural damage to the residence.

The following plate, Plate 2 shows a photograph of previous rock armour works carried out by Louth County Council at Salterstown, Annagassan, County Louth. The works carried out in Salterstown were very similar to those works proposed for Drummullagh.

Plate 2. Aerial photograph of rock armour constructed to prevent coastal erosion at Salterstown, Annagassan, County Louth.

2 METHODOLOGY FOR APPROPRIATE ASSESSMENT

2.1 Introduction

A number of guidance documents on the appropriate assessment process have been referred to during the preparation of this NIS, including:

- *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* (DoEHLG 2009, Revised February 2010);
- *EU Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC (2007);*
- *Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (Nov. 2001 – published 2002);
- *Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC* (2000); and
- *European Communities (Birds and Natural Habitats) Regulations 2011* (DoEHLG 2011).

The assessment requirements of Article 6 of the Habitats Directive are commonly dealt with in a stage-by-stage approach. The stages as outlined in *"Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities"* are outlined below.

2.2 Stage 1 – Screening

This initial process identifies the likely impacts of a proposed project or plan upon a Natura 2000 site, either alone, or in combination with other projects or plans and considers whether these impacts are likely to be significant.

2.3 Stage 2 – Appropriate Assessment

The consideration of the impact of the project or plan on the integrity of the Natura 2000 Site, either alone or in combination with other projects or plans to the sites structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.

2.4 Stage 3 – Assessment of Alternative Solutions

The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site.

2.5 Stage 4 – Assessment where Adverse Impacts Remain

An assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed. It should be noted that neither *Stage 3 Assessment of Alternative Solutions* nor *Stage 4 Assessment* where Adverse Impacts Remain were applicable in this instance, as the proposed coastal protection works will not adversely affect the integrity of any Natura 2000 site and, in particular, it will not adversely affect the Carlingford Shore SAC once mitigation measures are put in place.

3 SCREENING

According to the guidelines as laid by NPWS (2009), Appropriate Assessment Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

' i) Whether a plan or project is directly connected to or necessary for the management of the site; and ii) Whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a Natura 2000 site in view of its conservation objectives.'

It should be noted that the footprint of the proposed Coastal Protection Works at Drummullagh is inside the boundary of the Carlingford Shore Special Area of Conservation [002306]. As such, the proposed Coastal Protection Works are directly connected to the Carlingford Shore SAC which is a Natura 2000 Site (see Figure 5). The purpose of the screening exercise is to inform the AA process in determining whether the proposed works, alone or in combination with other plans and projects, is likely to have significant effects on the Natura 2000 sites within the study area (and in particular on Carlingford Shore Special Area of Conservation [002306]. If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the AA process must proceed to Stage 2 - Appropriate Assessment and the preparation of a Natura Impact Statement (NIS). Screening has been undertaken for this development in accordance with the European Commission's Guidance on Appropriate Assessment (European Commission, 2001) which comprises the following:

- Description of the Project/Works;
- Identification of Natura 2000 sites potentially affected by the Project/Works;
- Identification and description of individual and cumulative impacts likely to result from the Project/Works;
- Assessment of the significance of the impacts identified on the conservation objectives of the site(s); and
- Exclusion of sites where it can be objectively concluded that there will be no significant impacts on conservation objectives.

Please note that as a result of a European Court of Justice decision, Article 6(3) of Council Directive 92/43/EEC of 21st May, 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site.

Given that the proposed Coastal Protection Works are within Carlingford Shore Special Area of Conservation [002306] and given the above ruling, although the screening process was 'stepped through' for this assessment, no AA screening report was prepared for this development. This report, in effect 'bypasses' that stage and is a Natura Impact Statement for the proposed Coastal

Protection Works as required under European and Irish legislation. However, a short AA Screening Report statement has been prepared and is included in Appendix 1 of this report.

4 FIELD WORK & REPORTING METHODOLOGY

4.1 Desk Study

A comprehensive GIS mapping and data review was carried out to identify all statutory protected areas and other non-statutory areas within 15km of the site. This involved a review of inland freshwater water ecosystems. All ecological, biological/Q-Index and hydrological/chemical monitoring data available from the websites of NPWS, National Biodiversity Data Centre, Bat Conservation Ireland, Louth C.C., EPA, GSI, OPW and WFD were reviewed. Information on protected species of fauna and flora listed for protection under Annex II of the EU Habitats Directive (92/43/EEC), Annex I of the Birds Directive (79/409/EEC) and the Wildlife (Amendment) Act (2000) will be sought from NPWS, the National Biodiversity Data Centre and published sources were reviewed. The National Parks and Wildlife Service (NPWS) of the Department of Arts, Heritage, Regional Rural and Gaeltacht Affairs database of designated conservation areas and NPWS records of rare and protected plant species were checked with regard to the location of the lands at Drummullagh.

The online database hosted by the Irish National Biodiversity Data Centre (NBDC) (www.biodiversityireland.ie) was also utilised to assess the importance of the study area for mammals and bats. Other sources accessed to gather information on bats in the study area included The Bat Conservation Trust's report *'Distribution Atlas of Bats in Britain and Ireland 1980-1999'* (Richardson, 2000). The *'Irish Red Data Book 2: Vertebrates - Threatened Mammals, Birds, Amphibians and Fish in Ireland* (Whilde. 1993) and the updated *Irish Red List No.3: Terrestrial Mammals* (Marnell *et al.* 2009) were also reviewed.

Recent, high resolution, colour aerial photographs were used to identify habitats of conservation value. Relevant mapping was prepared for the NIS through a combination of Autocad Map 2017 and ArcGIS Pro. Ornithological data submitted as part of previous Ecological Impact Assessments, Natura Impact Statements and Appropriate Assessment Screening reports for developments within the vicinity of site were reviewed.

The Ecological Impact Assessment and other Ecological Reports that was prepared by RPS Consulting Engineers in 2020 on behalf of Louth County Council for the Part 8 Application for the Carlingford Greenway was reviewed as part of the desk study work for this project.

4.2 Unmanned Aerial Vehicle (Drone) Photogrammetry Survey

Mulroy Environmental Ltd. carried out 4K photogrammetric drone survey of the site and the surrounding area on the 22nd June, 2023. Mulroy Environmental are licensed SOP holders with the Irish Aviation Authority/EASA and have drone specific insurance in addition to our normal Public and Employers Liability Insurance. The site is not in an IAA restricted flight zone and did not require SOP permission from the IAA. The purposes of the drone surveys were to familiarise Mulroy Environmental with the topography and vegetation of the site and to help in the production of drawings for report. Two dimensional orthomosaics were generated for each survey which were used in the production of detailed drawings for the site and in the accurate calculation of habitat area through their use in ArcGIS

Survey 123. In addition, a 3D model of the site was produced which assisted in and in the mapping of habitats within the site.

4.3 ArcGIS Pro & Autocad Mapping

GIS maps of different scales were produced using the ArcGIS Pro computer programme. These maps were used to identify the proximity of the site to Special Areas of Conservation (SACs) and Special Protected Areas (SPAs), and to surrounding surface waters. SAC and SPA data was imported from NPWS and added as a layer (NPWS, 2023). Orthomosaics developed through drone photogrammetric surveys were imported into ArcGIS Pro and Autocad 2017 added as a map surface layer. The site boundary was identified and outlined within this map. A 15km buffer was created around a centre point within the site boundary.

4.4 Habitat Survey

A site-based habitat assessment was carried out on the 4th September, 2023 using ArcGIS Survey123 software installed on a GPS enabled Samsung Galaxy Tab Active 3 All Weather tablet. The habitat survey was carried out following the Heritage Council's *Best Practice Guidance (Smith et al., 2011).* Habitats were classified to Level 3 of the Heritage Council's classification (*Fossitt, 2000*), and also according to the *Habitats Directive types (European Commission, 2013)* where appropriate. In addition to habitat mapping, notes on plant species composition, structure and management were collected. Plant species were assigned a DAFOR abundance rating within each habitat. The DAFOR scale is presented in the following table, Table 1 which was modified from *Smith et al. (2011) Habitat Mapping Guidelines*.

Table 1. DAFOR Abundance Rating

RATING	DESCRIPTION
Dominant (D)	A Dominant species generally covers more than two-thirds of the habitat.
Abundant (A)	Abundant species typically cover between one-third and two-thirds of the habitat. A rule of thumb for evaluating Abundant species is 'everywhere you look you see lots'.
Frequent (F)	Commonly encountered species seen when walking through the habitat. 'Everywhere you look you see some'.
Occasional (O)	Occasional species generally have relatively low frequency and low cover. However, they do not have to be searched for to be found.
Rare (R)	Rare species are those that are only found once or a very few times during the survey, depending on the size of the habitat. Species cover is also very low where Rare species are found.
Locally Abundant (LA)	Used where overall occurrence of species is either occasional or rare, but species is abundant over a small area.

Plant nomenclature follows Stace (2010). Plant species identification was assisted by the PictureThis plant identification application with 98% accuracy (PictureThis, 2023). The identification and

classification of these plants was also assisted by databases provided by the NBDC, the EPA, Teagasc, Biodiversity Ireland and the NPWS.

4.5 Bird Survey

A walkover bird song survey was carried out along the site and the foreshore on the 4th September 2023. This recording began at 09.00am and had a duration of 30 minutes. This survey was carried out using Cornell Lab Merlin Bird ID software application installed on a Samsung Galaxy Tab Active 3 tablet. The results of the bird survey are included in Section 5.9.1.4.

5 EXISTING ENVIRONMENT

5.1 Description of Works Area

The proposed coastal protection works site at Drummullagh is approximately 40m by 3m in footprint and is located approximately 205m east of a regional road, the R173 and approximately 570m to the north of the town of Omeath (see Figures 6 & 7). The site is accessed from the R173 via a small country road, the L30541 which runs in a southwest to northeast direction and leads to a cul-de-sac approximately 86m to the north of the site. The proposed coastal protection works, are located immediately to the east of an existing residence (see Plate 3 below) and are on the western shore of Carlingford Lough. The site is approximately 630m to the southwest of Warrenpoint Port (see Figure 5).

Plate 3. Ground photograph taken at southeastern corner of existing rock armour to the east of the eastern boundary of the existing residence facing in a northerly direction

5.2 Site History

A review of 25-inch historical Ordnance Survey mapping indicates that the former Dundalk to Newry Railway line ran from south to north to the west of the residence (see following Plate 4). An inspection of the mapping indicates that a level crossing was located to the west of the site (see following Plate 5). A parochial house is located to the southwest of his level crossing. This is now a residence. Other notable features are located within the Omra Park estate to the south and southwest of the site where a school, St. Andrews School, an Anglican church, St. Andrew's Church and a rectory house are located.

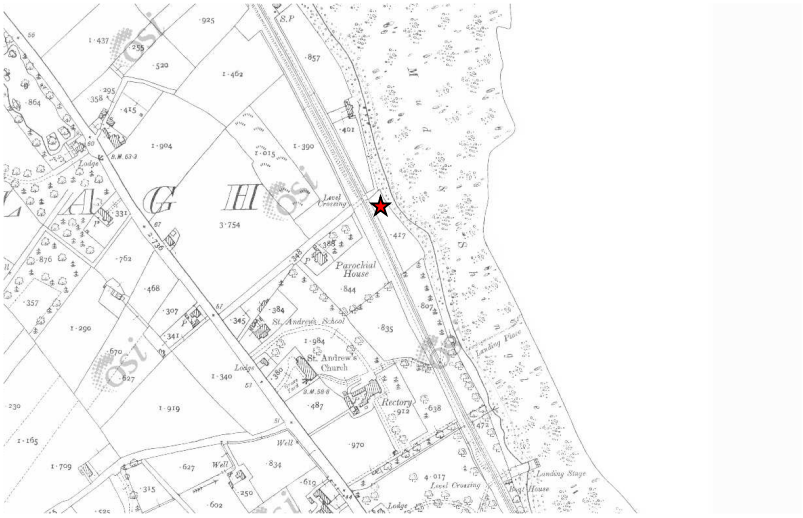


Plate 4. Extract of last Edition of 25-inch historical OS Mapping (note red star indicates the approximate location of the site)

Further to the south of the site is a large woodland estate where the former demesne, Drummullagh House is located. This is now in ruins.

Plate 5. Aerial photograph taken at 40m elevation from 50m to the southeast of the site facing in a north-westerly direction towards the location of the proposed coastal works immediately to the east of the eastern boundary wall of the residence

5.3 Topography

The topography of the works site where the current rock armour is located to the east of the boundary wall slopes from north to the south (see Figure 11 and Plate 6 following). The highest point is located in the northern end where the elevation is approximately 3.4mAOD. The lowest point is located in the southern end where the elevation is approximately 2.7mAOD. The boundary wall to the west of the works area has a top elevation of 4.77mAOD. The topography of the residence to the west of the works

area slopes from west to east from approximately 4.15mAOD on the western side to approximately 3.78mAOD on the eastern side of the site near the boundary wall.

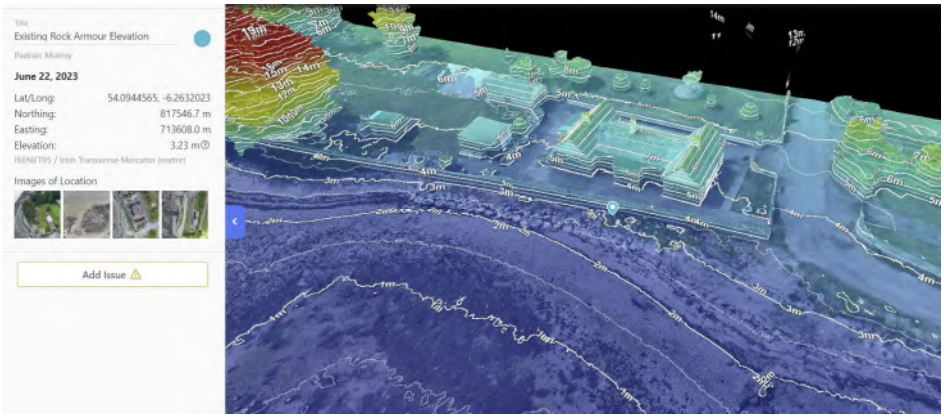


Plate 6. Extract of Dronedeploy 3D Elevation Model showing elevation contours of works site

5.4 Surrounding Property & Infrastructure

Figures 6 and 7 have been prepared which shows all residential and commercial property within 100m of the site's planning boundary. As can be seen from Figure 7, there are 2 residences within 100m of the site boundary. As stated previously, the works site is bordered by a residential property to the west (see Figures 6 & & 7). The south of the site is bordered by a mixed broadleaf/conifer woodland (see Habitat Maps in Figures 8 & 9 and Plate 7 below).

Plate 7. Aerial photograph taken over the works site at 40m elevation facing in a southerly direction showing the property to the south of the site and adjacent mixed broadleaf/conifer woodland which is the northern boundary of Omra Park

A number of residences are located to the west of the site with 3 residences located along the country road leading to the site one of which was formerly a parochial house. A commercial operation, a pottery works is located adjacent to one of these residences on the northern side of the country road (see Figures 6 & 7). Omra Park is located to the south and southwest of the site. This historical estate consists of large woodland demesne with a primary residence, an historical Church of Ireland church,

and adjacent graveyard and a former primary school which is currently used as a residence. These 3 buildings are registered as Protected Structures in the Louth County Development Plan 2021-2027, Zoning Map for Omeath.

A commercial enterprise consisting of a number of truck containers is located to the north of the site immediately to the west of the cul-de-sac (see Figure 7 and Plate 8 below). A seaweed farming business is also operated on the foreshore of the site with a number of seaweed nets tethered to points along the foreshore to the east of the cul-de-sac (see Plate 8 following).

Plate 8. Aerial photograph taken over the adjacent residence at 40m elevation facing in a northerly direction showing the commercial enterprise to the north of the site.

5.5 Existing Stormwater Drainage

A 60m long pipe is located on the foreshore to the northeast of the site. This runs in a southwest to northeast direction from a sealed manhole to its point of discharge on the foreshore approximately 70m to the northeast of the works site (see Plate 9 following). This pipe is covered by and protected by emplaced rocks along its full length.

There are no surface water bodies, surface water infrastructure or land drains within the footprint of proposed coastal protection works or along its perimeter.

The regional hydrology of the area is discussed in Section 5.7.1 of the report.

Plate 9. Aerial photograph taken at a location to the northeast of the works site 40m elevation facing in a southerly direction showing the pipe running along the foreshore

5.6 Closest Designated Protected Sites

It should be noted that the site is approximately 2.68km to the southeast of the border with Northern Ireland. As part of the appropriate assessment only the potential impact to Special Areas of Conservation and Special Protected Areas (i.e., Natura 2000) sites are assessed. Natural Heritage Areas (i.e., within the Republic of Ireland) and Area of Special Scientific Interests (ASSIs) (i.e., within Northern Ireland) are not regarded as Natura 2000 sites and are not part of this assessment.

The works site is located within and on edge of a Special Area of Conservation, Carlingford Shore SAC (002306) which runs along the shores edge. A review of mapping indicates that the eastern boundary wall of the residence demarcates the western edge of this SAC (see Figures 1 to 5).

Another Special Area of Conservation, Carlingford Mountain SAC (000453) (and within the Rep. of Ireland) is located approximately 1.85km upgradient and to the northwest of the site (see Figures 1 to 5).

5.7 Site Hydrology

5.7.1 Regional Hydrology

A site inspection and a detailed review of historical 6-inch, Cassini 6-inch and 25-inch mapping indicates that there are no streams or rivers within or along the boundaries of the site. In Ireland, each RBD is sub-divided into a number of Water Management Units (WMU). By their definition, WMUs are a geographical sub-unit of a river basin. Given the proximity of the Carlingford and Anglesey Mountains to the west of the site, the hydrology of the area is characterised and dominated by mountains streams which rise within the mountains and elevated areas and flow either into Carlingford Lough to the north of the Cooley Peninsula or to the south into Dundalk Bay.

The closest surface water body is a tributary of the Ryland River, called the Knocknagoran_10 by the EPA which is located approximately 0.9km to the west of the site. This flows in southeasterly direction towards the southern side of Omeath where it discharges into Carlingford Lough 1.6km to the south of the site.

The next closest surface water body (with the exception of Carlingford Lough) is a small un-named mountain stream which is located approximately 1.08km to the north of the site in the townland of Lislea. This stream passes under a bridge known locally as Quanns Bridge. The stream discharges into Carlingford Lough directly across from Warrenpoint Port. This surface water body is illustrated on 2 figures, Figures 4 and 5.

The site and the afore-mentioned surface water bodies are located within the Newry, Fane, Glyde and Dee River Catchment as classified by the new EPA's WFD catchments programme. In Ireland, each RBD is sub-divided into a number of Water Management Units (WMU) (see Appendix 2). The site is in the WFD Subcatchment Big (Louth)_SC_010. Beneath this Subcatchment the site is located within WFD River Sub Basin Knocknagoran_010 (see Appendix 2 for hydrological desk study information).

There are no EPA Q-index water monitoring locations or hydrometric stations on either of these surface water bodies. It should also be noted that there is no Water Framework Directive risk analysis of the surface water body to the north of the site. However, the WFD Risk Analysis for the Knocknagoran_010 has classified the ecological status of this catchment as 'Good'.

The catchment for both of these rivers appears to be upland area within Carlingford Mountain to the west of the site. The site is significantly distant from these catchments and the development will have no effect on their quality.

5.7.2 Local Site Hydrology

As stated previously, there are no surface water bodies or land drains within the works site or along the perimeter of the site. However, as stated previously, a 60m long stormwater pipe is located on the foreshore to the northeast of the site. This runs in a southwest to northeast direction from a sealed manhole to its point of discharge on the foreshore approximately 70m to the northeast of the works site (see Plate 7 following). This pipe is covered by and protected by emplaced rocks along its full length.

Based on the position of flotsam and drift lines remaining after tidal events, it is likely that the base of the wall on the western boundary of the works site is covered by seawater at spring tides. As there are no surface water bodies in or on the boundaries of the site, there are in effect no discharges of stormwater from the site into Carlingford Lough (i.e. there is no connectivity) (see Figure 11).

5.8 Site Geology

5.8.1 Introduction

This section addresses the soil and geology aspects of the environment and assesses the impacts of the proposed development on the existing soil, subsoil and bedrock environments. This section was prepared following a site audit and desk study work. Relevant documents that were assessed comprised of geological maps and publications by the National Soil Survey of Ireland and the Geological Survey of Ireland (GSI).

5.8.2 Soil

5.8.2.1 Soil (Top Horizon)

The construction of the existing rock armour involved the importation of large boulders and a concrete mix to the subject site and as such, should be identified as 'Made Ground' by the GSI. However, given the rural nature of the site this is not the case here.

5.8.2.2 Subsoil (Quaternary) Geology

The origin of the subsoil material in this region is associated with the movement and deposition from glaciers during the last Ice Age. The ice sheets ground down the underlying bedrock, breaking the rock and grinding it to small sizes ranging from clays to boulders. The powerful erosive force of these ice sheets are considered to have moulded/sculpted the landscape in the area, with glacial features evident in the area. Glacial deposits in the area consist of tills, which were deposited at the base of moving glaciers, and to a lesser extent fluvio-glacial sand and gravels, which were deposited by glacial meltwaters. A National Soil Mapping Project carried out jointly by the EPA and Teagasc have identified the area under the works site as *MGs - Marine gravel and sands (often raised)* (see Plate 10 following). Other soil types in the vicinity of the site are *TGr- Till derived from granite* and *A-Alluvium* (see Appendix 2)

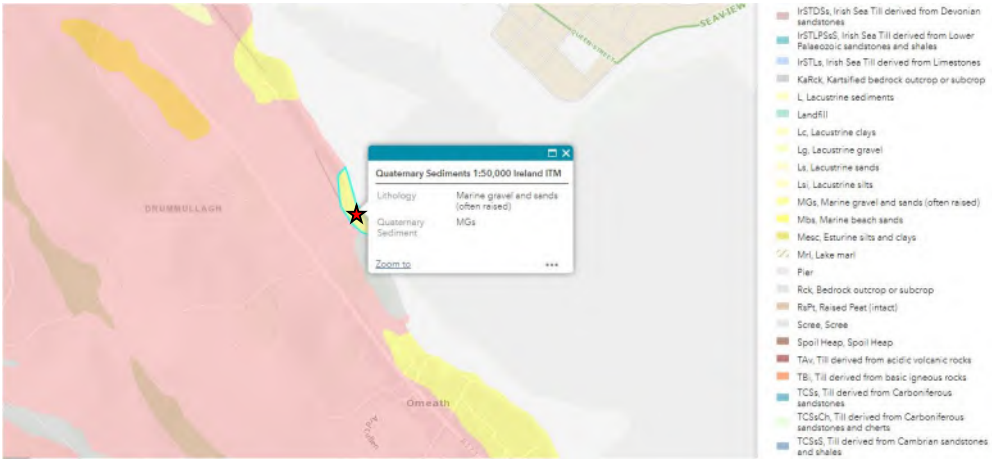


Plate 10. Extract of GSI Mapping showing soil types identified within the vicinity of the site

5.8.2.3 Site Specific Soil & Subsoil Detail

There is no site-specific information available on subsoils underlying or in the vicinity of the site but the subsoils are likely to be marine sands and gravels as detailed by GSI mapping.

5.8.3 Geology

5.8.3.1 Regional Bedrock Geology

According to the GSI Bedrock 1:100,000 scale digital geological map series, the Bedrock formation underlying the site is described as the Inniskeen Formation which is a *'Greywacke - Turbidite with red mica & red shale'* (see Appendix 2). The Slieve Gullion Complex formation is located approximately 1.26km to the west and upgradient of the site. This is defined as a *Porphyritic granophyre.*

5.8.3.2 On-site Bedrock Geology

An inspection of the site did not indicate any bedrock outcrop within the works site or in the general vicinity of the site. There are a number of GSI borehole records for boreholes drilled to the north of the site most likely as attempted water abstraction boreholes for domestic supply. A review of these records indicates that bedrock was consistently identified at approximately 6m below ground level.

5.8.4 Hydrogeology

5.8.4.1 General Hydrogeological Classification

The GSI have classified the bedrock aquifer underlying the site as *Poor Aquifer - Bedrock which is Generally Unproductive except for Local Zones* (see Appendix 2). Poor (P) aquifers would generally have *'moderate'* or *'low'* well yields - less than 100m^3/d.

5.8.4.2 Groundwater Vulnerability

Groundwater vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human

activities. The vulnerability category is based on the relative ease with which infiltrating water and potential contaminants may reach groundwater in a vertical or sub-vertical direction. The permeability and thickness of the subsoil, which influences the attenuation capacity, are important elements in determining the vulnerability of groundwater. The Irish GSI has produced guidelines on groundwater vulnerability mapping that aim to represent the intrinsic geological and hydrogeological characteristics that determine how easily groundwater may be contaminated by human activities. Vulnerability depends on the quantity of contaminants that can reach the groundwater, the time taken by water to infiltrate to the water table and the attenuating capacity of the geological deposits through which the water travels. These factors are controlled by the types of subsoils that overlie the groundwater, the way in which the contaminants recharge the geological deposits (whether point or diffuse) and the unsaturated thickness of geological deposits from the point of contaminant discharge. For vulnerability assessments with regard to bedrock aquifers the relevant geological layer is the subsoil between the release point of contaminants and the top of the bedrock. Any unsaturated bedrock layer is not considered as it is assumed that bedrock has little or no attenuation capacity due to its fissure flow characteristics. Groundwater encountered in low permeability glacial tills, or other non-aquifer subsoils, is not considered to be a target. Therefore, where low permeability subsoils overlie the bedrock it is the thickness of subsoil between the release point of contaminants and bedrock that is considered when assessing vulnerability of bedrock aquifers, regardless of whether the low permeability materials are saturated or not.

The southern half of the site has been given an aquifer vulnerability category rating of Extreme (E) by the GSI, with the northern half of the site classified as High (E) (see Plate 11 below and Appendix 2).

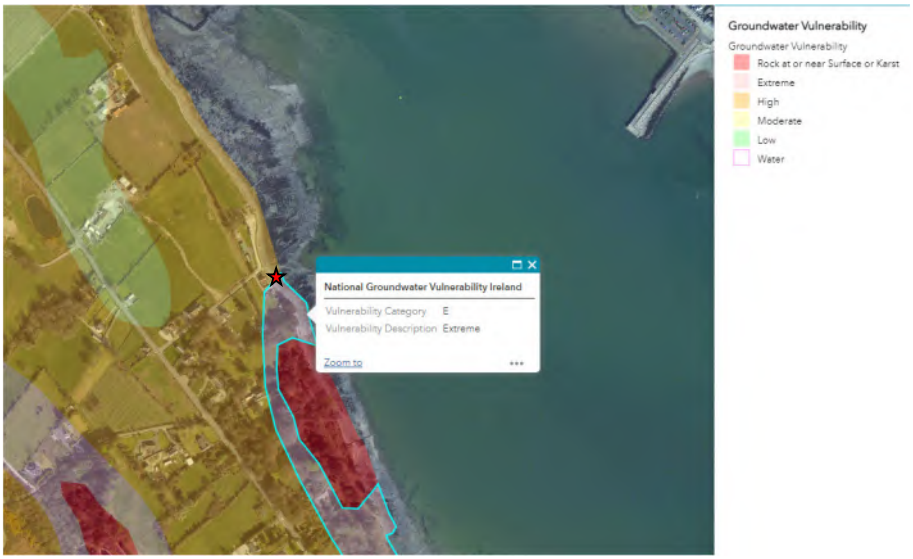


Plate 11. EPA/Teagasc/GSI Aquifer Vulnerability Mapping in proximity of site (note red star is in the centre of the site)

5.8.4.3 Groundwater Source Protection

The DoE-LG, EPA and GSI guidelines for Groundwater Protection Schemes allow for the combination of aquifer classification and vulnerability rating giving classifications of groundwater protection zones. The purpose of these zones is to place a control on the activities practised within a zone and thus provide protection to any underlying groundwater resources. Using DoE-LG, EPA and GSI criteria and the aquifer classification and vulnerability categories defined for the site, a combination of Pl/E (*'E – Extreme')* and Pl/H (*'H – High')* would be assigned for the site (see Table 2). It should be noted that the *'Extreme'* vulnerability classification given by the GSI is based on a perceived lack of overburden on the south-western side of the site (see Appendix 2). It should be noted that no evidence of rock outcrops were observed during the inspection of the site.

Table 2. Groundwater Vulnerability Mapping Guidelines

Vulnerability rating	High permeability (sand/gravel)	Moderate permeability (sandy till)	Low permeability (clayey subsoil)
Extreme	0 – 3.0m	0-3.0 m	0 – 3.0m
High	>3.0m	3.0-10.0m	3.0 – 5.0m
Moderate	N/A	>10m	5.0 – 10.0m
Low	N/A	N/A	>10.0m

5.8.4.4 Groundwater Quality Status

EPA Water Catchment mapping indicates that the site is on the northern end of the Louth Groundwater Body (IEGBNI_NB_G_019). The overall groundwater quality of this body is described as good (see Appendix 2).

5.8.4.5 Hydrogeological Risk from Proposed Coastal Protection Works

Given the nature and scale of the proposed coastal protection works, the risk posed by the proposed works to the underlying aquifer is negligible. Provided that mitigation measures laid out in the Construction Environmental Management Plan (CEMP) are implemented on site with regard to offsite bunded fuel storage (i.e. within the offsite builder's compound) and utilisation of spill kits near the work area, the risk of hydrocarbon spillage and contamination of surface water and/or groundwater will be minimal.

5.9 Site Ecology

5.9.1 On-site Ecology

5.9.1.1 Overview

The proposed site for the rock armour is located in Drummullagh, Omeath within a public area which is owned by Louth County Council. The rock armour site is in a rectangular shape and the works will be 40m long, by 1m wide by 0.5m deep as outlined previously. The works involve replacing the existing rock armour which has been fragmented and damaged by wave action. The boundary of the works is located immediately northeast of a residential property and is separated by a stone wall.

5.9.1.2 Methodology

A site-based habitat assessment was carried out on the 4th September, 2023 of the works site boundary and surrounding foreshore. The habitat survey was carried out following the Heritage Council's *Best Practice Guidance (Smith et al., 2011).* Habitats were classified to Level 3 of the Heritage Council's classification (*Fossitt, 2000*), and also according to the *Habitats Directive types (European Commission, 2013)* where appropriate.

Prior to field survey, a desk study was undertaken to identify habitats through 2D drone photogrammetric survey imagery (i.e., orthomosaics) and 3D mapping. Habitat types and data sets obtained from National Parks and Wildlife Service (NPWS), the National Biodiversity Data Centre (NBDC), the Environmental Protection Agency (EPA), and other sources were employed to assist in the drafting of a habitat map in preparation of the field survey.

In addition to habitat mapping, notes on plant species composition, structure and management were collected. As stated in Section 2 on Methodology, plant species were assigned a DAFOR abundance rating within each habitat. The DAFOR scale is presented in the previous table, Table 1 which was modified from *Smith et al. (2011) Habitat Mapping Guidelines*. Plant nomenclature follows Stace (2010). Plant species identification was assisted by the PictureThis plant identification application with 98% accuracy (PictureThis, 2023). The identification and classification of these plants was also assisted by databases provided by the NBDC, the EPA, Teagasc, Biodiversity Ireland and the NPWS.

Five GIS maps of different scales were produced using the ArcGIS computer programme. These maps were used to identify the proximity of the site to Special Areas of Conservation (SACs) and Special Protected Areas (SPAs), and to surrounding surface waters. SAC and SPA data was imported from NPWS and added as a layer (NPWS, 2023). An orthomosaic developed through a drone photogrammetric survey was imported into ArcGIS Pro and added as a map surface layer. The site boundary was identified and outlined within this map. A 15km buffer was created around a centre point within the site boundary.

It is general practice when screening a plan or project for compliance with the Habitats Directive, to identify all Natura 2000 sites (SPAs & SACs) within the functional area of the plan/project itself and within 15km of the boundaries of the area the plan/project applies to. This approach is currently recommended in the Department of the Environmental, Heritage and Local Government's document Guidance for Planning Authorities and as a precautionary measure, to ensure that all potentially affected Natura 2000 sites are included in the screening process.

5.9.1.3 Habitat Descriptions

Seven habitat types were found in the vicinity of the area proposed for the rock armour works (see Figures 8 & 9). These habitats included: *Sea Walls, Piers and Jetties (CC1), Sheltered Rocky Shores (LR3)*, *Buildings and Artificial Surfaces (BL3), Mixed Broadleaved Woodland (WD1), Treelines (WL2), Improved Amenity Grassland (GA2)* and *Muddy Sand Shores (LS3).* The footprint for the proposed rock armour area covers 120m^2. A stone wall divides the site from the adjacent residential property immediately west of the site. A narrow patch of vegetation can be seen in the northwest area between the existing rock armour and the concrete wall. Within the site boundary, 1 No. habitat types were identified: *Sea Walls, Piers and Jetties (CC1)*. The *Sheltered Rocky Shore (LR3)* habitat is immediately northeast of the site, followed by a *Muddy Sand Shore (LS3)* habitat further northeast down on the lower shore. No invasive plant species or habitats listed as Qualifying Interests (QIs) for Carlingford Shore SAC were identified within the site location.

Sea Walls, Piers, and Jetties (CC1)

This habitat category includes coastal constructions that are partially or fully submerged at high tide, or subject to sea splash or wave action. This includes sea walls, piers, jetties, slipways, causeways, and other marine structures either in rural or urban areas. Artificial structures which are exposed at low tide are also included, such as: coastal defences or groynes, wrecks, and pipes or pipelines. Building materials such as rock, cement, metal, wood, or plastic are commonly used in construction. If plant or animal communities are present along in the littoral and sublittoral zones of sea walls, piers, and jetties, they are typically similar to those of natural rocky substrata described in the marine section of the classification. The existing rock armour within the site location falls under this CC1 category, along with the other existing rock armour which forms a boundary between coastal and terrestrial habitats to the north of the site up to approximately 150m. The existing rock armour consists essentially of large boulders and rocks. This rock armour project will augment the existing armour and use similar building materials, which include concrete, a geotextile membrane layer, and large boulders and rocks. Existing displaced boulders and rocks will be reused in this project. A narrow patch of vegetation can be seen in the northwest area between the existing rock armour and the concrete wall. The species found within this area were native coastal species and are listed in Table 3. The plant species found along the second existing rock armour to the northeast of the site is listed in Table 4.

Sheltered Rocky Shores (LR3)

Sheltered rocky shores are areas of intertidal habitat which are largely sheltered from the open coast and consist of bedrock and stable accumulations of boulders, cobbles, and pebbles. As the effects of

wave action and sea spray are significantly reduced in sheltered areas, at the upper extreme, the lichen zone is usually compressed to a narrow band. The distinction between terrestrial and coastal habitat types are usually evident and abrupt. Dense growths of *Fucoids* are characteristically present, and seaweed species typically form distinct bands across the shore. These zones typically begin with channel wrack (*Pelvetia canaliculata*) above spiral wrack (*Fucus spiralis*) on the upper shore, knotted wrack (*Ascophyllum nodosum*) and/or bladder wrack (*Fucus vesiculosus*) on the mid-shore, and serrated wrack (*Fucus serratus*) on the lower shore. On the mid-shore, knotted wrack (*Ascophyllum nodosum*) increases in abundance with increasing shelter and may support a dense undergrowth of red seaweeds. In areas with reduced salinity due to influxes of freshwater, horned wrack (*Fucus ceranoides*), and ephemeral green seaweeds (*Cladophora* spp.) may be common.

The area immediately northeast of the site can be classified as an exposed rocky shore. This habitat type continues across the littoral zone at Drummullagh in both northwest and southeast directions and is partially fragmented by areas of muddy sand shore (LS3) (see Figure 8 & 9). The habitat was dominated by brown seaweed species, and in particular a large abundance of *Fucoid* species was evident throughout the habitat. Occurrences of channel wrack, spiral wrack, bladder wrack and knotted wrack species were noted along the upper shoreline. Towards the middle shore, knotted wrack and spiralled wrack were particularly abundant. Wrack siphon weed (*Vertebrata lanosa*) was occasionally discovered within abundances of knotted wrack. Bladder wrack, serrated wrack, horned wrack and *Cladophora* spp. also frequented this area. As such, the salinity of the seawater may be slightly diluted by freshwater influxes from the Newry River located to the North of the site. Towards the lower portion of the rocky shore, the abundances of bladder wrack and serrated wrack increased. Barnacles and limpets were also present on boulders and large rocks along the lower shore. Throughout the rocky shore, rarer occurrences of brown fan weed (*Dictyota dichotoma*), slimy whip weed (*Chordaria flagelliformis*), sea beech (*Delesseria sanguinea*), sea lettuce (*Ulva* spp.) and fragments of furbellow (*Saccorhiza polyschides*) were also recorded. All seaweed species recorded have been listed in Table 5.

Muddy Sand Shores (LS3)

In muddy sand shores, most of the sand is medium or fine (<1 mm in diameter) and muds (the silt/clay fraction) make up 10-30% of the sediment. The shore usually consists of gently sloping flats in sheltered areas, which remain water-saturated throughout the tidal cycle. Lugworms (*Arenicola marina*) and bivalve molluscs (particularly *Macoma balthica* and *Cerastoderma edule*) usually frequent these habitats. The muddy sand shore located at Drummullagh continues past the sheltered rocky shore habitat further down the shore to the northeast of the site (see Figures 8 & 9). A small stretch of muddy sand also extends towards the mid shore (see Figures 8 & 9). The mud sand in this area contained a large abundance of seashells on the surface, as pictured following in Plate 12. Saltmarshes typically occur on the edge of muddy sand shores, however, there was no evidence of saltmarshes in the proximity of the site. Seaweeds were sparse in this habitat, and if present were attached to rocks which were rare and sporadically dotted across the habitat. Occasional fragments of seaweed were washed up on the surface, likely torn from their holdfast by wave action.

Plate 12. Seashells on the surface of the Muddy Sand Shore (LS3) habitat

Mixed Broadleaved Woodland (WD1)

This category includes areas of non-native planted woodland or highly modified woodland, which include majority cover (90-100%) broad leaved trees, and no more than 0-25% coniferous land cover (see Figure 8). Woodlands within this category cannot be specified as semi-natural, however the species composition can include both non-native and native trees. A mixed broadleaved/conifer woodland was identified to the south of the site. Approximately 7 No. Monterey cypress (*Cupressus macrocarpa*) trees line the stone wall to the south of the works site boundary.

Treelines (WL2)

Treelines include narrow strips or lines of trees, less than 4 meters wide, which are usually planted as property or field boundary outlines. Typically, each tree is proportionally spaced apart. Tree species are often made up of non-native species such as Beech (*Fagus sylvatica*), Horse Chestnut (*Aesculus hippocastanum*), Lime trees (*Tilia spp.*) or conifers, etc. A small tree line was recorded to the northwest direction as a boundary along the commercial property (see Figures 8 & 9).

Improved Amenity Grassland (GA2)

This habitat category includes improved grassland areas, excluding farmland, which are usually species poor and regularly managed and mowed to maintain short swards. They are rarely grazed by livestock. This category includes grassland areas in gardens, parks, grounds of various buildings or institutions, golf course fairways, grassy sports fields and racecourses. A number of improved grassland areas were identified in the surrounding areas (see Figure 8 & 9). These areas were largely utilised as gardens outside of residential properties.

Buildings and Artificial Surfaces (BL3)

This category includes all buildings and structures which are composed of artificial structures such as cement, bricks, and tarmac. The stone wall which forms the northwest boundary of the proposed site location is included under this habitat description. The access road and a number of residential properties also fall under this category (see Figure 8 & 9).

5.9.1.4 Bird Survey

During the walkover site assessment, no physical evidence of bird nests was observed within the boundary of the site or the surrounding area. The species recorded during the walkover bird song survey on the 4th of September 2023 with Cornell Lab Merlin Bird ID software are as follows:

- Long tailed tit (*Aegithalus caudatus*);
- European robin (*Erithacus rubecula*);
- Eurasian oystercatcher (*Haematopus ostralegus*);
- Carrion crow (*Corvus corone*);
- Common greenshank (*Tringa nebularia*); and
- Rook (*Corvus frugilegus*).

Most birds recorded as above are common resident birds which are widespread across Ireland. Most species listed above have been given a *green* conservation status in Ireland as per the Birds of Conservation Concern in Ireland 2020-2026 list (Colhoun & Cummins, 2013). The Eurasian oystercatcher is a resident wader bird; however, an influx of individuals visits from Iceland and Faeroes to winter between September and March across a range of coastal habitats. During breeding season, they primarily nest along the coast; on shingle beaches, dunes, salt marshes and rocky shore habitats. This species has been designated a *red* conservation status in Ireland, which means they are of high conservation concern. Carrion crows are rare visitors to Ireland; however, a small breeding population has been discovered on the coast of the neighbouring county Down. The common greenshank is a wintering bird from Scotland and Scandinavia, which mostly visit coastland estuaries between September to April. All bird species in Ireland are protected by Irish National legislation under the Wildlife Act 1976. The bird species recorded during the survey are listed in Table 6.

The proposed works are not predicted to disturb bird habitats as rock armour already exists within the allocated works location. However, the works could disturb these bird species through indirect impacts. There will be potential feeding habitat alteration due to the removal of a proportion of the drift lines, and noise pollution and increased human presence may disturb birds that frequent the area. To minimise disturbance of migratory bird species, any works which include altering the habitat or clearing an area should take place outside of the wintering period between September and April. The site is not located within an SPA, and as such, there are no birds listed as Qualified Interests within the site location.

Table 3. Plant Species identified in CC1 – Sea walls, Piers Jetties Habitat within footprint of Proposed Rock Armour at Proposed Coastal Protection Works Site at Drummullagh, Omeath County Louth

Common Name	Taxon Name	Native/Alien/Invasive	Irish Status	Invasive Impact Score	DAFOR
Triangle orache	*Atriplex prostrata*	Native	Not protected	N/A	F
Sea mayweed	*Tripleurospermum maritimum*	Native	Not protected	N/A	O
Wavy hair grass	*Avenella flexuosa*	Native	Not protected	N/A	O
Sea radish	*Raphanus raphanistrum*	Native	Not protected	N/A	F
False oat grass	*Arrhenatherum elatius*	Native	Not protected	N/A	O
Sea Beet	*Beta vulgaris*	Native	Not protected	N/A	F
Common sowthistle	*Sonchus oleraceus*	Native	Not protected	N/A	O
Small geranium	*Geranium pusillum*	Alien	Occasional	Not assessed	O
Common nipplewort	*Lapsana communis*	Native	Not protected	N/A	O
Wild radish	*Raphanus sativus*	Alien	Occasional	Not assessed	R
Cutleaf geranium	*Geranium dissectum*	Alien	Established	Not assessed	R
Creeping bent	*Agrostis stolonifera*	Native	Not protected	N/A	F
White clover	*Trifolium repens*	Native	Not protected	N/A	F
Annual meadow-grass	*Poa annua*	Native	Not protected	N/A	F
Grassland sedge	*Carex divusla*	Native	Not protected	N/A	O
Narrow leaved saltbush	*Atriplex littoralis*	Native	Not protected	N/A	O
Dead/dry seaweed	*Ascophyllum & Fucus spp.*	Native	Not protected	N/A	A

Table 4. Plant Species identified in CC1 – Sea walls, Piers Jetties Habitat within Existing Rock Armour to Northwest of Proposed Coastal Protection Works Site at Drummullagh, Omeath County Louth

Common Name	Taxon Name	Native/Alien/Invasive	Irish Status	Invasive Impact Score	DAFOR
Triangle orache	*Atriplex prostrata*	Native	Not protected	N/A	O
Curly dock	*Rumex crispus*	Native	Not protected	N/A	F
Sea Beet	*Beta vulgaris*	Native	Not protected	N/A	F
Sea mayweed	*Tripleurospermum maritimum*	Native	Not protected	N/A	F
Sea radish	*Raphanus raphanistrum*	Native	Not protected	N/A	F
False oat grass	*Arrhenatherum elatius*	Native	Not protected	N/A	O
Common dandelion	*Taraxacum officinale*	Native	Not protected	N/A	O
European beach grass	*Ammophila arenaria*	Native	Not protected	N/A	O
Orchard grass	*Dactylis glomerata*	Native	Not protected	N/A	A
Perennial sowthistle	*Sonchus arvensis*	Native	Not protected	N/A	F
Perennial ryegrass	*Lolium perenne*	Native	Not protected	N/A	A
Common sowthistle	*Sonchus oleraceus*	Native	Not protected	N/A	F
Reed canary grass	*Phalaris arundinacea*	Native	Not protected	N/A	F
Broad bean	*Vicia faba*	Alien	Occasional	Not assessed	R
Ribwort plantain	*Plantago lanceolata*	Native	Not protected	N/A	O
Creeping bent	*Agrostis stolonifera*	Native	Not protected	N/A	A
Creeping buttercup	*Ranunculus repens*	Native	Not protected	N/A	O
Hogweed	*Heracleum Sphondylium*	Native	Not protected	N/A	R

Table 5. Plant Species identified in LR3 – Sheltered Rocky Shores Habitat at Foreshore to the East of Proposed Coastal Protection Works Site at Drummullagh, Omeath County Louth

Common Name	Taxon Name	Group
Spiraled wrack	*Fucus spiralis*	Brown
Egg wrack	*Ascophyllum nodosum*	Brown
Bladder wrack	*Fucus vesiculosus*	Brown
Furbellow	*Saccorhiza polyschides*	Brown
Serrated wrack	*Fucus serratus*	Brown
Channel wrack	*Pelvetia canaliculata*	Brown
Horned wrack	*Fucus ceranoides*	Brown
Brown fan weed	*Dictyota dichotoma*	Brown
Slimy whip weed	*Chordaria flagelliformis*	Brown
Sea Beech	*Delesseria sanguinea*	Red
Wrack siphon weed	*Vertebrata lanosa*	Red
Sea lettuce	*Ulva* spp.	Green
Green branched weeds	*Cladophora* spp.	Green

Table 6. Bird Species identified at Proposed Coastal Protection Works Site, Drummullagh, Omeath, County Louth during Survey on the 4th September, 2023

Common Name	Scientific Name	Irish status	Irish Red List Status	Wintering	Breeding
Long tailed tit	*Aegithalus caudatus*	Resident	Green	Yes	Yes
European robin	*Erithacus rubecula*	Resident	Green	Yes	Yes
Eurasian oystercatcher	*Haematopus ostralegus*	Resident	Red	Yes	Yes
Carrion crow	*Corvus corone*	Rare	Unknown	Yes	Yes
Common greenshank	*Tringa nebularia*	Wintering	Green	Yes	Rare
Rook	*Corvus frugilegus*	Resident	Green	Yes	Yes

5.9.1.5 Mammal Survey

During the site assessment, no sightings or physical evidence of mammal activity was found. The NBDC database was also examined as part of the desk study. No mammals were recorded within the site location or adjacent areas during the Mammals of Ireland 2016-2025 survey. The site location is within the 1km grid reference J1317. The only terrestrial mammal recorded within this 1km square was the Red Fox (*Vulpes vulpes*) during the Mammals of Ireland 2016-2025 survey. The Common Dolphin (*Delphinus delphis*) was the only marine mammal recorded within this 1km grid as a part of the IWDG Casual Cetacean Sightings dataset. The common dolphin is protected under Annex IV and Annex II of the EU Habitats Directive. All species of cetaceans are fully protected in Irish waters by national and European legislation under the Wildlife Act (1976). Neither of these species were observed during the survey.

6 NATURA 2000 SITES

Natura 2000 Designated sites within 15km of the proposed development (i.e., in the Rep. of Ireland and in Northern Ireland) are shown at various scales in Figures 1 to 5. The documentation published by the NPWS (Site Synopsis, Qualifying Interests, etc) for Carlingford SAC is located in Appendix 3. The following table, Table 7 outlines the qualifying interests for each site and identifies whether there are any potential source-pathway-receptor links via which adverse effects to the sites' qualifying interests and conservation objectives could potentially occur. This is vital to identify any potential adverse effects from the proposed development on the qualifying interests of these European sites, or cumulatively with other developments, that may result. Where a potential source-pathway- receptor link is present, an assessment is made as to whether there is a likelihood of significant adverse effects based on a review of the sites qualifying interests and conservation objectives.

In Northern Ireland, there is one Special Protection Area, Carlingford Lough SPA [UK9020161] which is 5.69km east-southeast from the site (see Figure 1). This site is the closest SPA to the proposed development. In the Republic of Ireland, there are 2 Special Protection Areas, Carlingford Lough SPA [004078] which is 7.7km east-southeast from the site and Dundalk Bay SPA [004026] which is 9.27km southwest of the site (see Figures 1 to 3).

In Northern Ireland, there is one Special Areas of Conservation (SAC), Slieve Gullion SAC [UK 0030277] which is 10.4km to the northwest of the site (see Table 7).

In the Republic of Ireland, there are 3 Special Areas of Conservation (SACs) within 15km of the site. The works site is inside the western boundary of Carlingford Shore SAC [002306] (see Figure 5) The other two SACs are Carlingford Mountain SAC [000453] which is 1.85km southwest of the site and Dundalk Bay SAC [000455] which is 10km southwest of the site (see Table 7).

As stated previously, as part of the appropriate assessment process only the potential impact to Special Areas of Conservation and Special Protected Areas (i.e., Natura 2000) sites are assessed. Natural Heritage Areas (i.e., within the Republic of Ireland) and Area of Special Scientific Interests (ASSIs) (i.e., within Northern Ireland) are not regarded as Natura 2000 sites and are not part of this assessment. In Northern Ireland, Areas of Special Scientific Interest are, although important are protected at a lower level. Likewise, Natural Heritage Areas (NHAs) in the Republic of Ireland are not afforded the same levels of protection as Special Protection Areas (SPAs) or Special Areas of Conservation (SACs) (see Table 7).

Of the sites located within 15km of the Proposed Coastal Protection Works site, only 1 <u>potential</u> *'source-pathway-receptor linkage'* is present, Carlingford Shore SAC [002306] (see Figures 1 to 5). The proposed coastal protection works site is located within the boundary of this SAC (see Figure 5).

TABLE 7. NATURE CONSERVATION SITES WITHIN 15 KM OF PROPOSED COASTAL PROTECTION WORKS, DRUMMULLAGH, OMEATH, CO. LOUTH (INFORMATION OBTAINED FROM WWW.NPWS.IE IN & WWW.DAERA-NI.GOV.UK IN SEPTEMBER 2023)

SITE NAME, SITE CODE, DISTANCE AND DIRECTION FROM SITE	HABITAT OR SPECIES OF QUALIFYING INTEREST AND THE ASSOCIATED CODE ACCORDING TO INTERPRETATION MANUAL OF EUROPEAN UNION HABITATS	THE POTENTIAL SOURCE-PATHWAY-RECEPTOR LINKS BETWEEN THE WORKS LOCATION AND THE ECOLOGICALLY DESIGNATED SITE
SPECIAL AREAS OF CONSERVATION (SACS)		
Carlingford Shore SAC [002306] 0m (E)	▪ [1210] Annual vegetation of drift lines ▪ [1220] Perennial vegetation of stony banks Source: *NPWS. (2013). Conservation Objectives: Carlingford Shore SAC [002306]. Version 1.0. National Parks and Wildlife Service Department of Culture, Heritage and the Gaeltacht.*	Any impacts would be regarded as short-term and just during the Construction Phase. The highest risk posed to the foreshore is calcite runoff newly created concrete footing either coming in contact with seawater at high tide and/or heavy rainfall creating calcite contaminated stormwater which will run onto the foreshore. Provided mitigation measures are put in place contamination of the foreshore and the water body itself is unlikely e.g., construction during suitable tidal conditions, correct placement of spillage booms, etc.
Carlingford Mountain SAC [000453] 1.85km (SW) (Rep. of Ireland)	▪ [4060] Alpine and Boreal heaths ▪ [4030] European dry heaths ▪ [8110] Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) ▪ [8210] Calcareous rocky slopes with chasmophytic vegetation ▪ [8220] Siliceous rocky slopes with chasmophytic vegetation ▪ [4010] Northern Atlantic wet heaths with *Erica tetralix* ▪ [6230] Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe) ▪ [7140] Transition mires and quaking bogs ▪ [7230] Alkaline fens Source: *NPWS. (2018). Conservation Objectives for Carlingford Mountain SAC [000453]. Generic Version 6.0. Department of Culture, Heritage and the Gaeltacht.*	Due to distance and the absence of any hydrological or other potential impact pathways between the proposed development and the European site, there are no potential ecological impacts.
Dundalk Bay SAC [000455] 9.27km (NE)	▪ [1130] Estuaries ▪ [1220] Perennial vegetation of stony banks ▪ [1410] Mediterranean salt meadows (*Juncetalia maritimi*) ▪ [1310] *Salicornia* and other annuals colonizing mud and sand ▪ [1140] Mudflats and sandflats not covered by seawater at low tide ▪ [1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) Source: *NPWS. (2011). Conservation Objectives: Dundalk Bay SAC [000455]. Version 1.0. Department of Culture, Heritage and the Gaeltacht.*	Due to distance and the absence of any hydrological or other potential impact pathways between the proposed development and the European site, there are no potential ecological impacts.

TABLE 7. NATURE CONSERVATION SITES WITHIN 15 KM OF PROPOSED COASTAL PROTECTION WORKS, DRUMMULLAGH, OMEATH, CO. LOUTH (INFORMATION OBTAINED FROM WWW.NPWS.IE IN & WWW.DAERA-NI.GOV.UK IN SEPTEMBER 2023) (CONTINUED)		
SITE NAME, SITE CODE, DISTANCE AND DIRECTION FROM SITE	**HABITAT OR SPECIES OF QUALIFYING INTEREST AND THE ASSOCIATED CODE ACCORDING TO INTERPRETATION MANUAL OF EUROPEAN UNION HABITATS**	**THE POTENTIAL SOURCE-PATHWAY-RECEPTOR LINKS BETWEEN THE WORKS LOCATION AND THE ECOLOGICALLY DESIGNATED SITE**
SPECIAL AREAS OF CONSERVATION (SACS)		
Rostrevor Wood SAC [UK 0030268] 4.78km (NE) (Northern Ireland)	European interest(s): 1. Old sessile oak woods with Ilex and Blechnum in the British Isles for which this is considered to be one of the best areas in the United Kingdom.	Due to distance and the absence of any hydrological or other potential impact pathways between the proposed development and the European site, there are no potential ecological impacts.
Derryleckagh SAC [UK 0016620] 6.63km (NNW) (Northern Ireland)	European interest(s): 1. Transition mires and quaking bogs for which this is considered to be one of the best areas in the United Kingdom.	Due to distance and the absence of any hydrological or other potential impact pathways between the proposed development and the European site, there are no potential ecological impacts.
Slieve Gullion SAC [UK 0030277] 10.41km (NW) (Northern Ireland)	▪ [4030] European dry heaths ▪ [4010] Northern Atlantic wet heaths with *Erica tetralix* ▪ [7130] Blanket bogs ▪ [7140] Transition mires and quaking bogs Source: http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030277 Accessed 02/01/19	Due to distance and the absence of any hydrological or other potential impact pathways between the proposed development and the European site, there are no potential ecological impacts.

TABLE 7. NATURE CONSERVATION SITES WITHIN 15 KM OF PROPOSED COASTAL PROTECTION WORKS, DRUMMULLAGH, OMEATH, CO. LOUTH (INFORMATION OBTAINED FROM WWW.NPWS.IE IN & WWW.DAERA-NI.GOV.UK IN SEPTEMBER 2023) (CONTINUED)		
SITE NAME, SITE CODE, DISTANCE AND DIRECTION FROM SITE	**HABITAT OR SPECIES OF QUALIFYING INTEREST AND THE ASSOCIATED CODE ACCORDING TO INTERPRETATION MANUAL OF EUROPEAN UNION HABITATS**	**THE POTENTIAL SOURCE-PATHWAY-RECEPTOR LINKS BETWEEN THE WORKS LOCATION AND THE ECOLOGICALLY DESIGNATED SITE**
Special Protection Areas (SPA)		
Carlingford Lough SPA [UK9020161] 5.69km (ESE) (Northern Ireland)	SPA SELECTION FEATURES ▪ Light-Bellied Brent Goose (*Branta berniclahrota*)* ▪ Common Tern (*Sterna hirundo*)* ▪ Sandwich Tern *(Thalasseus sandvicensis)** ADDITIONAL ASSI SELECTION FEATURES ▪ Great Crested Grebe (*Podiceps cristatus*)* ▪ Shelduck (*Tadorna tadorna*)* ▪ Scaup (*Aythya marila*)* ▪ Red-Breasted Merganser (*Mergus serrator*)* ▪ Oystercatcher (*Haematopus ostralegus*)* ▪ Dunlin (*Calidris alpina*)* ▪ Redshank (*Tringa totanus*)* <u>Source:</u> *NIEA Carlingford Lough Special Protection Area (SAP) UK9020160. Conservation Objectives – Including Conservation Objectives for Carlingford Lough ASSI*	Due to distance and the absence of any hydrogeological, hydrological or other potential impact pathways between the proposed development and the European site, there are no potential ecological impacts.

TABLE 7. NATURE CONSERVATION SITES WITHIN 15 KM OF PROPOSED COASTAL PROTECTION WORKS, DRUMMULLAGH, OMEATH, CO. LOUTH (INFORMATION OBTAINED FROM WWW.NPWS.IE IN & WWW.DAERA-NI.GOV.UK IN SEPTEMBER 2023) (CONTINUED)		
SITE NAME, SITE CODE, DISTANCE AND DIRECTION FROM SITE	**HABITAT OR SPECIES OF QUALIFYING INTEREST AND THE ASSOCIATED CODE ACCORDING TO INTERPRETATION MANUAL OF EUROPEAN UNION HABITATS**	**THE POTENTIAL SOURCE-PATHWAY-RECEPTOR LINKS BETWEEN THE WORKS LOCATION AND THE ECOLOGICALLY DESIGNATED SITE**
Special Protection Areas (SPA)		
Carlingford Lough SPA [004078] 7.69km (SE) (Rep. of Ireland)	▪ Light-Bellied Brent Goose (*Branta bernicla hrota*)* ▪ Wetlands & Waterbirds [A999] * denotes wintering birds at Dundalk Bay. Source: *NPWS. (2011). Conservation Objectives: Carlingford Lough SPA [004078] Version 1.0. Department of Culture, Heritage and the Gaeltacht.*	Due to distance and the absence of any hydrogeological, hydrological or other potential impact pathways between the proposed development and the European site, there are no potential ecological impacts.
Dundalk Bay SPA [004026] 9.27km (SW) (Rep. of Ireland)	▪ Curlew (*Numenius arquata*)* ▪ Redshank (*Tringa totanus*)* ▪ Black-Headed Gull (*Chroicocephalus ridibundus*)* ▪ Common Gull (*Larus canus*)* ▪ Herring Gull (*Larus argentatus*)* ▪ Great Crested Grebe (*Podiceps cristatus*)* ▪ Greylag Goose (*Anser anser*)* ▪ Light-Bellied Brent Goose (*Branta berniclahrota*)* ▪ Pintail (*Anas acuta*)* ▪ Common Scoter (*Melanitta nigra*)* ▪ Red-Breasted Merganser (*Mergus serrator*)* ▪ Oystercatcher (*Haematopus ostralegus*)* ▪ Ringed Plover (*Charadrius hiaticula*)* ▪ Golden Plover (*Pluvialis apricaria*)* ▪ Grey Plover (*Pluvialis squatarola*)* ▪ Lapwing (*Vanellus vanellus*)* ▪ Knot (*Calidris canutus*)* ▪ Dunlin (*Calidris alpina*)* ▪ Black-Tailed Godwit (*Limosa limosa*)* ▪ Bar-Tailed Godwit (*Limosa lapponica*)* ▪ Shelduck (*Tadorna tadorna*)* ▪ Teal (*Anas crecca*)* ▪ Mallard (*Anas platyrhynchos*)* ▪ Wetlands & Waterbirds [A999] * denotes wintering birds at Dundalk Bay. Source: *NPWS. (2011). Conservation Objectives: Dundalk Bay SPA [004026]. Version 1.0. Department of Culture, Heritage and the Gaeltacht.*	Due to distance and the absence of any hydrogeological, hydrological or other potential impact pathways between the proposed development and the European site, there are no potential ecological impacts.

The Site Synopsis and the Qualifying Interests for Carlingford Shore Special Area of Conservation (SAC) [002306] are located in Appendix 2. The two Conservation Objectives for Carlingford Shore Special Area of Conservation (SAC) [002306] can be summarised as follows:

Objective 1:

[1210] Annual vegetation of drift lines - To maintain the favourable conservation condition of Annual vegetation of drift lines in Carlingford Shore SAC

Objective 2:

[1220] Perennial vegetation of stony banks - To maintain the favourable conservation condition of Perennial vegetation of stony banks in Carlingford Shore SAC

The attributes and targets for the above are presented in the following 2 pages.

Objective 1 - [1210] Annual vegetation of drift lines - To maintain the favourable conservation condition of Annual vegetation of drift lines in Carlingford Shore SAC

Objective 1 is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession	Current area unknown, but thought to occur in a mosaic with perennial vegetation of stony banks (1220). Habitat is very difficult to measure in view of its dynamic nature, which means that it can appear and disappear within a site from year to year. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes	Current distribution unknown, but thought to occur in a mosaic with perennial vegetation of stony banks (1220). See coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Accumulation of organic matter in tidal litter is essential for trapping sand. Rock armour is present at Ballagan Point and Greenore. These physical barriers will affect sediment supply. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Thought to occur in a mosaic with perennial vegetation of stony banks (1220). See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities with typical species: sea rocket (Cakile maritima), sea sandwort (Honckenya peploides), prickly saltwort (Salsola kali) and orache (Atriplex spp.)	Based on data from the Coastal Monitoring Project (CMP) (Ryle et al., 2009) and Gaynor (2008). See coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. Based on data from Ryle et al. (2009). See coastal habitats supporting document for further details

Objective 2 - [1220] Perennial vegetation of stony banks - To maintain the favourable conservation condition of Perennial vegetation of stony banks in Carlingford Shore SAC

Objective 2 is defined by the following list of attributes and targets:

Attribute	Measure	Target	Notes
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession	Current area unknown. Habitat recorded during the National Shingle Beach Survey (NSBS) (Moore and Wilson, 1999) from three sub-sites: Whitestown to Cooley Point, Ballagan Point and Greenore. Although extent was not mapped, these contiguous sites extend for 3.5km along the coastline. Area of vegetated shingle is estimated to cover 130ha. NB Further unsurveyed areas maybe present within the SAC. See coastal habitats supporting document for further details
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes. See map 3 for mapped locations	Based on data from Moore and Wilson (1999). Exact current distribution unknown, although the habitat has been recorded along a 3.5km stretch of coastline from Greenore, extending south to Cooley Point (Moore and Wilson, 1999). See coastal habitats supporting document for further details
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions	Based on data from Moore and Wilson (1999). West of Cooley Point there has been a lot of development at Templetown beach, including the installation of a car park. The NSBS noted two areas of coastal defences (rock armour), one in an area south of Ballagan Point and another in an area south of Greenore (approx. 200m in length). A number of tourism-related developments, including a promenade protected with rock armour, have been constructed at Greenore. Shingle features are relatively stable in the long term. See coastal habitats supporting document for further details
Vegetation structure: zonation	Occurrence	Maintain range of coastal habitats including transitional zones, subject to natural processes including erosion and succession	Based on data from Moore and Wilson (1999). At Ballagan Point the shingle vegetation is backed by cobble-based grassland. Elsewhere along the Carlingford shore, gradations to inland habitats are disrupted by a road. Habitat is thought to occur in a mosaic with annual vegetation of drift lines (1210). See coastal habitats supporting document for further details
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops	Maintain the typical vegetated shingle flora including the range of sub-communities within the different zones	Based on data from Moore and Wilson (1999). See coastal habitats supporting document for further details
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover	Based on data from Moore and Wilson (1999). Negative indicators include non-native species, species indicative of changes in nutrient status and species not considered characteristic of the habitat. See coastal habitats supporting document for further details

As can be seen in Figures 1 to 5, the proposed coastal works site is located within the boundary of the Carlingford Shore SAC which is a Natura 2000 site. Therefore, the SAC is within the likely zone of impact of the proposed coastal works site.

As stated previously, there are no surface water bodies either within or on the boundaries of the proposed coastal works site. As such, there is no discharge of stormwater from the site to Carlingford Shore SAC.

The National Biodiversity Data Centre does not hold any records of rare or protected flora or faunal species for the site. The National Parks and Wildlife Service online database does not hold any records for the Drummullagh site or its environs.

Given the position of the works site, it is not proposed to remove nor will there be an impact on the mixed broadleaf/conifer woodland located to the south of the site.

Characteristics of Potential Impacts

The potential impact of the proposed development must be considered in terms of the construction works required to construct the rock armour and after its construction (i.e., during operation).

Construction Impacts

There is a requirement to carry out groundworks which will require the temporary removal of the existing boulders and any remaining concrete and gravel within the footprint (i.e., 40m x 3m) of the existing rock armour to a depth of approximately 1m below ground level (see Plate 13 below). The materials will be sorted and placed in a temporary stockpile at a suitable location upgradient of the site, outside of the SAC. It is proposed to recycle the boulders used in the previous rock armour construction.

Following this, a 40m long, by 1m wide by 0.5m deep concrete footing will be constructed at the base of the existing wall. Following the completion of the concrete footing, a geotextile membrane will be placed over the footing and then spread on the bottom and side walls of the excavation. Following this, select boulders will be placed into the rock armour. Then the previously excavated material will be used to fill void spaces within the emplaced boulders.

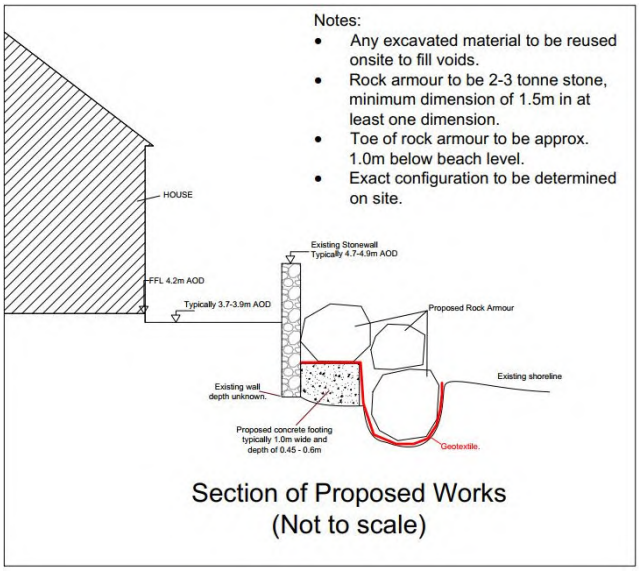


Plate 13. Extract of civil engineering drawings for proposed Coastal Works at Drummullagh showing section through proposed rock armour with concrete footing

A temporary working area, which will be approximately 7m x 8m in area, will be used at the northern end of the proposed works area for the management of materials. A temporary haul road will extend from this area along the eastern side of the proposed works area. This haul road will be approximately 5m in width and 40m in length. The working area and temporary haul road will be fenced off from the adjacent foreshore for the duration of the works.

These impacts would be regarded as short-term. The highest risk posed to the foreshore is calcite runoff from the newly created concrete footing either coming in contact with seawater at high tide and/or heavy rainfall creating calcite contaminated stormwater which will run onto the foreshore.

In order for this not to happen, the concrete will need to be allowed a sufficient period of time to set prior the boulders for the rock armour being put in place. Tarpaulin should be put in place to prevent rainfall making contacting with the concrete while it is setting. These works will be carried out during a suitable time of the year to allow the concrete to cure properly (i.e. when the highest tides will not reach the proposed works).

In order to carry out the coastal works, a 30-tonne excavator and site dumper will be required to excavate the ground for the rock armour and to place suitable boulders. Given the risk posed by the leakage of hydrocarbons from the excavator and dumper (e.g. hydraulic fluid from leaking cables, leaking diesel, lube oil, etc), a sufficiently floating long spill boom will need to be put in place on the foreshore to prevent the spread of any hydrocarbons in the event that a leakage of hydrocarbons occurs. The floating spill boom will be required to completely encircle the entire works area with the boom being tethered to posts installed upgradient of the high-water mark.

Operational Impacts

Designated Areas for Nature Conservation

Given that the proposed Coastal Protection works involve the replacement of an existing rock armour, there will effectively no material increase in the size of the rock armour. As such, there is no increase in the land take for the new rock armour. Once the civil works are complete, the rock armour will effectively be similar to the previous armour (i.e., albeit a more robust construction) and as such, there will be no change in the physical state of the SAC. At the Post-Construction Phase, there are no viable source-pathway-receptor linkages which can affect the Carlingford Shore SAC given the nature of the proposed rock armour structure. There will be no stormwater discharge or calcite leachate run-off to surface water emanating from the site. Concrete used on site will be to EN 206 and BS8500 standards, suitable for a marine environment. As such, there will be negligible risk of run-off from concrete once construction is complete.

7 IDENTIFICATION AND EVALUATION OF LIKELY SIGNIFICANT EFFECTS

7.1 Other Plans or Projects Adjacent or in the Vicinity of the site which could act in Combination with potential impacts from the Proposed Coastal Protection Works

7.1.1 Consideration of Potential 'In-Combination' Effects

In-combination effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location (CIEEM, 2018). Different types of actions can cause cumulative impacts and effects. As such, these types of impacts may be characterised as:

- *Additive/incremental* – in which multiple activities/projects (each with potentially insignificant effects) add together to contribute to a significant effect due to their proximity in time and space (CIEEM, 2018); and
- *Associated/connected* – a Development activity 'enables' another Development activity e.g. phased Development as part of separate planning applications. Associated Developments may include different aspects of the project which may be authorised under different consent processes. It is important to assess impacts of the 'project' as a whole and not ignore impacts that fall under a separate consent process (CIEEM, 2018).

In-combination effects are required to be considered at Screening for Appropriate Assessment Stage, and within an Appropriate Assessment itself. The scope of plans or projects considered for 'in-combination' effects includes plans and projects that are completed, approved or proposed to take into account effects that occur over time (EC, 2002). According to the European Commission (2006):

"[…] any element of a plan or project that has the potential to affect the conservation objectives of a Natura 2000 site, including its structure and function, should be considered significant"

7.1.2 Potential Additive/Incremental Impacts

A review was undertaken to identify any planning permissions granted within the last 5 years and within 500m of the proposed coastal works which could hypothetically result in ***'in-combination impacts'*** on Carlingford Shore SAC.

This process resulted in the identification of the Carlingford Greenway which was recently granted permission. As part of this process, the Ecological Impact Assessment that was prepared in 2020 as part of the Part 8 Application was reviewed to determine the proximity of the greenway to the proposed coastal protection works. In addition, the habitat maps prepared for that work were reviewed as a foundation for the ecological habitat survey carried out for this appropriate assessment. It is understood

that the construction of the Carlingford Greenway commenced on the 26th August, 2023 and is currently in progress. The Carlingford Greenway will be located in close proximity to the northern side of the proposed coastal defence works. It is anticipated that these works on the greenway will be completed by the end of February 2024. It is understood that if planning permission is obtained that the proposed Drummullagh Coastal Protection Works will commence at the earliest in May 2024. As such, the potential for cumulative or *'Potential Additive/Incremental Impacts'* resulting from the Construction Phase of the 2 projects happening at the same time is negligible. The layout of the greenway is presented in the following plate, Plate 14.

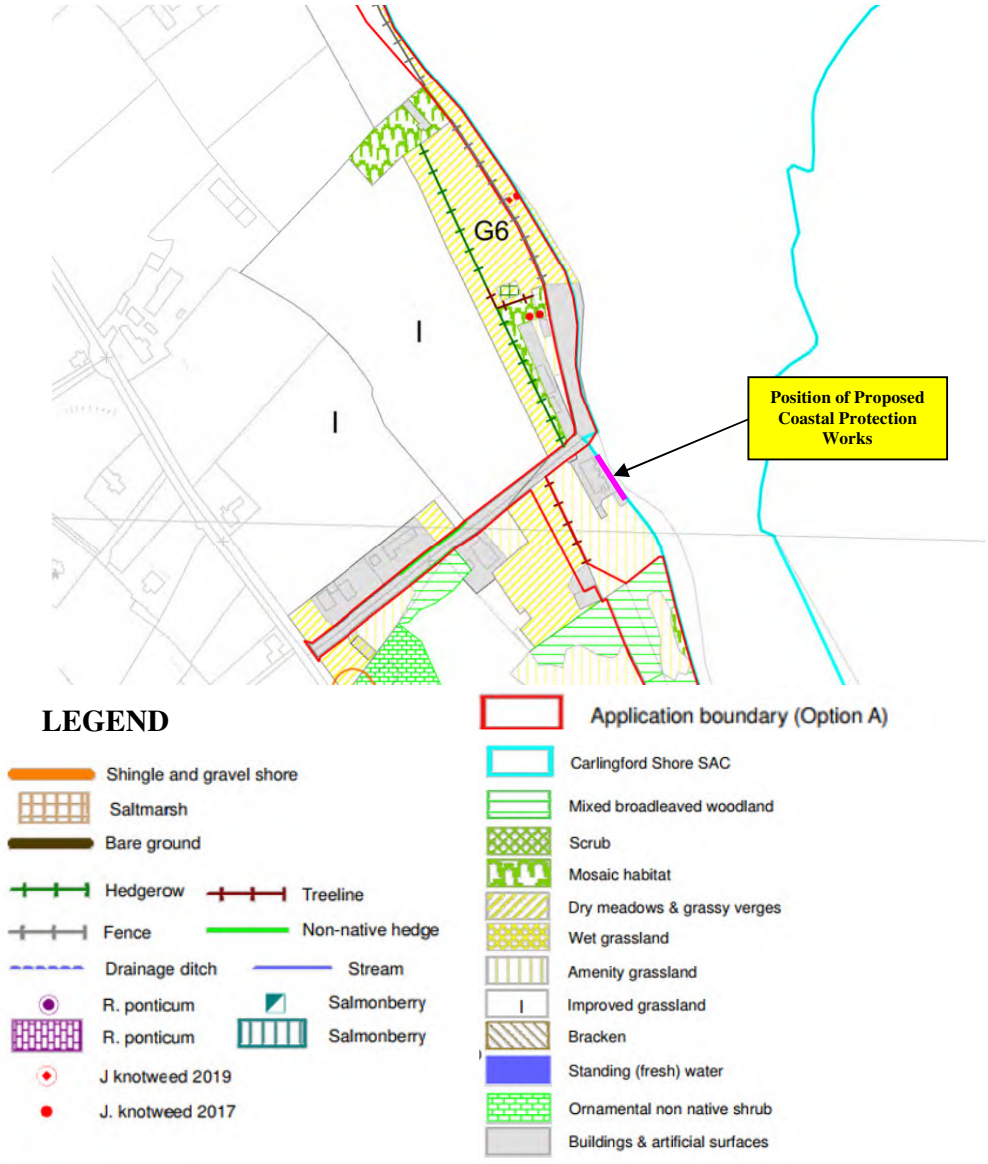


Plate 14. Extract of Figure 3.7 of the Ecological Impact Assessment for the Carlingford Greenway (note the position of the proposed linear coastal protection works marked with a magenta line)

It should be noted that there are 2 other Coastal Protection Works projects proposed by Louth County Council for the Cooley Peninsula that require planning applications to An Bord Pleanála under Section 177AE of the Planning and Development Act 2000 as amended (Appropriate Assessment). The first of these projects is located at Ballagan, Greenore, County Louth and is 13km from the Drummullagh site. The 2nd project is located at Bellurgan Point, Dundalk, County Louth and is 10.6km from Drummullagh site. Given the significant distance between Drummullagh and the 2 aforementioned sites, there is very low potential for 'in-combination impacts' between the Drummullagh construction works and these works even if they are carried out at the same time.

The European Pollutant Release and Transfer Register (E-PRTR) was reviewed to determine if any EPA licensed facilities are located within the vicinity of the site. There are no EPA licensed facilities with the potential for additive effects near the development site.

For both the proposed Coastal Protection Works and the Carlingford Greenway, using the *'Source-Pathway-Receptor'* risk assessment methodology, there does not appear to be viable pollutant linkages from these sites to the principle receptor of concern, Carlingford Shore SAC.

As such, with best practice construction techniques combined with the mitigation measures proposed for these projects, there does not appear to be any significant *'in-combination'* hydrological or other types of impacts in combination with the proposed Coastal Protection Works on the Carlingford Shore SAC.

7.2 Evaluation of potential impacts from the Proposed Coastal Protection Works on the Natura 2000 Sites

The proposed works are located within the boundary of Carlingford Shore SAC, and as such there is the potential for direct impacts upon Carlingford Shore SAC (i.e., a Natura 2000 site) from the proposed coastal protection works (see Table 8 and Table 9 following). There is, therefore a direct S-P-R linkage between the site works and this SAC. As Carlingford Shore SAC is dependent on water quality, a reduction in water quality or changes to local hydrology could negatively impact upon the conservation status of the SAC with regard to habitat quality and size and with regard to the ecological integrity of those species occurring within it. Table 7 lists the Natura 2000 sites in the Republic of Ireland and Northern Ireland within 15km of the proposed site and the potential impacts associated with the proposed site activity.

Table 8. The Potential for Impacts (Alone or in Combination with other Plans/Projects) on Natura 2000 Sites within 15km of the Proposed Coastal Works at Drummullagh

Site Name	Direct Impacts	Indirect / Secondary Impacts	Resource Requirements (water abstraction etc).	Emissions (to land, water or air)	Excavation Requirements	Duration of Construction and Operation
Carlingford Shore SAC [002306]	None Predicted	Potential	None Predicted	Potential	None Predicted	None Predicted
Carlingford Mountain SAC [000453]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted
Dundalk Bay SAC [000455]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted
Rostrevor Wood SAC [UK 0030268]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted
Derryleckagh SAC [UK 0016620]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted
Slieve Gullion SAC [UK 0030277]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted
Carlingford Lough SPA [UK9020161]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted
Carlingford Lough SPA [004078]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted
Dundalk Bay SPA [004026]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted

Table 9. Potential Changes to Natura 2000 Sites within 15km of the of the Proposed Coastal Works at Drummullagh

Site Name	Reduction of Habitat Area	Disturbance to Key Species	Habitat / Species Fragmentation	Reduction in Species Density	Changes in Key Indicators of Conservation Value	Climate Change
Carlingford Shore SAC [002306]	Potential	Potential	Potential	Potential	Potential	None Predicted
Carlingford Mountain SAC [000453]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted
Dundalk Bay SAC [000455]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted
Rostrevor Wood SAC [UK 0030268]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted
Derryleckagh SAC [UK 0016620]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted
Slieve Gullion SAC [UK 0030277]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted
Carlingford Lough SPA [UK9020161]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted
Carlingford Lough SPA [004078]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted
Dundalk Bay SPA [004026]	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted	None Predicted

7.3 Screening Assessment Conclusions

In order to determine the potential impacts, if any, of the proposed coastal works on nearby Natura 2000 sites, a screening process was completed. This identified 9 no. different Natura 2000 sites within a 15km radius, which are designated as either as an SAC or SPA. It has been determined that only one of these sites is potentially impacted by the proposal (i.e., Carlingford Shore SAC [002306]).

It has been determined that there is a potential risk to water quality/benthic biota within the Carlingford Shore SAC should contaminated surface water enter the foreshore as a consequence of site based runoff or other ongoing operations. Therefore, a full Stage 2 Appropriate Assessment has been conducted for the site, with an assessment of the potential mitigation of the afore-mentioned impacts.

8 APPROPRIATE ASSESSMENT

Screening identified potential impacts on Carlingford Shore SAC and therefore a Stage 2 - Appropriate Assessment was carried out to determine if the project will adversely affect the integrity of this Natura 2000 site. It involves the identification of the habitats and species within the site, and an assessment of the significance of impacts on their conservation status. An assessment of impacts is carried out, and mitigation measures proposed for potential impacts. Any negative impacts on the integrity of structure, function or conservation objectives of these sites will require the implementation of avoidance or mitigation measures to avoid progression to Stages 3 and 4 of the Appropriate Assessment process.

It should be noted that it is the goal of National Parks and Wildlife Services (NPWS) to draw up conservation plans for all areas designated for nature conservation, and that these plans will, among other things, set clear objectives for the conservation of the features of interest within a site. The NPWS have provided a site synopsis, Conservation Objectives and a Natura 2000 data form for Carlingford Shore SAC, from which information is sourced (see Appendix 2).

8.1 Description of the Qualifying Interests, Vulnerabilities and Conservation Status of Natura 2000 Sites Potentially Impacted upon by the Proposed Development

8.1.1 Carlingford Shore SAC (002306)

The Carlingford Shore SAC site comprises the entire southern shoreline of Carlingford Lough and continues round the tip of the Cooley Peninsula to just west of Cooley Point. While the principal conservation interests lie in the perennial vegetation of shingle banks and the annual vegetation of drift lines, the site also has intertidal sand and mudflats, patches of saltmarsh, some areas of dry grassland, and an area of mixed deciduous woodland. The site is flanked by Carlingford Mountain to the south-west. The underlying rock within the SAC is mainly carboniferous limestone. This outcrops in places in the form of bedrock shore or reefs. Granite boulders are occasionally found. Intertidal mudflats and sand/gravel banks also occur. The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive: *[1210] Annual Vegetation of Drift Lines* and *[1220] Perennial Vegetation of Stony Banks*. In Carlingford Shore SAC, the shingle and drift line habitats extend more or less continuously from Greenore to west of Cooley Point. They occur as a strip of varying width, from only a few metres in places, to up to about 50 m. One of the best developed areas is south of Ballagan Point. No habitats listed as Qualifying Interests (QIs) for Carlingford Shore SAC were identified within the site location. The substrate varies from stones and cobbles to gravels and coarse sands. The exposure level of this shoreline is high.

9 IMPACT ASSESSMENT

9.1 Identified Impacts

Given the position of the site on the edge and within the SAC, an S-P-R linkage between the proposed Coastal Protection Works and Carlingford Shore can be completed. Any impacts by the proposed Coastal Protection Works on the water quality of Carlingford could have negative impacts on sites downstream. There is also the possibility of secondary impacts, with any impact on Carlingford Shore SAC having an impact on any sites/species linked physically or ecologically to Carlingford Shore. However, these impacts are unlikely to occur if the proposed mitigation measures outlined in the next section are implemented in full.

10 PROPOSED MITIGATION MEASURES

The proposed works will be carried out by contractors who can meet the requirements of the standard best practice measures outlined below. The relevant appointed contractor shall have regard to measures to be implemented during the construction phase of the proposed works. The purpose of these measures is to ensure the strict protection of water quality in the freshwater environment and by extension the protection of the nearby designated European Sites. The appointed contractor shall be vigilant in ensuring that no activities, listed or otherwise, give rise to pollution of Carlingford Shore SAC protected habitats with suspended solids or other pollution related material having due regards to the following measures outlined below:

Construction Mitigation Measures

- A site-specific Construction and Environmental Management Plan (CEMP) will be prepared for the development in advance of the works by the appointed Contractor with a draft CEMP submitted to Louth County Council's representative for approval prior to commencement of the works;
- In order to minimise any impact to Natura 2000 sites, in particular Carlingford Shore SAC [002306], it is proposed that daily supervision by an Ecological Clerk of Works (EcOW) is provided before, during and after the completion of the construction works;
- Coastal protection works should only take place outside of the winter migratory bird months of September to March;
- Ecological enhancements can be implemented in coastal protection structure design to boost biodiversity and offset any possible negative impacts on the local ecology. For example, the addition of rough materials (i.e., jagged/porous rocks), artificial texturing on surfaces, or repurposing existing weathered rocks adds structural complexity; and therefore, creates microhabitats which will increase species colonisation. Another example includes incorporating structural gaps to increase water retention at low tide and mimic more valuable rock pool habitats. Ecological enhancements can be incorporated once the structural integrity remains intact with regards to the required specification and the specific purpose of the works;
- During periods of heavy precipitation and run-off, works will be halted or working surfaces/pads will be provided to minimise soil disturbance;
- Any bulk fuel storage tank should be a sufficient distance from the foreshore and properly bunded with a bund capacity of at least 110% of that of the fuel tank. No refuelling or storage of fuel will occur within the works area;
- Limit disturbance when excavating - Retain as much of the vegetated areas as possible. By limiting land disturbance, erosion hazards are reduced;
- The pouring of concrete for the project shall be completed in the dry to avoid seepage to the groundwater environment;
- Temporary fills or stockpiles will be covered with polyethylene sheeting to avoid sediment release associated with heavy rainfall;

- All fuels, lubricants and hydraulic fluids for equipment used on the construction site should be stored a sufficient distance from the foreshore in a roofed and bunded hazardous liquids container. These liquids should be carefully handled to avoid spillage, properly secured against unauthorised access or vandalism, and provided with spill containment in accordance with current best practice;
- A wheelie bin type hydrocarbon spill kit will be required and should be positioned close to the works area at the foreshore to deal with any leakage from plant working within the coastal protection works site; and
- Given the risk posed by the leakage of hydrocarbons from the excavator and dumper (e.g., hydraulic fluid from leaking cables, leaking diesel, lube oil, etc), a sufficiently long floating spill boom with a suspended curtain will need to be put in place on the foreshore to prevent the spread of any hydrocarbons in the event that a leakage of hydrocarbons occurs. The floating spill boom will be required to completely encircle the entire works area with the boom being tethered to posts installed upgradient of the high-water mark. The integrity of the boom will require checking twice a day.

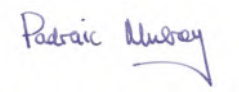
11 CONCLUSIONS

Provided the afore-mentioned mitigation measures are applied to ensure that no contaminants enter the foreshore area and hence the SAC and provided these measures are enforced during the construction period, it is considered that the proposed Coastal Protection Works will have no adverse impacts on the integrity of any of the species or habitats of the Carlingford Shore SAC or on any other Natura 2000 site within a 15km radius of the site.

On the basis of the findings of this Natura Impact Statement, it is concluded that the proposed Coastal Protection Works will not have a significant effect on the Natura 2000 network and neither a Stage 3. Assessment of Alternative Solutions or a Stage 4. Assessment Where Adverse Impacts Remain is required.

Yours sincerely,

Leanne Tuohy, BSc.
Staff Ecologist
Mulroy Environmental



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SERVICE CONSTRAINTS

1. This report and the AA Screening Assessment carried out in connection with the report (together the "Services") were compiled and carried out for Louth County Council (the "client") in accordance with the terms of an emailed fee proposal agreement Fee Proposal PRP524.18.04.2023 between Mulroy Environmental Ltd. and the "client" dated the 18th April, 2023. Mulroy Environmental Ltd. received permission to proceed by email (i.e., a 'Letter of Acceptance') on the 29th May, 2023. The Services were performed by Mulroy Environmental Ltd. with the skill and care ordinarily exercised by a reasonable Environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by Mulroy Environmental Ltd. taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between Mulroy Environmental Ltd. and the client.

2. Other than that expressly contained in paragraph 1 above, Mulroy Environmental Ltd. provides no other representation or warranty whether express or implied, in relation to the Services.

3. Unless otherwise agreed the Services were performed by Mulroy Environmental Ltd. exclusively for the purposes of the client. Mulroy Environmental Ltd. is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, Mulroy Environmental Ltd. does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and Mulroy Environmental Ltd. disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent environmental consultant and/or lawyer.

4. It is Mulroy Environmental Ltd.'s understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without Mulroy Environmental Ltd. be requested to review the report after the date hereof, Mulroy Environmental Ltd. shall be entitled to additional payment at the then existing rates or such other terms as agreed between Mulroy Environmental Ltd. and the client.

5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of Mulroy Environmental Ltd. In the absence of such written advice of Mulroy Environmental Ltd., reliance on the report in the future shall be at the client's own and sole risk. Should Mulroy Environmental Ltd. be requested to review the report in the future, Mulroy Environmental Ltd. shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between Mulroy Environmental Ltd. and the client.

6. The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the client and Mulroy Environmental Ltd. Mulroy Environmental Ltd. has not performed any observations, investigations, studies or testing not

specifically set out or required by the contract between the client and Mulroy Environmental Ltd.. Mulroy Environmental Ltd. is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, Mulroy Environmental Ltd. did not seek to evaluate the presence on or off the site of asbestos, electromagnetic fields, lead paint, heavy metals, radon gas or other radioactive or hazardous materials.

7. The Services are based upon Mulroy Environmental Ltd.'s observations of existing physical conditions at the Site gained from a walk-over survey of the site together with Mulroy Environmental Ltd.'s interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which Mulroy Environmental Ltd. was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information, including documentation, reviewed by Mulroy Environmental Ltd. and the observations possible at the time of the walk-over survey. Further Mulroy Environmental Ltd. was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. Mulroy Environmental Ltd. is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to Mulroy Environmental Ltd. and including the doing of any independent investigation of the information provided to Mulroy Environmental Ltd. save as otherwise provided in the terms of the contract between the client and Mulroy Environmental Ltd..

8. The environmental monitoring aspects of the Services is a limited sampling of the site at pre-determined borehole and soil vapour locations based on the operational configuration of the site. The conclusions given in this report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and Mulroy Environmental Ltd.] [based on an understanding of the available operational and historical information,] and it should not be inferred that other chemical species are not present.

9. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features