

BYRNE LOOBY

IRELAND | UK | UAE | BAHRAIN | KSA

Ballybofey-Stranorlar FRS

Environmental Constraints Study Report

Donegal County Council

Report No. W3639-ENV-R001

23 May 2022

Revision 04



OPW

Oifig na
nOibreacha Poiblí
Office of Public Works



Rialtas
na hÉireann
Government
of Ireland

Tionscadal Éireann
Project Ireland
2040

Document Control

Document: Environmental Constraints Study Report

Project: Ballybofey-Stranorlar FRS

Client: Donegal County Council

Report Number: W3639-ENV-R001

Document Checking:

Revision	Revision/ Review Date	Details of Issue	Authorised		
			Prepared By	Checked By	Approved By
00	28 December 2021	Issued for Review	R Llewellyn P Leresche	J Wren FJ Symes	K Thornton
01	10 January 2022	Issued for Review	R Llewellyn P Leresche	J Wren FJ Symes	K Thornton
02	7 February 2022	Issued incorporating client comments (round 1)	J Wren P Leresche	FJ Symes	K Thornton
03	13 May 2022	Issued incorporating client comments (round 2)	J Wren	FJ Symes	K Thornton
04	23 May 2022	For Issue	J Wren	FJ Symes	K Thornton
Disclaimer: Please note that this report is based on specific information, instructions, and information from our Client and should not be relied upon by third parties.					

Contents

Executive Summary.....	x
1 Introduction.....	1
1.1 Overview	1
1.2 Environmental Study Area	3
1.3 Project Background and Need for the Scheme.....	3
1.4 History of flooding	4
1.5 Potential Flood Risk Management Measures	4
2 Environmental Constraints	8
2.1 Stages of Work.....	8
2.2 Scope of Constraints Study	8
2.3 Methodology.....	9
2.3.1 General Guidance and background information	10
2.4 Project Team	12
2.5 Consultation	12
2.5.1 Opening Public Stakeholder Consultation	13
3 Resources and Materials.....	15
3.1 Introduction	15
3.2 Methodology.....	15
3.3 Baseline / Receiving Environment	15
3.3.1 Existing and/or planned flood mitigation works.....	16
3.3.2 Stormwater infrastructure	16
3.3.3 Wastewater Treatment Plants	16
3.3.4 Waste Management.....	21
3.3.5 Water supply	21
3.3.6 Electricity networks.....	25
3.3.7 Gas infrastructure	25
3.3.8 Digital infrastructure	25
3.3.9 Land Ownership and Zoning	27
3.3.10 Roads and Transportation Network	27
3.3.11 Pedestrian and Cycling Network	31
3.4 Key Constraints	31
4 Population and Human Health	34
4.1 Introduction	34
4.2 Methodology.....	34

4.3	Baseline / Receiving Environment	35
4.3.1	Population, land use, and human health	35
4.3.2	Tourism and recreation.....	36
4.3.3	Traffic	37
4.3.4	Regeneration.....	38
4.4	Key Constraints	39
5	Hydrology	41
5.1	Introduction	41
5.2	Methodology.....	41
5.3	Baseline / Receiving Environment	42
5.3.1	The Finn Valley Catchment	42
5.3.2	Waterbodies in the Study Area	42
5.3.3	Surface waterbody quality and status	45
5.4	Key Constraints	52
6	Soils, Geology and Groundwater	54
6.1	Introduction	54
6.2	Methodology.....	54
6.3	Baseline / Receiving Environment	55
6.3.1	Geology	55
6.3.2	Karst features.....	58
6.3.3	Soils	58
6.3.4	Geoheritage	60
6.3.5	Geohazards	60
6.3.6	Economic geology	60
6.3.7	Groundwater	61
6.4	Key Constraints	64
7	Ecology and Biodiversity	65
7.1	Introduction	65
7.2	Methodology.....	65
7.2.1	Desktop Study	65
7.2.2	Site Walkover	66
7.2.3	Legislation and Guidance	66
7.3	Baseline / Receiving Environment	67
7.3.1	Natura 2000 sites	67
7.3.2	Natural Heritage Areas and proposed Natural Heritage Areas	69

7.3.3	Ecology and Water Designated Statuses	71
7.3.4	Protected/Notable Species	73
7.3.5	Aquatic and Terrestrial Site habitats.....	77
7.3.6	Invasive species.....	77
7.4	Key Constraints	80
7.4.1	Water Framework Directive.....	80
7.4.2	Protected Sites	80
7.4.3	Protected/notable Species.....	80
8	Cultural Heritage and Archaeology.....	84
8.1	Introduction	84
8.2	Methodology.....	84
8.3	Baseline / Receiving Environment	85
8.3.2	Designated Heritage Constraints	86
8.3.3	National Inventory of Architectural Heritage (NIAH).....	89
8.4	Key Constraints	92
8.4.1	Archaeological Heritage	92
8.4.2	Historic Character and Setting	93
9	Landscape and Visual	94
9.1	Introduction	94
9.2	Methodology.....	94
9.3	Baseline / Receiving Environment	94
9.3.1	Landscape Character.....	94
9.3.2	Townscape features.....	95
9.3.3	Historic Landscape Characterisation (HLC)	97
9.3.4	Existing Trees and Hedgerows	97
9.3.5	Land Use Zoning.....	98
9.3.6	Protected Views, Corridors and Prospects	98
9.4	Key Constraints	100
10	Air Quality.....	102
10.1	Introduction	102
10.2	Methodology.....	102
10.3	Baseline / Receiving Environment	102
10.4	Key Constraints	103
11	Climate Change.....	104
11.1	Introduction	104

11.2	Methodology.....	104
11.3	Baseline / Receiving Environment	104
11.3.1	Flood Risk and Climate Change	104
11.3.2	Carbon and Climate Change.....	105
11.4	Key Constraints	106
12	Noise and Vibration.....	107
12.1	Introduction	107
12.2	Methodology.....	107
12.3	Baseline / Receiving Environment	107
12.4	Key Constraints	107
13	References	109
	Appendix A – Public Information Pack.....	A
	Appendix B – Responses to Project Level Initial Environmental Consultation	B
	Appendix C – Habitat Mapping	C
	Appendix D – Land Use Zoning Map for Ballybofey and Stranorlar	D
	Appendix E – County Donegal Development Plan 2018-2024: policies associated with landscape ..	E

Figures

Figure 1-1	CFRAM AFA and proposed flood defence measures.....	2
Figure 1-2	Project Scheme Area and Proposed Flood Defence Measures.....	7
Figure 3-1:	Wastewater treatment facilities within 10 km of the scheme area.....	19
Figure 3-2:	Wastewater Network	20
Figure 3-3:	Licensed Emission Facilities within the Study Area.....	22
Figure 3-4:	Groundwater abstraction locations.....	23
Figure 3-5:	Electricity infrastructure in the scheme boundary and vicinity.....	26
Figure 3-6:	Trans-European Transport Network (TEN-T) in relation to Scheme Area	29
Figure 3-7:	Rural area types in the study area.....	30
Figure 4-1:	Ballybofey and Stranorlar Regeneration Strategy & Action Plan 2022.....	38
Figure 5-1	Flow and Levels Duration Percentiles for the River Finn.....	43
Figure 5-2:	River Finn Catchment	44
Figure 5-3	Hydrology constraints study area with locations of national water quality monitoring stations and hydrometric gauges.....	48
Figure 5-4	WFD River Risk Status	50
Figure 5-5	WFD River Ecological Status.....	51
Figure 6-1:	Bedrock geology	57
Figure 6-2:	Soils in the scheme area and vicinity.	59
Figure 6-3:	Aquifers in the study area	62
Figure 6-4:	Groundwater vulnerability in the study area.....	63
Figure 7-1:	Natura 2000 Sites within 15km of Ballybofey and Stranorlar	68

Figure 7-2: Natural Heritage Sites and proposed Natural Heritage Sites within 15km of the scheme area	70
Figure 7-3: River Finn (code: IEPA5D0014) within the Finn Catchment.....	72
Figure 7-4 Invasive Species (extract from ByrneLooby, 2021 Ref: W3639-BLP-R-ENV-010)	79
Figure 8-1: RMP / SMR sites within and near to the constraints study area for archaeology and cultural heritage.....	88
Figure 8-2: NIAH sites and NIAH sites on RPS in the study area	91
Figure 9-1: Scenic Amenity Designations and views.....	99

Tables

Table 1-1: Waterbodies in the Scheme Area	1
Table 1-2: Flood History Overview Timeline	4
Table 2-1: Flood Relief Scheme Stages.....	8
Table 2-2: Consultation Plan.....	12
Table 3-1 Urban Wastewater Treatment Plant (WWTP) locations with wastewater discharge authorisation in the vicinity of the scheme.....	17
Table 3-2 Licensed Emission Facilities within the Study Area.....	21
Table 3-3 Groundwater Abstraction in the scheme area	24
Table 4-1 Population Projections reproduced from Draft County Donegal Development Plan 2018-2024.....	35
Table 4-2 Population by Nationality from Donegal Local Economic & Community Plan 2016-2022.	35
Table 4-3 Socio Economic Groups & Labour Force Details from Donegal Local Economic & Community Plan 2016-2022.....	36
Table 5-1 National water quality monitoring stations and hydrometric gauges within 3km of the scheme area	45
Table 5-2 Waterbody status data for the sections of rivers within the study area	49
Table 6-1 Bedrock geology in the study area	55
Table 6-2 Section 261A of the Planning and Development Act - Quarries in Ballybofey and Stranorlar	60
Table 6-3 Ground Waterbody WFD Status 2013-2018 for the study area	61
Table 7-1 Natura 2000 Sites within 15km of the Scheme Area	67
Table 7-2 Proposed Natural Heritage Areas (pNHA) and Natural Heritage Areas (NHA) within 15 km of the site	69
Table 7-3 Bat habitat suitability index	75
Table 7-4 Salmon count in the River Finn at Killygordon	76
Table 7-5 Habitat types within and adjacent to the proposed scheme footprint	77
Table 8-1: RMP sites within the proposed study area.....	87
Table 8-2: NIAH Sites within the study area	89
Table 11-1: Climate Change Allowances	105

Terms and Abbreviations

%	Percentage
I	One
II	Two
III	Three
IV	Four
V	Five
ACA	Architectural Conservation Area
AEP	Annual Exceedance Probability
AFA	Area for Further Assessment
AFAc	Area for Action
AlluviMIN	EPA geoportal code for mineral alluvium
AminDW	EPA geoportal code for deep well drained mineral (derived from mainly acidic parent materials)
AminPD	EPA geoportal code for deep poorly drained mineral (derived from mainly acidic parent materials)
AminPDPT	EPA geoportal code for poorly drained mineral soils with peaty topsoil (derived from mainly acidic parent materials)
AminSP	EPA geoportal code for shallow poorly drained mineral soil (derived from mainly acidic parent materials)
AminSW	EPA geoportal code for shallow well drained mineral (derived from mainly acidic parent materials)
AQIH	Air Quality Index for Health
BL	ByrneLooby
BminSP	EPA geoportal code for shallow poorly drained mineral soil (derived from mainly basic parent materials)
BminSW	EPA geoportal code for shallow well drained mineral (derived from mainly basic parent materials)
c.	Approximately
CDP	Council Development Plan
CEMP	Construction Environmental Management Plan
CFRAMS	Catchment Flood Risk Assessment and Management Study
Co.	County
COVID-19	Coronavirus disease 2019
DCCAE	Department of the Environment, Climate and Communications
DHLGH	Department of Housing, Local Government and Heritage
DCC	Donegal County Council
EC	Executive Council

EIA	Environmental impact assessment
EIAR	Environmental impact assessment report
Eir	Eircom Limited
EirGrid	EirGrid Group
EPA	Environmental Protection Agency
ESB	Electricity Supply Board
EU	European Union
FAQ	Frequently asked questions
fl.	Floruit, abbreviated fl. (or occasionally flor.), Latin for "he/she flourished", denotes a date or period during which a person was known to have been alive or active.
FRMP	Flood Risk and Management Plan
FRS	Flood Relief Scheme
GIS	Geographic Information Systems
GSI	Geological Survey Ireland
HLC	Historic Landscape Characterisation
IFI	Inland Fisheries Ireland
km	Kilometres
km ²	Kilometres squared
kV	Kilovolt
LAP	Local Area Plan
LCA	Landscape Character Assessment
Made	EPA geoportal code for made ground
m	meter(s)
mm/yr	Millimetres per year
NBDC	National Biodiversity Data Centre
NHA/ pNHA	Natural Heritage Areas / Proposed Natural Heritage Areas
NIAH	National Inventory of Architectural Heritage
NMS	National Monuments Service
NPWS	National Parks and Wildlife Service
NRA	National Road Schemes
NTA	National Transport Authority
NWNB CFRAM	North Western – Neagh Bann (NWNB) Catchment Flood Risk Assessment and Management (CFRAM) Study
NWRM	National Water Retention Measures

OPW	Office of Public Works
pe	Population Equivalent
Pers. Comm.	Personal Communication
QI	Qualifying Interests
Q-value	Biological River Quality Classification System
RMP	Record of Monuments and Places
RPS	Record of Protected Structures
SAC	Special Areas of Conservation
SCI	Sites of Community Importance OR Species of Conservation Interest
SEA	Strategic Environmental Assessment OR Social and Environmental Assessment
SI	Site Investigation OR Statutory Instrument
SMR	Sites and Monuments Record
SPA	Special Protection Area
sp.	Species (singular)
spp.	Species (plural)
TII	Transport Infrastructure Ireland
UNESCO	United Nations Educational, Scientific and Cultural Organization
WFD	Water Framework Directive
WHS	World Heritage Site
WwTP	Wastewater Treatment Plant
ZAP	Zone of Archaeological Potential

Executive Summary

The objective of this project is the identification, design, and submission of a Flood Relief Scheme, to alleviate the risk of flooding for the communities of Ballybofey and Stranorlar. The Scheme will be technically, socially, environmentally and economically acceptable to the standards of the EU Directive on the Assessment and Management of Flood Risk (Floods Directive 2007/60/EC) transposed into Irish Law as SI 122 of 2010.

The viable scheme (currently under review) is comprised mainly of construction of hard defences and associated works in locations within the towns and surrounding areas, chiefly along the banks of the following water bodies: Finn, Burn Durnett, Goland, Carrickmagrath, Sessiagh, Cooladawson, Treanamullin, Lough Alaan WC, Lough Alann Tributary and Magherapaste. Preferred measures outlined in the CFRAM comprise:

- Flood defences along River Finn at:
 - Cedars Housing Estate
 - Jackson's Hotel Carpark
 - Navenny
- Flood defences along Burn Durnett:
 - Cappry
 - Navenny
- Flood defences along Goland at Goland.
- Flood defences/culvert improvements along Sessiagh at Sessiaghoneill.
- Flood defences along Magherapaste at Drumboe Cottages.
- Flood defences along Lough Alaan at St Mary's National School.
- Flood defences/culvert improvements along Cooladawson at its crossing of the N15.

Additional works/investigations identified post CFRAM that may include:

- Culvert improvements on Lough Alaan watercourse in Stranorlar
- Investigations at the Glebe Housing estate in Stranorlar

The aim of the project at preliminary design stage is to carry out a detailed evaluation of viable flood relief measures, select the best measure or combination of measures and carry out a preliminary design. Catchment based measures to reduce flow and flood peaks will also be considered, if feasible.

A summary of the key constraints identified for each of the environmental disciplines considered as part of the baseline constraints identification exercise is described below. They include:

- Resources and Materials.
- Population and Human Health.
- Hydrology.
- Soils, Geology and Hydrogeology.
- Ecology and Biodiversity.
- Cultural Heritage and Archaeology.
- Landscape and Visual.
- Air Quality.
- Climate Change.
- Noise and Vibration.

Resources and Materials

Impacts on services and utilities such as watermains, stormwater drainage, gas mains, underground powerlines etc. will all need to be considered during the design process. The possible interruption of these services and utilities should be minimised, where possible. Furthermore, impacts on road and rail infrastructure, public rights of way and land ownership will need to be considered.

There is an existing public storm sewer network servicing the surrounding developments, including a 200mm sewer running beneath the Chestnut Road, and two 900mm storm sewer pipelines, all discharging to the River Finn. Under the ABP Board Order ABP-310657-21, some minor works including the construction of two new manholes and two pump hardstands on the two existing storm water lines is planned (An Bord Pleanála, 2021). All works need to be mindful of these infrastructure services.

Further, the existing stormwater drainage network in the twin towns is subject to ongoing flooding, overflow and capacity deficiencies. This situation is a constraint to the flood scheme and the design should be mindful not to worsen the condition.

Traffic is a major issue in the town. Third party infrastructure projects being developed in the study area will be considered within the cumulative impact assessment in the EIAR to identify and determine the significant of any cumulative or in-combination effects.

Coordination between project developers/teams will be required where construction occurs within overlapping or similar timeframes or where working areas overlap or are located in nearby areas.

Population and Human Health

Constraints on population and human health will depend on the final nature and extent of the scheme, as well as the duration and nature of the construction phase.

Impacts on public amenity areas adjacent to and requiring access to the rivers such as riverside walks, parks, playgrounds and tourist features should be considered, with replacement mitigation proposed if necessary. Impacts on tourist facilities, recreation and amenity facilities in the area should be considered constraints, especially those requiring access to the watercourses in the area.

Development of the proposed scheme must take into consideration ways for areas of commercial or tourist potential maintain (and where possible enhance) their aesthetic and public attractiveness both during construction and operation of the scheme.

Measures to protect extant recreational areas and green public spaces should be developed within the proposed scheme. The proposed scheme design should ensure continuity of the public walkways within its footprint.

The scheme design should take into account the value (both cultural and economic) of any buildings (residential, retail, etc.) close to the edges of waterbodies likely to be adversely affected by the scheme within the scheme study area.

Regional roads in the project are likely to be congested at peak travel times. Some roads in the scheme area are narrow and may not be suitable for site access. A bridge provides road and pedestrian access between Ballybofey and Stranorlar and access to the bridge should be maintained throughout scheme construction and development. There is a potential for construction to make traffic more congested in the study area and vicinity in the short term. A traffic management plan will be required with the CEMP.

Construction works will have to be mindful of maintaining access for both pedestrians and cyclists. A traffic management plan will be required during construction works. Any design proposals should ensure that any bridges over watercourses are maintained where feasible so that temporary or permanent disruption of local transport links and access to homes and businesses in the study area

Population and Human Health

are minimised. It is also noted that people travel between the towns to access facilities such as schools, medical facilities, and shops.

Urban development may limit access and movement of vehicles/equipment during construction at the following locations:

- Flood defences along River Finn at Cedars Housing Estate and Jackson's Hotel Carpark.
- Flood defences along Burn Daurant at Cappry.
- Flood defences along Magherapaste at Drumboe Cottages.
- Flood defences along Lough Alaán watercourse at St Mary's National School.
- Also, Investigations at the Glebe Housing estate in Stranorlar.

During construction of the scheme, traffic restrictions could pose problems for deliveries and site access and traffic management measures will be considered as part of the environmental impact assessment process. The traffic associated with construction works will need to be mindful of the tourist and retail trades.

It is also likely that the existing embankments will form part of the new scheme (either as is or upgraded/replaced) such that a maintenance regime post-scheme will be put into place. These works will need to be mindful of the tourist and retail trades also.

St Mary's School is due to move to new premises and the old school building may be repurposed for community use. Should the preferred option from project level assessment identify measures adjacent to the school, at its current or future location, the timing of works should be considered to minimise impacts during periods when active teaching takes place (e.g. outside of term time).

Sensitive receptors e.g. homes, schools, medical facilities, places of worship, should be considered key constraints in the design of the flood relief scheme. The scheme design should take into account the value (both cultural and economic) of any buildings (residential, retail, etc.) close to the waterbodies' edges or likely to be adversely affected by the scheme within the scheme study area. Medical facilities in the scheme study area are sensitive receptors and must be given due consideration. Flooding events can cause devastation to homes, businesses and local facilities, with social and human health impacts. Their specific protection through adequate flood defences should be considered in the design of the scheme.

Other impacts to population that are also concerned with human health, including material assets such as water supply, wastewater treatment, and utilities should also be given due consideration.

Hydrology

Surface water bodies in the study area are classed under the Water Framework Directive (WFD) as 'At risk' of not meeting WFD objective of 'Good' Ecological Status. Under WFD requirements, the development of the scheme should incorporate measures to ensure that the hydromorphological conditions of the water body is consistent with the achievement of the required ecological status. Further mitigation should be implemented with regards to the release of suspended solids and accidental releases of pollutants during construction, however these are mentioned in further detail in the Ecology & Biodiversity Section.

Measures to protect surface water from leaks/spills, contamination, increased turbidity or input of suspended solid, etc, should be considered.

Contamination potentially present on site from historical land use must also be considered. The CEMP for the scheme will include measures to avoid mobilising and/or creating pathways for any contaminants present on site to the surface where surface runoff can introduce contaminants to surface water during enabling and construction works.

Hydrology

Measures to protect active national water monitoring stations and hydrometric gauges and avoid impacting their data collection processes should be considered during design and construction phases.

The scheme design and schedule will need to take into consideration the development of any WWTPs, water abstraction facilities or third party 'WFD' projects in the vicinity of the scheme area, including potential impacts to utilities and infrastructure.

Potential impacts on the hydrology and morphology of the study area watercourses during construction, maintenance and operations should be considered. It is recommended that the hydrological and morphological (physical condition) regime of all waterbodies which might be affected by the scheme are fully considered to ensure that the WFD hydro-morphological status is unaffected.

The scheme should take into consideration water quality sensitive protected species, including Annex II species and qualifying interests for the SAC, recorded in waterbodies in the scheme area and vicinity. Additionally, water dependant terrestrial ecosystems are present within the study area and downstream and should be considered.

The scheme should take into consideration the presence of protected water resources in the study area. The National Parks and Wildlife Service Conservation Objectives for the River Finn SAC include Water quality criteria regarding transparency, nutrient concentration, macrophyte status, and the aim to achieve at least Q4 at all sites for Q value assessment (based on triennial water quality surveys carried out by the Environmental Protection Agency).

Projects to improve the quality of surface waterbodies in the catchment are being undertaken by local groups and other third parties. Coordination with these groups is advised to ensure the projects are not detrimentally impacted during works.

Soils, Geology and Hydrogeology

Made ground and/or contaminated ground: Depending on the scheme design and type of works, for areas where made ground is uncompacted and/or highly variable it may require to excavate and place this material and replace with suitable founding material. This material may also be a possible a source of contamination. As this material will be excavated during construction, it may require contamination testing be undertaken during the detailed site investigation.

Contaminated land: The scheme area is located in an area with industrial heritage and commercial properties. If intrusive works are required during construction at locations where known or unknown contaminated land may be present (e.g. from recorded historical land-use), an investigation may be required into determine if land contamination is present and, if present, to determine its nature and extent.

Soils and groundwater: Poor draining soils occurring within the scheme footprint are potentially soft and compressible and will likely require a detailed site investigation (SI) in order to design a suitable flood defence scheme. Appropriate environmental controls and management measures will be implemented for any advance SI works, this may include a requirement for AA screening, or an application/notification to NPWS for approval. A CEMP will be developed for construction activities. The CEMP will identify appropriate equipment and construction techniques that should be used in circumstances where there is a potential impact to the environment. Engineering design should minimise the impacts of the flood relief scheme on the sections of river within the study areas and the wide catchment.

Soils, Geology and Hydrogeology

Groundwater vulnerability to contamination: Depending on the design of the scheme, works may occur adjacent or within areas where groundwater is classified by the GSI as 'extremely vulnerable' to contamination. Appropriate environmental controls and management measures will be implemented for any advance SI works. A CEMP will be developed for construction activities. A CEMP will be developed for all site investigation works, construction activities and traffic management.

Ecology and Biodiversity

The most significant ecological constraint in Ballybofey and Stranorlar is the River Finn, given its status as an SAC and salmonid river. For this reason, any works that are to be carried out to reduce flooding must take this sensitivity into account. Where at all possible, any in-river works should be avoided and every effort must be made to minimise, if not avoid, any run off to it. All work that is to be carried out on the river bank must be carried out in such a way as to minimise the potential for events such as diesel or concrete spillages, run off of water with suspended sediment loadings or any accidental spillages. If it is considered necessary to re-build in river structures (e.g. culverts, weirs), the same sort of construction approach should be designed in to minimise resuspension and loss of concrete to the river. Appropriate Assessment under Articles 6(3) and 6(4) of the EU Habitats Directive (Directive 92/43/EEC) will be required for the proposed scheme.

In ecological terms, the river corridor (including the river itself) supports a number of protected species including salmon, sea and brown trout, otter, bats and badger. Any in-river and bankside works have to be designed to minimise potential impacts on these (and all other) species. All works should be planned wherever possible to be carried out at times of the year that are ecologically least sensitive e.g. outside bird nesting (March – September) and fish migration periods (Spring/Summer, depending on species).

As a European protected species, the otter is fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). Any scheme option that may have the potential to disturb otters must be assessed. A full otter survey should be completed once the scheme extents are known. If otters are found to be present and disturbance is likely that DCC will need to apply for a licence to allow proposed development works that might affect otters to proceed legally. The potential impacts on otter will be assessed and reported in the EIA.

Otter mitigation works can potentially be conducted at any time of year but must avoid the breeding season (usually Spring but can be any time of year) if holts are present on site.

Badgers. Pre-construction update surveys will be carried out to maintain the validity of species data. The results of these would inform the decision as to whether to close a sett through exclusion or to destroy it if it is no longer active. Alternative locations for artificial setts would also be scoped in these updates. Surveys would be carried out in accordance with best practice guidance. Should a badger sett be recorded within the scheme extents prior to construction works then appropriate mitigation and a licence for works will be required. Construction of new setts must be completed in Spring/Summer with blocking and destruction of existing setts completed in Autumn/early winter.

The scattered mature trees, bridges, architecture (churches, masonry) and areas of low water flow provide good foraging, roosting and commuting routes for bat species in the area. Options that require the removal of mature trees or works to bridges or other riverine structures with the potential to support roosting bats shall be assessed for bat potential. Bat surveys shall be conducted on any features with medium or high potential for roosting bats. Once more detail becomes available pertaining to the proposed scheme to the site (including the proposed methods of construction), the site should be re-visited for the purpose of:

Ecology and Biodiversity

- Surveying key locations (e.g. where it is known that potential roosting habitat will be removed or disturbed); and
- Obtaining more detailed information about any potential bat roosts (i.e. whether it is a maternity roost, hibernaculum etc.)

This information will inform any considerations of mitigation measures that may need to be implemented. The optimal time to conduct map surveys are May and August, when bats are most active. If bats are found, they should not be disturbed during hibernation period (October to March) or maternity period (June to August). If a bat roost requires removal, then a licence would be required. Removal of roosts should be carried out during the summer months for hibernation roosts and during the winter months for maternity roosts. As all Irish bats and their roosts are protected under national and EU legislation it is an offence to disturb or interfere with them without a licence. Such a derogation (which must be given by the Minister for the Environment, Heritage and Local Government) can only be sanctioned where there is no satisfactory alternative and where it will not be detrimental to the favourable conservation status of the species concerned. Therefore, any felling of trees or work on bridges which provide suitable roost habitat for bats should be sought in advance of any development that may interfere with such roost sites.

Irish Stoat has been recorded in the scheme area. The Irish stoat is protected under the Wildlife Act (1976) and Wildlife (Amendment) Act 2000. Should a breeding den for Irish Stoat be recorded from within or adjacent to (ca 50m) a license to close the den will be required from the NPWS. If a den is found, no works can be carried out during the breeding season (this can range from February to August).

A fish survey of suitable waterbodies in the study area should be completed on site to establish the presence/absence/abundance of fish species. This will involve netting and electrofishing surveys, where required (i.e. where instream works will cause disturbance to the river bed via structure or excavation) and where technically feasible. In terms of the construction programme, it should be noted that in salmonid catchments, in-stream works are not permitted between the months of January to April (migration) and October to December (spawning). This corresponds with guidance from Inland Fisheries Ireland (Murphy, 2016). Lamprey (both species) spawning takes place in the spring and early summer period in often the same habitats where salmon and trout spawn (O'Connor, 2017). The spawning season for brown and sea trout is November to February. If spawning grounds are found to be present in the construction zone for the scheme, then this period should be avoided. A full impact assessment and management plan for these fish species will be produced as part of the EIA report once full scheme details (including construction methods) are known.

There are two records of Freshwater Pearl Mussel within the Finn Catchment (one live and one dead) (OPW, Jan 2022). The Finn catchment is categorised as a 'Catchment of other Extant Populations' for this species (NPWS, 2021)¹.

The freshwater pearl mussel is listed as Endangered on the IUCN Red List and is one of the 365 most endangered species in the world. It is protected under the Wildlife Act and Annex II and V of the EU Habitats Directive. Any activities that result in changes in river flow, increased levels of silt, and increased levels of nutrients are contributing to the decline of freshwater pearl mussels. In addition

¹ These mussel populations may lie (in part) within SAC, other nature conservation sites or in the wider countryside. Those populations within SAC were not considered of sufficient quality to warrant designation for the species and detailed restoration objectives, targets, plans or measures are unlikely to be developed. However, the potential effects of any plans, developments or activities on the populations, including the potential to cause 'environmental damage' as per the Environmental Liability Directive and Regulations, must be determined through SEA, EIA or other ecological assessment.

Ecology and Biodiversity

to drainage, and changes to river channel morphology, increased intensification of land use in river catchment areas can contribute to inadequate conditions for freshwater pearl mussel survival.

In addition, any impacts that result in a decrease in anadromous salmonid populations (Atlantic salmon and sea trout) could have a significant impact upon the viability of the freshwater pearl mussel population. The lifecycle of freshwater pearl mussel is reliant upon the development of glochidia which attach to the gills of host fish, usually juvenile salmonids, to continue development (Skinner A, 2003). Therefore, a decline in the salmonid population within the river, as a result of construction and operational disturbance to migration, could have an impact upon the future viability and population size of freshwater pearl mussel. Works therefore should be carried out outside the period when salmon are migrating either upstream to breed or when fish return to the sea as smolts or adults.

Surface water bodies in the study area are classed under the Water Framework Directive (WFD) as 'At risk' of not meeting WFD objective of 'Good' Ecological Status. Under WFD requirements, the development of the scheme should incorporate measures not to worsen its status. All possible risks of point source pollution or runoff during construction and operation should be assessed and prevented. Works during the construction of the scheme could pose a threat to the water quality of water bodies within and downstream of the study area through various mechanism, chiefly:

- Increasing suspended solids in the water bodies through release or run-off of significant amounts of suspended solids during enabling works and construction; and
- Unplanned events such as leaks/spills/runoff/accidental release or escape of fuels, oils and lubricants, bulk liquid cement, contaminated leachate, etc.

Measures to protect surface water from leaks/spills, contamination, increased turbidity or input of suspended solid, etc, should be considered.

Japanese Knotweed and Himalayan balsam have been identified as present within the study area. An Invasive Species Management Plan has been prepared separately (Report Ref (ByrneLooby, 2021 Ref: W3639-BLP-R-ENV-010)). An invasive species treatment and management plan will be implemented for the scheme during 2022 and on a continuous basis leading to construction and operation of the Scheme.

Cultural Heritage and Archaeology

All archaeological and historic sites/features and properties with statutory designations in the study area are the key considerations in the constraints study in relation to cultural heritage, these sites have been identified and mapped for the constraints study.

The scheme area may contain known and previously unknown underwater archaeological heritage that should be considered in any study to inform planning design and any potential EIARs. There is a general riverine archaeological potential along the River Finn. All wrecks over 100-years old are protected under the 1987 and 1994 (Amendment) Acts of the National Monuments Acts. Longboat discoveries from the Rivers Finn and Foyle, near Ballybofey are subject to statutory protection under section 3 of the 1987 National Monuments (Amendment) Act.

There are over 100 Register of Protected Structures (RPS) protected sites/buildings/features within the constraints study area. These structures/features should be considered as cultural heritage constraints during the design of the proposed flood relief scheme and avoided where possible. Every care should be taken in these locations to avoid direct impacts on protected structures or by means of careful design or by the application of appropriate mitigation measures. This includes development that might adversely affect the setting of the protected structure. Any design proposals in the vicinity of protected structures vicinity should be carried out in a way that will not

Cultural Heritage and Archaeology

materially affect the character, integrity, amenity and setting of these sites. An architectural conservation specialist may be required advise on appropriate measures mitigate any potential impact on this. There may be opportunities under Objective 4 of the County Donegal Heritage Plan Actions set out in the Heritage Council Strategy (2018-2022) to ‘promote heritage education, training, tourism and outreach activities’.

While change within the setting of an historic site or landscape may be acceptable, in certain instances development will be considered intrusive and inappropriate (such as large embankments, walls or similar permanent infrastructure). This effect on the setting of archaeological and architectural heritage sites requires an assessment to be made on a case-by-case basis according to the type of development, its location and landscape setting by means of objective analysis based on a set of predefined criteria and professional judgement, supported by appropriate descriptive material. Specific mitigation requirements can only be identified as issues for development once the design options are defined. Further assessments such as archaeological testing, underwater archaeological assessments, structural architectural heritage appraisals or structural surveys etc. may be required in the next phases of the assessment or as mitigation measures for the scheme. In accordance with the Architectural Heritage Guidelines any work to or in the vicinity of a Protected Structure, NIAH site or the ACA require a conservation heritage impact assessment by a conservation architect.

Landscape and Visual

The existing trees and planting within the study area provides both visual and recreational amenity for the residential and amenity areas within the study area and the wider districts. Additionally, the ‘green’ character of the landscape is considered to be a key component of local tourism development for the towns and the wider area. Such areas also provide a network of habitats, ecological ‘corridors’ and ‘stepping stones’ essential for wildlife. Accordingly, such feature should be retained where possible.

The proposed development of the subject site will result in a change to the landscape character which will be most noticeable locally, such as from the adjacent residential and tourist areas (including along the river banks and bridges). The potential magnitude of this change will be assessed when the details, scale and extent of the proposed interventions have been finalised.

Historical landscape character and cultural heritage: Within the study area there are several designations and structures of national interest that need to be considered such as Protected Structures and Recorded Monuments, a Conservation Area, and Sites of Archaeological Interest.

Protecting the key landscape resource which underpins the Wild Atlantic Way and the Donegal Tourism brand generally from inappropriate development is recognised as a key planning challenge in Donegal.

There are recreational amenities within the study area that need to be considered in relation to possible impacts on their accessibility, recreational and visual values:

- Walk/Cycle Pathways along the banks of the rivers
- Land use zoning objectives in county development plans – areas zoned as for Amenity.

Landscape and Visual

Key viewpoints will be selected when the details, scale and extent of the proposed interventions have been defined. There is a need to protect:

- Views towards the rivers and Ballybofey Bridge from business serving the tourism and recreational sector (e.g. cafes, etc)
- Recreational views – towards to and from the river (e.g. public pathways, community garden area)
- Public, recreational and residential views to and from the rivers and bridges, with emphasis on area that may be visually impacted by the suggested hard defence proposals in CFRAM:
 - Towards and from River Finn SAC
 - Towards and from Recorded Monuments and Protected Structures e.g. Ballybofey Bridge
 - Public pathways and amenity areas which pass through the study area
 - Other tourist amenities e.g. guesthouses, cafes, restaurants, seating areas

During the construction phase, the following elements of the proposed development have the potential to cause visual impacts, they will however be short to medium term in duration:

- Temporary site works – hoarding, lighting, cranes, car parking, storage areas
- Construction traffic – dust and emissions
- Tree and vegetation clearance
- Groundworks – cut and fill excavations
- Laying of foundations

The principal elements which are likely to give rise to landscape and visual impact in the long term/operational phase are:

- Removal of some existing trees,
- Height of proposed structures/ interventions,
- New structures/ interventions,
- Change of character – dependent on proposed interventions type and scale
- Proposed tree and shrub planting,

Appropriate design, siting and mitigation measures are required to integrate the proposed scheme within the landscape.

Air Quality

The key constraints in relation to air quality are any sensitive receptors in proximity to the location of construction works. The scheme design should take into consideration any air quality sensitive receptors such as residences, schools, businesses, and medical facilities located in proximity to works associated with the flood relief scheme.

Climate Change

The potential impacts of climate change will need to be considered in the design of the proposed scheme.

Carbon impacts in relation to flooding consist of a) the potential impacts associated with flood damages and b) potential impacts associated with the construction and operation of the flood defences themselves.

Through installing flood relief measures, the potential impacts associated with flood damages can be largely mitigated, however carbon impacts from construction and operation (the 'carbon cost' will be calculated as the scheme progresses.

Climate Change

The Climate Change Sectoral Adaptation Plan for Flood Risk Management (2019 - 2024) considers Flood Relief Schemes to be a key prevention strategy for effects of climate change, and as such, this Project is integral to the overall climate adaptation strategy.

However, climate change is considered as a constraint on the design of the scheme, as higher rainfall and extreme weather events attributing to climate changes may lead to higher water levels, which would influence the design of the scheme.

The design should be mindful of the Donegal County Council Climate Adaptation Strategy which sets out strategic priorities, measures and responses for adaptation in the County over the next five years, as required by the Climate Action and Low Carbon Development Act 2015 (Donegal County Council, 2019). The risk of flooding and provision of sustainable protection infrastructure is noted as a key item in the Strategy.

The WFD has also called for a shift in flood management approach away from site specific hard engineering solutions, towards an integrated assessment of water resources and flood management at the catchment scale. The assessment and design should be mindful of this and reference key climate change legislation.

As part of the Project, the foreseen 'Carbon Cost' of the tonnes of Carbon Dioxide (CO₂) the proposed scheme options will generate, and the financial implications of this CO₂ quantity will be undertaken, taking into account relevant guidelines from the EU.

Noise and Vibration

During the Options assessment it is recommended that the short-listed flood alleviation measures be assessed in relation to the impact of noise and vibration during the construction phase of the project.

Noise and vibration effects are expected to occur during the construction phase only. Construction noise is temporary in nature, and therefore the normal way of minimising the impact is to limit the working hours. The Local Authority may place noise limits on the construction works. The project CEMP will include measures to avoid or minimise the potential impacts of noise on sensitive receptors during construction.

Ground-borne vibration attenuates rapidly with distance. People are very sensitive to vibration and can feel vibration long before it becomes an issue in terms of cosmetic damage or structural damage to buildings. Assessment of potential for damage due to vibration should be carried out where vulnerable structures are located in close proximity to works such as sheet piling.

The scheme design and methods for works during construction should consider potential impacts to potential vulnerable structures and consider if there is a requirement for ongoing noise and vibration monitoring during construction.

Traffic along national route roads within the town is congested and traffic noise, particularly at peak times, and construction traffic should be managed to ensure cumulative or in-combination impacts from noise and/or vibration are avoided, where possible, or minimised.

1 Introduction

1.1 Overview

The Office of Public Works (OPW), working in partnership with Donegal County Council (DCC) and other Local Authorities, commissioned and have completed the North Western – Neagh Bann (NWNB) Catchment Flood Risk Assessment and Management (CFRAM) Study. The relevant CFRAM Study reports are available, for information purposes, from the publications section of www.FloodInfo.ie (CFRAM) (EPA, 2021).

The NWNB CFRAM study area included Ballybofey–Stranorlar (Bealach Féich– Srath an Urláir) as an Area for Further Assessment (AFA) and concluded that a flood relief scheme would be viable and effective for the communities. The viable scheme (currently under review) is comprised mainly of construction of hard defences and associated works in locations within the towns and surrounding areas, chiefly along the banks of the following water bodies: Finn, Burn Durnett, Golland, Carrickmagrath, Sessiagh, Cooladawson, Treanamullin, Lough Alaán WC, Lough Alaán Tributary and Magherapaste, as mentioned in Table 1-1. The potential for Natural Water Retention Measures (NWRM) is also being assessed as part of a NWRM Feasibility Assessment and may reduce the scale of the structural protection works required as part of the scheme. These measures may include catchment woodlands, land and soil management practises, agricultural and upland drainage modifications, overland sediment traps, river bank restoration and washlands and offline storage ponds.

Table 1-1: Waterbodies in the Scheme Area

Reach ID	Name
0161M	River Finn
0170M	Burn Durnett
0173M	Golland
0172M	Carrickmagrath
0171M	Sessiagh
0168M	Cooladawson
0169M	Treanmullin
0175M	Lough Alaán WC
0175A	Lough Alann tributary
0174M	Magherapaste

The scheme area (AFA) for the entire CFRAM is shown in Figure 1-1.

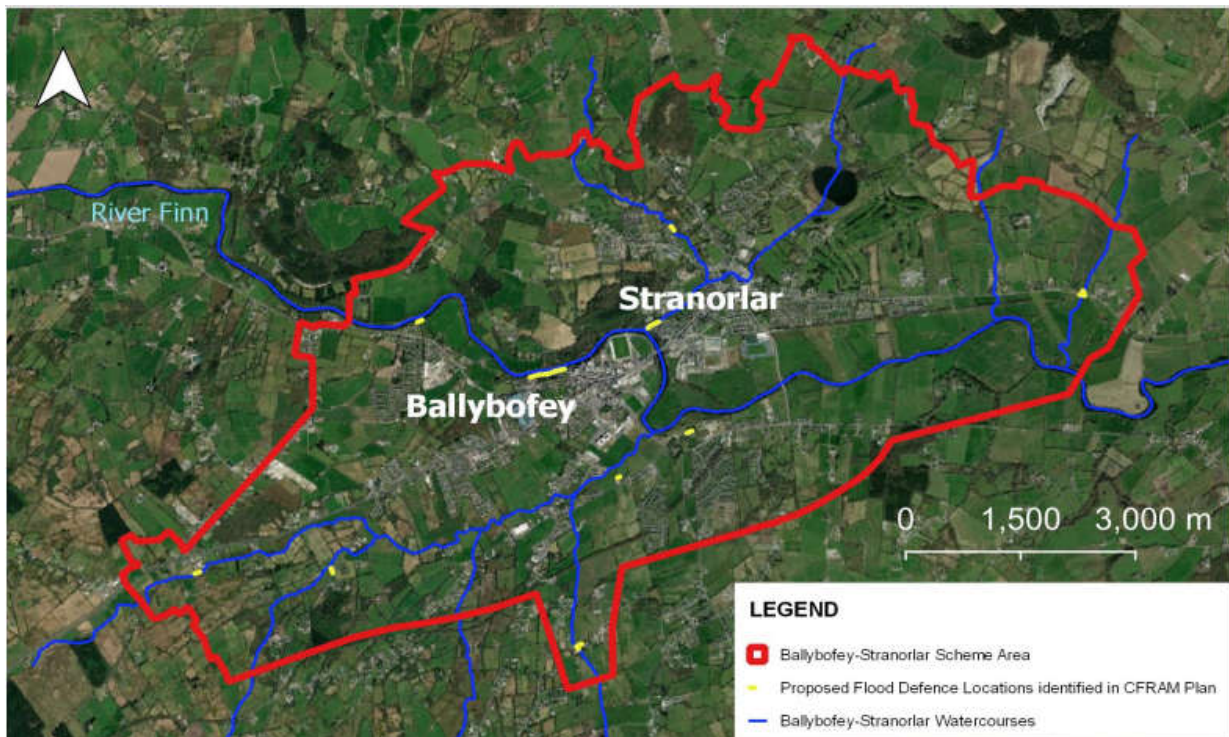


Figure 1-1 CFRAM AFA and proposed flood defence measures

Flood risk in Ireland has historically been addressed using structural or engineered solutions (arterial drainage schemes and/or flood relief schemes). In line with internationally changing perspectives, the government adopted a new policy in 2004 that shifted the emphasis in addressing flood risk towards:

- Catchment-based context for managing risk.
- More pro-active flood hazard and risk assessment and management, with a view to avoiding or minimising future increases in risk, such as that which might arise from development in floodplains.
- Increased use of non-structural and flood impact mitigation measures.

Notwithstanding this shift, engineered solutions to manage existing risks are likely to continue to form a key component of the overall national flood risk management programme and strategy.

A further influence on the management of flood risk in Ireland is the 'Directive on the Assessment and Management of Flood Risks 2007/60/EC' (also known as the 'Floods Directive'). The aim of this Directive is to reduce the adverse consequences of flooding on human health, the environment, cultural heritage and economic activity.

Typical proposed flood relief works could involve raising the flood defence levels of the river by constructing new flood defence walls incorporating flood gates and/or strengthening and raising existing ones, constructing new flood defence embankments and/or strengthening and raising existing ones, raising and repairing existing bridge parapets, work on weirs, work on channels and culverts, constructing storage ponds and/or strengthening and enlarging existing ones, installing new flap valves and repairing or replacing existing ones, installing new screens on culvert inlets and/or replacing

existing ones, installing pressure manhole covers, and may include ancillary works such as pumping stations and/or storage tanks.

1.2 Environmental Study Area

Outside of the urban centre at Ballybofey and Stranorlar, the area is predominantly rural and agricultural in nature. The twin towns are located on the River Finn and a number of the Finn's tributaries are present within the study area.

The environmental constraints study area has been developed in consideration of the preferred option in the CFRAM study and additional areas for further investigation as identified by DCC and BL. The preferred measures identified in the CFRAM, their location(s), and overall project footprint may be liable to change as more information becomes available through project level assessment.

The environmental constraints study area includes the lengths of river channels / watercourses that have hydraulic influence on the area intended to benefit from, and be protected by, any feasible scheme as well as the catchment areas draining to the downstream ends of those river channels. The study area boundary for each environmental discipline will vary according to the location of receptors and individual topic best practice, appropriate statutory and/or specialist guidance, and applicable legislation and regulations.

The environmental constraints study area for each discipline topic is defined in each section, accompanied by a figure showing the extents of the study area for that topic.

The constraints study will consider the effects of the construction and operation of the scheme in the catchment area as a whole, where appropriate. Site surveys have been and will be undertaken to collect recent and site-specific baseline data to inform the scheme design, the scoping report, Environmental Impact Assessment (EIA) and Appropriate Assessment (AA) for this scheme and data, where appropriate and available at the time of writing and, have been included in consideration of potential constraints.

1.3 Project Background and Need for the Scheme

Flood hazard is the potential threat posed by flooding to people, property, the environment, and our cultural heritage. Flooding only presents a risk however when people, property, businesses, farms, infrastructure, the environment, or cultural heritage can be potentially impacted or damaged by floods.

Flood risk is the combination of the probability of flood events of different magnitudes and the degree of the potential impact or damage arising from a flood.

The objective of this project is the identification, design, submission (for planning consent) and construction of a Flood Relief Scheme (FRS), that is technically, socially, environmentally and economically acceptable, to alleviate the risk of flooding to the communities of Ballybofey and Stranorlar in accordance with to the standards of the EU Directive on the Assessment and Management of Flood Risk (Floods Directive 2007/60/EC) transposed into Irish Law as SI 122 of 2010.

1.4 History of flooding

There is a history of flooding at Ballybofey and Stranorlar with the most recent event recorded in August 2020. Historical events have been attributed to a range of sources, including fluvial (river) flooding from the River Finn and its tributaries, surface water (pluvial, rainfall) flooding and groundwater flooding. A total of 15 flood events have been cited and a timeline of these events and reported sources is displayed in Table 1-2 below.

Table 1-2: Flood History Overview Timeline

Date	Receptors	Source
25/08/2020	Roads flooded	Pluvial*
21/02/2020	Finn Park	Fluvial
October 2019	Roads flooded	Fluvial and Blockage
30/08/2019	Roads flooded	Fluvial
22/08/2017	Roads flooded	Pluvial*
05/12/2015	Properties, commercial premises, roads and St Mary's National School	Fluvial, Pluvial and Groundwater
14/11/2015	Carpark and fields	Fluvial
04/01/2012	Roads flooded	Pluvial*
14/12/2011	Roads and fields flooded	Fluvial and Pluvial
October 2011	Roads and properties	Fluvial
07/01/2005	Roads and fields flooded	Fluvial
29/10/1989	Flooding reported	Fluvial
20/09/1985	Commercial premises and Finn Park	Fluvial
15/08/1970	Flooding reported	Fluvial
08/10/1965	Properties and commercial premises	Fluvial

*Source of flooding was not reported upon however this assumption is made based on the details of the report text.

The largest flood events of note are the November 2015 and the December 2015 events.

Breach of the existing Finn embankment protecting Ballybofey town centre is a key concern for the local community. There is also the issue of pluvial flooding of Ballybofey Town Centre when the water level in the River Finn is high and storm drainage cannot discharge.

Flooding from the Lough Alaan watercourse north of the N13/N15 junction (Stranorlar) has occurred since the CFRAM Study was completed, as well as flooding to Glebe Hollow housing development in Stranorlar.

1.5 Potential Flood Risk Management Measures

A viable scheme option for Ballybofey and Stranorlar was identified in the CFRAM level of assessment and the preferred measures outlined in the FRMP consist of hard defences (series of flood embankments and walls) and improvement of channel conveyance. These measures are located at three places to protect properties from the River Finn (at the Cedars on R252, alongside Jacksons Hotel car park, and in Navenny) and at seven locations to protect from Finn tributaries.

As mentioned, breach of the existing Finn embankment protecting Ballybofey town centre is a key concern for the local community. The FRMP calls for a full detailed condition assessment of the existing embankment with recommendations made for upgrade or maintenance works as part of the Scheme.

Regarding the issue of pluvial flooding of Ballybofey Town Centre, should the existing embankments at this location become part of the Flood Relief Scheme as a result of the assessment and recommendations made in this Project, ancillary works to mitigate this flood risk will also be required.

For the flooding from the Lough Alaan watercourse north of the N13/N15 junction (Stranorlar), a culvert upgrade may be required to increase conveyance capacity. And for the flooding to Glebe Hollow housing development in, it is not clear if this was due to overland flow or fluvial flooding but will require confirmation through this project.

Preferred measures outlined in the CFRAM comprise:

- Flood defences along River Finn at
 - Cedars Housing Estate
 - Jackson's Hotel Carpark
 - Navenny
- Flood defences along Burn Durnett
 - Cappry
 - Navenny
- Flood defences along Goland
- Flood defences/culvert improvements along Sessiagh at Sessiaghoneill
- Flood defences along Magherapaste at Drumboe Cottages
- Flood defences along Lough Alaan at St Mary's National School
- Flood defences/culvert improvements along Cooladawson at its crossing of the N15

Additional works/investigations identified post CFRAM that may include:

- Culvert improvements on Lough Alaan watercourse in Stranorlar
- Investigations at the Glebe Housing estate in Stranorlar

A project-level options assessment will consider the scheme option outlined in the CFRAM and any other viable options arising out of project-level assessment. Development of the latter is ongoing and will be based on more detailed information than was available for the CFRAM, including detailed hydrological assessment, hydraulic modelling studies and environmental studies. Further, existing embankments are to be assessed through project level review to determine requirements to

safeguard from future breaching and to ensure they are sufficient for a 1% Annual Exceedance Probability (AEP). Consequently, the type and location of measures outlined in the CFRAM and shown in Figure 1-2 are liable to change as further information becomes available through project level assessment and the level of flood risk both now and in the future is confirmed.

Figure 1-2 overleaf shows the location of hard defences in the preferred option in the CFRAM.

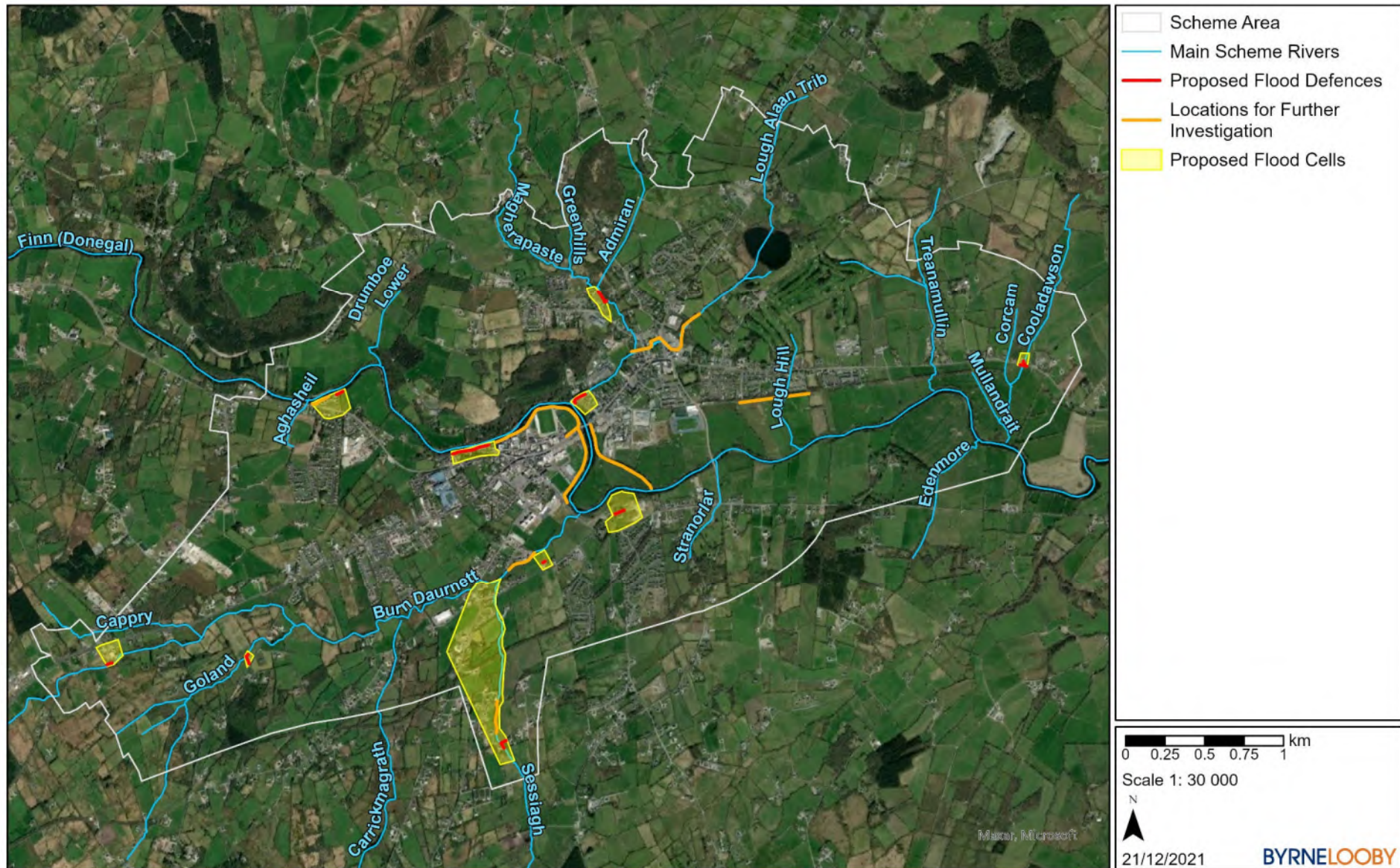


Figure 1-2 Project Scheme Area and Proposed Flood Defence Measures

2 Environmental Constraints

2.1 Stages of Work

Various stages of work are carried out in the completion of a flood relief scheme. There are five stages of work as outlined in Table 2-1 and the progression to each subsequent stage depends on the outcome of the previous stage.

Table 2-1: Flood Relief Scheme Stages

Stage	Environmental Assessment	Examples of the specific studies completed as the scheme progresses
I	Scheme Development	Data Gathering and review Topographical Surveys LiDAR surveys Drainage Surveys Ecology Surveys Archaeological Investigation Hydrology Study & Hydraulic Modelling Flood Defence Asset Surveys Site Investigations and site walkovers Conduct Flood Risk Assessments Prepare a number of Flood Risk Management Options
	Initial Consultation with Stakeholders	
	Constraint Study	
	Screening for Appropriate Assessment	
	Appropriate Assessment	
	Detailed Design	
	Scoping for EIA	
	Environmental Impact Assessment	
	Public Consultation	
	Preparation of Environmental Assessment of Options Report	
	Public Consultation on Preferred Scheme	
	EIAR for Preferred Option	
II	Preparation of Part X Planning Application	Carry out a Cost Benefit Analysis
	Submission of a Part X Planning Application to An Bord Pleanála	Selection of a Preferred Option Flood Risk Management Plan
III	Detailed Design Confirmation	Interference Notices
	Tender	Public Consultation
IV	Construction Supervision	
V	Handover to Client	

ByrneLooby have been appointed to bring the scheme from preliminary design (Stage I), assessing various options available, through public consultation, detailed design and environmental procedures (Environmental Impact Assessment and Appropriate Assessment) to planning application to An Bord Pleanála (Stage II).

Subject to successfully satisfying An Bord Pleanála requirements, the scheme will then be designed and tendered (Stage III), constructed (Stage IV) and delivered (completed) to the client (Stage V).

2.2 Scope of Constraints Study

The Environmental Constraints Study is the first step in the preparation of an environmental impact assessment report for the Ballybofey and Stranorlar Flood Relief Scheme. The purpose of the

constraints study is to identify the key environmental aspects which may be impacted upon by possible flood relief measures and/or which may impose constraints on the viability and/or design of these measures.

The scope of the Constraints Study has followed the guidelines prepared by the Department of Housing, Planning and Local Government: Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment, August 2018 (Department of Housing, Local Government and Heritage, 2018).

Guidance contained with the Environmental Protection Agency's Guidelines 'Advice Notes on the Current Practice in the Preparation of Environmental Impact Statements' (2015) has also been considered (EPA, 2017).

This environmental constraints study has been reported under the following sub-discipline/topic area headings:

- Resources and Materials
- Population and Human Health
- Hydrology
- Soils, Geology and Hydrogeology
- Biodiversity
- Cultural Heritage and Archaeology
- Landscape and Visual
- Air Quality
- Climate Change
- Noise

For this study we have combined the human health, land use, traffic and population in the population and human health section. Similarly, other sections of the constraints study e.g. noise, air quality, etc. are also applicable to human beings. Air quality includes climate and noise includes vibration due to the nature and location of the scheme.

2.3 Methodology

ByrneLooby and its specialists have undertaken a series of desk studies and preliminary site visits as part of the constraints study. Further details on constraints are presented in the following sections of this report. Information has been gathered with due regard to the likely environmental impacts of the proposed scheme, and the statutory requirements for Environmental Impact Assessment and Appropriate Assessment as set out in the EU Directives and associated Irish legislation.

The constraints study has had regard in general to the following guidance and information sources as mentioned below. Specific guidance and information sources are referenced in individual specialist sub- sections.

2.3.1 General Guidance and background information

The following guidance and information sources were referred to in the preparation of this constraints study report:

- Department of Housing, Planning and Local Government, August 2018. Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.
- Guidelines on the information to be contained in Environmental Impact Statements, 2002 (Environmental Protection Agency) and Draft Revised Guidelines, 2017.
- Advice Notes on Current Practice in the Preparation of Environmental Impact Statements (Environmental Protection Agency, 2003) and Draft Revised Notes, 2015. Department of Environment, Heritage and Local Government (2010) Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities.
- European Communities (2000) Managing Natura 2000 Sites: The Provision of Article 6 of the Habitats Directive 92/43/EEC.
- EC Environment Directorate-General (2000) 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.
- Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.
- Department of Environment, Heritage and Local Government (2010) Circular NPW1/10 & PSSP 2/10 Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities.
- Flood Risk Management Plan for the North Western River Basin (UOM01) (OPW 2018).
- NWNB SEA Statement UoM01 (OPW 2017).
- North Western-Neagh Bann CFRAM AA Screening report (OPW 2015).
- NWNB AA NIS - UoM01 (OPW 2016).
- AFA Final Designation Report (OPW 2012).
- Appropriate Assessment Determination in accordance with Regulation 42(11) of the European Communities (Birds and Natural Habitats) Regulations 2011 – 2015 for Flood Risk Management Plan for the North-Western River Basin (UoM01) (OPW 2018)

- Methodology for Classifying the Vulnerability of National Monuments from Flooding in The Republic of Ireland (OPW 2011)
- National Pluvial Screening Project for Ireland (OPW 2010)
- North-West and Neagh-Bann Flood Risk Review Final Report May 2012 (OPW 2011)
- North Western - Neagh Bann CFRAM Study UoM 01 Hydraulics Report (OPW 2014)
- North Western - Neagh Bann CFRAM Study UoM 01 Hydrology Report (OPW 2013)
- North Western - Neagh Bann CFRAM Study UoM 01 Inception Report (OPW 2012)
- NWNB Final Report UoM01 (OPW 2017)
- NWNB POR UoM01 (OPW 2016)
- NWNB SEA Environmental Report UoM01(OPW 2016)
- NWNB SEA Scoping Report (OPW 2015)
- PFRA Main Report (OPW 2012)
- Preliminary Flood Risk Analysis Report - Waterways Ireland (OPW 2011)
- Preliminary Flood Risk Analysis Report - Waterways Ireland – Appendices (OPW 2011)
- Public Consultation on the Draft Flood Risk Management Plans - Summary Report (OPW 2017)
- Weighting The Perceived Importance of Minimising Economic, Social and Environmental/Cultural Risks In Flood Risk Management (OPW 2015)
- County Donegal Development Plan 2018-2024 (Donegal County Council, 2018a)
- Donegal County Council Tourism Strategy 2017 – 2020 (Donegal County Council, 2017)
- Seven Strategic Towns Local Area Plan 2018-2024 (Donegal County Council, 2018b)
- An Bord Pleanála (ABP) Report. Case Reference JP05E.304662, Proposed dredging of material for flood relief works along the River Finn. (An Bord Pleanala, 2020a)
- An Bord Pleanála (ABP) Report. Case Reference JP05E.303860, Construction of two storm manholes and tree & vegetation removal from flood embankments on the River Finn and geotechnical investigation works. (An Bord Pleanala, 2020b)
- An Bord Pleanala (ABP) Report. Case Reference JP05E.310657, Ballybofey & Stranorlar Flood Mitigation Measures. Construction of two storm manholes and two pump hardstands behind the Flood Embankments on the River Finn. (An Bord Pleanala, 2021)

Key guidance or references specific to specialist areas considered in this report are included in the discipline specific methodology sections, where appropriate.

2.4 Project Team

This environmental constraints report was drafted by ByrneLooby: Fiona Symes (technical oversight, generalist inputs), Kieran Thornton (technical oversight, reviewer), Dr. Rhian Llewellyn (geology, soils, hydrogeology and hydrology and generalist inputs), Paige Leresche (generalist inputs), David Moran (scheme information and hydrology) and Steven Tooher (ecology).

2.5 Consultation

Consultation has been carried out with the public and various stakeholders, the purpose of which was to engage with them, to gather local knowledge on flooding and environmental constraints and opportunities for addressing flood risk in the area.

Comprehensive communication and engagement plans have been developed and adopted by the team such as a project website, direct emails, local media, and public consultation among other approaches listed in Table 2-2. Consultation includes the establishment of a maintained project website and regular project newsletters.

At the time of writing consultation is ongoing and the views of statutory bodies, non-statutory bodies and interested stakeholders will be considered in the preparation of the EIA. Where stakeholders have provided inputs that have implications on the project constraints these have been considered.

Table 2-2: Consultation Plan

Communication Activity	Purpose / Correspondence
Project website	https://www.floodinfo.ie/frs/en/ballybofey-stranorlar/home/ The website provides regular updates and information to stakeholders about the scheme. The website provides scheme information, scheme news and updates, a photo gallery, and resources section comprised of FAQ, glossary and contact subsections. Publicly available key project documents are provided for direct download from the project website, as they become available. The website is available in Gaeilge and English language.
Direct Email	A dedicated project email address is the primary source of contact for all interested Parties (unless otherwise requested by a party): ballybofey-stranorlarfrs@byrneLooby.com. On the 01/10/2021, project information letters were sent to 19 relevant authorities and stakeholders. The responses to these letters have been logged and further information is provided in Appendix B of this report
Local authority / community publications such as parish newsletters	Items in local authority / community group newsletters are likely to reach a wide range of citizens. A newsletter is published quarterly by ByrneLooby to the project website. The September 2021 newsletter is the first newsletter to be published on the project website. A total of 430 information packs, questionnaires and pre-paid envelopes were delivered to properties within the 0.1% AEP flood extent boundary in Ballybofey-Stranorlar by Donegal County Council on 22/09/2021. The Public Information Pack is included under Appendix A.

Communication Activity	Purpose / Correspondence
	This information was also made available on the project website (https://www.floodinfo.ie/frs/en/ballybofey-stranorlar/project-info/public-engagement/).
Social Media	Donegal County Council advertise any project information on their social media outlets.
Public Consultation Days / workshop	Consultation exhibitions / events offer a more extensive and open form of engagement on a personal basis. They provide opportunities for members of the public to express views on the consultation subject area, ask questions, and receive feedback on the issues they raise. Public consultation day no. 1 (27 th September 2021 to Friday 22 nd October 2021) was held online due to COVID-19 restrictions. A questionnaire was issued via online survey for any interested parties to complete. Sixteen responses were received. Donegal County Council provided the option of meeting a member of the project team in Ballybofey-Stranorlar on the 12 th October 2021 from 6pm to 8pm. There were no attendees of the public at the in-person meetings. Due to the COVID-19 Pandemic, alternative consultation methods, such as the above, will continued to be considered.
Collaborative Workshop	The Collaborative Workshop for Ballybofey and Stranorlar was held on 7th December 2021. Stakeholders included – relevant departments from DCC, OPW, and Loughs Agency. Feedback from the workshop was positive and all stakeholders agreed to continue collaboration throughout the project's timeline.

Four statutory bodies have responded to a stakeholder letter (sent via email during the first stakeholder engagement event) asking for their views on the proposed scheme. At the time of writing responses had been provided as outlined in Appendix B. Where communications have been received that advise the inclusion of specific third parties in consultation these requests have been actioned.

2.5.1 Opening Public Stakeholder Consultation

The first Public Consultation Event was held from Monday 27th September 2021 to Friday 22nd October 2021.

The objective of the public consultation was to make stakeholders and the general public aware of the project, to provide early engagement and to get the feedback on the flooding, environmental and other issues of concern to them.

Information packs were issued to residents and stakeholder groups including brief information leaflets, a questionnaire, and pre-paid envelopes for responses. This information was also made available on the project website (<https://www.floodinfo.ie/frs/en/ballybofey-stranorlar/project-info/public-engagement/>) and promoted by Donegal County Council via press release and social media.

The PC event was advertised online through the scheme's website, local newspapers, and local radio:

- Donegal Daily
- Donegal News

- Highland Radio
- Donegal County Council website and social media accounts

Donegal County Council provided the option of meeting a member of the project team in Ballybofey-Stranorlar on the 12th October 2021 from 6pm to 8pm. There were no requests for any in-person meetings.

A total of 430 information packs (Appendix A) were delivered to properties within the 0.1% AEP flood extent boundary in Ballybofey-Stranorlar by Donegal County Council. Questionnaires were enclosed within the information packs, asking a series of questions regarding awareness of the CFRAM Study, personal experiences of flood events in the town and opinions on the importance of various environmental constraints. The questionnaire also provided space for any observations that the resident/stakeholder wished to bring forward.

A total of sixteen (16 nos.) questionnaire responses were received for the scheme and useful general observations/requests/concerns were outlined in these responses, including:

- The public is in favour of strengthening the River Finn embankments to protect from future flood events.
- There were operational concerns highlighted with regards to pipework on Drumboe Avenue.
- There were requests for regular removal of gravel and debris from the River Finn.
- It was acknowledged that the Bypass works (N13/N15) should be considered when designing scheme, as residents are concerned of flooding to their lands.
- Response highlighted that flooding to pitches adjacent River Finn (GAA Club and Athletics Club) are to be prevented.
- Some members of public stated that they're unable to procure house insurance as they live in a flood zone.
- It was requested that natural water retention and storage measures should be considered.
- It was requested that flood defences are designed to minimise impacts on the riparian ecosystem (River Finn SAC).
- It was advised that a whole catchment approach to flood resilience be considered.
- It was advised that the incorporation/integration of recreational/community facilities into the FRS with consideration of landscape architecture is needed.
- Drumboe Lower Residents expressed concerned of flooding to Drumboe Lower properties, expressing that the estate had been flooded a number of occasions.

3 Resources and Materials

3.1 Introduction

This section describes the constraints relating to material assets within the scheme study area and identifies possible issues which have the potential to constrain the flood relief scheme design.

For the purposes of this report, the study is defined as the Scheme Area shown in Figure 1-2 which includes the towns of Ballybofey and Stranorlar and some of the surrounding rural area. Features outside of this boundary (up to an outer extent of 10km) are discussed where relevant. Wastewater Treatment Plants and associated discharge points within the River Finn Catchment are considered up to 10km from the scheme boundary due to their interaction with hydrology in the catchment (see section 5.3).

3.2 Methodology

The material assets within the study area were assessed by consultation with the following documents:

- EPA data base on waste licenced facilities within the study area.
- EPA data on Urban Waste Water Discharges in Ireland.
- Urban Waste Water Treatment in 2020 (EPA, 2020).

The methodology included:

- Identification of possible material assets within the scheme study area.
- Identification of locations where there may be existing sensitive receptors.
- Identification of material assets constraints.

3.3 Baseline / Receiving Environment

Material assets within the study area include:

- Existing/planned flood mitigation works
- Stormwater infrastructure
- Wastewater infrastructure
- Waste management facilities
- Water supply networks

- Electricity networks
- Digital infrastructure
- Land ownership and zoning
- Roads and Transportation network
- Pedestrian and cycling networks

Gas infrastructure was assessed, but not found in the scheme area.

3.3.1 Existing and/or planned flood mitigation works

In addition to the proposed scheme, a number of other schemes are currently progressing through planning / construction including:

- An Bord Pleanála (ABP) Report. Case Reference JP05E.304662, Proposed dredging of material for flood relief works along the River Finn. (An Bord Pleanála, 2020a)
- An Bord Pleanála (ABP) Report. Case Reference JP05E.303860, Construction of two storm manholes and tree & vegetation removal from flood embankments on the River Finn and geotechnical investigation works. (An Bord Pleanála, 2020b)
- An Bord Pleanála (ABP) Report. Case Reference JP05E.310657, Ballybofey & Stranorlar Flood Mitigation Measures. Construction of two storm manholes and two pump hardstands behind the Flood Embankments on the River Finn. (An Bord Pleanála, 2021)

The design and construction of the scheme will be mindful of these ongoing projects, and ensure the interfaces are adequately addressed.

3.3.2 Stormwater infrastructure

There is an existing public storm sewer network servicing the surrounding developments. An existing storm sewer runs beneath the Chestnut Road and travels south-east through the playing pitches, parallel to Aldi. There are two 900 mm concrete storm sewer pipe which flow in a south-easterly direction and discharges into the River Finn. Under the ABP Board Order ABP-310657-21, there is intention to construct two new manholes and two pump hardstands on these existing storm water lines (An Bord Pleanála, 2021). Another stormwater sewer runs underneath the alleyway linking Main Street (N15) and Chestnut Road. This is a 200 mm sewer and also discharges into the River Finn (Tobin Consulting Engineers, 2020).

3.3.3 Wastewater Treatment Plants

The towns are served by Ballybofey and Stranorlar Sewerage Scheme and Wastewater Treatment Plant (including storm water overflow) with capacity PE of 9,200 since 2020 (Donegal County Council, 2018b). The treatment process includes preliminary treatment (screens), secondary treatment (aeration) and discharges treated effluent into the Finn.

EPA licenced wastewater treatment facilities within 10 km of the scheme boundary and within the sub-catchment are described in Table 3-1 and their locations shown in Figure 3-1.

Table 3-1 Urban Wastewater Treatment Plant (WWTP) locations with wastewater discharge authorisation in the vicinity of the scheme

Facility name	License #	Facility type	Treatment type as reported to EPA	Location of emission
Ballybofey-Stranorlar	D0120-01	PE of 2,001 to 10,000	Secondary Treatment	Treated Discharge Outfall to River Finn at Ballybofey and Stranorlar (emission ID TPEFF0600D0120SW001)
Castlefinn	D0514-01	PE of 500 to 1,000	Primary Treatment	Treated Discharge Outfall to River Finn at Castlefinn (emission ID TPEFF0600D0514SW001)
Cloghan/Brockagh	A0486-01	PE < 500	Primary Treatment	Treated Discharge Outfall to River Finn at Cloghan (emission ID TPEFF0600A0486SW001)
Curragh Housing Scheme	A0364-01	PE < 500	Primary Treatment	Treated Discharge Outfall to River Finn at Killygordan (emission ID TPEFF0600A0364SW0011)
Killygordon	D0518-01	PE of 500 to 1,000	Secondary Treatment	Treated Discharge Outfall to River Finn at Killygordan (emission ID TPEFF0600D0518SW001)
Lischooley Housing Scheme	A0449-01	PE < 500	Primary Treatment	Treated Discharge Outfall to River Finn at Carricknashane (emission ID TPEFF0600A0449SW001)
Convoy	D0344-01	PE of 1,001 to 2,000	Secondary Treatment	Treated Discharge Outfall to Deelee River at Convoy (emission ID TPEFF0600D0344SW001) ¹
Drumkeen	A0365-01	PE < 500	Secondary Treatment	Treated Discharge Outfall to Deelee River at Drumkeen (emission ID TPEFF0600A0365SW001) ¹

Data source: EPA online data for Licensing and Permitting (EPA, EPA online data for Licensing and Permitting, 2021)

¹Both Treated Discharge Outfalls are outside of the Project Scheme Catchment, but within the 10km constraints boundary, and have therefore been included for completeness.

3.3.3.1 Wastewater network

The foul network is operated and maintained by Irish Water. Data provided by Irish Water has been used to identify existing foul networks.

Wastewater Pumping Stations are located in the following at:

- Navenny
- St. Joseph's
- Glenfinn Road
- Drumboe Avenue

- Hawthorn Close

In January 2020 Irish Water completed upgrades to the Ballybofey and Stranorlar Sewerage Scheme to address overflows and flooding from the St Joseph's Pumping Station. The works included replacement of the existing pumping station at Navenny and flood alleviation measures to protect the site from flooding. At the time of writing, there is a proposal to upgrade parts of the sewer network in the towns to increase its capacity and eliminate overflows. It is anticipated that works will take place at Mill Brae Road, Chapel Lane, Chapel Close, Stranorlar Main Street, Navenny Street, Chestnut Road, St Joseph's Pumping Station and Navenny Pumping Station.

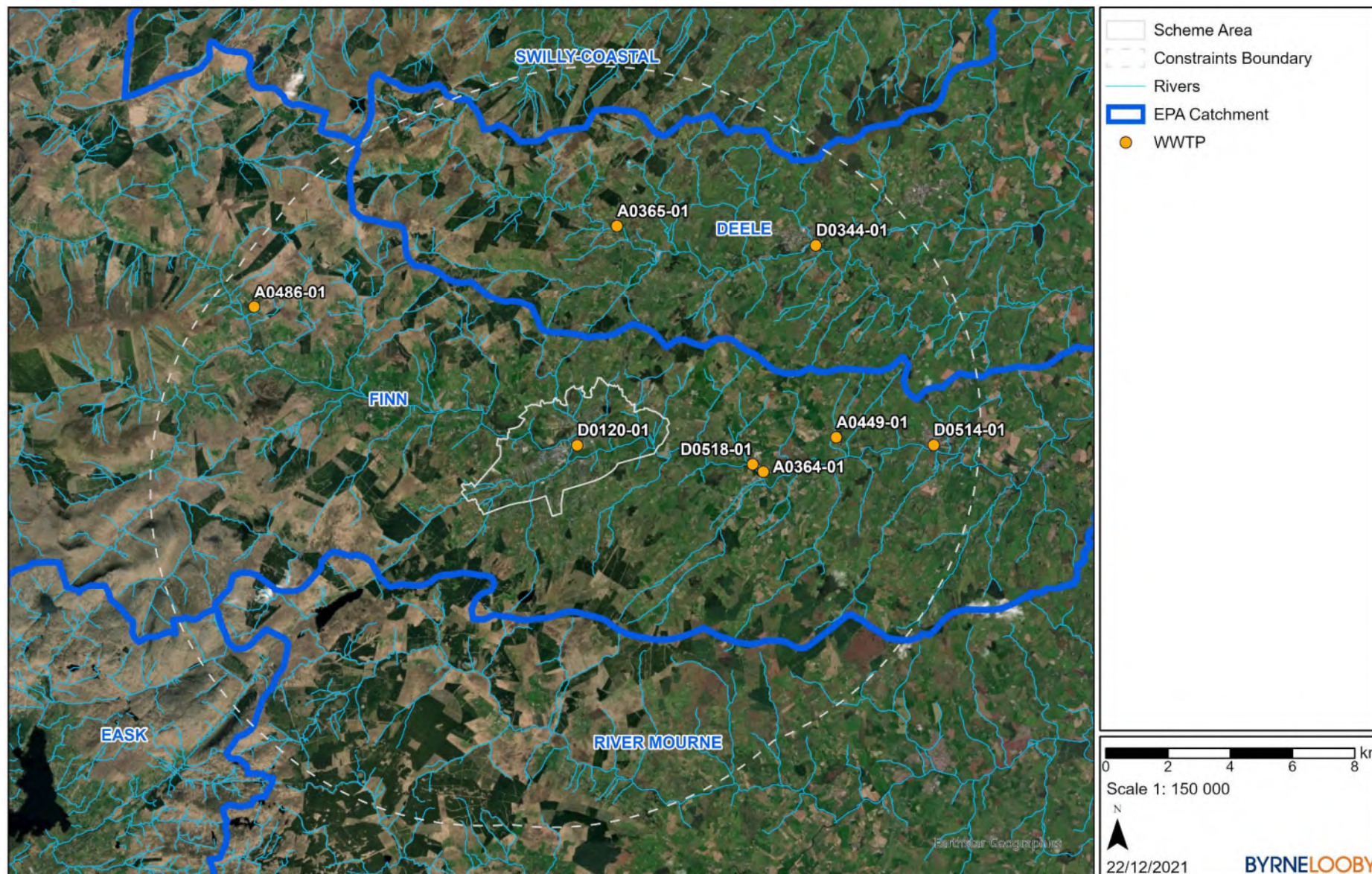


Figure 3-1: Wastewater treatment facilities within 10 km of the scheme area
 (Data Source EPA online data for Licensing and Permitting (EPA, EPA Licensed Facilities, 2021))



Figure 3-2: Wastewater Network

3.3.4 Waste Management

Recycling, domestic, commercial and industrial waste services are provided by commercial operators within the study area. Bryson Recycling operate a recycling centre in Stranorlar.

The EPA data map viewer for waste (EPA, 2021) indicates that there are no dump sites present within the study area.

EPA data indicates that large-scale industrial and agricultural activities in Table 3-2, licenced under the Pollution Prevention Control Directive, are present in the scheme area (EPA, 2021).

Table 3-2 Licensed Emission Facilities within the Study Area

Type	Name	License #	Location
Industry (IEL)	Aurivo Consumer Foods Limited	P1035	Crossroads, Killygordon, Lifford, Donegal
Industry (IEL)	Glenmore Generation Limited	P1004	Glenmore Estate, Aghaveagh, Ballybofey, Donegal, F93 Y6YW
Industry (IPPC)	McCool's Sawmills Limited	P0318	Drumboe Lower, Stranorlar, Lifford, Donegal

McCool's Sawmills Limited (code: P0318) is an Industrial Emissions Licensing facility located in Drumboe Lower, Stranorlar.

3.3.5 Water supply

Water for domestic, commercial and agricultural purposes is supplied to Ballybofey and Stranorlar from the Lough Mourne Water Supply. Lough Mourne is located 4.5 km south-west from the border of the Scheme Area, and 8 km from the towns, therefore no impact is predicted from the works.

3.3.5.1 Existing River Abstractions

There is no record of surface water abstraction from waterbodies within the study area (EPA, 2021).

3.3.5.2 Existing Groundwater Abstractions

Well card data produced by the Geological Survey of Ireland (GSI) indicates that there are 11 dug wells, 46 boreholes and 2 springs within the study area (see detail in Figure 3-4). The approximate locations are shown in Figure 3-4 (Geological Survey Ireland, Department of the Environment, Climate and Communications, 2021).

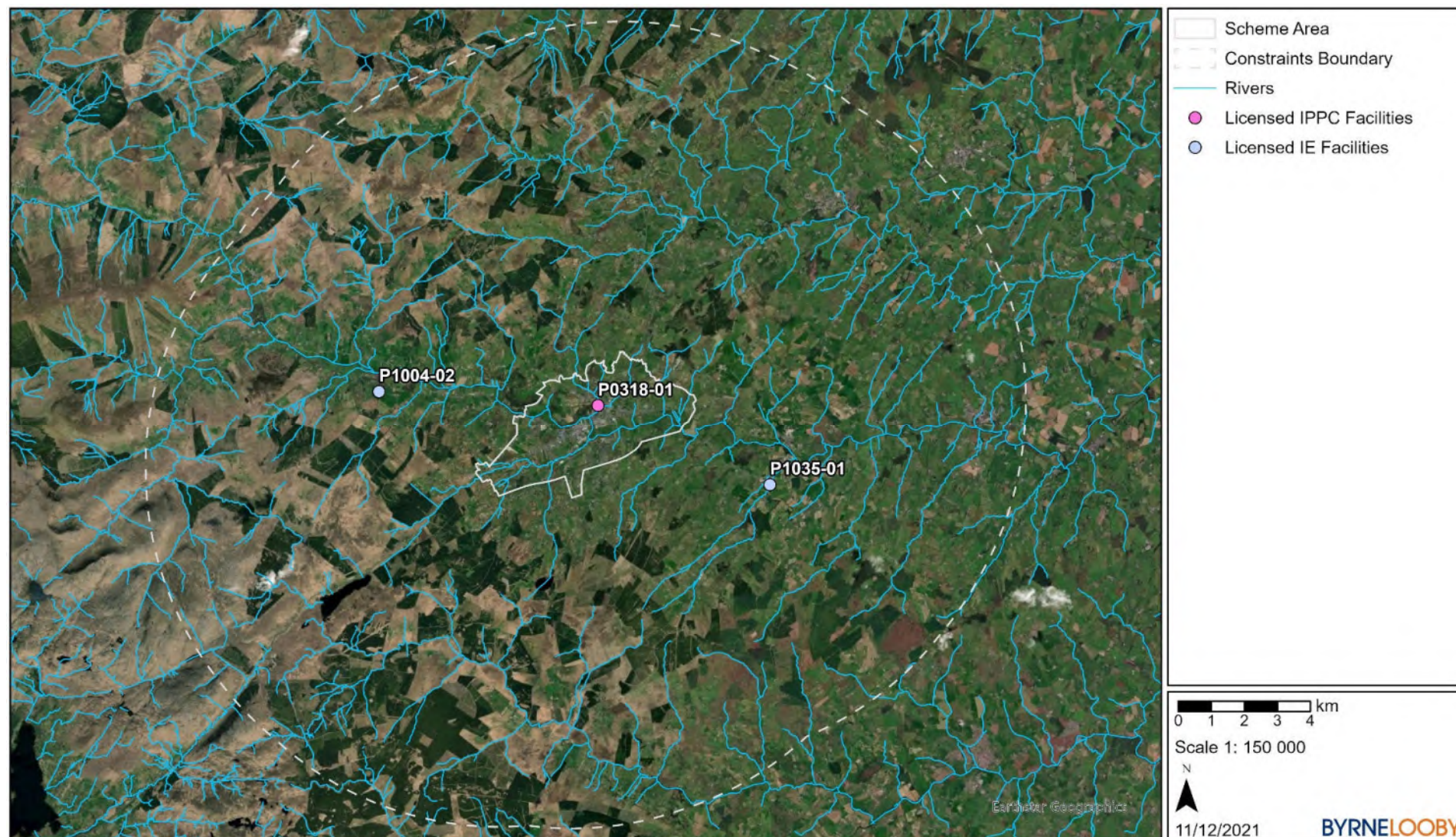


Figure 3-3: Licensed Emission Facilities within the Study Area

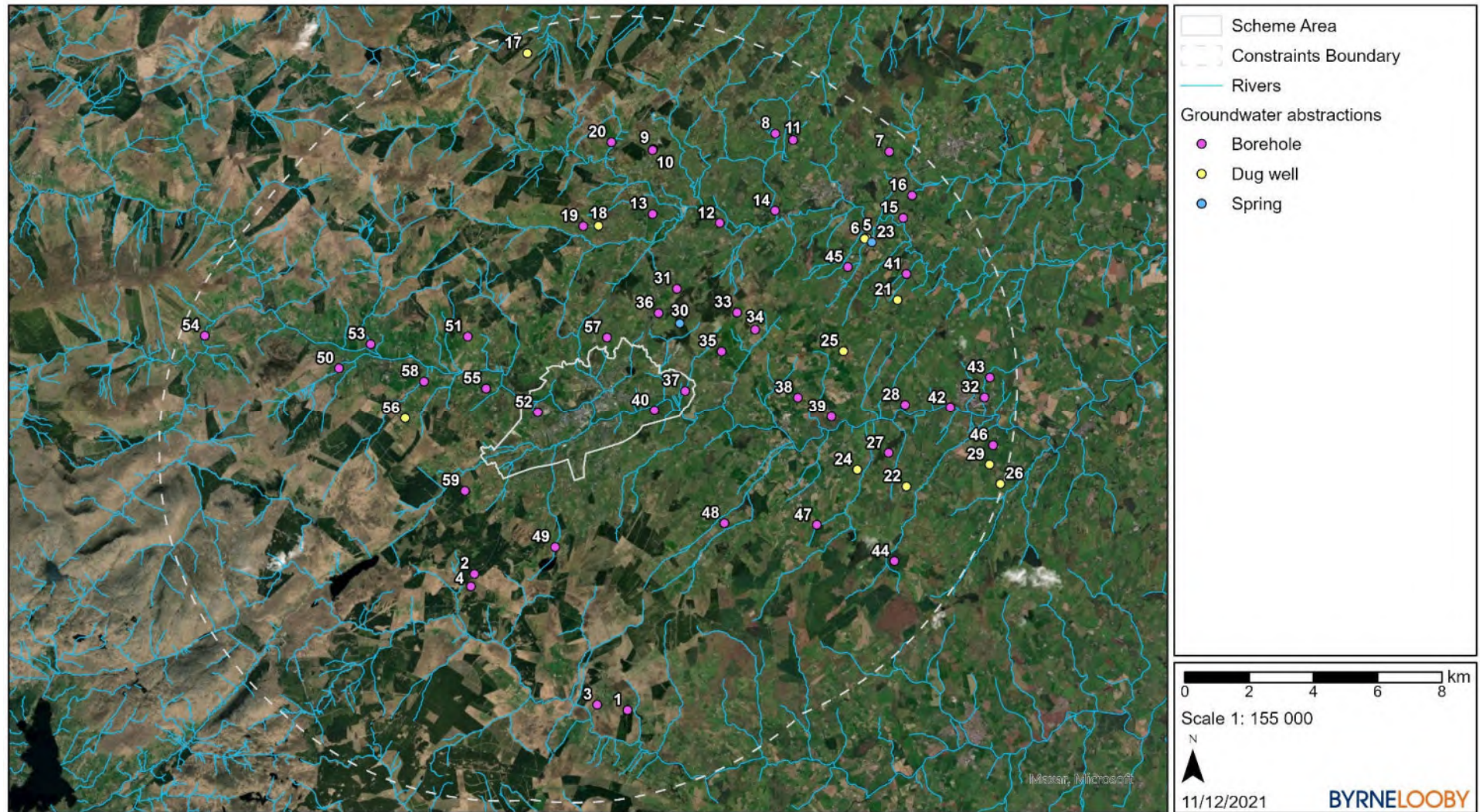


Figure 3-4: Groundwater abstraction locations

Table 3-3 Groundwater Abstraction in the scheme area

Label	GSI Code	Type	Depth (m)	Drill Date	ITM Coordinates	
					Easting	Northing
1	2037NEW002	Borehole	3.5	2002-08-21	215500	385400
2	2037NWW006	Borehole	68.6	2001-01-20	210740	389630
3	2037NWW013	Borehole	3	2002-08-21	214560	385570
4	2037NWW014	Borehole	85	2003-07-15	210630	389240
5	2039NEW007	Dug well	1.8	1962-06-16	222950	400080
6	2039NEW008	Dug well	1.8	1962-04-01	222880	400060
7	2039NEW021	Borehole	60	2000-05-15	223650	402770
8	2039NEW028	Borehole	50	1999-09-01	220100	403330
9	2039NEW032	Borehole	68.6	2001-01-01	216300	402850
10	2039NEW033	Borehole	68.6	2001-01-01	216280	402820
11	2039NEW035	Borehole	3.8	2002-08-19	220650	403130
12	2039NEW036	Borehole	3.8	2002-08-19	218370	400550
13	2039NEW038	Borehole	5.2	2002-08-01	216280	400830
14	2039NEW043	Borehole	0.5	2002-08-19	220090	400940
15	2039NEW044	Borehole	2.8	2002-08-20	224080	400710
16	2039NEW050	Borehole	5.5	2003-05-27	224350	401410
17	2039NWW001	Dug well	1.2	1971-09-01	212380	405830
18	2039NWW002	Dug well	1.8	1969-07-01	214600	400460
19	2039NWW003	Borehole	56.4	2000-06-06	214130	400450
20	2039NWW004	Borehole	57.9	1998-10-10	215000	403060
21	2039SEW005	Dug well	3.6	1968-07-01	223900	398160
22	2039SEW023	Dug well	3.6	1964-10-30	224180	392340
23	2039SEW024	Spring	-	-	223100	399950
24	2039SEW025	Dug well	3.1	1963-09-28	222650	392860
25	2039SEW026	Dug well	1.8	1962-06-22	222220	396570
26	2039SEW028	Dug well	1.8	1965-05-14	227100	392420
27	2039SEW030	Borehole	38.4	-	223630	393390
28	2039SEW031	Borehole	39.6	-	224140	394890
29	2039SEW033	Dug well	2.7	1963-10-31	226770	393020
30	2039SEW035	Spring	-	-	217130	397430
31	2039SEW036	Borehole	50.3	1999-07-07	217040	398510
32	2039SEW038	Borehole	52	-	226610	395130
33	2039SEW039	Borehole	91.5	-	218910	397770
34	2039SEW040	Borehole	67	-	219470	397240
35	2039SEW041	Borehole	45.7	-	218430	396560
36	2039SEW042	Borehole	7.5	2002-08-20	216470	397750
37	2039SEW043	Borehole	5.8	2002-08-21	217300	395330
38	2039SEW044	Borehole	1	2002-08-21	220800	395120
39	2039SEW045	Borehole	4	2002-08-21	221840	394520
40	2039SEW046	Borehole	7.6	2002-08-20	216340	394710
41	2039SEW049	Borehole	3	2002-08-16	224180	398970
42	2039SEW050	Borehole	10	2002-08-18	225550	394810
43	2039SEW051	Borehole	4.1	2002-08-15	226780	395750

Label	GSI Code	Type	Depth (m)	Drill Date	ITM Coordinates	
					Easting	Northing
44	2039SEW052	Borehole	4.8	2002-08-21	223800	390030
45	2039SEW053	Borehole	5.5	2003-05-28	222360	399180
46	2039SEW054	Borehole	4.5	2003-05-28	226870	393620
47	2039SEW055	Borehole	3.8	2003-05-28	221390	391150
48	2039SEW056	Borehole	6.5	2003-05-28	218520	391200
49	2039SWW004	Borehole	58	1998-01-14	213250	390460
50	2039SWW005	Borehole	90	1999-10-15	206530	396030
51	2039SWW006	Borehole	23	1998-05-20	210530	397020
52	2039SWW007	Borehole	3.5	2002-08-20	212710	394660
53	2039SWW008	Borehole	6.5	2002-08-20	207510	396780
54	2039SWW009	Borehole	8	2002-08-20	202350	397050
55	2039SWW011	Borehole	5	2002-08-21	211100	395400
56	2039SWW012	Dug well	3.7	2001-03-12	208580	394470
57	2039SWW013	Borehole	-	-	214860	396990
58	2039SWW014	Borehole	1.8	2003-05-28	209170	395620
59	2039SWW015	Borehole	3.5	2003-05-28	210440	392200

3.3.6 Electricity networks

The Electricity Supply Board (ESB) Networks maintains the distribution electricity infrastructure. Figure 3-5 shows the layout of the network, with three High Voltage 110kV overhead lines. There are three High Voltage underground lines. The rest of the infrastructure is network with a mix of overhead and underground lines. The Medium Voltage lines are 20kV while the Low Voltage lines are 230V for single phase and 400V for three phases.

3.3.7 Gas infrastructure

There is no gas distribution or transmission infrastructure reported within the scheme boundary of wider vicinity.

3.3.8 Digital infrastructure

Internet and landline services are provided by several commercial operators with available internet speeds averaging from 100 Mb to 500 Mb through 'part fibre' technology (Switcher Limited, 2021).

Eircom Limited ('Eir') own and maintain the telecoms network for the Area. Mobile phone coverage for 2G, 3G, and 4G is provided by commercial operators in the study area with coverage classed as ranging from good to very good by the Commission for Communication Regulation (Commission for Communication Regulation, 2021).

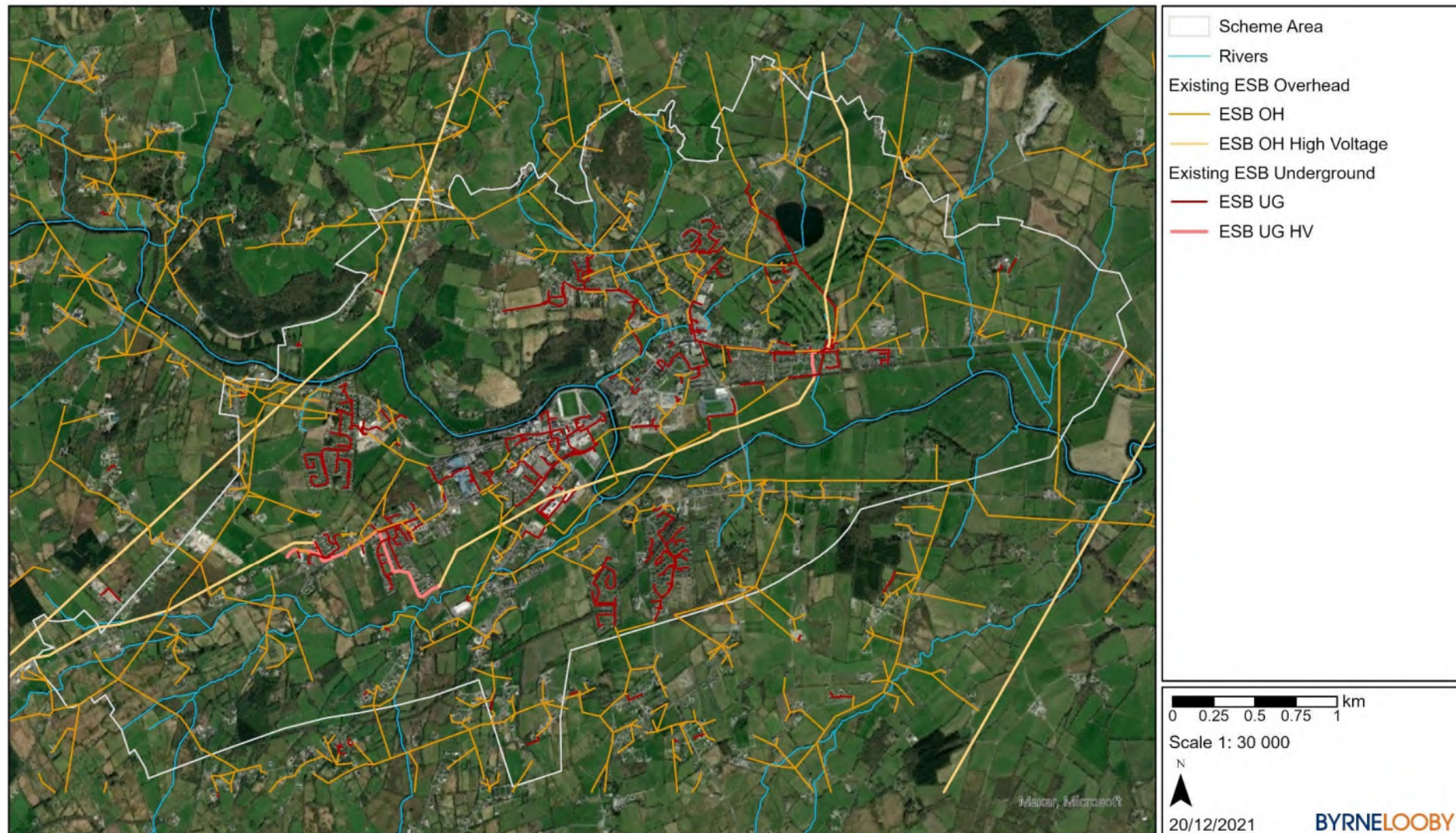


Figure 3-5: Electricity infrastructure in the scheme boundary and vicinity

3.3.9 Land Ownership and Zoning

Both Ballybofey and Stranorlar are jointly classified as a Tier 2 town. Urban areas of the towns are surrounded by agricultural land with the towns being largely residential with supporting social amenities.

Access to privately owned lands may be required for construction and maintenance works, and land may also need to be acquired as a result of the scheme. Depending on the nature of the land use in the particular areas, there may be a land use change engendered by the proposed scheme.

Rural Area Types identified in the County Donegal Development Plan 2018-2024 are shown in Figure 3-7 (Donegal County Council, 2021).

Appendix D contains the Settlement Framework map of Ballybofey and Stranorlar, from the Variation to the County Donegal Development Plan 2018-2024 in respect of the TEN-T Priority Route Improvement Project, Donegal (Donegal County Council, 2021).

3.3.10 Roads and Transportation Network

The twin towns are served, primarily by the N15 and N13 National Primary routes and the R252 Ballybofey to Dungloe Regional Road. The towns are connected by the River Finn Bridge over which the N15 passes. In response to consultation (see Appendix B), Traffic Infrastructure Ireland (TII) made note of the following national road structures within the Ballybofey and Stranorlar FRS area:

- N15 Structure ID DL-N15-005.00 (Cappry Bridge).
- N15 Structure ID DL-N15-004.00 (Finn Bridge).
- N15 Structure ID DL-N15-003.00 (Mullandrait Bridge).
- N15 Structure ID DL-N15-002.70 (Corcam Bridge).

Constraints have been identified based on this consultation, outlined in Section 4.4.

Traffic is a major issue for the towns and projects are underway to reduce congestion, including the Ballybofey and Stranorlar Bypass and the Ballybofey/Stranorlar Western Link Road. At the time of writing the projects are at the options stages.

N15/N13 Ballybofey to Stranorlar Bypass (Trans-European Transport Network (TEN-T) Donegal Section 1) of the TEN-T Priority Route Improvement Project, Donegal is currently at Phase 3, Design and Environmental Evaluation. The project aims to improve regional connectivity and recognises the N15 as a strategically important route providing a critical link between Donegal and the West of Ireland (Transport Infrastructure Ireland, 2020). The Project prioritises three sections of the TEN-T road network for improvement namely:

- Section 1: N15/N13 Ballybofey/Stranorlar Urban Region.
- Section 2: N56/N13 Letterkenny to Manorcunningham.
- Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link.

The TEN-T route (recently updated in the Variation to the County Donegal Development Plan 2018-2024) is illustrated in Appendix D. The location of the Project in relation to the Scheme Area is illustrated in Figure 3-6). Flood Cell 1 and 7 and their associated flood defences are located within the Ten-T Servitude., with all others on the periphery, as illustrated in Figure 3-6.

All roads in the scheme study area are maintained by the County Council, however any modifications to National Primary and Secondary roads would require consultation with Transport Infrastructure Ireland (TII).

A bus service operated by Bus Éireann connects the twin towns to regional towns. A Local Link bus service connects the area to other towns. There are no railways or tramways directly serving the study area.

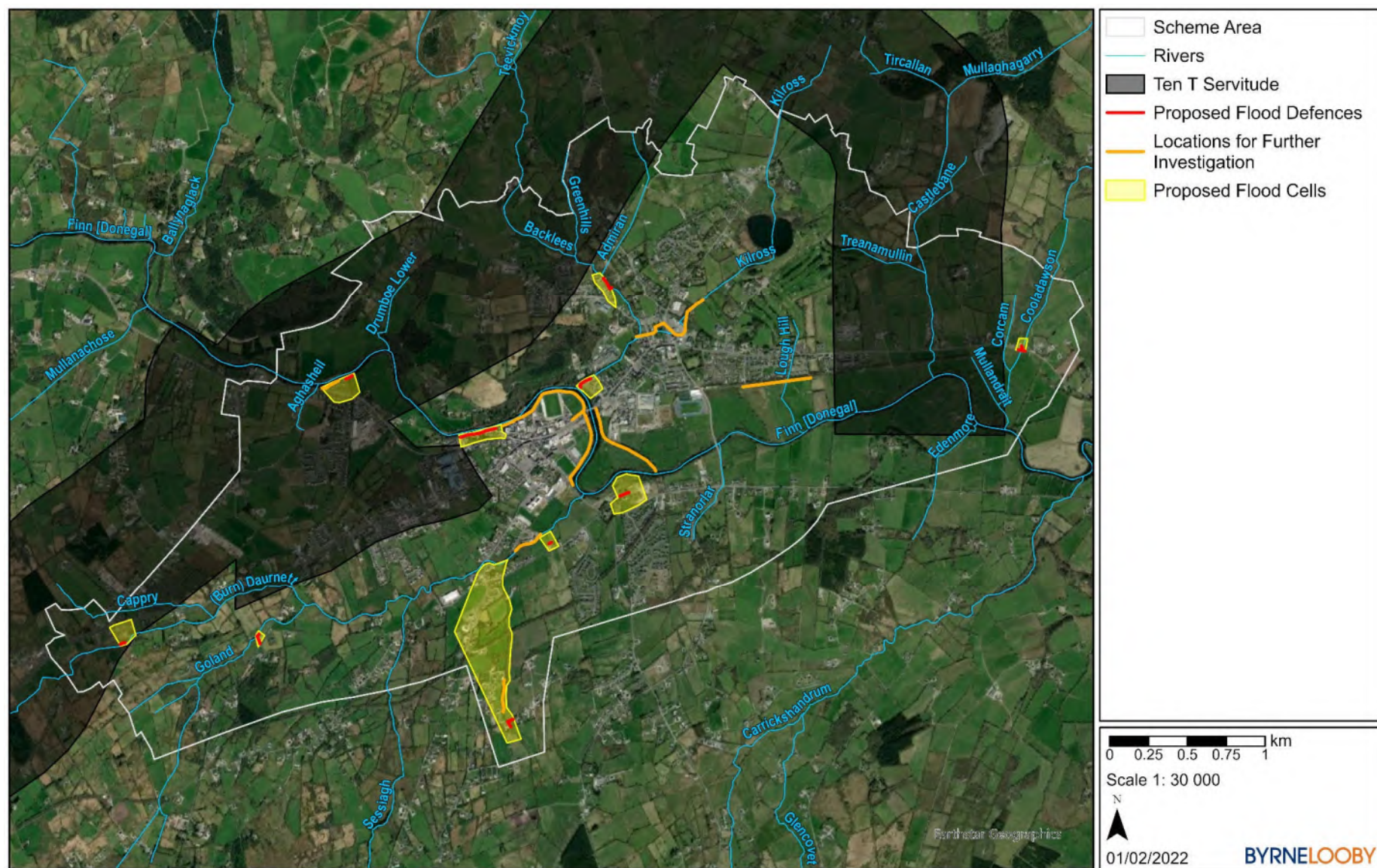


Figure 3-6: Trans-European Transport Network (TEN-T) in relation to Scheme Area

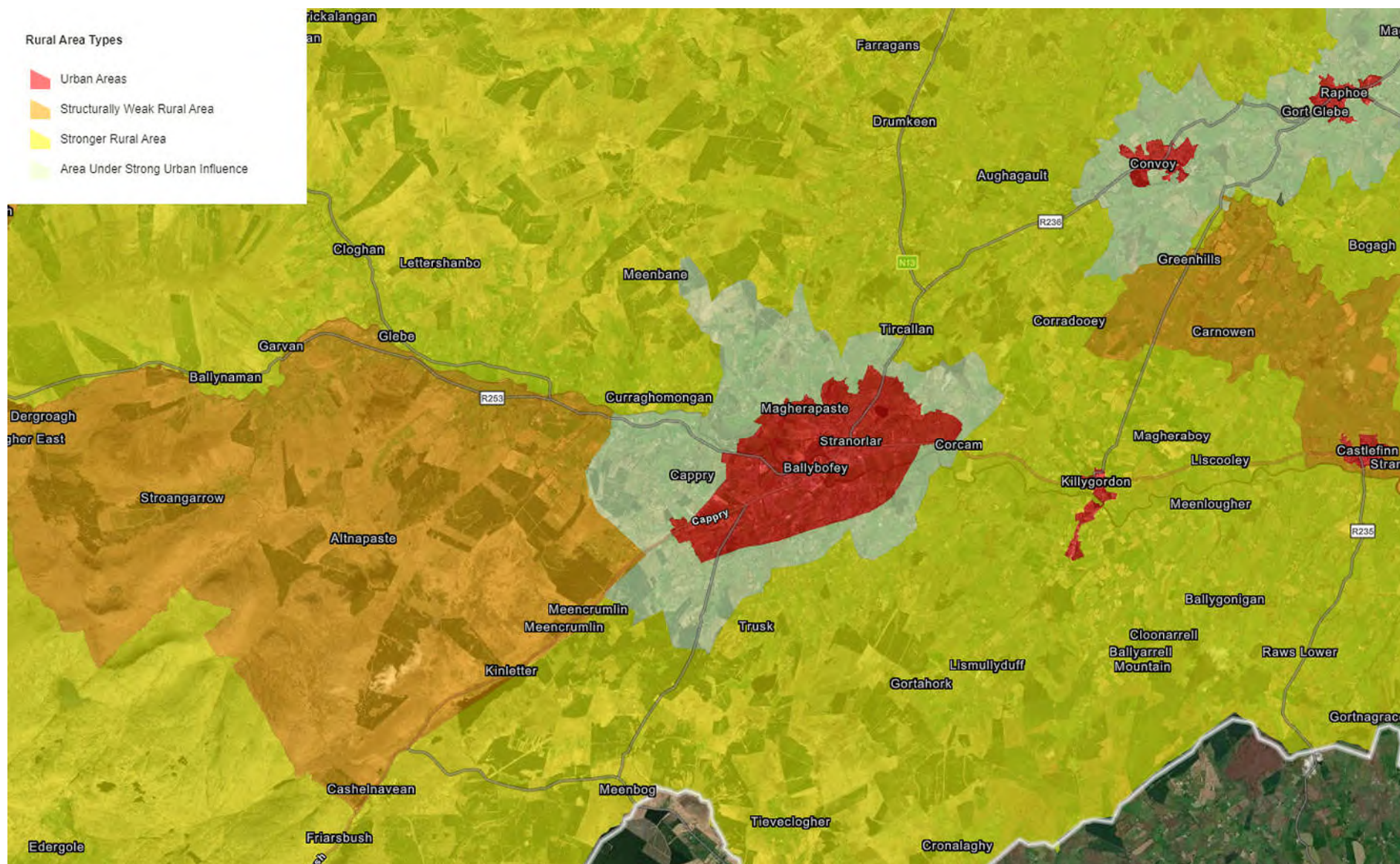


Figure 3-7: Rural area types in the study area

Data source: County Donegal Development Plan 2018-2024 ArcMap Viewer (Donegal County Council, 2021)

3.3.11 Pedestrian and Cycling Network

Various walking pathways are located along lengths of the River Finn and within the towns. Public amenity areas in the towns are connected by public walkways and bridges. There are no cycle lanes/paths within the town.

Donegal County Council proposes to build a single span steel space truss footbridge adjacent to and downstream of the Sessiaghoneill road bridge on the Burn Daurnett River to improve the pedestrian and cycle routes between Ballybofey town centre and the Sessiagh (O'Neill) town suburb. The footbridge will be 3.3m wide and will carry a 3m wide shared pedestrian / cycleway and footways will connect into the existing pedestrian infrastructure.

Third party infrastructure projects in the study area will be considered within the cumulative impact assessment in the EIAR to identify and determine the significance of any cumulative or in-combination effects.

At the time of writing, no further information is available regarding pedestrian and non-vehicular users of the study area (for example cyclists and equestrians). This data has been requested and will be considered as the scheme progresses.

3.4 Key Constraints

Impacts on services and utilities such as watermains, gas mains, underground powerlines etc. will all need to be considered during the design process. The possible interruption of these services and utilities should be minimised, where possible. Furthermore, impacts on road and bridge infrastructure and land ownership will need to be considered.

Third party infrastructure projects being developed in the study area will be considered within the cumulative impact assessment in the EIAR to identify and determine the significant of any cumulative or in-combination effects. Coordination between project developers/teams will be required where construction occurs within overlapping or similar timeframes or where working areas overlap or are located in nearby areas.

Additional general and site-specific constraints will need to be considered as the scheme progresses, including:

- During planning, development, and construction, the utilities infrastructure must be fully considered to ensure that disruptions to the utilities infrastructure are avoided.
- During the construction stage, measures may have to be taken to ensure the construction does not interfere in any of the underground or overground utilities services.
- It will be necessary to contact TII where the development could impact on primary and national roads within and outside of the scheme area. TII would be specifically concerned as to potential significant impacts the development would have on the national road network (and junctions with national roads) in the proximity of the proposed development, e.g., N13 and N15 within the Ballybofey and Stranorlar FRS area.

- It will be necessary to conduct consultations with the relevant Local Authority/National Roads Design Office with regard to the locations of existing and future national road schemes in the area, e.g., the Donegal TEN-T Scheme within the Ballybofey and Stranorlar FRS area.
- Visual impact from existing national roads should be considered as part of the EIAR.
- The Project should consider the 'Environmental Noise Regulations 2006' (SI 140 of 2006) and, in particular, how the development will affect future action plans by the relevant competent authority.
- Where new structures may be proposed on national roads, the requirements of the TII publication 'Technical Acceptance of Road Structures on Motorways and Other National Roads' (DN-STR-03001) should be referenced. This Standard specifies the procedures to be followed in order to obtain Technical Acceptance for structures on motorway and other national road schemes and for the submission of as built records.
- An assessment of scour and other hydraulic actions on national road structures in accordance with UK BD 97/12 should be undertaken where necessary. Scour prevention measures will be required if the assessment illustrates the potential for scour beneath the foundations.
- It will be necessary that, subject to meeting the appropriate thresholds and criteria and having regard to best practice, a Traffic and Transport Assessment (TTA) be carried out in accordance with relevant guidelines, noting traffic volumes attending the site and traffic routes to/from the site, with reference to impacts on the national road network and junctions of lower category roads with national roads. TII's 'Traffic and Transport Assessment Guidelines' (2014) should be referred to in relation to proposed development, with potential impacts on the national road network.
- It will be necessary to consult the TSS Publications to determine whether a Road Safety Audit is required prior to construction.
- It will be necessary to clearly identify haul routes proposed and fully assess the network(s) to be traversed. Where abnormal loads are a feature of the proposed development, separate structure approvals/permits, and other licences may be required in connection with the proposed haul route. All structures on the haul route should be checked to confirm their capacity to accommodate any abnormal load.
- It will be necessary to contact ESB if there is a need for lines to be turned off for a period of time (e.g. for works or relocation of infrastructure) and to determine if the affected residences could be serviced from elsewhere.
- It will be necessary to contact Irish Water if there is a need for water utilities to be turned off for a period of time (e.g. for works or relocation of infrastructure) and to determine if the affected residences could be serviced from elsewhere.
- During planning, development, and construction, any proposals by the applicant to divert existing water services (watermains, service connections, rising mains, foul and surface water sewers, culverts, etc.) will need to be submitted to Irish Water prior to works commencing.
- During the construction stage, measures should be taken to ensure the construction does not interfere with underground services. Where works occur in proximity to electrical lines, some

areas may have to be cut-off for the remainder of the work. This could cause an impact to local residents and business.

- Underground electrical lines in the study area may be at risk of flooding in extreme weather conditions causing power outages in areas of Ballybofey and Stranorlar. The location of the underground cable routes in the planning and construction stages of the scheme should be taken into consideration.
- Consideration of the designs effect on sewerage capacity in the event of hydrological changes or flooding.
- Impacts on road and bridge infrastructure and land ownership will need to be considered.
- Impacts on public rights of way, footpaths and cycle routes will need to be considered. The proposed scheme design should ensure continuity of the public walkways within its footprint and future plans for same.
- River Finn Bridge provides a significant crossing of the River Finn and public right of way and access should be maintained throughout the project construction and operation phases.
- Coordination with third party projects may be required during the planning and development of the scheme to avoid or reduce the likelihood of potential cumulative and in combination impacts.
- As advised by the Minister of transport (Minister of Transport pers. comm. 20/10/2021), given that all of the hard measures identified and assessed in 2018 scored quite high with regards to negative environmental consequences, designers are advised to weigh nature-based criteria compared to hard defences when designing these flood relief schemes.
- As advised by the Minister of transport (Minister of Transport pers. comm. 20/10/2021), the designer of the scheme should ensure that the threat of flooding along the public road network (where it exists) is reduced by the proposed design and that the drainage of the public road network is improved where possible and not impaired by the proposed development.
- The scheme will need to be mindful of any ongoing projects occurring within the project area, including those outlined in Section 3.3.1, as well as any others that materialise.
- The existing stormwater drainage network in the twin towns is subject to ongoing flooding, overflow and capacity deficiencies. This situation is a constraint to the flood scheme and the design should be mindful not to worsen the condition.

4 Population and Human Health

4.1 Introduction

This section sets out the principal constraints in relation to the socioeconomic setting of the study area. These include population, recreation/tourism, and public health matters characterising the study area that may impact on the selection of the flood relief measures for the proposed scheme, and which relate to the main settlement areas near which any flood relief measures are likely to be undertaken.

For the purposes of this report, the study is defined as the area which includes the towns of Ballybofey and Stranorlar and the immediate surrounding rural area. Features outside of this boundary (up to an outer extent of 10km) are considered where relevant.

Currently, the impact of flooding is causing a multitude of socio-economic impacts to the communities Ballybofey and Stranorlar, including the inability to obtain housing insurance, the permanent loss of belongings, the permanent or temporary loss of livelihood for commercial properties, and the general social impact of angst in potential flood events. The intention of the Scheme is to provide flood defence measures for sensitive receptors in the towns of Ballybofey and Stranorlar, which overall will provide positive impact to the towns, and in particular the individual commercial and residential receptors affected by historical flooding events.

4.2 Methodology

A desktop study was undertaken to identify the key population and human health constraints within the study area. The following sources of information were used in the preparation of this section:

- Google Maps (Google, 2021).
- Ordnance Survey Ireland (OSi), National Mapping Agency data accessed through the Geohive map viewer (OSi, 2021).
- County Donegal Development Plan 2018-2024 (Donegal County Council, 2018a).
- Donegal County Council Tourism Strategy 2017 – 2020 (Donegal County Council, 2017).
- Landscape Character Assessment of County Donegal (Donegal County Council, 2016).
- Census of Ireland 2016 (Central Statistics Office, 2021) .
- Donegal County Council Website (<https://www.donegalcoco.ie>).
- North West River Basin District Management Plan 2021 (EPA, 2021).
- Ballybofey-Stranorlar Regeneration Strategy (Pasparakis Friel, 2022).

- The Donegal Local Economic & Community Plan 2016 -2022, Appendix 1, The Profile of the County.

Sensitive receptors and potential constraints have been identified. Other environmental interactions with population and human health, e.g. noise, vibration, air quality, climate, and material assets are addressed in the relevant sections of this report.

4.3 Baseline / Receiving Environment

4.3.1 Population, land use, and human health

Ballybofey and Stranorlar is situated on the River Finn with several tributaries of the River Finn that flow through the towns. The twin towns are considered to be Tier 2 Settlement Strategic Support Towns.

The towns collectively comprise the 3rd largest urban centre in Donegal and are strategically located within a strong rural hinterland in the Finn Valley and at a key point along the N15/N13 North South Transport Corridor (part of the wider Atlantic Corridor) (Donegal County Council, 2016).

The towns act as the key retail, commercial, social educational and recreational centre for the local area in the Finn Valley and wider vicinity.

Various population and socio-economic statistics have been provided in Table 4-1 to Table 4-3 below.

Table 4-1 Population Projections reproduced from Draft County Donegal Development Plan 2018-2024.

	2011 population	Estimated 2016 population	Projected additional population by 2024	Projected population by 2024
Ballybofey and Stranorlar	4,852	4,781	838	5,619

Table 4-2 Population by Nationality from Donegal Local Economic & Community Plan 2016-2022.

	Irish	United Kingdom	Polish	Lithuanian	Other EU 27	Rest of World	Not Stated	Total	% Other than Irish
Ballybofey and Stranorlar	4,078	169	214	78	100	127	28	4,794	14.4%

Table 4-3 Socio Economic Groups & Labour Force Details from Donegal Local Economic & Community Plan 2016-2022.

	A	B	C	D	E	F	G	H	I	J	Z
Ballybofey and Stranorlar	11%	3%	11%	24%	12%	10%	3%	5%	1%	1%	18%
Labour force Participation Rate	57.6%										
Non-Labour force Participation Rate	42.4%										
Unemployment Rate	29.5%										
Labour Force	2,169										
A: Employers and Managers, B: Higher professional, C: Lower professional, D: Non-manual, E: Manual skilled, F: Semi-skilled, G: Unskilled, H: Own account workers, I: Farmers, J: Agricultural Workers, Z: All others gainfully occupied and unknown											

The town has a 6% share of Non-Residential Buildings, as advised in The Donegal Local Economic & Community Plan 2016 -2022. It has 3 Primary and 2 Secondary Level schools with a combined student population of 553 and 1130 at each respective level (Donegal County Council, 2016).

Green spaces, residential and commercial properties and facilities for social amenities such as MacCumhaill Park and Sean MacCumhail's GAA Club are located on the right bank on the River Finn in Ballybofey. Green spaces (including woodland and agricultural land), residential and commercial properties and facilities for social amenities such as a school (St Marys National School) and religious centre (Church of Mary Immaculate) are located on the left bank on the River Finn in Stranorlar. A wastewater treatment plant is also present, located within Stranorlar on the left bank of the River Finn, south-east of the River Finn Bridge crossing.

Further inland either side of the river is mainly residential with a few supporting commercial and community services (such as restaurants, stores, etc.) and further beyond the towns is agricultural land. Local services within the twin towns include banking facilities, health care facilities and Ballybofey Garda Station. Land use and zonation is described in section 3.3.9.

4.3.2 Tourism and recreation

Two of the key objectives (S-O-4 and S-O-5) within the County Donegal Development Plan reference plans for economic growth and regeneration to support strengthened and vibrant communities. Tourism is a key driver of this (Donegal County Council, 2018a). In support of this, The Local Area Plan was drafted, identifying seven strategically located towns, including Ballybofey and Stranorlar. The vision of the towns is mentioned in the Seven Strategic Towns Local Area Plan 2018-2024 (Donegal County Council, 2018b), as mentioned below:

'That, by 2024, Ballybofey-Stranorlar will have an enhanced reputation as a sporting centre of excellence and as a key centre of recreation and hospitality for the County. In addition, the Twin Towns will have an enhanced reputation also as an attractive place to live and work on foot of expanded residential and retail facilities and on foot also of strategic infrastructural improvements to the town.'

Ballybofey and Stranorlar were identified as 'Strategic Towns' performing a 'Special Economic Function' as a result the extend of retail offering, proximity of the town to the Northern Ireland Boarder, location in relation to key National Primary Roads and provision of educational hub, as

mentioned below (Donegal County Council, 2018a). The Donegal County Council Tourism Strategy 2017-2020 further identifies intentions for the development of tourism infrastructure, with County Donegal being identified as 'Ireland's Hidden Gem'.

As mentioned, the twin-towns are a regionally popular location for sports facilities and shopping amenities. The hospitality industry includes three hotels in the towns. Retail outlets include the nationally-recognised McElhinney's Department Store and national chain supermarkets. The Balor Arts Centre is located within Ballybofey.

The shopping experience is considered to be enhanced by the compact development of retail within the core of the towns. The Base Enterprise Centre, founded by the Ballybofey and Stranorlar Integrated Community Company (BASICC) in 2015 is a non-profit social enterprise which promotes development, trade and enterprise in the business and commercial sector to support in fostering a thriving community that provides valuable opportunities to people.

The towns are promoted as a prominent sports hub and are the location of McCumhaill Park, Finn Park, Finn Harps Football Club, the Donegal County GAA Headquarters, Ballybofey and Stranorlar Golf Club and Finn Valley Athletic Centre and adjacent Finn Valley Leisure Centre. Other local sports clubs include clubs for boxing, tennis and power lifting club, plus a number of gyms, and pilates studios.

There are no national waymarked trails present in the scheme area. Local walks include the Drumboe Woods walk in Stranorlar, and the looped Trusk Lough Walk located to the south of The River Finn, Drumboe Woods and Trusk Lough are recognised as important recreational amenities for the towns (Donegal County Council, 2021). As outlined in the Donegal County Council Tourism Strategy 2017-2020, greenway development is currently in planning phase from Ballybofey to Donegal Town.

Fishing under permit takes place on the River Finn and the river is known as an excellent location for salmon fishing.

4.3.3 Traffic

Traffic congestion is a major issue for the Ballybofey and Stranorlar and several projects are proposed or underway to alleviate this. The N15 route runs through the centre of the twin-towns and the route accommodates regional and local traffic. Currently, the volume of traffic using the N15 is greater than the current capacity of the existing road, causing congestion particularly during peak periods (see Section 1.1.1 for detail).

The TII Traffic Data website does not contain and count data for National Roads from within the Scheme area. Traffic count data for Ballybofey and Stranorlar has been requested and was not available at the time of writing.

Traffic data will be required to inform the traffic impact assessment for the construction phase of the scheme.

4.3.4 Regeneration

Ballybofey and Stranorlar has been identified as an area of regeneration, and as such the Twin Towns Regeneration Plan was launched in 2019, with a new focus on developing a long-term strategy for the regeneration, working with the community, businesses and partners to establish key areas of improvement. In November 2019, at a large consultation event, alongside the development of a full Regeneration Strategy (see below), two key projects were identified including a regeneration of the town centre covering the Ritz building and town car park and plans for the development of a park and the environs of Drumboe Woods.

The Ballybofey and Stranorlar Regeneration Strategy & Action Plan was developed by Pasparakis Friel Architects, on behalf of Donegal County Council and in conjunction with The Ballybofey and Stranorlar Integrated Community Company (BASICC). It was finalised and published in April 2022. The purpose of the masterplan is to identify key priorities and actions in supporting the sustainable regeneration of the Twin Towns up to 2040, breaking down the area into seven primary districts which address a spread of projects across the two towns whilst focusing on key areas of vacancy and dereliction (Pasparakis Friel, 2022).

The Strategy is illustrated in Figure 4-1 below and is to be implemented across three stages, with a detailed consultation process included. Ten 'Principles of Regeneration' were established, providing focus for the regeneration strategy across a range of topics such as retail offering, pedestrianisation, civic space, heritage, sustainability, nature, community facilities etc. These principles are detailed in further detail in Chapter 9 of this report.



Figure 4-1: Ballybofey and Stranorlar Regeneration Strategy & Action Plan 2022

4.4 Key Constraints

Constraints on population and human health will depend on the final nature and extent of the scheme, as well as the duration and nature of the construction phase.

Public and tourist amenities and facilities should be considered key constraints. Impacts on public amenity areas adjacent to and requiring access to the rivers such as riverside walks, parks, playgrounds and tourist features should be considered, with replacement mitigation proposed if necessary. Impacts on tourist facilities, recreation and amenity facilities in the area should be considered constraints, especially those requiring access to the watercourses in the area.

Development of the proposed scheme must take into consideration ways for areas of commercial or tourist potential maintain their aesthetic and public attractiveness both during construction and operation of the scheme.

Development of the proposed scheme must take into consideration ways to complement and enhance public amenities including green spaces in the proposed scheme footprint. Measures to protect extant recreational areas and green public spaces should be developed within the proposed scheme. The proposed scheme design should ensure continuity of the public walkways within its footprint.

The scheme design should take into account the value (both cultural and economic) of any buildings (residential, retail, etc.) close to the edges of waterbodies likely to be adversely affected by the scheme within the scheme study area.

Regional roads in the project are likely to be congested at peak travel times. Some roads in the scheme area are narrow and may not be suitable for site access. A bridge provides road and pedestrian access between Ballybofey and Stranorlar and access to the bridge should be maintained throughout scheme construction and development. There is a potential for construction to make traffic more congested in the study area and vicinity in the short term. A traffic management plan will be required with the CEMP.

Construction works will have to be mindful of maintaining access for both pedestrians and cyclists. A traffic management plan will be required during construction works.

Any design proposals should ensure that any bridges over watercourses are maintained where feasible so that temporary or permanent disruption of local transport links and access to homes and businesses in the study area are minimised. It is also noted that people travel between the towns to access facilities such as schools, medical facilities, and shops.

Urban development may limit access and movement of vehicles/equipment during construction at the following locations:

- Flood defences along River Finn at Cedars Housing Estate and Jackson's Hotel Carpark.
- Flood defences along Burn Daurant at Cappry.
- Flood defences along Magherapaste at Drumboe Cottages.
- Flood defences along Lough Alaan watercourse at St Mary's National School.

- Also, Investigations at the Glebe Housing estate in Stranorlar.

It is also likely that the existing embankments will form part of the new scheme (either as is or upgraded/replaced) such that a maintenance regime post-scheme will be put into place. These works will need to be mindful of the tourist and retail trades also.

During construction of the scheme, traffic restrictions could pose problems for deliveries and site access and traffic management measures will be considered as part of the environmental impact assessment process. The traffic associated with construction works will need to be mindful of the tourist and retail trades.

St Mary's National School is due to move to new premises and the old school building may be repurposed for community use. Should the preferred option from project level assessment identify measures adjacent the school, at its current or future location, the timing of works should be considered to minimise impacts during periods when active teaching takes place (e.g. outside of term time). Sensitive receptors e.g. homes, schools, medical facilities, places of worship, should be considered key constraints in the design of the flood relief scheme. The scheme design should take into account the value (both cultural and economic) of any buildings (residential, retail, etc.) close to the waterbodies' edges or likely to be adversely affected by the scheme within the scheme study area. Medical facilities in the scheme study area are sensitive receptors and must be given due consideration. Flooding events can cause devastation to homes, businesses and local facilities, with social and human health impacts. Their specific protection through adequate flood defences should be considered in the design of the scheme.

Other impacts to population that are also concerned with human health, including material assets such as water supply, wastewater treatment, and utilities should also be given due consideration. Constraints and considerations regarding the architectural conservation area are addressed in Chapter 8.

5 Hydrology

5.1 Introduction

This section of the report outlines the environmental constraints associated with the hydrology of the study area. The principal surface water body is the River Finn. A large number of rivers and streams are present within the Scheme area which ultimately discharge into the River Finn. These are referenced and illustrated in Section 5.3.2 but include the River Finn, Burn Daurnett, Golland, Carrickmagrath, Sessiagh, Cooladawson, Treanamullin, Lough Alaan WC, Lough Alaan Tributary and Magherapaste.

For the purposes of this report, the study is defined as an area approximately 3 km in radius from the scheme area (see Figure 5-3). Features outside of this boundary (up to an outer extent of 10km) are discussed where relevant to give greater context within the wider vicinity of the project area (as they are considered unlikely to interact with the scheme). This 10 km extent for such features will be reviewed when further details for the design and construction of the scheme become available to ensure adequate consideration of interactions, were relevant.

5.2 Methodology

A desktop study was undertaken to describe the overall hydrological regime and water quality within the study area and to define hydrological constraints. The sources of publicly available information consulted in order to identify possible hydrological constraints within the study area include:

- EPA geoportal website including map viewer and water quality database.
- OPW Database of Hydrometric Stations.
- NIEA water quality database and maps.
- Geological data available through the GSI data portal and map viewer series (Geological Survey Ireland, Department of the Environment, Climate and Communications, 2021).
- Water Framework Directive website www.catchments.ie.
- The OPW's floodinfo.ie portal website.
- North Western River Basin District Management Plan (2009 – 2015).
- River Basin Management Plan for Ireland (2018 – 2021).
- River Finn Catchment Characterisation Catchment CARE Storyboard (CatchmentCARE, 2021).
- WFD Cycle 2, Catchment Foyle, Subcatchment Finn [Donegal]_SC_030, Code 01_2 Report (WFD Application, 2018a).

- WFD Cycle 2, Catchment Foyle, Subcatchment Finn [Donegal]_SC_040, Code 01_7 Report (WFD Application, 2018b).
- Waterbody: Finn [Donegal]_SC_030 webpage (EPA Catchments, 2021a).
- Waterbody: Finn [Donegal]_SC_040 webpage (EPA Catchments, 2021b).
- Waterbody: FINN (DONEGAL)_050 webpage (EPA Catchments, 2021c).
- Waterbody: FINN (DONEGAL)_060 webpage (EPA Catchments, 2021d).
- Waterbody: FINN (DONEGAL)_070 webpage (EPA Catchments, 2021e).
- Draft River Basin Management Plan for Ireland 2022 – 2027 (Department of Housing, Local Government and Heritage, 2021).

A number of other datasets are also relevant to hydrology due to their interactions, e.g. ecological sites and hydrogeological features. These have been dealt with in other relevant sections of this report. The characterisation of the baseline in this section is based on desktop study. Surface water abstraction is described in Section 3.3.5.1.

5.3 Baseline / Receiving Environment

5.3.1 The Finn Valley Catchment

All rivers in the study area are located within the Finn Valley catchment. The River Finn's total length is c. 64 km and it drains a catchment area of 319 km². The source of the River Finn is Lough Finn which is located in Co. Donegal c. 30 km northwest of the study area.

5.3.2 Waterbodies in the Study Area

The River Finn is the principal river in the scheme area and it flows broadly west to east, and transboundary, forming the border between Co. Donegal and Co. Tyrone between Clady and Strabane. The waterbodies within the scheme area are outlined in Table 1-1.

The River Finn is a 'flashy' river, experiencing rapid increase in flow shortly after onset of a precipitation event. The following provides indication of duration percentiles where flows and levels equalled or exceeded for a given percentage of time between the data period 1992 to 2019. The annual maximum water level was 20.471 mOD and 19.760 mOD and S. G reading 4.541 m and 19.76 m for the 2019 and 2020 hydrographic years respectively. Climate change is likely to increase the frequency of intense rainfall events in the following years.

Figure 5-1 Flow and Levels Duration Percentiles for the River Finn

Duration Percentiles	1%	5%	20%	25%	50%	75%	90%	95%	99%
Flows equalled or exceeded for the given percentage of time (m ³ /s). Data Period: 1993 to 2013.	75.839	52.004	40.215	21.911	8.119	3.471	1.832	1.237	0.721
Levels equalled or exceeded for the given percentage of time (mAOD Poolbeg). Data Period: 1992 to 2019.	18.167	17.631	17.377	16.98	16.601	16.372	16.244	16.184	16.117

(Data Source: <https://waterlevel.ie/hydro-data/stations/01043/station.html?1642067842>).

Lough Alaán is located included in the Scheme Area, adjacent to the Ballybofey & Stranorlar Gold Club, in the south-eastern portion of the Scheme Area. No other lakes, transitional waters and coastal waters are present in the Scheme Area itself, however there are a number of lakes present in the 10 km study area, including Lough Mourne, Trusk Lough and Lough Sallagh. A review of OPW arterial drainage schemes indicate there are no arterial drainage schemes or benefitting lands within the model catchment (Office of Public Works, 2021b).

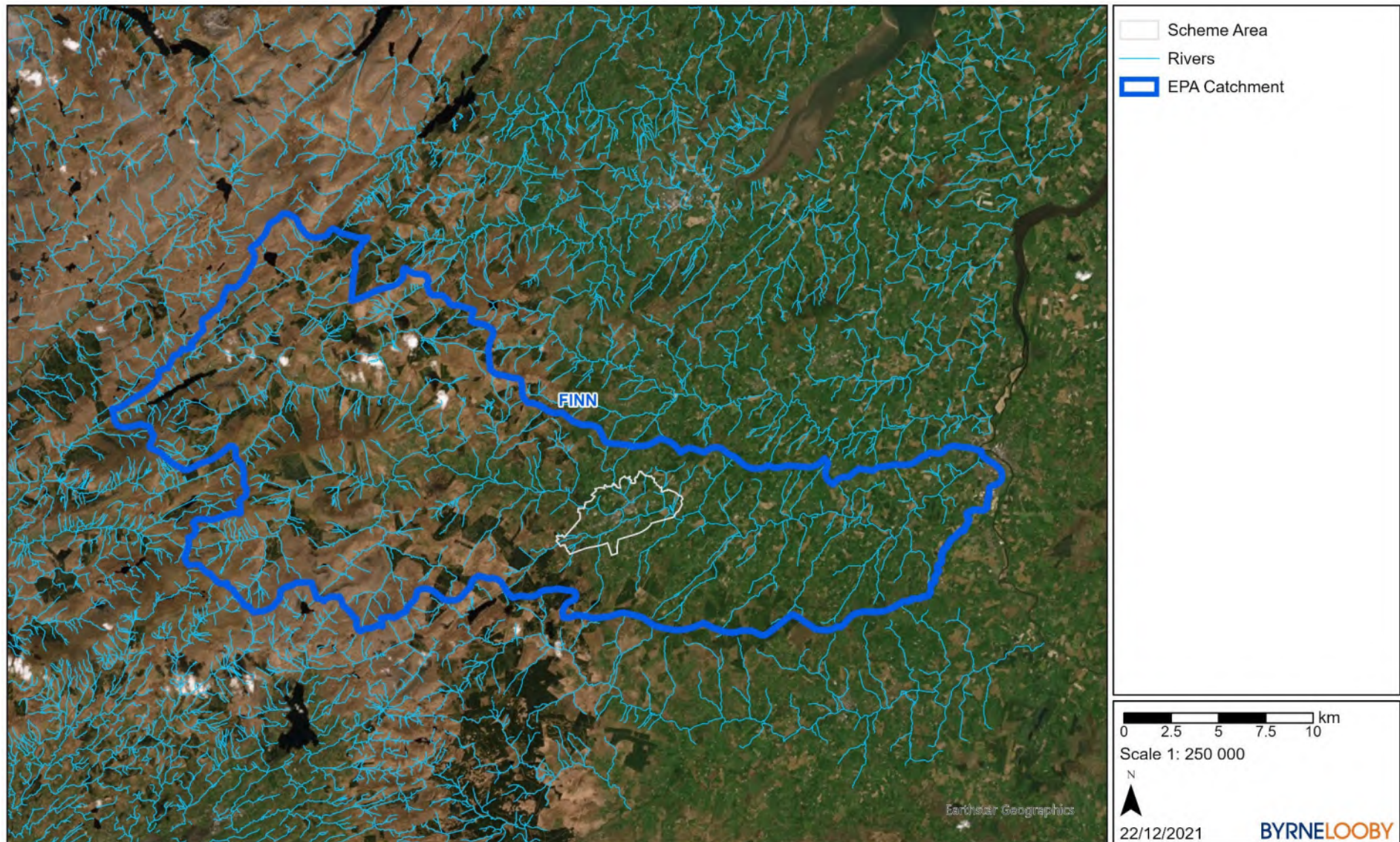


Figure 5-2: River Finn Catchment
(Data source: EPA GeoPortal)

5.3.3 Surface waterbody quality and status

The Water Framework Directive (WFD) was agreed by all individual European Union (EU) member states in 2000 and provides a comprehensive framework for water quality management across the EU. The directive requires that all member states adopt a comprehensive integrated basin-based approach to water management. For this purpose, Ireland has been divided into eight River Basin Districts.

Rivers, lakes, estuaries and coastal waters can be awarded one of five statuses including 'High', 'Good', 'Moderate', 'Poor' and 'Bad' whereas groundwater can be awarded only 'Good' or 'Poor' status. Ecological status for surface water bodies is primarily driven by the Biological Quality Elements (BQEs) which includes fish, aquatic flora, macroinvertebrates and phytoplankton. Standards for general physico-chemical parameters, specific pollutants and hydromorphology are set at levels in order that they are sufficient to support the status of the BQEs (Catchments.ie, 2021).

The key objectives of the directive are to maintain a 'High' status of waters where it exists, prevent any deterioration in the existing status of waters and achieve at least 'Good' in relation to all waters by 2015, latest by 2027. Those rivers classed as being 'at risk' relates to the potential of that watercourse meeting the 'Good' Ecological Status. Surface water bodies in the study area, including the River Finn (FINN DONEGAL_050, FINN DONEGAL_060), and Burn Durnett (BURN DAURNETT_010) are classed under the Water Framework Directive as 'At risk' of not meeting the WFD objectives of 'good' Ecological Status (see Table 5-2 and Figure 5-4). Further, the Ecological Status is recorded as being 'poor' (see Table 5-2 and Figure 5-4). Significant pressures from forestry and agriculture (pasture), waste (combined sewer overflows) and urban run-off (diffuse Sources run-off) are highlighted as key concerns for the rivers in the study area.

The EPA monitors water levels and quality within the study area. National water quality monitoring stations and their location are detailed in Table 5-1 (EPA, 2021).

Table 5-1 National water quality monitoring stations and hydrometric gauges within 3km of the scheme area

Map Label	Registration Number	Type	Name	Waterbody	Status/ Purpose	ING Coordinates	
						Easting	Northing
0104 2	01042	Hydrometric Gauge	Dreenan	Finn [Donegal]	Recorder (Active)	215227	394565
0104 3	01043	Hydrometric Gauge	Ballybofey	Finn [Donegal]	Recorder (Active)	213511	394674
0104 4	01044	Hydrometric Gauge	Sessiagh	Burn Durnett	Staff Gauge Only (Inactive)	213774	393868
1	Rs01b020010	National WQ Monitoring Station	Blackburn Br.	Burn Durnett	River Water	209608	392009
2	Rs01b020100	National WQ Monitoring Station	At Burn Durnett Bridge	Burn Durnett	River Water	212531	393680
3	Rs01b020150	National WQ Monitoring Station	Burn Durnett - U/S Herdman's Discharge	Burn Durnett	River Water	213101	393521
4	Rs01b020200	National WQ Monitoring Station	Bridge N.W. Of Daisy Hill	Burn Durnett	River Water	213781	393860

Map Label	Registration Number	Type	Name	Waterbody	Status/ Purpose	ING Coordinates	
						Easting	Northing
5	Rs01b020300	National WQ Monitoring Station	Burn Daurnett - Br Just U/S Finn River Confluence	Burn Daurnett	River Water	214382	394267
6	Rs01f010600	National WQ Monitoring Station	Bridge 2.5 Km U/S Ballybofey	Finn (Donegal)	River Water	212464	395041
7	Rs01f010650	National WQ Monitoring Station	Finn (Donegal) - Footbridge Ballybofey	Finn (Donegal)	River Water	214474	394725
8	Rs01f010700	National WQ Monitoring Station	Finn (Donegal) - Ballybofey Br	Finn (Donegal)	River Water	214444	394835
9	Rs01f010710	National WQ Monitoring Station	Finn (Donegal) - 1 Km D/S Ballybofey Br	Finn (Donegal)	River Water	214405	394475
10	Rs01f010720	National WQ Monitoring Station	Finn (Donegal) - U/S Burn Daurnett R Confluence	Finn (Donegal)	River Water	214443	394292
11	Rs01f010800	National WQ Monitoring Station	Br S Of Stranorlar	Finn (Donegal)	River Water	215246	394601
12	Rs01f010850	National WQ Monitoring Station	Finn (Donegal) - D/S Ballybofey (L.A.)	Finn (Donegal)	River Water	217554	394385
13	Rs01f010880	National WQ Monitoring Station	Upstream Of Tpeff0600 D0518sw001	Finn (Donegal)	River Water	220234	394152
14	Rs01r020200	National WQ Monitoring Station	Bridge U/S Finn River Confluence	Rough Burn	River Water	209279	395901

Recent and publicly available surface water quality data is available for the study areas from the catchments.ie website (WFD Application, 2018a,b; EPA Catchments, 2021a-e). Physicochemical surface water data is available from monitoring station codes in the scheme area and vicinity: RS01F010600. This data will be considered with of the environmental impact assessment. Data from Northern Ireland Environment Agency will also be considered, where appropriate.

The Catchments.ie website publishes waterbody status data for the sections of rivers within the study area (where works might be proposed) under their sub catchment classification system. An overview is provided in Figure 5-3 (WFD Application, 2018a,b; EPA Catchments, 2021a-e).

There are a number of additional 'EPA waterbodies and/or rivers' within the Scheme Area. However, at the time of writing no data was available for these. They include:

- Admiran
- Aghasheil
- Backlees
- Cappry
- Cooladawson
- Corcam
- Drumboe
- Edenmore
- Goland

- Greenhills
- Kilross
- Lough Hill
- Mullaghagarry
- Mullandrait
- Sessiagh
- Stranorlar
- Treanamullin

48

Table 5-2 Waterbody status data for the sections of rivers within the study area

Waterbody	EPA Name	EPA Code	RWB Code	Monitoring type of Waterbody	Water Quality Status (2013-2018)	WFD risk status	Pressures
River Finn	FINN (DONEGAL)_050	01F01	IE_NW_01F010600	<ul style="list-style-type: none"> Operational Monitoring Biological Monitoring 	Ecological Status or Potential: Poor Biological Status or Potential: Poor Invertebrate Status or Potential: Poor	At risk*	Significant pressure from agriculture (pasture) and forestry
River Finn	FINN (DONEGAL)_060	01F01	IE_NW_01F010800	<ul style="list-style-type: none"> Operational Monitoring Biological Monitoring Supporting Chemistry Monitoring 	Ecological Status or Potential: Poor Biological Status or Potential: Poor Invertebrate Status or Potential: Poor Supporting Chemistry Conditions: Pass	At risk*	Significant pressure from urban waste (combined sewer overflows) and urban run-off (diffuse Sources run-off)
River Finn	FINN (DONEGAL)_070	01F01	IE_NW_01F010910	This waterbody is not on a published monitoring programme.	Unassigned	Review**	No
Burn-Daurnett	BURN DAURNETT_010	01B02	IE_NW_01B020200	<ul style="list-style-type: none"> Operational Monitoring Biological Monitoring Supporting Chemistry Monitoring 	Ecological Status or Potential: Poor Biological Status or Potential: Poor Invertebrate Status or Potential: Poor Supporting Chemistry Conditions: Pass	At risk*	Significant pressure from forestry and agriculture (pasture)
*due to less than Good ecological status for 2010-2015 **under Review due to their unassigned status							

Source: Catchments.ie; WFD Cycle 2, Catchment Foyle, Subcatchment Finn [Donegal]_SC_030, Generated on: 07 Nov 2018, Code 01_2; WFD Cycle 2, Catchment Foyle, Subcatchment Finn [Donegal]_SC_040, Generated on: 07 Nov 2018, Code 01_7

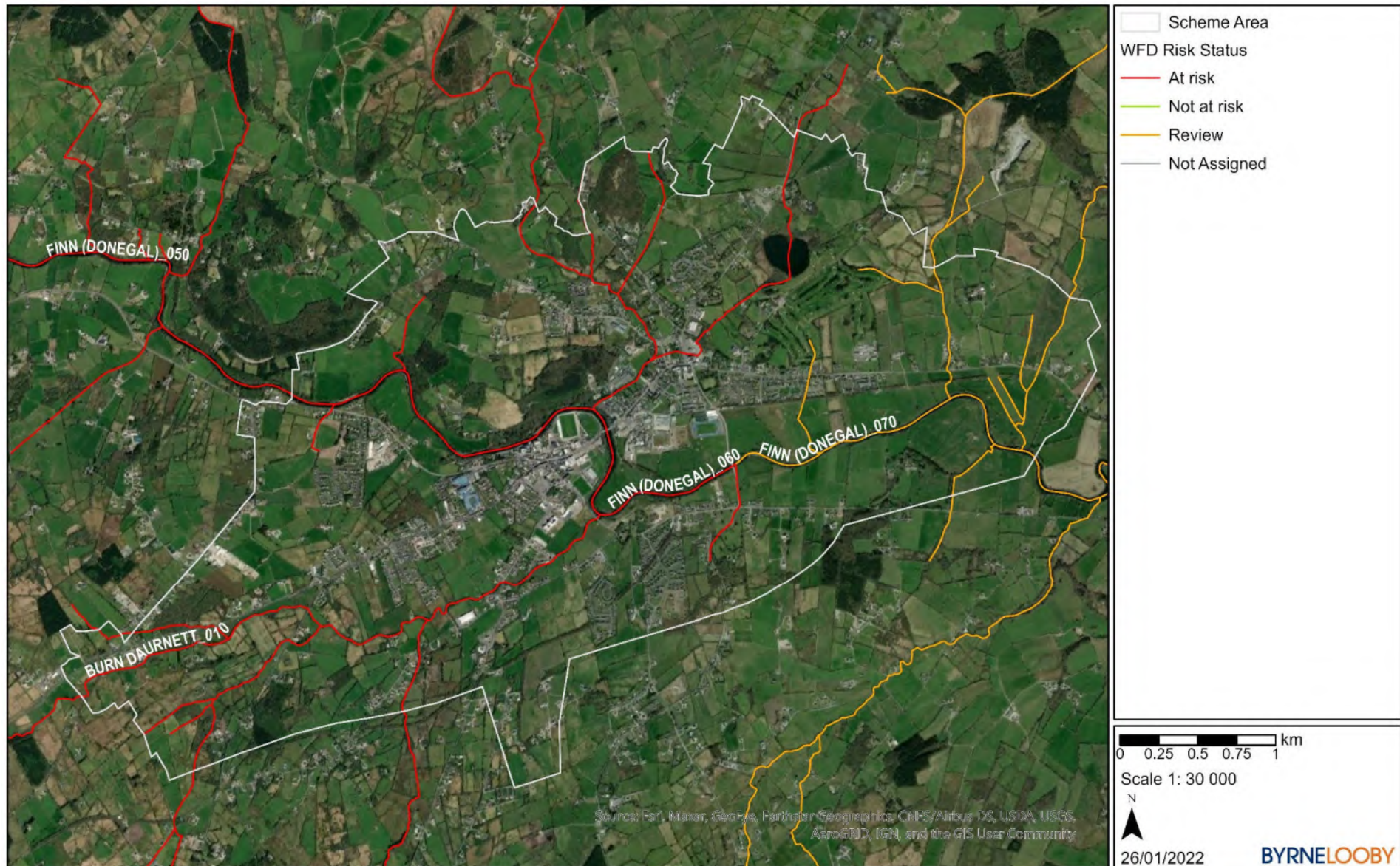


Figure 5-4 WFD River Risk Status



Figure 5-5 WFD River Ecological Status

CatchmentCare, of which Donegal County Council is a Lead Partner, has three projects is focussed on water quality improvement underway in the Finn Catchment (CatchmentCARE, 2021). These are:

- Coiste Sli Taobh an Mhuilinn (Millside Walk, Lough Finn),
- River Finn Anti-Pollution Project (Glenmore/ Welchtown), and,
- Ballybofey and Stranorlar Integrated Community Company (BASICC).

LAWPRO identify 'Finn (Donegal)' as an Area for Action (AFAC) for restoration with project overlap with the Arctic Char Project at Lough Finn. No further details are available at the time of writing. Potential cumulative impacts arising from third party project interactions or in-combination effects will be considered within the EIAR (Department of Housing, Local Government and Heritage, 2021).

5.4 Key Constraints

Surface water bodies in the study area are classed under the Water Framework Directive as 'At risk' of not meeting the WFD objectives of 'good' Ecological Status. Under WFD requirements, the development of the scheme should incorporate measures to ensure that the hydromorphological conditions of the water body is consistent with the achievement of the required ecological status.

The River Finn is a 'flashy' river, experiencing rapid increase in flow shortly after onset of a precipitation event. This is highlighted as a key constraint to construction whereby high rainfall events would require appropriate risk assessment. Climate change and the onset of more frequent and larger rainfall events is noted as a further risk.

Measures to protect surface water from leaks/spills, contamination, increased turbidity or input of suspended solid, etc, should be considered.

Contamination potentially present on site from historical land use must also be considered. The CEMP for the scheme will include measures to avoid mobilising and/or creating pathways for any contaminants present on site to the surface where surface runoff can introduce contaminants to surface water during enabling and construction works.

Measures to protect active national water monitoring stations and hydrometric gauges and avoid impacting their data collection processes should be considered during design and construction phases.

The scheme design and schedule will need to take into consideration the development of any WWTPs, water abstraction facilities or third party 'WFD' projects in the vicinity of the scheme area, including potential impacts to utilities and infrastructure.

Potential impacts on the hydrology and morphology of the study area watercourses during construction, maintenance and operations should be considered. A hydromorphology survey will be completed using the River Hydromorphology Assessment Technique (RHAT). It is recommended that the hydrological and morphological (physical condition) regime of all waterbodies which might be affected by the scheme shall be fully considered to ensure that the WFD hydro-morphological status is unaffected.

The scheme should take into consideration water quality sensitive protected species, including Annex II species and qualifying interests for the SAC, recorded in waterbodies in the scheme area and vicinity. Additionally, water dependant terrestrial ecosystems are present within the study area and downstream and should be considered.

The scheme should take into consideration the presence of protected water resources in the study area. The National Parks and Wildlife Service Conservation Objectives for the River Finn SAC include Water quality criteria regarding transparency, nutrient concentration, macrophyte status, and the aim to achieve at least Q4 at all sites for Q value assessment (based on triennial water quality surveys carried out by the Environmental Protection Agency).

Projects to improve the quality of surface waterbodies in the catchment are being undertaken by local groups and other third parties. Coordination with these groups is advised to ensure the projects are not detrimentally impacted during works.

6 Soils, Geology and Groundwater

6.1 Introduction

This section of the report outlines the environmental constraints associated with the soils, geology and groundwater/hydrogeology of the study area.

The extents of the topic specific constraint boundaries/study areas are provided in the relevant figures in the following section and are:

- 1 km of the scheme area boundary for geology, karst features, geoheritage, geohazards, economic geology, and soil.
- 3 km of the scheme area boundary for groundwater.

In the absence of formal guidance on the establishment of a study area for this topic, the boundaries were selected using professional judgement to ensure that the local geological context could be considered at an appropriate scale to the features identified.

Features outside of these boundaries may be discussed in the following subsections to give greater context within the wider vicinity of the project area, where relevant. However, such features are not considered within the constraint boundary as they are unlikely to interact with the scheme.

6.2 Methodology

A desktop study was undertaken to describe the environmental constraints associated with the soils, geology and hydrogeology of the study area. The sources of publicly available information consulted in order to identify possible constraints within the study area include:

- The Geological Survey of Ireland (GSI) online database.
- Geological Survey Ireland (GSI) data and map viewer, including hydrogeology, geology, soils, geoheritage, and karst database. GSI is a division of the Department of Communications, Climate Action and Environment. Specific attribution statement: "This report contains Irish Public Sector Data (Geological Survey) licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) licence".
- Department of the Environment, Climate and Communications OPALS Viewer (Mineral Exploration and Mining).
- Donegal County Council Planning Department (Quarries Register under Section 261 Planning and Development Act 2000).
- Teagasc Irish Soil Information System.
- EPA Map data and map viewer, including ENVision Mines Site, the EPA's online Historic Mines Inventory.

- Groundwater data hosted on Catchments.ie.
- Irish Concrete Federation Members Directory (Irish Concrete Federation, 2021).
- WFD Cycle 2, Catchment Foyle, Subcatchment Finn [Donegal]_SC_030, Code 01_2 Report (WFD Application, 2018a).
- WFD Cycle 2, Catchment Foyle, Subcatchment Finn [Donegal]_SC_040, Code 01_7 Report (WFD Application, 2018b).

The characterisation of the baseline in this section is based on desktop study.

Groundwater abstraction is described in Section 3.3.5.2.

6.3 Baseline / Receiving Environment

6.3.1 Geology

Bedrock geology in the study area and wider catchment is comprised of Neo-Proterozoic Dalradian metasediments. The quartzite and granite uplands, largely covered in blanket peat, occur in the upper reaches of the Finn Catchment. Glacial till derived from metamorphic sediments are present in lower sections of the catchment.

A 'massif' peninsula of hard quartzite mountains, known as the Blue Stacks, extends from Ballybofey to Glencolumbkille on the western coast (Donegal County Council, 2021). The mountainous characteristic of the upper catchment contributes to the 'flashy' nature of River Finn as it reaches Ballybofey, as mentioned in Section 5.3.2. A sequence of sub-reclined, tight-isoclinal Caledonian (c. 460 Ma) fold nappes are present in the northwest of Ireland and the Ballybofey Nappe underlies the scheme area. This fold nappe has a NE-plunge and may be traced for 40 km along strike (Alsop, 2009). The formations and lithological descriptions of geology in the scheme area are presented in Figure 6-1 and Figure 6-2 (Geological Survey Ireland, Department of the Environment, Climate and Communications, 2021). Bedrock geology is detailed in Table 6-1.

Table 6-1 Bedrock geology in the study area

Formation	Lithology	Stratigraphical Unit
Aghyaran and Killygordon Limestone Formations	Comprised of Marble, quartzite, psammite; graphitic. Both calcitic and dolomitic marble are associated with quartzite and psammite sometimes tending to psephitic.	Dalradian, Precambrian
Boultypatrik (grit) Formation	-	Dalradian, Precambrian
Killeter Quartzite Formation	Fine grained, slightly impure quartzite with beds typically c. 5cm thick and occasional graded pebbly beds.	Dalradian, Precambrian

Formation	Lithology	Stratigraphical Unit
Lough Eske Psammite Formation	Comprised of Feldspathic psammite; quartzite, marble. The formation is typified by pale green, massively bedded, feldspathic psammites with pelitic beds generally <10cm thick. Occasional minor quartzite units <30cm thick and marble units <10m thick	Dalradian, Precambrian
Lough Mourne Formation	Comprised of a quartz and feldspar pebbles, green matrix. Typically comprises coarse and feldspathic pale pink psephites in a pale green chloritic matrix. The formation has been divided into two subfacies; a massive granular psephite with grain diameters of approx. 2mm and a coarse psephite with grains	Dalradian, Precambrian
Termon Formation	Comprised of Banded semi-pelitic and psammitic schist. The lowermost semi-pelitic schists are typically dark and graphitic and interbedded with thin units of dolomitic marble and lenses of psammite. the semi-pelitic schists become greenish and calcaceous upwards and are interbedded with thin greenish psammitic schist.	Dalradian, Precambrian

GSI data indicates that Quaternary geology in the study area is comprised of till derived from metamorphic rocks and alluvium (Geological Survey Ireland, Department of the Environment, Climate and Communications, 2021).

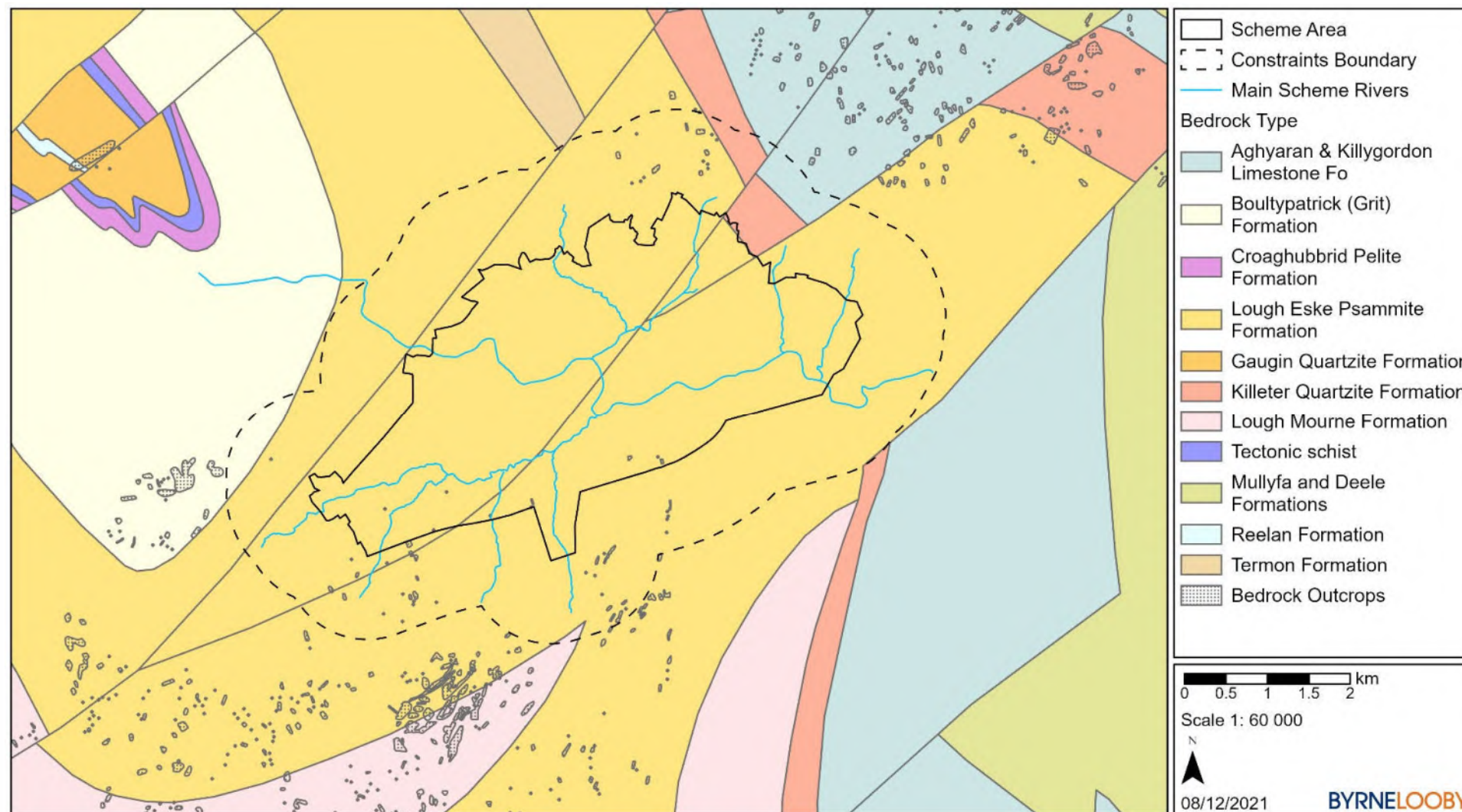


Figure 6-1: Bedrock geology

6.3.2 Karst features

Karst can form on any rock that is soluble in water and, within Ireland, most karst is found in Carboniferous limestones. Karst features can cause structural instability to overlying and adjacent land and increase vulnerability to groundwater by creating a pathway for contaminants present on land or surface waters to enter the subsurface.

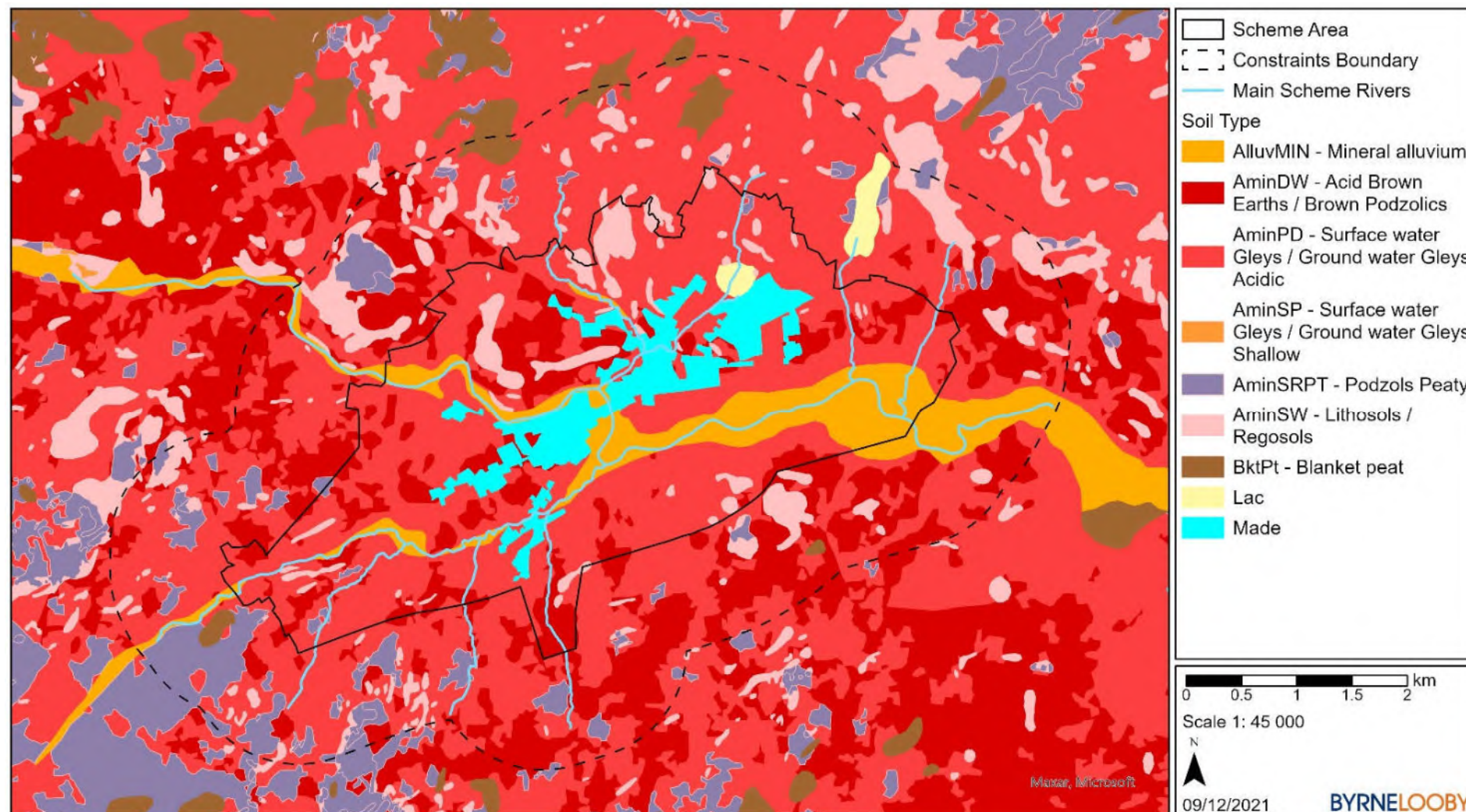
GSI bedrock mapping data indicates that Carboniferous limestone is not present within the study area. Karst feature data compiled by the groundwater unit at the Department of the Environment, Climate and Communications (DCCAE) indicates that there are no karst features reported from the scheme area or vicinity. There are no karst features reported in proximity of the lower catchment (Geological Survey Ireland, Department of the Environment, Climate and Communications, 2021).

6.3.3 Soils

GSI and Teagasc data indicates that made soils are present in urban areas and, outside of these areas, acid brown earths and podzolic soils are present within the scheme area (An Foras Taluntais, 1969) (Teagasc, 2021).

DCCAE provide high level soil permeability data that is not available throughout the constraints boundary area of scheme area. This data indicates that subsoil permeability is largely moderate in the study area (Geological Survey Ireland, Department of the Environment, Climate and Communications, 2021).

Historical site investigation data for soils, including reports outlining the presence of any soil contamination that may be present in the scheme area, were not available at the time of writing. A licenced waste facility, Ballybofey/Stranorlar Wastewater Treatment Plant (WwTP), is present in the study area (see Section 3.3.3) and could be a potential source of contamination. EPA data indicates that there are no waste boundaries or dumpsite boundaries within the scheme area. However, the location and nature of any contaminated soils, if present in the scheme, may not be recorded, particularly if caused by historical events. Soils in the scheme area and vicinity are shown in Figure 6-2.



6.3.4 Geoheritage

GSI data indicates that there are no audited or unaudited sites of geological heritage in the study area. (GSI map viewer, 2021). There are no sites designated as Natural Heritage Areas or Irish Geological Heritage in the study area.

Two Irish Geological Heritages are recognised outside of the study area and higher up in the Finn catchment:

- The Lúba na Finne site comprises a number of tight meanders in a mountain river along the course of the River Finn, east of Fintown (Geological Survey Ireland, 2020).
- The Loch Finne site comprises glacio-fluvial geomorphology including a lateral moraine within the boundary of the existing Lough Finn proposed Natural Heritage Area (pNHA) (Geological Survey Ireland, 2020).

6.3.5 Geohazards

GSI data indicates that there are no landslides reported from the study area. Landslips have been record in peat areas south of Lough Morne and to the south east of the scheme area, including a peat landslip at Meenbog Wind Farm in November 2021 (Geological Survey Ireland, Department of the Environment, Climate and Communications, 2021) (Irish Farmers Journal, 2020).

6.3.6 Economic geology

Section 261A of the Planning and Development Act (2000 – 2011) details the registered quarries within Ballybofey and Stranorlar, as outlined in Table 6-2 (Donegal County Council, 2021).

Table 6-2 Section 261A of the Planning and Development Act - Quarries in Ballybofey and Stranorlar

Reference code	Townland of quarry
EUQY31	Gortlettragh, Stranorlar
EUQY34	Cashelnavean, Ballybofey
EUQY35	Loughsallagh, Ballybofey
EUQY36	Cashelnavean, Ballybofey
EUQY38	Croaghonagh, Ballybofey
EUQY40	Croaghonagh, Ballybofey
EUQY135	Meenagrauv, Ballybofey
EUQY139	Curraghamongan, Ballybofey
EUQY151	Dooish, Ballybofey
EUQY176	Trusk, Ballybofey

There are no records of extractive industry/quarries within the study area (Geological Survey Ireland, 2021).

6.3.7 Groundwater

Aquifer categories are intended to describe both resource potential (Regionally or Locally important, or Poor) and groundwater flow type and attenuation potential (through fissures, karst conduits or intergranular). The aquifer code is made up of the aquifer resource value and how the groundwater flows in the bedrock or sand & gravel aquifer. They are as follows (Geological Surveys Ireland, 2022):

Regionally Important (R) Aquifers:

- Karstified bedrock (Rk)
- Fissured bedrock (Rf)
- Extensive sand & gravel (Rg)

Locally Important (L) Aquifers:

- Sand & gravel (Lg)
- Bedrock which is Generally Moderately Productive (Lm)
- Bedrock which is karstified to a limited degree or limited area (Lk)
- Bedrock which is Moderately Productive only in Local Zones (LI)

Poor (P) Aquifers:

- Bedrock which is Generally Unproductive except for Local Zones (PI)
- Bedrock which is Generally Unproductive (Pu)

Hydrostratigraphic rock unit groups in the constraints area broadly fall into Precambrian Quartzites, Gneisses and Schists and Precambrian Marbles. As illustrated in Figure 6-3, bedrock units in the area are classified as a 'PI - Poor Aquifer' which means that it is generally unproductive except for local zones (Geological Surveys Ireland, 2022). Locally Important Aquifers with moderately productive bedrock (LI) are noted within portions located north-east and south-east of the Scheme Area, and Poor Aquifers with generally unproductive bedrock (PU) are noted in very small pockets north-west of the Scheme Area. Within the scheme area the average groundwater recharge rate is 100 mm/yr in made ground (Geological Surveys Ireland, 2022).

The Geological Survey Ireland (GSI) classes groundwater vulnerability to be 'High' throughout much of the study area, including the corridor along the River Finn. Other areas are either classed as 'Extreme' or 'Rock at or near karst surface' (see Figure 6-4). Groundwater vulnerability represents the characteristics of the geological and hydrogeological features at a site that determine the ease of contamination of groundwater, or in other words how easy can contamination infiltrate into subsurface materials and contaminate the groundwater.

The Ballybofey Groundwater body (code: IEGBNI_NW_G_048) underlies the study areas and its Water Framework Directive waterbody status is shown in Table 6-3 and classified as 'not at risk' (WFD Application, 2018a; WFD Application, 2018b).

Table 6-3 Ground Waterbody WFD Status 2013-2018 for the study area

Chemical	Overall Groundwater Status	Quantitative Groundwater Status
Good	Good	Good

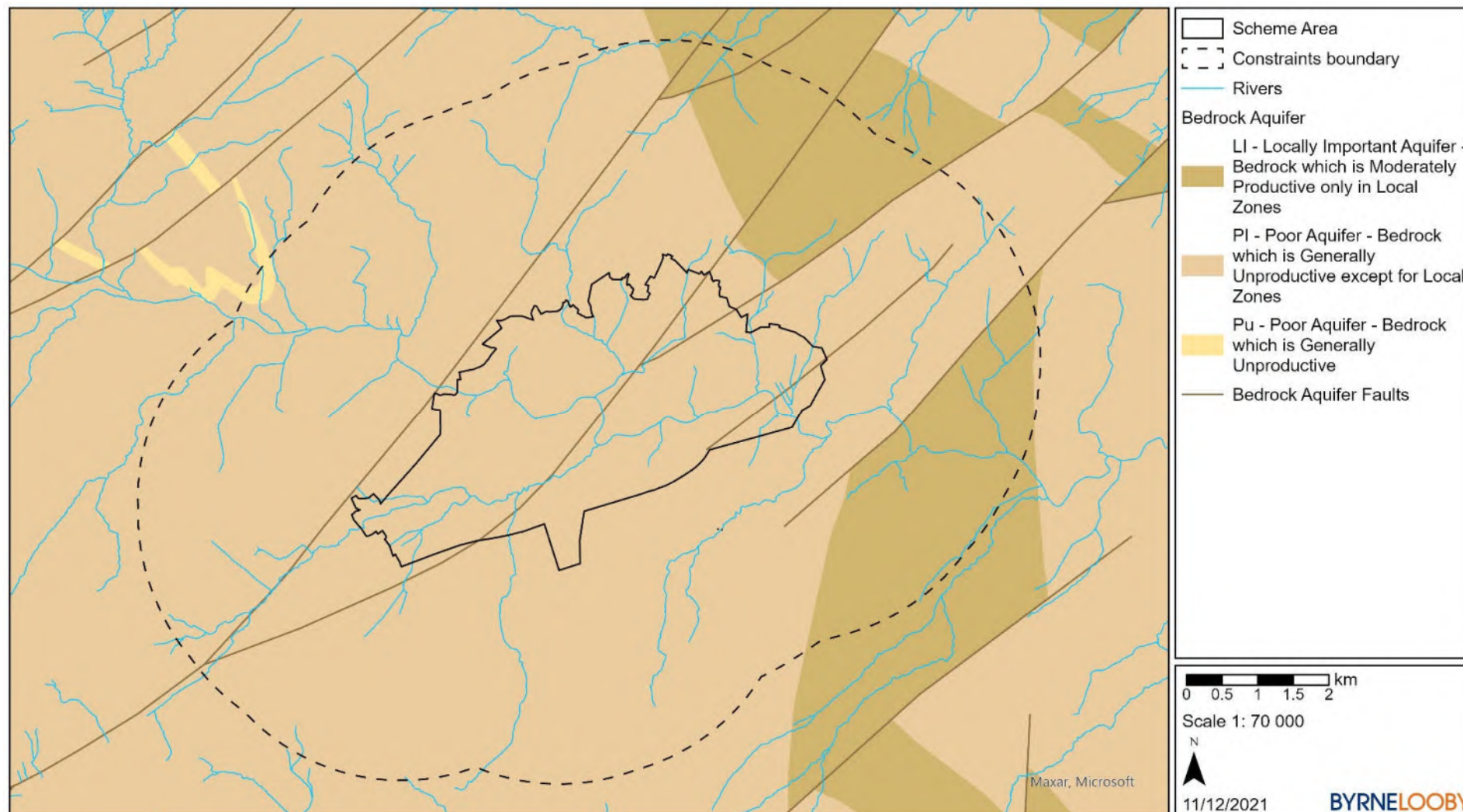


Figure 6-3: Aquifers in the study area

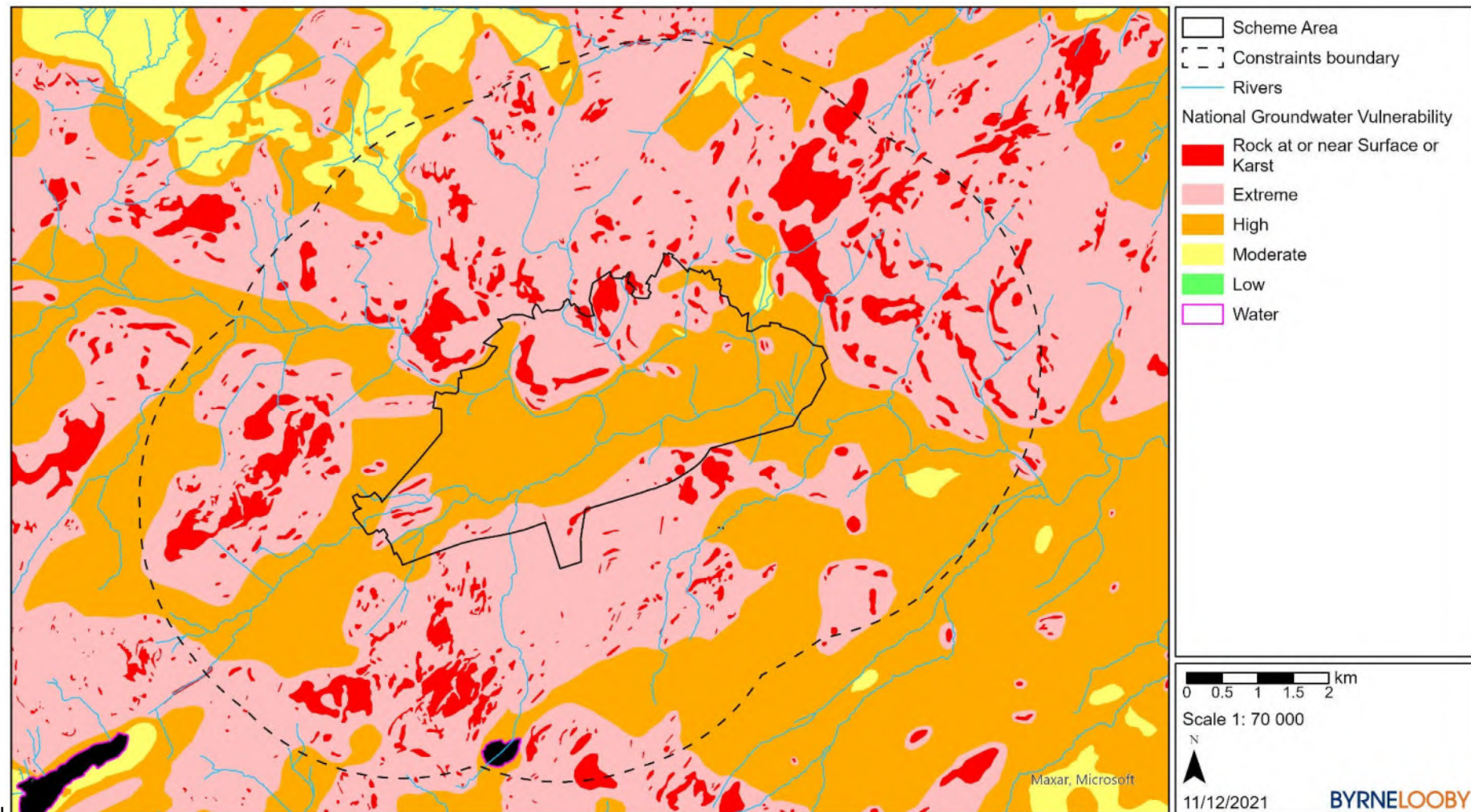


Figure 6-4: Groundwater vulnerability in the study area

6.4 Key Constraints

Key constraints associated with the soils, geology and hydrogeology of the study area include:

- **Made ground and/or contaminated ground:** Depending on the scheme design and type of works, for areas where made ground is uncompacted and/or highly variable, it may be required to excavate and replace this material with suitable founding material. This material may also be a possible source of contamination. As this material will be excavated during construction, it may require contamination testing to be undertaken during the detailed site investigation.
- **Contaminated land:** The scheme area is located in an area with industrial heritage and commercial properties. If intrusive works are required during construction at locations where known or unknown contaminated land may be present (e.g. from recorded historical land-use), an investigation may be required to determine if land contamination is present and, if present, to determine its nature and extent.
- **Soils and groundwater:** Poor draining soils occurring within the scheme footprint are potentially soft and compressible and will likely require a detailed site investigation (SI) in order to design a suitable flood defence scheme. Appropriate environmental controls and management measures will be implemented for any advance SI works, this may include a requirement for AA screening, or an application/notification to NPWS for approval. A CEMP will be developed for construction activities. The CEMP will identify appropriate equipment and construction techniques that should be used in circumstances where there is a potential impact to the environment. Engineering design should minimise the impacts of the flood relief scheme on the sections of river within the study areas and the wide catchment.
- **Groundwater vulnerability to contamination:** Depending on the design of the scheme, works may occur adjacent or within areas where groundwater is classified by the GSI as 'extremely vulnerable' to contamination. Appropriate environmental controls and management measures will be implemented for any advance SI works. A CEMP will be developed for construction activities. A CEMP will be developed for all site investigation works, construction activities and traffic management.
- **Karst features:** GSI data indicated that there are no recorded karst features in the study area. However, despite the lack of carbonate lithologies in bedrock in the study area it is prudent to consider that karst features such as caves, swallow holes, weathered rock and dolines may be present and can lead to ground surface and ground instability and are a constraint to be considered in the engineering design of the scheme.
- **Geoheritage:** It is good practice to inform the Geological Survey Ireland (GSI) (contact: Beatriz.Mozon@gsi.ie) where:
 - construction works temporarily or permanently uncover significant outcrop;
 - where reports detailing any site investigations can be made available to the GSI;
 - a digital photographic record of any significant new excavation can be produced and provided to the GSI.

7 Ecology and Biodiversity

7.1 Introduction

This section assesses data on flora, fauna and habitats within the study area in order to identify receptors potentially sensitive to flood risk management options, or which may constrain the implementation of certain options.

For the purposes of this report, the constraints study area is defined as an area approximately 15km in radius from the urban area of Ballybofey and Stranorlar where potential measures are proposed. This is shown in Figure 7-1 below.

The extent of the study area is based on best practice guidance (Chartered Institute of Ecology and Environmental Management, 2018 (updated 2019)) which advises that a 'zone of influence' is established which includes the area of which ecological features may be affected as a result of the scheme and (DoE, 2009) (DoE, 2009) which recommends that all Natura 2000 sites within 15km of a project be initially screened for impacts.

7.2 Methodology

A desktop assessment and a Preliminary Ecological Assessment (PEA) were carried out to identify features of ecological importance which have potential to be affected by the proposed development. It comprises of both a desk study and a walkover survey. A PEA (as described by the Chartered Institute of Ecology and Environmental Management (CIEEM) (Chartered Institute of Ecology and Environmental Management, 2017) is the term used to describe a rapid field assessment of the ecological features present, or potentially present, within a site of the surrounding area based on a visit to the site at a suitable time of the year. It involves describing the habitats and species present at the site based on visual and photographic surveys. The PEA is undertaken also to make a preliminary assessment of the likely impacts of a development. The assessments included an examination of aerial imagery and other available datasets to investigate the potential for connectivity to designated and ecologically sensitive areas, as well as a review of available literature e.g., NPWS data on European sites.

7.2.1 Desktop Study

During the desktop study, information was collated from readily available sources including:

- National Parks and Wildlife Service (NPWS) (<https://www.npws.ie/maps-and-data/habitat-and-species-data> (accessed November 2021))
- Development Applications Unit of the Department of Housing, Local Government and Heritage
- Birdwatch Ireland
- Lough's Agency (Loughs Agency, 2021)

- Inland Fisheries Ireland, The Atlas of Breeding Birds in Britain and Ireland (Sharrock, 1976)
- The New Atlas of Breeding Birds of Britain and Ireland (Gibbons et al., 1993)
- NPWS site synopses, satellite images of the area and OPW Discovery Series maps.
- Information on the Finn catchment was sourced from websites of and publications from the following organisations:
 - National Parks and Wildlife (National Parks and Wildlife Service, 2015);
 - The Environmental Research Unit (Environmental Research Agency, 1992, p. 507)
 - The Environmental Protection Agency (Environmental Protection Agency, 2018)
 - Lough's Agency (Loughs Agency, 2021)
 - Inland Fisheries Ireland.

7.2.2 Site Walkover

Habitats which might be affected by the development were identified and their suitability to support sensitive, rare and protected species was assessed (having regard to the typical ranges of species known to occur in the locality).

The walk over survey (September 2021) involved examining and recording the habitats and flora and fauna that are present along the river bank, in the vicinity of the locations of proposed measures, and areas for investigation and photographing representative elements of these. All identifications were made in the field and binoculars were used to identify birds.

7.2.3 Legislation and Guidance

In assessing the potential impacts on the prevailing biodiversity, due regard was had to relevant legislation and guidance including:

- EIA Directive (2014/52/EU);
- Planning and Development Acts 2000 – 2018 and Planning and Development Regulations 2001-2019;
- Wildlife Act 1976 and as amended;
- Flora (Protection) Order 2015;
- Inland Fisheries Act 1959 – 2010;
- EU Water Framework Directive 2000/60/EC;
- European Communities (Birds and Natural Habitats) Regulations 2011 (as amended);

- Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine (Chartered Institute of Ecology and Environmental Management (CIEEM), 2018 (updated September 2019));
- Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment (European Union, 2013);
- Ireland's National strategy for Plant Conservation: progress towards 2020 (Smyth, N. Cole, E. Kelleher, C, Jebb, M & Lynn, D., 2019);
- Ireland's Marine Strategy Framework Directive Article 19 Report Initial Assessment, GES and Targets and Indicators (Marine Institute, October 2013);
- National Biodiversity Action Plan 2017-2021 (Department of Culture, Heritage and the Gaeltacht, 2011); and,
- Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (Inland Fisheries Ireland, 2016).

This section of the report has been compiled from a preliminary ecology report based on a site walkover and desktop assessment.

A number of other factors that are also relevant to ecology due to their interactions, e.g. hydrology, hydrogeology and population and human health, are detailed in the relevant sections of this report.

7.3 Baseline / Receiving Environment

7.3.1 Natura 2000 sites

Natura 2000 is an ecological network composed of sites designated under the Birds Directive (Special Protection Areas (SPA)) and the Habitats Directive (Sites of Community Importance (SCI), and Special Areas of Conservation (SAC)).

Best practice guidance (DoE, 2009) recommends that all Natura 2000 sites within 15km of a project be initially screened for impacts.

There is 1 Special Protection Area (SPA) and 5 Special Areas of Conservation (SAC) within 15km of the urban area of Ballybofey and Stranorlar as listed in Table 7-1 and shown on Figure 7-1 (NPWS, 2021).

Table 7-1 Natura 2000 Sites within 15km of the Scheme Area

Type	Site Code	Site Name	County
SAC	000129	Croaghonagh Bog	Donegal
SAC	000163	Lough Eske and Ardnamona Wood	Donegal
SAC	002301	River Finn	Donegal
SAC	000173	Meentygrannagh Bog	Donegal
SAC	002287	Lough Swilly	Donegal
SPA	004075	Lough Swilly	Donegal

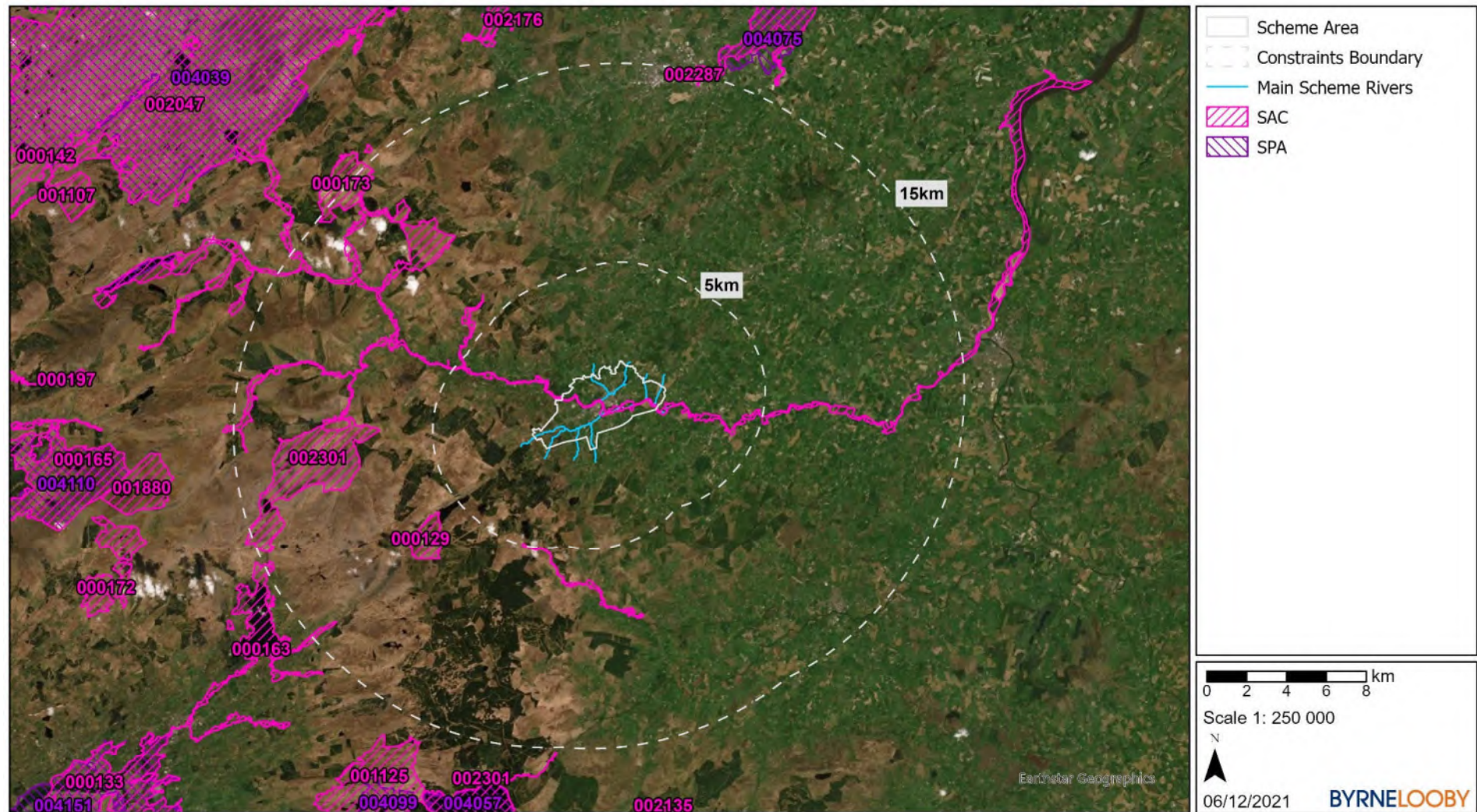


Figure 7-1: Natura 2000 Sites within 15km of Ballybofey and Stranorlar

7.3.1.1 River Finn Special Area of Conservation

The River Finn Special Area of Conservation (SAC) (site code 002301) is of high conservation value for the following Qualifying Interest (QI) habitats and plant and animal species (*denotes a priority habitat):

Habitats

- 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- 4010 Northern Atlantic wet heaths with *Erica tetralix*
- 7130 Blanket bogs (* if active bog)
- 7140 Transition mires and quaking bogs

Species

- 1355 Otter (*Lutra lutra*)
- 1106 Salmon (*Salmo salar*)

The SAC contains protected water dependent habitats or species.

None of the above habitats are present with the study area. Both species are present within the study area and are discussed further in the following sections.

7.3.2 Natural Heritage Areas and proposed Natural Heritage Areas

There are 4 Natural Heritage Areas (NHA) and 7 proposed Natural Heritage Areas, within 15km of the scheme (see Table 7-2).

Table 7-2 Proposed Natural Heritage Areas (pNHA) and Natural Heritage Areas (NHA) within 15 km of the site

Type	Site Code	Site Name	County
pNHA	000166	Lough Swilly Including Big Isle, Blanket Nook & Inch Lake	Donegal
pNHA	000129	Croaghonagh Bog	Donegal
pNHA	000173	Meentygrannagh Bog	Donegal
pNHA	001129	Feddyglass Woods	Donegal
pNHA	001870	Tullytresna Bog	Donegal
pNHA	002011	River Swilly Valley Woods	Donegal
pNHA	002046	Owendoo And Cloghervaddy Bogs	Donegal
NHA	002375	Barnesmore Bog NHA	Donegal
NHA	002437	Meenagarranroe Bog NHA	Donegal
NHA	002452	Lough Hill Bog NHA	Donegal
NHA	000122	Cashelnavean Bog NHA	Donegal

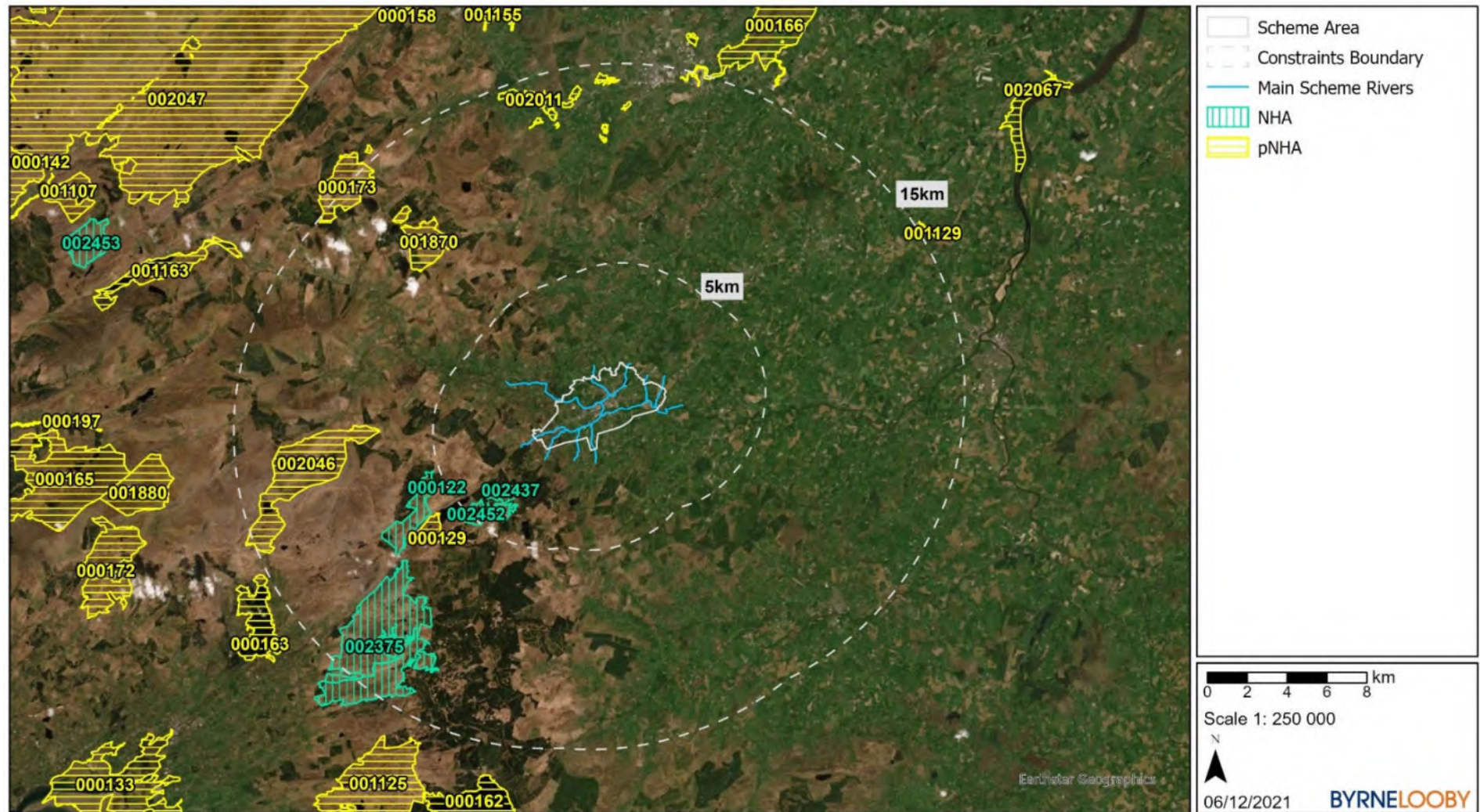


Figure 7-2: Natural Heritage Sites and proposed Natural Heritage Sites within 15km of the scheme area

7.3.3 Ecology and Water Designated Statuses

Figure 7-3 provides a map showing the extents of the River Finn Catchment, The River Finn and the Scheme Area.

7.3.3.1 Water Framework Directive

The WFD was agreed by all individual European Union (EU) member states in 2000 and provides a comprehensive framework for water quality management across the EU. The directive requires that all member states adopt a comprehensive integrated basin-based approach to water management. The key objectives of the directive are to maintain a 'High' status of waters where it exists, prevent any deterioration in the existing status of waters and achieve at least 'Good' in relation to all waters by 2015, latest by 2027. Those rivers classed as being 'at risk' relates to the potential of that watercourse meeting the 'Good' Ecological Status.

Surface water bodies in the study area, including the River Finn (FINN DONEGAL_050, FINN DONEGAL_060), and Burn Durnett (BURN DAURNETT_010) are classed under the Water Framework Directive as 'At risk' of not meeting the WFD objectives of 'good' Ecological Status (see Table 5-2 and Figure 5-4). Further, the Ecological Status is recorded as being 'poor' (see Table 5-2 and Figure 5-4). Significant pressures from forestry and agriculture (pasture), waste (combined sewer overflows) and urban run-off (diffuse Sources run-off) are highlighted as key concerns for the rivers in the study area.

The River Basin Management Plan (RBMP) for Ireland 2022-2027 is currently out for public consultation², to be published later in 2022. The final plan will need to be considered in this flood relief scheme.

7.3.3.2 Quality of Salmonid Waters) Regulations

The River Finn (code: IEPA5D0014) is designated under S.I. 293: European Communities (Quality of Salmonid Waters) Regulations, 1988 within the scheme area and along the river's course from Lough Finn to Lifford.

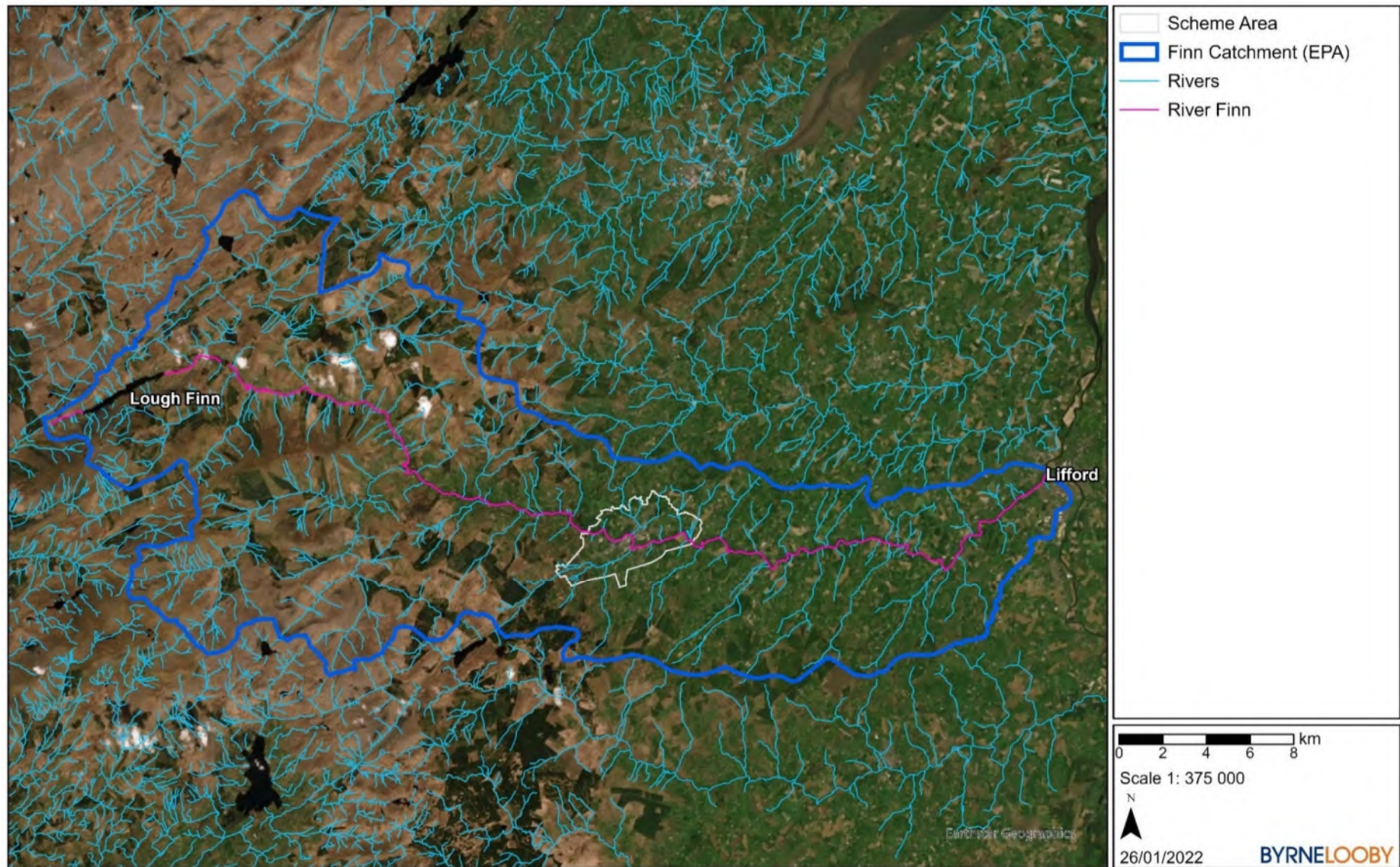
7.3.3.3 Nutrient Sensitive Areas

There are no designated Nutrient Sensitive Areas in the Finn catchment. However, species sensitive to water quality are present in the scheme area and pressures on water quality have been identified within the catchment.

7.3.3.4 Other

The catchment occurs with *Margaritifera margaritifera* sensitive areas (Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media, 2017). However, this species is not recorded within the study area (see Section 7.4.3.6).

² <https://www.gov.ie/en/consultation/2bda0-public-consultation-on-the-draft-river-basin-management-plan-for-ireland-2022-2027/>



7.3.4 Protected/Notable Species

Several species of flora and fauna are afforded protection under national, European and international law. At a national level, species are protected under, inter alia, the Wildlife Acts. At a European level, species are protected under, inter alia, the Birds Directive (Council Directive 79/409/EEC) and Habitats Directive (Council Directive 92/43/EEC), which are transposed into national law by various measures including the European Communities (Natural Habitats) Regulations, 1997-2005, and the European Communities (Conservation of Wild Birds) Regulations, 1985. The badger is not considered endangered in Ireland; however, badgers are protected under the Wildlife Acts (Wildlife Act, 1976; Wildlife Amendment Act, 2000), and in Northern Ireland under the Wildlife (N.I.) Order of 1985.

In many cases a derogation licence will be required to remove or disturb these legally protected species or their habitats.

Protected/Notable species recorded in the study are include:

- Otter
- Red Squirrel
- Badgers
- Bats
- Irish Stoat
- Various freshwater fish, including Salmon
- Aquatic Mollusc species

7.3.4.1 Birds

Over 65 bird species (National Biodiversity Records Centre, 2021) have been recorded from the study area including the following protected bird species: Barn Swallow (*Hirundo rustica*), Black-headed Gull (*Larus ridibundus*), Canada Goose (*Branta canadensis*), Common Coot (*Fulica atra*), Common Goldeneye (*Bucephala clangula*), Common Grasshopper Warbler (*Locustella naevia*), Common Kestrel (*Falco tinnunculus*), Common Linnet (*Carduelis cannabina*), Common Pheasant (*Phasianus colchicus*), Common Snipe (*Gallinago gallinago*), Common Starling (*Sturnus vulgaris*), Common Swift (*Apus apus*), Common Wood Pigeon (*Columba palumbus*), Eurasian Curlew (*Numenius arquata*), Eurasian Teal (*Anas crecca*), Eurasian Woodcock (*Scolopax rusticola*), House Martin (*Delichon urbicum*), House Sparrow (*Passer domesticus*), Little Grebe (*Tachybaptus ruficollis*), Mallard (*Anas platyrhynchos*), Mute Swan (*Cygnus olor*), Rock Pigeon (*Columba livia*), Sand Martin (*Riparia riparia*), Whooper Swan (*Cygnus cygnus*) and Yellowhammer (*Emberiza citrinella*).

7.3.4.2 Mammals (non volent)

The desk study data collection exercise confirmed records of otter, red squirrel, badgers, irish stoat and bats. The study site contains suitable foraging, commuting, breeding and resting habitats for common mammal species in general and similar habitats are also present at a larger scale in the wider landscape. Overall, the proposed site is considered of local importance for mammal (non-volant) species.

7.3.4.3 Otter

The ecological study area contains suitable commuting, foraging, breeding and resting habitats for otter. Desktop study indicates that otters have previously been reported as occurring in the vicinity of the scheme.

Three potential otter holts were recorded during the field survey, all within 100m of Ballybofey Bridge. At one of these locations, otter hair at the entrance and soil disturbance suggests it is currently active.

Otter is listed as vulnerable in the Irish Red Data Book and is fully protected in the State by the Wildlife Act. It is also listed in both Annex II and IV of the EU Habitats Directive and in Appendix II of the Berne Convention.

7.3.4.4 Red Squirrel

Although red squirrel have been recorded in the study area, no dreys or field signs were recorded during the site visit. Construction work is very unlikely to threaten red squirrel as no drey sites were recorded within the proposed scheme area.

The red squirrel is protected under the Wildlife Act (1976) and Wildlife (Amendment) Acts (2000 and 2010) and the Bern Convention (Appendix III).

Ongoing/regular human disturbance may deter red squirrel from using the site on a regular basis.

7.3.4.5 Pine Marten

There are no existing NBDC records for Pine Marten within the study area. No evidence of pine marten activity was observed during the Habitat and Species Walkover Survey.

The pine marten is protected in Ireland by both national and international legislation. Under the Irish Wildlife Acts it is an offence, except under licence, to capture or kill a pine marten, or to destroy or disturb its resting places.

Ongoing/regular human disturbance may deter pine marten from using the site on a regular basis.

7.3.4.6 Badger

Badgers have been recorded in the study area (NBDC, 2021). During the ecology survey, a potential sett was recorded within 100m of Ballybofey Bridge. Hair at the entrance and soil disturbance suggests it is currently active.

Ongoing/regular human disturbance may deter badgers from using the site on a regular basis.

7.3.4.7 Bats

Brown Long-eared Bat (*Plecotus auritus*), Daubenton's Bat (*Myotis daubentonii*), Lesser Noctule (*Nyctalus leisleri*), Long-eared Bat (*Plecotus auritus*), Pipistrelle (*Pipistrellus sensu lato*) and Soprano Pipistrelle (*Pipistrellus pygmaeus*) have been recorded in the study area (NBDC, 2021).

All bat species are listed in Annex IV(a) of the Habitats Directive and are strictly protected in Ireland. a person who deliberately captures, kills or disturbs a specimen in the wild..... or who damages or destroys a breeding site or resting place of such an animal, is guilty of an offence (Mullen, Marnell, & Nelson, 2021).

Habitat suitability index data compiled by the National Biodiversity Data Centre (NBDC, 2021) for the scheme area indicates that it is generally of moderate suitability for bat usage. The area is deemed most suitable for soprano pipistrelles, common pipistrelles, Leisler's and natterer's bats. The surrounding landscape is reasonably diverse, comprising a mixture of agricultural grassland, woodland and urban land-uses, which are punctuated by a network of criss-crossing treelines/hedgerows and a river system. The diverse landscape, as well as the presence of ecological corridors (in the form of hedgerows/treelines and rivers) are what increases the habitat suitability index for bats. The reasonably high coverage of built land is likely to have prevented a higher overall index being attributed to the area.

Bat habitat suitability within the study area is summarised in Table 7-3 below

Table 7-3 Bat habitat suitability index

Bat Species	Index (out of 100)
All Bats	26
<i>Pipistrellus pygmaeus</i>	41
<i>Plecotus auritus</i>	29
<i>Pipistrellus</i>	36
<i>Rhinolophus hipposideros</i>	1
<i>Nyctalus leisleri</i>	38
<i>Myotis mystacinus</i>	20
<i>Myotis daubentonii</i>	29
<i>Pipistrellus nathusii</i>	1
<i>Myotis nattereri</i>	39

7.3.4.8 Irish Stoat

Irish Stoat has been recorded in the scheme area (NBDC, 2021). The Irish stoat is protected under the Wildlife Act (1976) and Wildlife (Amendment) Act 2000.

7.3.4.9 Herpetofauna (reptiles and amphibians)

Records for Common Frog (*Rana temporaria*) exists for the study area, including a historical record of frogspawn at 'Drumbe Woods' in Stranorlar. No published records for Smooth Newt (*Lissotriton vulgaris*) or Natterjack Toad (*Epidalea calamita*) are held by NBDC.

Common Frog is the only species of frog found in Ireland and is listed as an internationally important species. Frogs are protected under the European Union Habitats Directive and by the Irish Wildlife Act.

7.3.4.10 Freshwater Fish

The primary fish species within the Finn catchment include Atlantic salmon (*Salmo salar*), Sea Trout (*Salmo trutta morpha trutta*), Brown Trout (*Salmo trutta*), Arctic Charr (*Salvelinus alpinus*), Sea

Lamprey (*Petromyzon marinus*), Brook and River Lamprey (*Lampetra planeri* and *Lampetra fluviatilis*), and European Eel (*Anguila anguila*). Flounder (*Platichthys flesus*), Twaite Shad (*Alosa fallax Lacépède*) and European Smelt (*Osmerus eperlanus*) may be present within the lower tidal River Finn (The Loughs Agency, 2007).The River Finn is one of the major salmon rivers in the Foyle Catchment. Atlantic Salmon is a qualifying interest of the River Finn SAC. A counter, operational since 2000, is located at Killygordon which is downstream of the study area and the count data is reproduced in Table 7-4 (Loughs Agency, 2021).

Table 7-4 Salmon count in the River Finn at Killygordon

Year	Net Up Count for Salmon
2012	2190
2013	2715
2014	3748
2015	2953
2016	2588
2017	1985
2018	3955
2019	4247
2020	2302

Further surveys are required on site to establish the presence/absence / abundance of the fish species listed above. This will involve netting and electrofishing surveys.

It is noted that there is an active National Salmon Monitoring Programme which is led by the Standing Scientific Committee on Salmon (SSCS) of Inland Fisheries Ireland. Conservation initiatives aim to recover stocks in rivers not meeting their conservation limits and to manage all rivers in compliance with the EU Habitats Directive (92/43/EEC) (EPA, 2017).

7.3.4.11 Aquatic Mollusc

River limpet (*Ancylus fluviatilis*) and Wandering Snail (*Radix balthica*) have been recorded in the scheme area (NBDC, 2021).

There are two records of Freshwater Pearl Mussel within the Finn Catchment (one live and one dead) (OPW, Jan 2022). The Finn catchment is categorised as a 'Catchment of other Extant Populations' for this species (NPWS, 2021)³. The species however is not considered to be a significant constraint to the scheme.

This species was recorded in the River Foyle, downstream of the scheme area and of Lifford near Corkan Isle. It has also been recorded within the River Mourne upstream of the confluence of the River Finn and the River Mourne. To the west of the scheme area historical records on this species from the

³ These mussel populations may lie (in part) within SAC, other nature conservation sites or in the wider countryside. Those populations within SAC were not considered of sufficient quality to warrant designation for the species and detailed restoration objectives, targets, plans or measures are unlikely to be developed. This species is therefore not considered to be a significant constraint for the Scheme. However, the potential effects of any plans, developments or activities on the populations, including the potential to cause 'environmental damage' as per the Environmental Liability Directive and Regulations, must be determined through SEA, EIA or other ecological assessment.

mid-1900s are recorded for Mullanieran Bridge and Mullanmore, West Donegal. To the south west of the study area historical records for this species from the mid-1900s are recorded from the River Eske at Drumbarrenhill, Drumnacary and Thrushbank Bridge and there is no connectivity with the River Finn (National Biodiversity Data Centre, 2021).

The freshwater pearl mussel is listed as Endangered on the IUCN Red List and is one of the 365 most endangered species in the world. It is protected under the Wildlife Act and Annex II and V of the EU Habitats Directive. Any activities that result in changes in river flow, increased levels of silt, and increased levels of nutrients are contributing to the decline of freshwater pearl mussels. In addition to drainage, and changes to river channel morphology, increased intensification of land use in river catchment areas can contribute to inadequate conditions for freshwater pearl mussel survival.

7.3.5 Aquatic and Terrestrial Site habitats

A habitats survey was completed in September 2021. Habitats (*sensu* Fossitt, 2000) present within the study area are listed in Table 7-5. Habitat maps are provided in Appendix C.

Table 7-5 Habitat types within and adjacent to the proposed scheme footprint

Habitat Name	Habitat Code (as per Fossitt, 2000)
Eroding/Upland Rivers	FW1
Depositing/Lowland Rivers	FW2
Drainage Ditches	FW4
Improved Agricultural Grassland	GA1
Amenity Grassland	GA2
Dry Meadows and Grassy Verges	GS2
Mixed Broadleaved Woodland	WD1
Scrub	WS1
Ornamental/Non-native Scrub	WS3
Hedgerows/Treelines	WL1/WL2
Spoil and Bare Ground	ED2
Recolonising Bare Ground	ED3
Buildings and Artificial Surfaces	BL3

7.3.6 Invasive species

7.3.6.1 Invasive floral species

Regulations 49 and 50 of the European Communities (Birds and Natural Habitats) Regulations 2011 make it an offence to: plant, disperse, allow dispersal or cause the spread of a number of non-native 'invasive species' including Japanese knotweed and Himalayan balsam.

NBDC record and Donegal County Council records indicate that Himalayan Balsam (*Impatiens glandulifera*) and Japanese Knotweed (*Fallopia japonica*) are recorded with the vicinity of the scheme. These terrestrial invasive flora species are non-native and subject to restrictions under Regulations 49 and 50 throughout the State (S.I. No. 477 of 2011, 3rd Schedule, Part 1).

A single record of Canadian Waterweed (*Elodea canadensis*) is recorded from the scheme area at the River Finn adjacent to the Finn Valley Athletic Club and upstream of the bridge at Millbrae (NBDC grid

code: H19M, and record date: 01/08/2007). This aquatic species is designated as a High Impact Invasive Species. It is a non-native, invasive plant that out-competes crowds-out and displaces native plants. Additionally, under favourable conditions it can grow rapidly and can choke the margins of slow-flowing rivers. All species of *Elodea* spp. (waterweeds) are non-native species subject to restrictions under Regulations 49 and 50 throughout the State (S.I. No. 477 of 2011, 3rd Schedule, Part 1).

Sycamores (*Acer pseudoplatanus*) are an invasive species widely present across the Island of Ireland that is not subject to legal restrictions (NBDC grid code: H19M, and record date: 01/08/2007). This species is present in the scheme area.

A survey to identify and record the occurrence of non-native invasive species was undertaken in September 2021. Japanese Knotweed and Himalayan balsam have been identified as present within the public realm areas in the study area as shown on Figure 7-4. An Invasive Species Management Plan has been prepared separately (Report Ref (ByrneLooby, 2021 Ref: W3639-BLP-R-ENV-010)).

An invasive species treatment and management plan will be implemented for the scheme during 2022 and on a continuous basis leading to construction and operation of the Scheme.

7.3.6.2 Invasive faunal species

Desktop study indicates that the following non-native invasive fauna species have been recorded in the scheme area:

- Eastern Grey Squirrel (*Sciurus carolinensis*) have been recorded in the vicinity of the scheme with the most recent record dated January 2019.
- a single historical record of American Mink (*Mustela vison*) has been documented from near Burndaurnet Bridge, Ballybofey, within the vicinity of the scheme, dated July 1997. Mink has also been recorded from across the wider region.
- the New Zealand Flatworm (*Arthurdendyus triangulatus*) was recorded at Treanamullin (Stranorlar) and Glencovet (Ballybofey) with three records collected from April and May 2018).

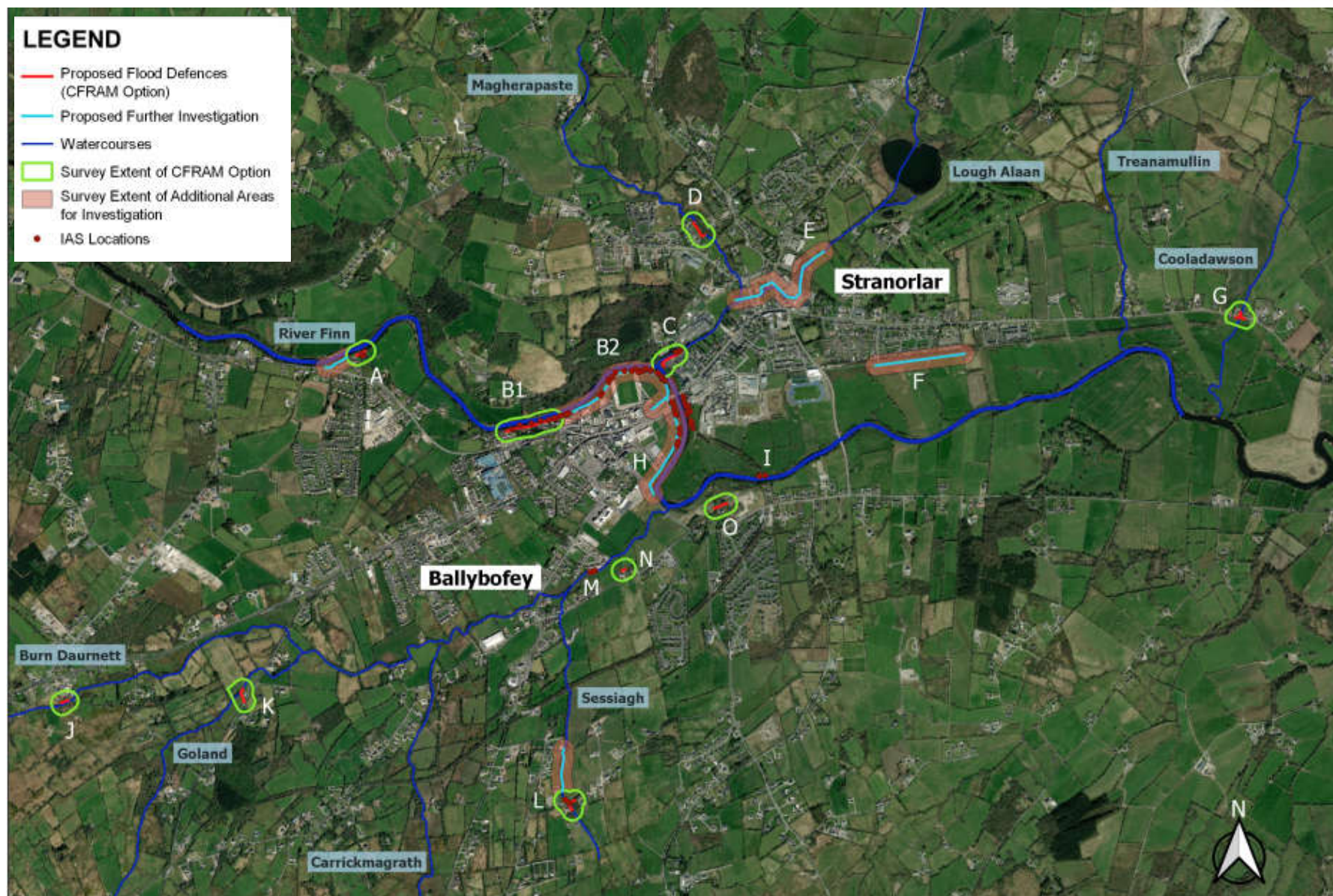


Figure 7-4 Invasive Species (extract from ByrneLooby, 2021 Ref: W3639-BLP-R-ENV-010)

7.4 Key Constraints

7.4.1 Water Framework Directive

Surface water bodies in the study area are classed under the Water Framework Directive as 'At risk' of not meeting the WFD objectives of 'good' Ecological Status.

Under WFD requirements, the development of the scheme should incorporate measures not to worsen its status. All possible risks of point source pollution or runoff during construction and operation should be assessed and prevented. Works during the construction of the scheme could pose a threat to the water quality of water bodies within and downstream of the study area through various mechanism, chiefly:

- (1) Increasing suspended solids in the water bodies through release or run-off of significant amounts of suspended solids during enabling works and construction; and
- (2) Unplanned events such as leaks/spills/runoff/accidental release or escape of fuels, oils and lubricants, bulk liquid cement, contaminated leachate, etc.

7.4.2 Protected Sites

The most significant ecological constraint in Ballybofey and Stranorlar is the River Finn, given its status as an SAC and salmonoid river. For this reason, any works that are to be carried out to reduce flooding must take this sensitivity into account. Where at all possible, any in-river works should be avoided and every effort must be made to minimise, if not avoid, any run off to it.

All work that is to be carried out on the river bank must be carried out in such a way as to minimise the potential for events such as diesel or concrete spillages, run off of water with suspended sediment loadings or any accidental spillages. If considered necessary to re-build in river structures (e.g. culverts, weirs), the same sort of construction approach should be designed in to minimise resuspension and loss of concrete to the river.

Appropriate Assessment under Articles 6(3) and 6(4) of the EU Habitats Directive (Directive 92/43/EEC) will be required for the proposed scheme.

7.4.3 Protected/notable Species

In ecological terms, the river corridor (including the river itself) supports a number of protected species including salmon, sea and brown trout, otter, bats and badger.

Any in-river and bankside works have to be designed to minimise potential impacts on these (and all other) species.

All works should be planned wherever possible to be carried out at times of the year that are ecologically least sensitive e.g. outside bird nesting (March – September) and fish migration periods (Spring/Summer, depending on species).

7.4.3.1 Otter

As a European protected species, the otter is fully protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). Any scheme option that may have the potential to disturb otters must be assessed.

A full otter survey should be completed once the scheme extents are known. If otters are found to be present and disturbance is likely then the contractor must apply for a licence to allow proposed development works that might affect otters to proceed legally. The potential impacts on otter will be assessed and reported in the EIA.

Otter mitigation works can potentially be conducted at any time of year but must avoid the breeding season (usually Spring but can be any time of year) if holts are present on site.

7.4.3.2 Badgers

Pre-construction update surveys will be carried out to maintain the validity of species data. The results of these would inform the decision as to whether to close a sett through exclusion or to destroy it if it is no longer active. Alternative locations for artificial setts would also be scoped in these updates. Surveys would be carried out in accordance with best practice guidance.

Should a badger sett be recorded within the scheme extents prior to construction works then appropriate mitigation and a licence for works will be required. Construction of new setts must be completed in Spring/Summer with blocking and destruction of existing setts completed in Autumn/early winter.

7.4.3.3 Bat

The scattered mature trees, bridges, architecture (churches, masonry) and areas of low water flow provide good foraging, roosting and commuting routes for bat species in the area. Options that require the removal of mature trees or works to bridges or other riverine structures with the potential to support roosting bats shall be assessed for bat potential. Bat surveys shall be conducted on any features with medium or high potential for roosting bats.

Once more detail becomes available pertaining to the proposed structural alterations to the site (including the proposed methods of construction), the site should be re-visited for the purpose of:

- Surveying key locations (e.g. where it is known that potential roosting habitat will be removed or disturbed); and
- Obtaining more detailed information about any potential bat roosts (i.e. whether it is a maternity roost, hibernaculum etc.)

This information will inform any considerations of mitigation measures that may need to be implemented. The optimal time to conduct map surveys are May and August when bats are most active. If bats are found, they should not be disturbed during hibernation period (October to March) or maternity period (June to August). If a bat roost requires removal, then a licence would be required. Removal of roosts should be carried out during the summer months for hibernation roosts and during the winter months for maternity roosts.

As all Irish bats and their roosts are protected under national and EU legislation it is an offence to disturb or interfere with them without a licence. Such a derogation (which must be given by the Minister for the Environment, Heritage and Local Government) can only be sanctioned where there is no satisfactory alternative and where it will not be detrimental to the favourable conservation status of the species concerned. Therefore, any felling of trees or work on bridges which provide suitable roost habitat for bats should be sought in advance of any development that may interfere with such roost sites.

7.4.3.4 Irish Stoat

Irish Stoat has been recorded in the scheme area. The Irish stoat is protected under the Wildlife Act (1976) and Wildlife (Amendment) Act 2000.

Should a breeding den for Irish Stoat be recorded from within or adjacent to (ca 50m) a license to close the den will be required from the NPWS. If a den is found, no works can be carried out during the breeding season (this can range from February to August).

7.4.3.5 Freshwater Fish

A fish survey of suitable waterbodies in the study area should be completed on site to establish the presence/absence/abundance of fish species. This will involve netting and electrofishing surveys, where required (i.e. where instream works will cause disturbance to the river bed via structure or excavation) and where technically feasible.

In terms of the construction programme, it should be noted that in salmonid catchments, in-stream works are not permitted between the months of January to April (migration) and October to December (spawning). This corresponds with guidance from Inland Fisheries Ireland (Murphy, 2016).

Lamprey (both species) spawning takes place in the spring and early summer period in often the same habitats where salmon and trout spawn (O'Connor, 2017). The spawning season for brown and sea trout is November to February. If spawning grounds are found to be present in the construction zone for the scheme, then this period should be avoided.

A full impact assessment and management plan for these fish species will be produced as part of the EIA report once full scheme details (including construction methods) are known.

7.4.3.6 Freshwater pearl mussel

There are two records of Freshwater Pearl Mussel within the Finn Catchment (one live and one dead) (OPW, Jan 2022). The Finn catchment is categorised as a 'Catchment of other Extant Populations' for this species (NPWS, 2021)⁴.

⁴ These mussel populations may lie (in part) within SAC, other nature conservation sites or in the wider countryside. Those populations within SAC were not considered of sufficient quality to warrant designation for the species and detailed restoration objectives, targets, plans or measures are unlikely to be developed. However, the potential effects of any plans, developments or activities on the populations, including the potential to cause 'environmental damage' as per the Environmental Liability Directive and Regulations, must be determined through SEA, EIA or other ecological assessment.

This species has also been recorded in the River Foyle downstream of the scheme area and of Lifford near Corkan Isle. It has also been recorded within the River Mourne upstream of the confluence of the River Finn and the River Mourne. To the west of the scheme area historical records on this species from the mid-1900s are recorded for Mullanieran Bridge and Mullanmore, West Donegal. To the south west of the study area historical records for this species from the mid-1900s are recorded from the River Eske at Drumbarrenhill, Drumnacary and Thrushbank Bridge and there is no connectivity with the River Finn (National Biodiversity Data Centre, 2021).

The freshwater pearl mussel is listed as Endangered on the IUCN Red List and is one of the 365 most endangered species in the world. It is protected under the Wildlife Act and Annex II and V of the EU Habitats Directive. Any activities that result in changes in river flow, increased levels of silt, and increased levels of nutrients are contributing to the decline of freshwater pearl mussels. In addition to drainage, and changes to river channel morphology, increased intensification of land use in river catchment areas can contribute to inadequate conditions for freshwater pearl mussel survival.

In addition, any impacts that result in a decrease in anadromous salmonid populations (Atlantic salmon and sea trout) could have a significant impact upon the viability of the freshwater pearl mussel population. The lifecycle of freshwater pearl mussel is reliant upon the development of glochidia which attach to the gills of host fish, usually juvenile salmonids, to continue development (Skinner A, 2003). Therefore, a decline in the salmonid population within the river, as a result of construction and operational disturbance to migration, could have an impact upon the future viability and population size of freshwater pearl mussel. Works therefore should be carried out outside the period when salmon are migrating either upstream to breed or when fish return to the sea as smolts or adults.

7.4.3.7 Invasive Species

Japanese Knotweed and Himalayan balsam have been identified as present within the study area. An Invasive Species Management Plan has been prepared separately (Report Ref (ByrneLooby, 2021 Ref: W3639-BLP-R-ENV-010)).

An invasive species treatment and management plan will be implemented for the scheme during 2022 and on a continuous basis leading to construction and operation of the Scheme.

8 Cultural Heritage and Archaeology

8.1 Introduction

This section assesses and evaluates the potential cultural heritage and archaeology (consisting of archaeological and built heritage) constraints of the study area.

For the purposes of this report, the constraints study area is defined as the Scheme Area as outlined in Figure 8-1.

8.2 Methodology

Constraints were determined through a desk study. The assessment involved the compilation and mapping of available cultural heritage data sets. This forms a permanent renewable database that can be utilised by multiple specialist users to provide information for the project design and EIA process.

A review of the following information took place in order to inform the cultural heritage report:

- Guidelines for the Archaeological Assessment of Flood Relief Schemes (Department of Housing, Local Government and Heritage, 2021).
- Framework and Principles for the Protection of the Archaeological Heritage – Published by Dúchas (Department of Arts, Heritage, Gaeltacht and the Islands, 1999).
- UNESCO World Heritage Sites (WHS) and Tentative World Heritage Sites and those monuments on the tentative list.
- National Monuments in State care, as listed by the National Monuments Service (NMS) of the Department of Housing, Local Government and Heritage (DHLGH).
- National Monuments Sites with Preservation Orders Sites.
- Sites listed in the Register of Historic Monuments.
- Record of Monuments and Places (RMP) and the Sites and Monuments Record (SMR) from the Archaeological Survey of Ireland.
- National Inventory of Architectural Heritage (NIAH) Building Survey (NIAH ratings are international, national, regional, local and record, and those of regional and above are recommended for inclusion in the RPS).
- Cartographical Sources, OSi Historic Mapping Archive, including early editions of the Ordnance Survey including historical mapping (OSi, 2021).
- Topographical files of the National Museum of Ireland as provided through Heritagemaps.ie (The Heritage Council, 2021).
- Place names; Townland names and toponymy (Gaois, Fiontar & Scoil na Gaeilge and The Placenames Branch Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media, 2021).

- The Dúchas Project National Folklore Collection (UCD, 2021).
- A review and interpretation of aerial imagery (Google earth 2001–2021 used in combination with historic mapping to identify potential cultural heritage assets).
- Settlement Character Assessment in Landscape Character Assessment of County Donegal (Donegal County Council, 2021).
- National Inventory of Architectural Heritage, Survey of the Architectural Heritage of County Donegal (NIAH) (National Inventory of Architectural Heritage, 2021).
- The Irish archaeological excavations catalogue i.e. Excavations bulletin and Excavations Database (Department of Housing Local Government and Heritage, 2021).
- Draft County Donegal Heritage Plan 2014-2019 (County Donegal Heritage Forum, 2015).
- Wreck Inventory of Ireland Database (WIID) (National Monuments Service, 2021).
- Record of Protected Structures 2020 as set out in the Draft County Donegal Development Plan 2018–2024 (Donegal County Council, 2020)

The 'Archaeological Survey of County Donegal' 1983 is currently being reprinted as part of the implementation of the Draft County Donegal Heritage Plan.

8.3 Baseline / Receiving Environment

Ballybofey and Stranorlar have clear historical cores, formed around crossroads either side of the River Finn that have over time merged into one urban structure. Although both towns have a long history of settlement they are not considered 'Heritage Towns' by Donegal County Council nor 'Historic Towns' by the Heritage Council.

The DCC settlement report (2018- 2024) states that there are 9 protected structures in and around the twin towns, with a further 27 listed on the National Inventory of Architectural Heritage. The River Finn is a Special Area of Conservation, and the settlement is surrounded by 12 recorded monuments.

Objectives for the protection of the Archaeological and Built Heritage in the county are set out in the County Donegal Development Plan 2018 – 2024:

'AH-O-1: To conserve and protect the County's archaeological heritage for present and future generations.'

'BH-O-1: To preserve, protect, enhance and record the archaeological heritage of the County.'

8.3.1.1 Previous excavations

There have been several archaeological excavations within the study area. The excavations and investigations within the study area are summarised as follows (Department of Housing Local Government and Heritage, 2021):

- Mullindrait, Stranorlar (code: 2005:343): Site type of no archaeological significance.

- Millbrae, Stranorlar (code: 2015:213): Site type is fulacht fiadh with no finds.
- Navenny, Ballybofey (code: 2006:0459): Site type of no archaeological significance.
- Glenmore–Ballybofey (code: 2001:275): Site type is a mound and large standing stone
- Stranorlar-Ballybofey (code: 1999:145): Site type of no archaeological significance.
- Donegal Road, Ballybofey (code: 2011:137): Site type of no archaeological significance.

8.3.2 Designated Heritage Constraints

8.3.2.1 Underwater archaeology

In response to initial consultation, Development Applications Unit have advised in a pers comm dated 5th November 2021 that ‘the Wreck Inventory of Ireland Database lists a large number of longboat discoveries from the Rivers Finn and Foyle, near Ballybofey’. However, such records are not readily identifiable in the publicly available online datasets hosted by Department of Housing, Local Government, and Heritage or the National Monuments Service: Wreck Viewer and archive records will be consulted during the specialist surveys to be completed in 2022.

8.3.2.2 World Heritage Site

There are no World Heritage Sites in the study area nor are there any sites contained in the tentative list of candidate Sites.

8.3.2.3 National Monument and Preservation Order sites

There are no National Monuments in the ownership of the State in the study area.

8.3.2.4 Record of Monuments and Places and Sites and Monuments Record Sites (RMP / SMR sites) and Zone of Archaeological Potential (ZAP)

The Record of Monuments and Places (RMP) of the DHLGH records known upstanding archaeological monuments, their original location (in cases of destroyed monuments) and the position of possible sites identified as cropmarks on vertical aerial photographs. Archaeological sites identified since 1994 have been added to the non-statutory SMR database of the Archaeological Survey of Ireland (National Monuments Service, DHLGH), which is available online at www.archaeology.ie and includes both RMP and SMR sites. Those sites designated as SMR sites have not yet been added to the statutory record but are scheduled for inclusion in the next revision of the RMP. RMP sites located within the proposed study area are detailed in Table 8-1 and illustrated in Figure 8-1 below.

Table 8-1: RMP sites within the proposed study area

Map Label	RMP #	Type	Townland	ITM Coordinates	
				Easting	Northing
1	DG01914	Ringfort - unclassified	Creggan (Stranorlar Ed)	612193	895774
2	DG01915	Ringfort - rath	Creggan	612374	895782
3	DG01916	Enclosure	Creggan	612288	895485
4	DG01917	Ringfort - unclassified	Goland	611949	893413
5	DG01918	Ringfort - cashel	Goland	611469	893143
6	DG01920	Ringfort - cashel	Goland	610812	892173
7	DG01921	Ringfort - cashel	Carrickmagrath	612566	892130
8	DG01922	Standing stone	Creggan	612656	896860
9	DG01923	Ringfort - unclassified	Curraghomongan	611535	896681
10	DG01924	Ringfort - cashel	Curraghomongan	611424	896542
11	DG01925	Ringfort - unclassified	Curraghomongan	611801	896302
12	DG01931	Standing stone	Goland	611543	893083
13	DG01934	Redundant record	Goland	610772	892184
14	DG01935	Redundant record	Ballynaglack	613199	896762
15	DG01936	Ringfort - unclassified	Ballynaglack	613259	896650
16	DG01937	Ringfort - rath	Backlees, Dunwiley	614615	896773
17	DG01938	Ringfort - cashel	Dunwiley	615541	896875
18	DG01939	Church	Drumboe Lower	613389	895443
19	DG01940	Ringfort - rath	Admiran	614791	895925
20	DG01941	Ritual site - holy well	Lough Hill (Stranorlar Ed)	615799	896005
21	DG01948	Ringfort - unclassified	Ballybofey	613519	894622
22	DG01949	House - 17th century	Drumboe Lower	613729	894801
23	DG01950	Enclosure	Glebe (Stranorlar Ed)	615227	895449
24	DG01951	Church	Glebe (Stranorlar Ed)	615290	895321
25	DG01952	Ringfort - unclassified	Stranorlar	615141	894828
26	DG01953	Ringfort - unclassified	Mullandrait	616053	895068
27	DG01954	Castle - unclassified	Cavan Lower	617750	895050
28	DG01964	Standing stone	Carn (Gleneely Ed)	616838	894306
29	DG01965	Ringfort - unclassified	Carrickshandrum	617876	894017
30	DG01969	Enclosure	Drumavish	617204	892650
31	DG01976	Souterrain	Gortletteragh	617248	896780
32	DG01979	Standing stone	Carn (Gleneely Ed)	615903	892475
33	DG03209	Souterrain	Cappry	611386	893330
34	DG03223	Megalithic tomb - unclassified	Knockfair	615948	896292
35	DG03436	Ringfort - cashel	Gortletteragh	617240	896803
36	DG03637	Kiln - corn-drying	Navenny	614712	894331

8.3.2.5 Architectural Conservation Area (ACA)

An ACA refers to a place, area, group of structures or townscape that is of special architectural, archaeological, historical, social, cultural, or scientific interest, or that contributes to the appreciation of a Protected Structure. There is no designated Archaeological Conservation Area (ACA) present within the study area.

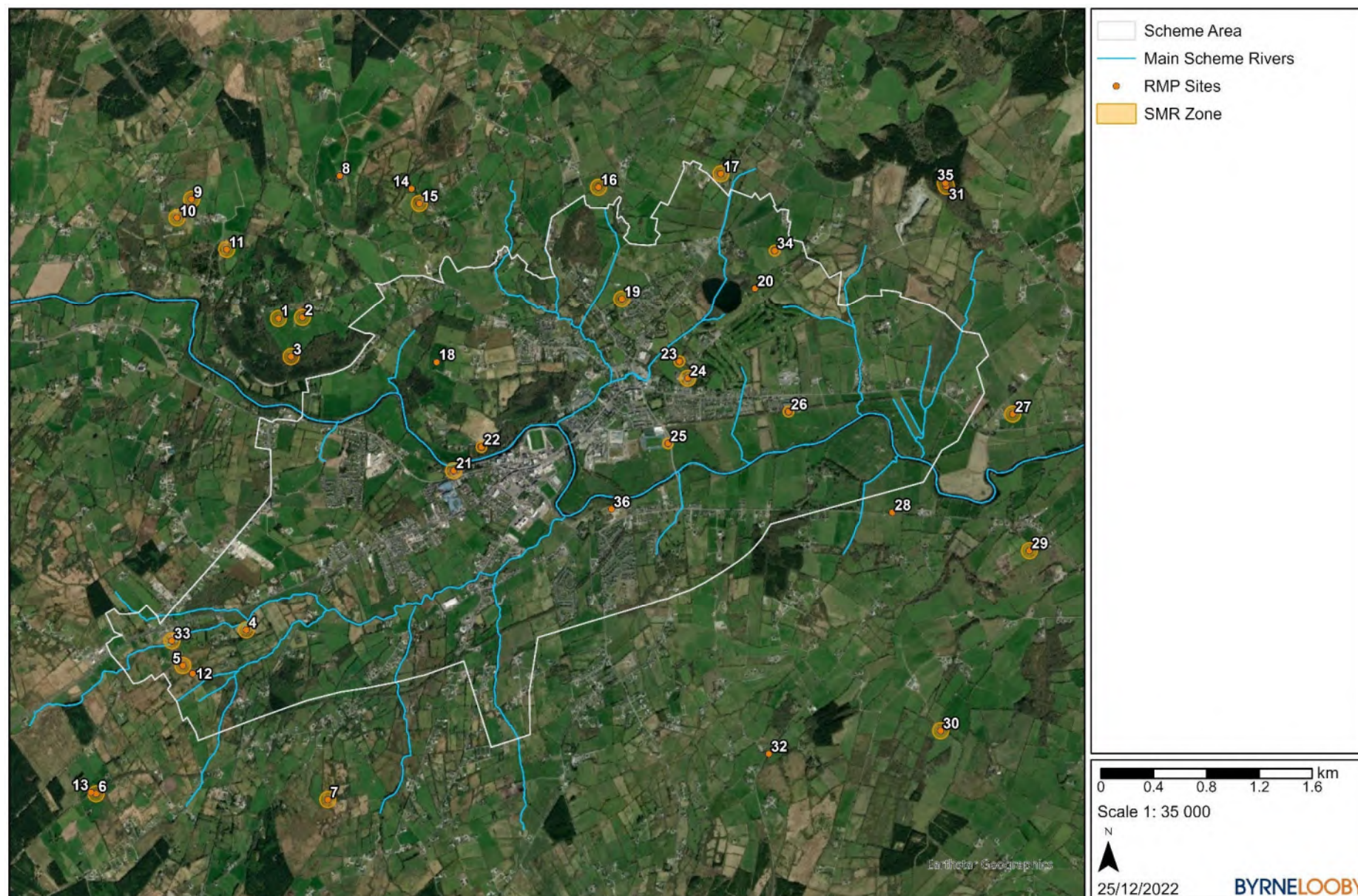


Figure 8-1: RMP / SMR sites within and near to the constraints study area for archaeology and cultural heritage

8.3.3 National Inventory of Architectural Heritage (NIAH)

The National Inventory of Architectural Heritage (NIAH) building surveys provide the basis for the recommendations of the Minister for Heritage and Electoral Reform to the planning authorities for the inclusion of particular structures in their Record of Protected Structures. The published surveys are a source of information on the selected structures for relevant planning authorities. It is worthwhile noting that the NIAH survey is not considered to be a complete record of the architectural heritage of an area.

The properties recorded in the study area by the NIAH are considered as being buildings and structures of conspicuous historical, archaeological, artistic, scientific, social or technical interest and are recorded by this survey as having a 'Regional' rating. Structures that are considered of regional significance are recommended by the Minister to the relevant planning authority for inclusion in their RPS and the planning authorities can add to the record at any time should they choose to adopt them.

The NIAH sites as well as NIAH sites with Record of Protected Structures (RPS sites) status within the study area are indicated in both Table 8-2 and Figure 8-2.

Table 8-2: NIAH Sites within the study area

Map Label	NIAH Reg#	NAME	DATE	Townland	RPS	ORIGINALTY	IN USE TYPE
1	40838001	Drumboe Martyrs Memorial	1950 - 1960	Drumboe Lower	N	monument	monument
2	40838007		1840 - 1880	Ballybofey	N	house	house
3	40838010	Allied Irish Bank	1890 - 1910	Ballybofey	Y	bank/ financial institution	bank/ financial institution
4	40838016	Goodness Me	1850 - 1900	Ballybofey	N	house; shop/retail outlet	
5	40838018	G. Barrett & Son	1820 - 1900	Ballybofey	Y	house	house
6	40838019	Victor's Restaurant\Surf and Turf\Zigzags	1860 - 1870	Ballybofey	Y	market house; market building	restaurant
7	40838020	-	1890 - 1920	Ballybofey	N	house	house
8	40838021	Balor Theatre	1940 - 1950	Ballybofey	N	cinema	theatre/ opera house/concert hall; hall
9	40838022	Ballybofey Bridge	1770 - 1860	Ballybofey, Stranorlar	Y	bridge	bridge
10	40838023	Church of Mary Immaculate	1855 - 1900	Stranorlar	Y	church/chapel	church/chapel
11	40838025	-	1900 - 1920	Stranorlar	N	house	house
12	40838026	-	1925 - 1945	Stranorlar	N	house	house
13	40838027	The Haven	1925 - 1945	Stranorlar	N	house	house
14	40838029	-	1840 - 1880	Stranorlar	N	house	
15	40838030	-	1870 - 1900	Stranorlar	Y	Presbytery /parochial/ curate's house	house

Map Label	NIAH Reg#	NAME	DATE	Townland	RPS	ORIGINALTY	IN USE TYPE
16	40838031	Reformed Presbyterian Church	1870 - 1880	Stranorlar	Y	church/chapel	church/chapel
17	40838032	-	1920 - 1940	Stranorlar	N	house	house
18	40838034	James Boyle & Co. Solicitors	1860 - 1900	Stranorlar	N	house	office; public house
19	40838036	-	1780 - 1820	Stranorlar	Y	house	house
20	40838038	-	1890 - 1930	Stranorlar	N	water pump	
21	40838039	-	1890 - 1930	Stranorlar	N	water pump	
22	40838040	St. John's Church of Ireland Church	1720 - 1740	Glebe (Stranorlar)	Y	church/ chapel	church/ chapel
23	40838041	Stranorlar Presbyterian Church	1905 - 1910	Stranorlar	Y	church/ chapel	church/ chapel
24	40838042	-	1870 - 1890	Stranorlar	N	manse	house
25	40838044	The Manse	1870 - 1900	Stranorlar	N	manse	house
26	40838045	Stranorlar Country House	1900 - 1910	Stranorlar	Y	house	house
27	40838047	-	1750 - 1800	Drumboe Lower	N	outbuilding; coach house	
28	40838048	Stranorlar Catholic Graveyard	1800 - 1900	Stranorlar	N	graveyard/ cemetery	graveyard/ cemetery
29	40907720	-	1800 - 1840	Cappry	N	outbuilding	outbuilding
30	40907721	Meenglass Station Bridge	1880 - 1900	Carrickmagrath	N	bridge	bridge
31	40907813	Edenmore House	1770 - 1810	Edenmore (Gleneely)	Y	country house	house
32	40907814	Rockfield House	1830 - 1850	Dreenan	Y	country house	country house
33	40907829	-	1880 - 1890	Carrickmagrath	N	bridge	bridge
34	40907831	-	1850 - 1860	Drumavish	Y	school	house
35	40907833	Edenmore House	1770 - 1790	Edenmore (Gleneely)	Y	outbuilding	outbuilding
36	40907834	-	1760 - 1800	Drumboe Upper	N	house	outbuilding
37	40907835	Dunwiley House	1840 - 1880	Dunwiley	N	house	house
38	40907836	St. Joseph's Community Hospital and Home	1840 - 1860	Mullandrait	N	graveyard/ cemetery	-
39	40907838	Finn View House	1900 - 1910	Treanamullin	N	house	house
40	40907839	Kia Meua	1910 - 1940	Corcam	N	house	house
41	40907852	-	1800 - 1880	Drumavish	N	outbuilding; walled garden	-

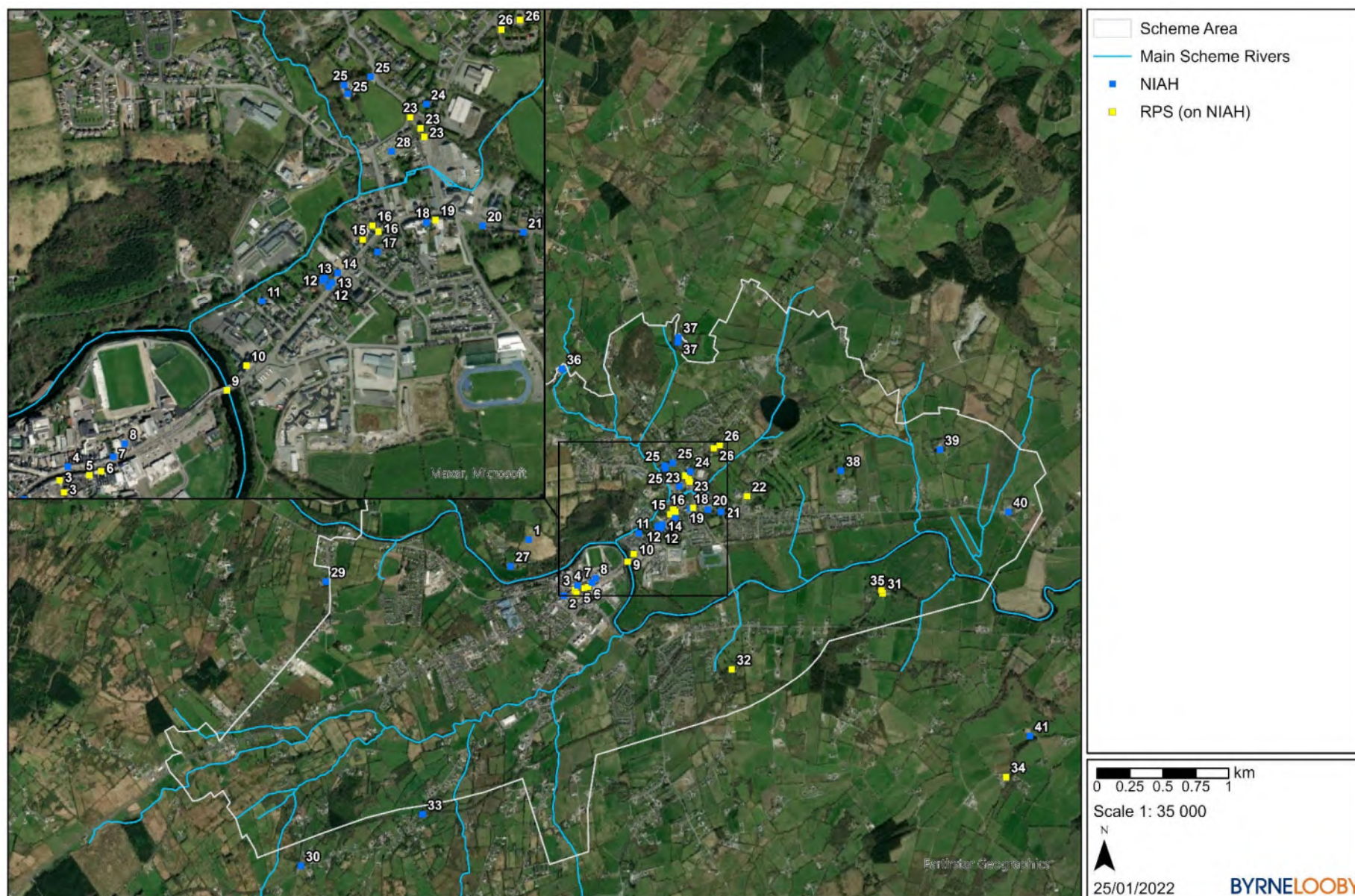


Figure 8-2: NIAH sites and NIAH sites on RPS in the study area

8.4 Key Constraints

All archaeological and historic sites/features and properties with statutory designations in the study area are the key considerations in the constraints study in relation to cultural heritage, these sites have been identified and mapped for the constraints study. In summary the following constraints have been identified.

8.4.1 Archaeological Heritage

The scheme area may contain known and previously unknown underwater archaeological heritage that should be considered in any study to inform planning design and any potential EIARs. Such sites can include a range of underwater cultural heritage such as fortifications with associated slipways, quays, etc., harbours with associated infrastructure, shipwrecks, weirs, fishtraps, lakeside dwellings, causeways, logboats, sites such as rock cut platforms and steps, and artefactual material associated with sites or as individual depositions in underwater environments. Riverine post-medieval built heritage, such as quaysides, slips and flood-defence parapet walls may also be included, as can structures and features relating to the former use of the rivers for the milling and brewing industries. Archaeological materials relating to earlier quaysides, industrial structures and the reclamation of these areas may also be present beneath present ground level (DAU pers. comm. 05/11/2021; reference: G Pre00255/2021).

As advised by DAU National Monuments Service (NMS), the methodologies and processes outlined in the 'Framework and Principles for the Protection of the Archaeological Heritage and the 'Guidelines for the Archaeological Assessment of Flood Relief Schemes' (DHLGH 2021) should be consulted and adhered to in undertaking the archaeological assessments for these projects (DAU pers. comm. 05/11/2021; reference: G Pre00255/2021).

There is a general riverine archaeological potential along the River Finn. All wrecks over 100-years old are protected under the 1987 and 1994 (Amendment) Acts of the National Monuments Acts. Longboat discoveries from the Rivers Finn and Foyle, near Ballybofey are subject to statutory protection under section 3 of the 1987 National Monuments (Amendment) Act.

There are over 100 RPS protected sites/buildings/features within the constraints study area. These structures/features should be considered as cultural heritage constraints during the design of the proposed flood relief scheme and avoided where possible.

Every care should be taken in these locations to avoid direct impacts on protected structures or by means of careful design or by the application of appropriate mitigation measures. This includes development that might adversely affect the setting of the protected structure. Any design proposals in the vicinity of protected structures vicinity should be carried out in a way that will not materially affect the character, integrity, amenity and setting of these sites. As advised by DAU (DAU pers. comm. 05/11/2021; reference: G Pre00255/2021), it is suggested that OPW appoint a dedicated Project Archaeologist to support in this process.

There may be opportunities under Objective 4 of the County Donegal Heritage Plan Actions set out in the Heritage Council Strategy (2018-2022) to 'promote heritage education, training, tourism and outreach activities'.

8.4.2 Historic Character and Setting

While change within the setting of an historic site or landscape may be acceptable, in certain instances development will be considered intrusive and inappropriate (such as large embankments, walls or similar permanent infrastructure). This effect on the setting of archaeological and architectural heritage sites requires an assessment to be made on a case-by-case basis according to the type of development, its location and landscape setting by means of objective analysis based on a set of predefined criteria and professional judgement, supported by appropriate descriptive material.

Specific mitigation requirements can only be identified as issues for development once the design options are defined. Further assessments such as archaeological testing, underwater archaeological assessments, structural architectural heritage appraisals or structural surveys etc. may be required in the next phases of the assessment or as mitigation measures for the scheme.

It should be noted, however, if flood relief measures impact any areas in proximity to a notable/protected site/building/feature then judicious use of archaeological assessment techniques may be required in these areas in order to understand the implications for the proposed scheme.

In accordance with the Architectural Heritage Guidelines any work to or in the vicinity of a Protected Structure, NIAH site or the ACA require a conservation heritage impact assessment by a conservation architect.

9 Landscape and Visual

9.1 Introduction

This section of the report provides a review of the landscape and visual constraints that have been identified within the study area.

For the purposes of this report, the study is defined as the area in Figure 1-1.

9.2 Methodology

The procedure used for the landscape and visual constraints study entailed a desktop study of the scheme area in relation to its overall context both locally and regionally and including a review of the relevant planning policies and publications, including the following:

- County Donegal Development Plan 2018-2024, including interactive mapping for scenic amenity (Donegal County Council, 2018a).
- Landscape Character Assessment of County Donegal (2016) comprising:
 - Landscape Character Assessment of County Donegal (including 'Finn Valley LCA 14'),
 - Settlement Character Assessment,
 - Digital Interactive Mapping.
- National Parks & Wildlife Service – location of SPAs, SACs and NHAs.
- Guidelines for Landscape and Visual Impact Assessment (Landscape Institute & I.E.M.A., UK 2013).
- National Landscape Strategy for Ireland 2015-2025 (Department of Housing, Local Government and Heritage, 2020).
- Historic Gardens and Designed Landscape sites in County Donegal - National Inventory of Architectural Heritage (National Inventory of Architectural Heritage, 2020).
- Draft Ballybofey and Stranorlar Regeneration Strategy & Action Plan. Draft Stage 2 Report (Pasparakis Friel, 2022).

9.3 Baseline / Receiving Environment

9.3.1 Landscape Character

Ballybofey/Stranorlar is located within the Finn Valley and the area is characterised by an essentially flat landscape which has facilitated the towns' development. The twin towns are co-joined by a bridge over the River Finn and the twin towns act as a service centre within the Finn Valley.

The study area is dominated by the River Finn, its tributaries and associated valleys cut from the surrounding uplands. The landscape eastwards from Ballybofey Stranorlar towards Castlefinn is a fertile agricultural plain along the river within a wider gently undulating agricultural landscape of large square fields (Donegal County Council, 2016).

The River Finn and tributaries, and associated green corridors, within the study area and beyond are ecologically important landscapes with the River Finn containing an SAC in the scheme area. Drumboe Wood is an important and valuable recreational resource in a natural and tranquil setting.

9.3.1.1 Landscape Character Assessment (LCA)

Landscape character assessment is a process which describes, maps and classifies landscapes objectively. Defining landscape character enables an understanding to be formed of the inherent value and importance of individual landscape elements and the processes that may alter landscape character in the future. In relation to landscape character, the County Donegal Development Plan 2018-2024 contains a range of objectives applicable to protected areas, ecology, built structures, culture, tourism, and industry, and key objectives are reproduced in Appendix E.

All new developments within County Donegal must have regard to the specific landscape classifications as provided in the Landscape Character Assessment of County Donegal (2016), in terms of integration and assimilation of development into the receiving landscape, particularly in accordance with Policy NH-P-13 (see Appendix E). The scheme area contains Areas of Moderate Scenic Amenity (MSA) and Area of High Scenic Amenity (HSA) shown in Figure 9-1.

9.3.2 Townscape features

The towns display a broadly linear development form with development arranged along the axis of both the Ballybofey and Stranorlar Main Streets. The majority of the residential development is located in an irregular fashion on the approach roads to the towns with much of the development located a considerable distance from the town centre. Some residential development is located along, and in close proximity to, the main streets of Ballybofey and Stranorlar. The town centre itself is predominately arranged along the main street of both towns, displaying a strong streetscape with a reasonably compact, visually interesting form (Donegal County Council, 2016).

The Landscape Character Assessment of County Donegal (Donegal County Council, 2016) states that townscape features include:

- Rich architectural and streetscape detailing, presence of landmarks and hierarchy of streets and spaces which ensure the environment is stimulating.
- Dominated by active frontages contributing to a sense of vitality.
- Building frontages open directly onto the street resulting in a vibrant character.
- Church spire visible from both ends of twin towns providing a local focal point which connects both Ballybofey and Stranorlar.
- Spacious character of streetscape due to a relatively wide street proportion.
- Mix of uses provided giving residents greater access to a number of retail services.

- Commercial buildings front onto the main street resulting in a vibrant character.
- Ample Car parking provided which lessens the impact of on street parking.
- Attractive pedestrian environment with streetscape elements including streetlights, bollards, formal planting and street trees which contribute to a stimulating environment adding colour and life perceptually breaking up large-paved areas.
- Town well served with both estate type development of housing and looser ribbon type of individual houses and bungalows.
- Houses within this townscape are typically terraced and closely spaced giving a high sense of enclosure to the street and provides active surveillance while businesses are closed.
- Finn Harps football stadium is currently located in the centre of Ballybofey, and a new stadium is presently under construction adjacent to a cluster of other sporting facilities in Stranorlar.
- An 18-hole course Ballybofey Golf Club is situated north of Ballybofey and Stranorlar.
- The traditional town centre continues to display a strong and diverse independent retailing sector and a vibrant retail sector.
- The presence of long-established residential areas provides a sense of identity and place, referencing and cultural and historic value.

The Landscape Character Assessment of County Donegal (2016) states that the following perspectives are of particular importance in terms of landscape setting and the protection of views:

- Views of the settlements skyline, particularly from strategic approaches to the town from either end.
- Church spires visible from outside the town form important local landmarks.
- Extensive woodlands, native planting and the banks of the River Finn provide a natural invaluable resource.
- Views channelled to the landscape setting are significant in terms of contributing to a sense of place.
- Occasional views between buildings along the main street providing glimpses of the surrounding landscape setting.
- Views projecting out to the countryside provide a connection with the settlement and the landscape contributing to a strong sense of place.
- The layout of the town centre and traditional streetscapes.

9.3.2.1 Regeneration Strategy & Action Plan

The Ballybofey and Stranorlar Regeneration Strategy & Action Plan was developed by Pasparakis Friel Architects, on behalf of Donegal County Council and in conjunction with The Ballybofey and Stranorlar Integrated Community Company (BASICC). It was finalised and published in April 2022. The purpose

of the masterplan is to identify key priorities and actions in supporting the sustainable regeneration of the Twin Towns up to 2040. Following consultation in 2020, ten key findings were established which founded the Ten 'Principles of Regeneration', providing focus for the regeneration strategy. The findings and resulting Principles are detailed below:

1. Retail Village
2. Enhance Pedestrian Experience
3. Improve Connection to Existing Natural Amenities
4. Civic Space for All Ages
5. Promote & Protect the Heritage Buildings
6. Sustainable Development
7. Treasure the Woods & River and Tread Carefully
8. Community Space
9. Traffic & Parking
10. Ballybofey- Stranorlar Blueprint

In parallel to these overarching principles there are three ongoing and complementary areas of work, including:

1. The Ten-T Bypass: This will provide connection with the N15 (Donegal Road) approximately 3.5km west of the town centres and with the N13 (Letterkenny Road) approximately 4.5km north of the town centres.
2. The SEED Project: This is a proposition to bring lasting social and economic benefits to Ballybofey and Stranorlar and the surrounding rural community.
3. The Drumboe Woods and Environ Feasibility Study: This is a separate study which is focused on Drumboe Woods and Environs to identify key priorities and assess options to support in the sustainable development of the woods and river.

9.3.3 Historic Landscape Characterisation (HLC)

No historic landscape characterisation has been undertaken for the vicinity of the scheme boundary at the time of writing.

9.3.4 Existing Trees and Hedgerows

The County Donegal Development Plan 2018-2024 states that Traditional field boundaries such as stone walls, hedgerows, tree lines, banks and ditches contribute to the regional character of rural landscapes in County Donegal and reflect historical landownership and farming practises that reinforce our sense of place.

There are areas of mature woodland, tree planting and hedgerows within and around the study area. While there are no Tree Preservation Orders or Heritage Trees within the study area, the woodland, tree planting and hedgerows may provide visual and residential amenity and biodiversity benefits within this area and the surrounding environment.

Trees and hedgerows marking boundaries and along the river corridors create important biodiversity corridors and linkages.

9.3.5 Land Use Zoning

Both Ballybofey and Stranorlar are jointly classified as a Tier 2 town. Urban areas of the towns are surrounded by agricultural land with the towns being largely residential with supporting social amenities.

Appendix D contains the Settlement Framework map of Ballybofey and Stranorlar, from the Variation to the County Donegal Development Plan 2018-2024 in respect of the TEN-T Priority Route Improvement Project, Donegal (Donegal County Council , 2021).

9.3.6 Protected Views, Corridors and Prospects

There are no protected views within or into the study area at the time of writing (County Donegal Development Plan 2018 – 2024). The Landscape Character Assessment of County Donegal (Donegal County Council, 2016) identifies townscape views that are of significance and details are provided in Section 9.3.2.

The length of the River Finn within the scheme area is a green corridor with riparian habitat, and discontinuous tree cover and agricultural lands on banks within the study area. Urban development is located close to the banks on both sites of the river within the towns.

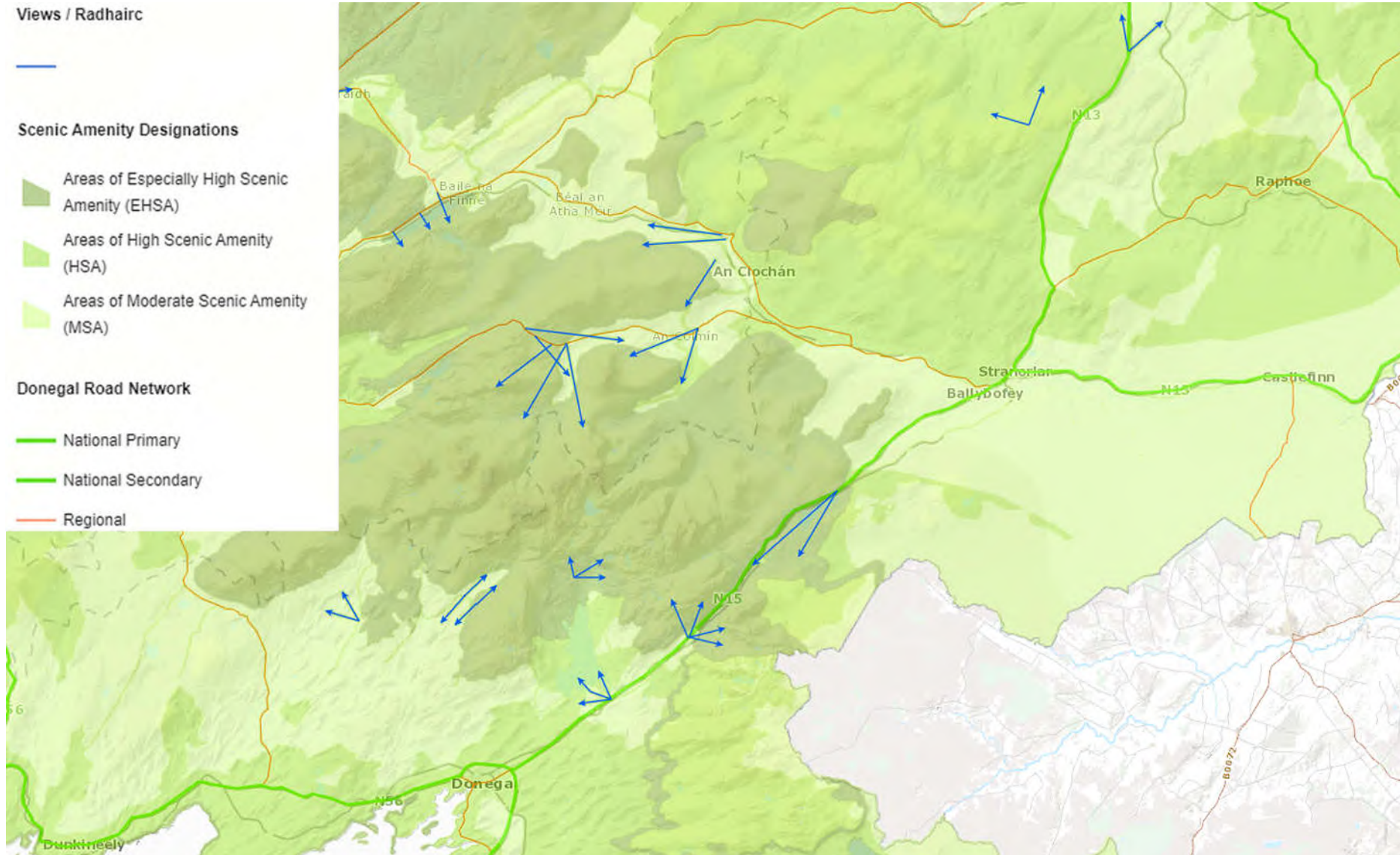


Figure 9-1: Scenic Amenity Designations and views
Source: (Scenic Amenity Designations, 2021)

9.4 Key Constraints

The existing trees and planting within the study area provide both visual and recreational amenity for the residential and amenity areas within the study area and the wider districts. Additionally, the 'green' character of the landscape is considered to be a key component of local tourism development for the towns and the wider area. Such areas also provide a network of habitats, ecological 'corridors' and 'stepping stones' essential for wildlife. Accordingly, such feature should be retained where possible.

The proposed development of the subject site will result in a change to the landscape character which will be most noticeable locally, such as from the adjacent residential and tourist areas (including along the river banks and bridges). The potential magnitude of this change will be assessed when the details, scale and extent of the proposed interventions have been finalised.

Historical landscape character and cultural heritage: Within the study area there are several designations and structures of national interest that need to be considered such as Protected Structures and Recorded Monuments, a Conservation Area, and Sites of Archaeological Interest.

Protecting the key landscape resource which underpins the Wild Atlantic Way and the Donegal Tourism brand generally from inappropriate development is recognised as a key planning challenge in Donegal.

There are recreational amenities within the study area that need to be considered in relation to possible impacts on their accessibility, recreational and visual values:

- Walk/Cycle Pathways along the banks of the rivers
- Land use zoning objectives in county development plans – areas zoned as for Amenity.

Key viewpoints will be selected when the details, scale and extent of the proposed interventions have been defined.

There is a need to protect:

- Views towards the rivers and Ballybofey Bridge from business serving the tourism and recreational sector (e.g. cafes, etc)
- Recreational views – towards to and from the river (e.g. public pathways, community garden area)
- Public, recreational and residential views to and from the rivers and bridges, with emphasis on area that may be visually impacted by the suggested hard defence proposals in CFRAM:
 - Towards and from River Finn SAC.
 - Towards and from Recorded Monuments and Protected Structures e.g. Ballybofey Bridge.
 - Public pathways and amenity areas which pass through the study area.

- Other tourist amenities e.g. guesthouses, cafes, restaurants, seating areas.
- During the construction phase, the following elements of the proposed development have the potential to cause visual impacts, they will however be short to medium term in duration:
 - Temporary site works – hoarding, lighting, cranes, car parking, storage areas
 - Construction traffic – dust and emissions
 - Tree and vegetation clearance
 - Groundworks – cut and fill excavations
 - Laying of foundations

The principal elements which are likely to give rise to landscape and visual impact in the long term/operational phase are:

- Removal of some existing trees
- Height of proposed structures/ interventions
- New structures/ interventions
- Change of character – dependent on proposed interventions type and scale
- Proposed tree and shrub planting

Appropriate design, siting and mitigation measures are required to integrate the proposed scheme within the landscape.

10 Air Quality

10.1 Introduction

This section describes the existing air quality environment in the scheme study area and identifies possible issues which have the potential to constrain the flood relief scheme design.

For the purposes of this report, the study is defined as the Scheme Area which includes the towns of Ballybofey and Stranorlar and some of the surrounding rural area (up to an outer extent of 500m).

10.2 Methodology

The procedure used for the air quality constraints study entailed a desktop study of the scheme area in relation to its overall context both locally and regionally and including a review of the relevant planning policies and publications, including the following:

- Air Quality Index for Health (EPA, 2021),
- Most recent data for from the Letterkenny Station 64 (EPA, 2021),
- Donegal County Council Website, Air pollution (Donegal County Council , 2021),
- EPA air quality data (EPA, 2021).

10.3 Baseline / Receiving Environment

The scheme study area is comprised of twin towns (urban areas) surrounded by rural areas, small villages and settlements, farmland, open spaces. The closest national air quality monitoring station is Station 64 at Letterkenny, 31.5 km from the study area.

Item 'WES-0-6' in the County Donegal Development Plan (2018-2024) states the following air quality objective:

'It is the policy of the Council to provide for environmental protection, through: the protection of surface water and ground water from pollution in accordance with the River Basin Management Plan, Groundwater Protection Scheme and Source Protection Plans for public water supplies, the protection against soil contamination; minimising air and noise pollution; supporting remediation of all existing pollution; ensuring full compliance with relevant National and European Regulations, Statutes and Directives through monitoring and control of relevant activities.' (Donegal County Council, 2018a).

Under the Clean Air for Europe Directive, EU member states must designate "Zones" for the purpose of managing air quality. For Ireland, four zones were defined in the Air Quality Standards Regulations (2011). The zones were amended on 1 January 2013 to take account of population counts from the 2011 CSO Census and to align with the coal restricted areas in the 2012 Regulations (S.I. No. 326 of 2012).

Ireland is divided into zones (Zones A, B C and D) for the assessment and management of air quality, in compliance with EU legislation. The scheme study area is located in Zone D: Rural Ireland ('Rural West'). According to the EPA Air quality index for health (AQIH) the air quality of the zone in which Ballybofey and Stranorlar is located was reported as '3 - Good' (data correct as of 25th May 2021) (source: EPA air quality zone data and Map viewer).

Sensitive receptors within the scheme study area with respect to air quality and climate are predominantly people. This includes homes, schools, medical centres, businesses, sports facilities, and places of worship. Flora and fauna can also be sensitive to air quality and climate. Biodiversity is dealt with in Section 7.

During the construction phase, sensitive receptors may be impacted due to construction activities and construction traffic.

The operational phase will not result in any impacts in relation to air and will have will be beneficial to the surrounding property owners in alleviating flooding which may increase in frequency due to climate change.

10.4 Key Constraints

The key constraints in relation to air quality are any sensitive receptors in proximity to the location of construction works. The scheme design should take into consideration any air sensitive receptors such as residences, schools, businesses, and medical facilities located in proximity to works associated with the flood relief scheme.

11 Climate Change

11.1 Introduction

This section describes the baseline conditions, the regulatory framework (with regard to the consideration of climate change for flood relief schemes in Ireland) and identifies any implications, considerations, constraints and/or opportunities with regards to the proposed scheme.

For the purposes of this report, the study area is defined as the island of Ireland.

11.2 Methodology

The procedure used to identify potential climate change constraints entailed a review of relevant legislation, policy and guidance, a desktop study of climate data available for Ireland and an identification of key constraints for the proposed scheme.

This Chapter has been prepared with review of the following documents:

- Climate Change Sectoral Adaptation Plan for Flood Risk Management (2019 - 2024) (Office of Public Works, 2019)
- Climate Change and Low Carbon Development Act (2015) (amended 2021)
- The National Adaptation Framework (2018) (Department of Communications, Climate Action & Environment, 2018)
- Donegal County Council's Climate Adaptation Strategy 2019-2024. (Donegal County Council , 2019).

11.3 Baseline / Receiving Environment

11.3.1 Flood Risk and Climate Change

It is acknowledged nationally that climate change is likely to have a significant effect upon flood risk in Ireland due to rising sea levels and more intense rainfall events and storms (Office of Public Works, 2019) however there remains uncertainty in relation to the rate and scale of this change.

Met Éireann has predicted that in Ireland the autumns and winters may see a rise in rainfall events of approximately 20%, and that the summer period may become drier. However, the change in precipitation patterns in Ireland, particularly at a local level and for shorter (sub-seasonal) durations, remains uncertain and is the subject of ongoing research (Office of Public Works, 2019). The Climate Change Sectoral Adaptation Plan for Flood Risk Management (2019 – 2024) reports that since the early 1990s, a rise in mean sea level of approximately 3.5 cm per decade has been observed and various studies have shown that during the 20th century, sea level rise has been accelerating. To add to this, an increase in storm events over the North Atlantic Region are predicted to have a direct impact upon storm surges on the coast of Ireland (Office of Public Works, 2019).

Rising sea levels and increased rainfall predictions place parts of Ireland and, more specifically, County Donegal at greater risk of flooding from coastal, groundwater pluvial and fluvial flooding. Currently, flooding has already been identified as a key concern for County Donegal and current levels of adaptation are projected to be insufficient to avoid flooding for current global warming predictions (Donegal County Council, 2019). This calls for a greater need for planning and development in vulnerable areas, which the Scheme Area is identified as given the characteristics of the River Finn as a 'flashy' river, sensitive to changes in rainfall.

Climate change allowance for the hydrological analysis will be calculated for two possible future scenarios, namely the Mid-range Future Scenario (MRFS) and the High-End Future Scenario (HEFS). Table 11-1 summaries the climate change allowances to be applied, in line with national guidance (Office of Public Works, 2019).

Table 11-1: Climate Change Allowances

Parameter	MRFS	HEFS
Extreme Rainfall Depth	+20%	+30%
Extreme Flows	+20%	+30%
Mean Sea Level Rise	+500 mm	+1000 mm
Urbanisation	<i>No general allowance – review on a case-by-case basis</i>	
Forestation	-1/6 Tp ¹	-1/3 Tp ¹ +10% SPR ²
Note 1: Reduce the time to peak (Tp) by a third: This allows for potential accelerated runoff that may arise as a result of drainage of afforested land.		
Note 2: Add 10% to the Standard Percentage Runoff (SPR) rate: This allows for increased runoff rate that may arise following felling of forestry.		

11.3.2 Carbon and Climate Change

The Climate Action and Low Carbon Development Act provides for the approval of plans by the Government in relation to climate change for the purpose of pursuing the transition to a low carbon, climate resilient and environmentally sustainable economy; to establish a body to be known as the National Expert Advisory Council on Climate Change; and to provide for matters connected therewith. The Act is Ireland's first framework piece of climate change legislation and lays the ground for transition towards a low carbon economy, to be achieved through a combination of the following:

- a national greenhouse gas mitigation plan;
- a national adaptation framework; and
- specific sectoral adaptation plans. (Grantham Research Institute on Climate Change and the Environment, 2022)

Carbon impacts in relation to flooding consist of a) the potential impacts associated with flood damages and b) potential impacts associated with the construction and operation of the flood defences themselves.

Through installing flood relief measures, the potential impacts associated with flood damages can be largely mitigated, however carbon impacts from construction and operation (the 'carbon cost' will be calculated as the scheme progresses.

As part of the Project, the foreseen 'Carbon Cost' of the tonnes of Carbon Dioxide (CO₂) the proposed scheme options will generate, and the financial implications of this CO₂ quantity will be undertaken, taking into account relevant guidelines from the EU. The calculation of the Carbon Cost shall include:

- The quantities of different types of materials to be used for the option or Scheme.
- The quantity of CO₂ embodied in each type of material through sourcing, production, etc.
- The quantity of CO₂ that would be generated through the construction process.
- The quantity of CO₂ that would be generated per year in operation and maintenance of the option or scheme, such as through the operation of pumps, maintenance operations, etc.

11.4 Key Constraints

For the purposes of this report, potential climate change impacts have been classified as potential flood risk impacts and potential carbon impacts.

The Climate Change Sectoral Adaptation Plan for Flood Risk Management (2019 - 2024) considers Flood Relief Schemes to be a key prevention strategy for effects of climate change, and as such, this Project is integral to the overall climate adaptation strategy.

However, climate change is considered as a constraint on the design of the scheme, as higher rainfall and extreme weather events attributing to climate changes may lead to higher water levels, which would influence the design of the scheme.

The design should be mindful of the Donegal County Council Climate Adaptation Strategy which sets out strategic priorities, measures and responses for adaptation in the County over the next five years, as required by the Climate Action and Low Carbon Development Act 2015 (Donegal County Council, 2019). The risk of flooding and provision of sustainable protection infrastructure is noted as a key item in the Strategy.

The WFD has also called for a shift in flood management approach away from site specific hard engineering solutions, towards an integrated assessment of water resources and flood management at the catchment scale. The assessment and design should be mindful of this and reference key climate change legislation, as outlined in Section 11.2 above.

Carbon impacts in relation to flooding consist of a) the potential impacts associated with flood damages and b) potential impacts associated with the construction and operation of the flood defences themselves.

Through installing flood relief measures, the potential impacts associated with flood damages can be largely mitigated, however carbon impacts from construction and operation (the 'carbon cost' will be calculated as the scheme progresses.

As part of the Project, the foreseen 'Carbon Cost' of the tonnes of Carbon Dioxide (CO₂) the proposed scheme options will generate, and the financial implications of this CO₂ quantity will be undertaken, taking into account relevant guidelines from the EU.

12 Noise and Vibration

12.1 Introduction

This section describes the existing noise environment in the scheme study area and identifies possible issues which have the potential to constrain the flood relief scheme design.

For the purposes of this report, the study is defined as the Scheme Area which includes the towns of Ballybofey and Stranorlar and some of the surrounding rural area (up to an outer extent of 500m).

12.2 Methodology

The procedure used for the noise and vibration constraints study entailed a desktop study of the scheme area in relation to its overall context both locally and regionally and including a review of the relevant planning policies and publications, including the following:

- Available aerial & street photography available by Google (2021) and OSi (2021).

12.3 Baseline / Receiving Environment

Sensitive receivers to noise and vibration within the study area are predominately people and animals. Sensitive receivers to vibration may include built structures and potentially vulnerable structures could include bridges, buildings, walls, property, and protected structures.

Most of the noise and/or vibration-sensitive receptors in the study areas are within the urban areas of Ballybofey and Stranorlar. Sensitive receptors may also be present in rural areas where built structures (including residential) or livestock may be present in proximity to construction works.

Noise during the construction phase of the project may have a temporary or short-term adverse impact on the local environment. It is not envisaged that the development of the flood relief scheme will lead to noise and vibration impacts that have a long-term or detrimental effect to sensitive receptors within the study area.

12.4 Key Constraints

During the Options assessment is recommended that the short-listed flood alleviation measures be assessed in relation to the impact of noise and vibration during the construction phase of the project.

Noise and vibration effects are expected to occur during the construction phase only and would be expected to include:

- Construction traffic,
- Earthmoving plant and equipment,
- Sheet piling,
- Power tools and generators.

Construction noise is temporary in nature, and therefore the normal way of minimising the impact is to limit the working hours. The Local Authority may place noise limits on the construction works.

The project CEMP will include measures to avoid or minimise the potential impacts of noise on sensitive receptors during construction. The following noise control measures may be employed to limit noise impacts from the scheme:

- Install site hoarding 2.4 m high around site boundaries,
- Install local noise barriers with absorptive linings near to specific sources, during construction works,
- Provide enclosures around generators,
- Provide local screening,
- Implement appropriate noise management measures.

Ground-borne vibration attenuates rapidly with distance. People are very sensitive to vibration and can feel vibration long before it becomes an issue in terms of cosmetic damage or structural damage to buildings. Assessment of potential for damage due to vibration should be carried out where vulnerable structures are located in close proximity to works such as sheet piling.

The scheme design and methods for works during construction should consider potential impacts to potential vulnerable structures and consider if there is a requirement for ongoing noise and vibration monitoring during construction.

Traffic along national route roads within the town is congested and traffic noise, particularly at peak times, and construction traffic should be managed to ensure cumulative or in-combination impacts from noise and/or vibration are avoided, where possible, or minimised.

13 References

- Switcher Limited. (2021). *Switcher Limited*. Retrieved 11 29, 2021, from switcher.ie
- Alsop, G. I. (2009). *The geometry and structural evolution of a crustal-scale Caledonian fold complex: the Ballybofey Nappe, northwest Ireland*. Published online by Cambridge University Press.
- An Bord Pleanála. (2020a, 3 24). *An Bord Pleanála*. Retrieved from Case Details. Case reference: JP05E.304662 Townlands of Ballybofey and Stranorlar, Co. Donegal.: <https://www.pleanala.ie/en-ie/case/304662>
- An Bord Pleanála. (2020b, 3 24). *An Bord Pleanála*. Retrieved from Case Detail. Case reference: JP05E.303860 Townlands of Ballybofey and Stranorlar, Co. Donegal.: <https://www.pleanala.ie/en-ie/case/303860>
- An Bord Pleanála. (2021, 12 06). *An Bord Pleanála*. Retrieved from Case Details. Case Reference JP05E.310657 Ballybofey, Co. Donegal: <https://www.pleanala.ie/en-ie/case/310657>
- An Foras Taluntais. (1969). *West donegal Resource Survey, Part 2—Some Aspects of Production—Crops, Livestock and Fisheries*. Dublin 4: An Foras Taluntais. Retrieved from <https://www.teagasc.ie/media/website/environment/soil/West-Donegal-report-2.pdf>
- CatchmentCARE. (2021). *Community Incentive Scheme (CIS)*. Retrieved 11 11, 2021, from CatchmentCARE: Community Actions for Resilient Ecosystems: <https://www.catchmentcare.eu/community-incentive-scheme/>
- CatchmentCARE. (2021). *River Finn Catchment Characterisation CatchmentCARE Storyboard*. Retrieved 10 15, 2021, from <https://storymaps.arcgis.com/stories/21410fccb8894fce818a4330b6fc4a07>
- Catchments.ie. (2021). *Catchments.ie*. Retrieved from Guide to the Water Framework Directive: <https://www.catchments.ie/guide-water-framework-directive/>
- Central Statistics Office. (2021). *Central Statistics Office*. Retrieved 11 15, 2021, from <https://www.cso.ie/en/index.html>
- Chartered Institute of Ecology and Environmental Management. (2017). *Guidelines on Ecological Report Writing*. Winchester.
- Chartered Institute of Ecology and Environmental Management. (2018 (updated 2019)). *Guidelines for Ecological Impact Assessment in the UK and Ireland*. Winchester: CIEEM.
- Commission for Communication Regulation. (2021). *Commission for Communication Regulation Tools & Resources*. Retrieved 11 29, 2021, from <https://www.comreg.ie/tools-resources/>
- County Donegal Heritage Forum. (2015). *Draft County Donegal Heritage Plan 2014 – 2019*.
- Department of Arts, Heritage, Gaeltacht and the Islands. (1999). *Framework and Principles for the Protection of the Archaeological Heritage*. Dúchas.

- Department of Communications, Climate Action & Environment. (2018). *National Adaptation Framework*. Retrieved from file:///C:/Users/jwren/Downloads/76430_d35c3843-29c7-419a-b48b-ad5db2bfb118.pdf
- Department of Housing Local Government and Heritage. (2021). *The Irish archaeological excavations catalogue (Excavations bulletin and Excavations Database)*. Retrieved from www.excavations.ie
- Department of Housing, Local Government and Heritage. (2018). *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (August 2018)*. Retrieved from <https://www.gov.ie/en/publication/53aee9-guidelines-for-planning-authorities-and-an-bord-pleanala-on-carrying/>
- Department of Housing, Local Government and Heritage. (2020). *National Landscape Strategy*.
- Department of Housing, Local Government and Heritage. (2021). *Draft River Basin Management Plan for Ireland 2022 – 2027*. www.gov.ie/housing.
- Department of Housing, Local Government and Heritage. (2021). *Guidelines for the archaeological assessment of Flood Relief Schemes for Ireland’s National Monuments Service*. Dublin: Department of Housing, Local Government and Heritage.
- Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media. (2017). *Margaritifera Sensitive Areas Map*. Retrieved 12 01, 2021, from data.gov.ie:https://data.gov.ie/dataset/margaritifera-sensitive-areas-map
- Donegal County Council . (2019, 09). *Donegal County Council Climate Adaptation Strategy*. Retrieved from https://www.donegalcoco.ie/media/donegalcountyc/environment/FINAL_Climate%20Change%20Adaptation%20Strategy%202019%20-2024.pdf
- Donegal County Council . (2021). *Air pollution* . Retrieved from Pollution control: <https://www.donegalcoco.ie//services/environment/pollutioncontrol/air%20pollution/>
- Donegal County Council . (2021, May 31). *Variation to the County Donegal Development Plan 2018-2024 in respect of the TEN-T Priority Route Improvement Project, Donegal (Variation No. 1)* . Retrieved from <https://www.donegalcoco.ie/media/donegalcountyc/planning/pdfs/planningpolicy/cdp2018-2024variationno1ten-t/The%20Variation.pdf>
- Donegal County Council. (2016). *Landscape Character Assessment of County Donegal*.
- Donegal County Council. (2017). *Donegal Tourism Strategy 2017-2020*.
- Donegal County Council. (2018a). *County Donegal Development Plan 2018-2024*.
- Donegal County Council. (2018b). *Seven Strategic Towns Local Area Plan 2018-2024*.
- Donegal County Council. (2019). *Donegal County Council Climate Adaptation Strategy*. Retrieved from [Climate Adaptation:](#)

https://www.donegalcoco.ie/media/donegalcountyc/environment/FINAL_Climate%20Change%20Adaptation%20Strategy%202019%20-2024.pdf

Donegal County Council. (2020). *Record of Protected Structures Updated 2020*. Retrieved from [https://www.donegalcoco.ie/media/donegalcountyc/planning/pdfs/conservation/recordofprotectedstructures/Record%20of%20Protected%20Structures%20\(2020\).pdf](https://www.donegalcoco.ie/media/donegalcountyc/planning/pdfs/conservation/recordofprotectedstructures/Record%20of%20Protected%20Structures%20(2020).pdf)

Donegal County Council. (2021). *Landscape Character Assessment Digital Interactive Mapping*. Retrieved 11 20, 2021, from <https://donegal.maps.arcgis.com/apps/MapJournal/index.html?appid=20ba257d26284f5f9233c423dac016c5>

Donegal County Council. (2021). *Online Planning Application Locator for 2021*. Retrieved 11 20, 2021, from <https://donegal.maps.arcgis.com/apps/webappviewer/index.html?id=8be91e332a8f47fbfb83add1550c666>

Donegal County Council. (2021). *Outdoor recreation*. Retrieved 12 02, 2021, from Green Economy: <http://www.donegalcdb.ie/cdb/greenecomony/outdoorrecreation/>

Donegal County Council. (2021, December 14). *Rural Area Maps*. Retrieved from County Donegal Development Plan 2018-2024: <https://donegal.maps.arcgis.com/apps/View/index.html?appid=7b44cab1b818490a9d6c264db534d4d2&extent=-9.0677,54.5439,-6.4309,55.3836>

Donegal County Council. (2021). *Rural Area Types, County Donegal Development Plan 2018-2024*. Retrieved 11 29, 2021, from Donegal County Council Interactive Mapping: <http://arcg.is/1iOWHD>

Donegal County Council. (2021). *S261 a Quarry Register at November, 2021*. Retrieved from Control of Quarries: <https://www.donegalcoco.ie/media/donegalcountyc/planning/pdfs/S261a%20Quarry%20Register%20Nov2021.pdf>

Donegal County Council. (no date). *The Donegal Local Economic & Community Plan 2016-2022, Appendix 1*. Retrieved from <https://www.donegalcoco.ie/media/donegalcountyc/community/lcdc/App%201%20to%20LECP%20%20The%20Profile%20of%20the%20County%20February%202016.pdf>

Environmental Research Agency. (1992). *Water Quality in Ireland 1987 – 1990*.

Environmental Protection Agency. (2018). *Water Quality in 2016. An Indicator's report*.

EPA. (2017). *Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR)*.

EPA. (2017). *National Salmon Monitoring Programme*. Retrieved from <http://gis.epa.ie/GetData/Download>

- EPA. (2020). *Urban Waste Water Treatment in 2020*. Retrieved from <https://www.epa.ie/publications/monitoring--assessment/waste-water/Urban-Waste-Water-Treatment-in-2020-report.pdf>
- EPA. (2021). *Station 64*. Retrieved from Air Quality : <https://e/station/EPA-64>
- EPA. (2021). *Air Quality Index for Health*. Retrieved from Environment and You: www.epa.ie/environment-and-you/air/
- EPA. (2021). *Environment and Wellbeing*. Retrieved from <https://gis.epa.ie/EPAMaps/EnvironmentAndWellbeing>
- EPA. (2021). *EPA Licensed Facilities*. Retrieved 11 29, 2021, from EPA Geoportal: <https://gis.epa.ie/GetData/Download>
- EPA. (2021, 11 29). *EPA Maps*. Retrieved from <https://gis.epa.ie/EPAMaps/>
- EPA. (2021). *EPA online data for Licensing and Permitting*. Retrieved 11 29, 2021, from <https://www.epa.ie/our-services/licensing/>
- EPA. (2021). *www.gov.uk*. Retrieved from Collections: <https://www.gov.uk/government/collections/draft-river-basin-management-plans-2021#north-west-rbd>
- EPA Catchments. (2021a). *Waterbody: Finn[Donegal]_SC_030*. Retrieved from https://www.catchments.ie/data/#/subcatchment/01/01_2?_k=e51shz
- EPA Catchments. (2021b). *Waterbody: Finn[Donegal]_SC_040*. Retrieved from https://www.catchments.ie/data/#/subcatchment/01/01_7?_k=eurot4
- EPA Catchments. (2021c). *Waterbody: FINN (DONEGAL)_050*. Retrieved from https://www.catchments.ie/data/#/waterbody/IE_NW_01F010600?_k=8k6jfl
- EPA Catchments. (2021d). *Waterbody: FINN (DONEGAL)_060*. Retrieved from https://www.catchments.ie/data/#/waterbody/IE_NW_01F010800?_k=upwpcj
- EPA Catchments. (2021e). *Waterbody: FINN (DONEGAL)_070*. Retrieved from https://www.catchments.ie/data/#/waterbody/IE_NW_01F010910?_k=f5l609
- Gaois, Fiontar & Scoil na Gaeilge and The Placenames Branch Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media. (2021). *Placenames Database of Ireland*. Retrieved from <https://www.logainm.ie/en/>
- Geological Survey Ireland. (2020). *The Geological Heritage of Donegal*. Dublin: Geological Survey Ireland. Retrieved from <https://www.gsi.ie/en-ie/publications/Pages/The-Geological-Heritage-of-Donegal.aspx>
- Geological Survey Ireland. (2021, 12 03). *GSI APM Pits And Quarries*. Retrieved from <https://dcenr.maps.arcgis.com/home/item.html?id=a205a046a2474e82944f9823b6568ea0>

- Geological Survey Ireland, Department of the Environment, Climate and Communications. (2021, 11 29). *Geological Survey Ireland Spatial Resources*. Retrieved from <https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228>
- Geological Surveys Ireland. (2022, 01 23). *Groundwater*. Retrieved from Geological Survey Ireland Spatial Resources: <https://dcenr.maps.arcgis.com/apps/MapSeries/index.html?appid=a30af518e87a4c0ab2fbde2aaac3c228>
- Google. (2021). *Google Maps*. Retrieved 11 29, 2021, from <https://www.google.com/maps>
- Grantham Research Institute on Climate Change and the Environment. (2022, 02 01). *Climate Change Laws of the World*. Retrieved from CLimate Action and Low Carbon Development Act 2015: <https://climate-laws.org/geographies/ireland/laws/climate-action-and-low-carbon-development-act-2015>
- Irish Concrete Federation. (2021). *Irish Concrete Federation Members Directory*. Retrieved 10 10, 2021, from www.irishconcrete.ie
- Irish Farmers Journal. (2020). *'Watch: thousands of tonnes of peat and trees slide downstream in Donegal'*. Retrieved 11 15, 2021, from <https://www.farmersjournal.ie/watch-thousands-of-tonnes-of-peat-and-trees-slide-downstream-in-donegal-584016>
- Loughs Agency. (2021). *Finn*. Retrieved 11 30, 2021, from Managing Our Loughs: <https://www.loughs-agency.org/managing-our-loughs/monitoring/fish-counter-programmes/finn/>
- Loughs Agency. (2022). *Advice and Regulations*. Retrieved from Loughs Agency: <https://www.loughs-agency.org/visiting-our-loughs/angling/anglers-guide/advise-and-regulations/>
- Mullen, E., Marnell, F., & Nelson, B. N. (2021). *National Parks and Wildlife Service*. Retrieved from NPWS: <https://www.npws.ie/sites/default/files/files/article-12-guidance-final.pdf>
- National Biodiversity Data Centre. (2021). *Species Detail - Freshwater Pearl Mussel (Margaritifera (Margaritifera) margaritifera)*. Retrieved 10 15, 2021, from Biodiversity Maps: <https://maps.biodiversityireland.ie/Species/123483>
- National Biodiversity Ireland website. (2020). Retrieved from <https://www.biodiversityireland.ie/>.
- National Biodiversity Records Centre. (2021). *National Biodiversity Records Centre*. Retrieved from <https://biodiversityireland.ie/>
- National Inventory of Architectural Heritage. (2020). *Historic Gardens and Designed Landscape sites in County Donegal*. Retrieved from National Inventory of Architectural Heritage: www.buidingsofireland.ie/Surveys/Gardens/
- National Inventory of Architectural Heritage. (2021). *National Inventory of Architectural Heritage*. Retrieved from <https://www.buildingsofireland.ie/>

- National Monuments Service. (2021). *Wreck Viewer*. Retrieved 11 11, 2021, from <https://www.archaeology.ie/underwater-archaeology/wreck-viewer>
- National Parks and Wildlife Service. (2015, May). *Dublin Bay and River Tolka Estuary SPA Site Synopsis*. Retrieved from Protected Sites in Ireland: <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004024.pdf>
- National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs, Dublin, Ireland. (2016). *Ireland Red List No. 10: Vascular Plants*. Dublin.
- NPWS. (2021, October). *Download Boundary Data*. Retrieved 12 06, 2021, from National Parks & Wildlife Service: <https://www.npws.ie/maps-and-data/designated-site-data/download-boundary-data>
- O'Connor, W. (2017). *Introduction to lampreys and issues they face in Ireland*. Retrieved October 2020, from <https://lampreysurveys.com/2017/09/26/lampreys-in-ireland/>
- Office of Public Works. (2019, 09). *Climate Change Sectoral Adaptation Plan 2019-2024*. Retrieved from Gov.ie: <https://www.gov.ie/en/publication/97984b-climate-change-and-sectoral-adaptation-plan/#sectoral-adaptation-plan>
- Office of Public Works. (2021b). *Online interactive drainage map*. Retrieved 10 10, 2021, from FloodInfo: floodinfo.ie
- OPW. (2021). *Online interactive drainage map*. Retrieved 10 10, 2021, from FloodInfo: floodinfo.ie
- OSi. (2021, November 1). *OS map viewer 'Geohive' data*. Retrieved from geohive.ie
- Pasparakis Friel. (2022, 04). *Ballybofey-Stranorlar Regeneration Strategy*. Retrieved from Donegal County Council: https://www.donegalcoco.ie/media/donegalcountyc/planning/ballybofey-stranorlarregenerationstrategy/Ballybofey%20and%20Stranorlar%20Regeneration%20Strategy_April%202022.pdf
- Scenic Amenity Designations*. (2021, 11 29). Retrieved from County Donegal Development Plan 2018 – 2024: <https://donegal.maps.arcgis.com/apps/View/index.html?appid=fac6dc872a2144eaae3bb7cd12619c6c&extent=-9.0800,54.4693,-6.4433,55.3104>
- Skinner A, Y. M. (2003). *Ecology of the Freshwater Pearl Mussel. Conserving Natura 2000 Rivers Ecology Series No. 2*. Peterborough: English Nature.
- Teagasc. (2021). *Data and Downloads (historical legacy soils data)*. Retrieved from <http://gis.teagasc.ie/soils/downloads.php>
- The Heritage Council. (2021). *Heritagemaps.ie*. Retrieved 11 29, 2021, from Heritagemaps.ie
- The Loughs Agency. (2007). *Atlantic Salmon and Trout Populations and Fisheries River Finn & Tributaries Catchment Status Report*.

Tobin Consulting Engineers. (2020, September). *Donegal County Council*. Retrieved from Media: Surface Water Drainage Design & Compliance with Sustainable Urban Drainage Systems.: [https://www.donegalcoco.ie/media/donegalcountyc/planning/ballybofeystanorlarseedproject/6%20Surface%20Water%20Drainage%20Design%20%20Compliance%20with%20Suds%20Report%20-%20Final%20\(Sept%202020\).pdf](https://www.donegalcoco.ie/media/donegalcountyc/planning/ballybofeystanorlarseedproject/6%20Surface%20Water%20Drainage%20Design%20%20Compliance%20with%20Suds%20Report%20-%20Final%20(Sept%202020).pdf)

Transport Infrastructure Ireland. (2020, September). *Major Roads Projects Active List Transport Infrastructure Ireland (TII)*. Retrieved from Projects & Improvements: <https://www.tii.ie/roads-tolling/projects-and-improvements/Major-Active-Projects.pdf>

UCD. (2021). *National Folklore Collection*. Retrieved 11 29, 2021, from <https://www.duchas.ie/en>

WFD Application. (2018a). *WFD Cycle 2, Catchment Foyle, Subcatchment Finn[Donegal]_SC_030, Code 01_2, Generated on: 07 Nov 2018*. Retrieved 11 29, 2021, from Catchments.ie: [https://catchments.ie/wp-content/files/subcatchmentassessments/01_2%20Finn\[Donegal\]_SC_030%20Subcatchment%20Assessment%20WFD%20Cycle%202.pdf](https://catchments.ie/wp-content/files/subcatchmentassessments/01_2%20Finn[Donegal]_SC_030%20Subcatchment%20Assessment%20WFD%20Cycle%202.pdf)

WFD Application. (2018b). *WFD Cycle 2, Catchment Foyle, Subcatchment Finn[Donegal]_SC_040, Code 01_7 Report*. Retrieved 11 27, 2021, from Catchments.ie: [https://catchments.ie/wp-content/files/subcatchmentassessments/01_7%20Finn\[Donegal\]_SC_040%20Subcatchment%20Assessment%20WFD%20Cycle%202.pdf](https://catchments.ie/wp-content/files/subcatchmentassessments/01_7%20Finn[Donegal]_SC_040%20Subcatchment%20Assessment%20WFD%20Cycle%202.pdf)

Appendix A – Public Information Pack



20th September 2021

Re: Ballybofey & Stranorlar Flood Relief Scheme – Opening Public Consultation

Dear Sir/Madam,

Ballybofey & Stranorlar Flood Relief Scheme is being progressed by Donegal County Council in partnership with the Office of Public Works. Engineering consultants, Byrne Looby - Arcadis have been appointed to design a flood relief scheme that is technically, socially, environmentally and economically acceptable. The project is currently in Stage 1 “Scheme Analysis and Development”. This involves data collection / surveys, detailed river modelling, and early community engagement to inform the design and identify the preferred Scheme. Our aim is to ensure that design is based on the most up to date information and analysis, and that stakeholder and public input regarding flooding, design and environmental constraints are considered as early as possible in the process.

To this end we are launching an Opening Public Consultation period which will run from 27th September 2021 to 22nd October 2021. Due to the ongoing COVID-19 pandemic, an Opening Public Consultation Day will not be held in person. Instead, we hope to engage with you via online consultation or through correspondence with the project team. Please find enclosed:

1. An information leaflet providing you with more detail on the scheme, links to the project website, the public consultation process, the information we are looking for, and how you can make a submission online, by email, post or telephone.
2. A questionnaire form. We would be grateful if you could fill it out and return to us by 22nd October 2021. The information leaflet provides the contact details and an option to download the form online if you wish.

Our first Scheme Newsletter will be published soon. It will include the background to the Scheme, updates on the stages in the project and what the team are working on. These newsletters will be prepared every three months and will keep you up to date with progress. You can download them from the project website www.floodinfo.ie/frs/en/ballybofey-stranorlar.

At the end of Stage 1, a second public consultation will be held to let you know how your submission has been considered in arriving at the preferred Scheme to be taken forward to the statutory planning process.

We also advise that surveying teams will be in Ballybofey & Stranorlar over the coming months to gather data for the project. This includes ecologists gathering environmental data, and engineers gathering topographical data and reviewing existing infrastructure. The surveyors may require access to private lands to complete their assessments. All teams will carry identification and follow HSE Guidelines in relation to safe practices and COVID 19.

We thank you in advance for your input to the public consultation which will greatly assist in the development of the flood relief scheme.

Yours faithfully,

Shane Mc Monagle and Lorraine Arbuckle,

Flood Relief Schemes Unit, floodreliefschemes@donegalcoco.ie

PUBLIC ENGAGEMENT EVENT

BALLYBOFEY AND STRANORLAR FLOOD RELIEF SCHEME



From: Mon, 27th September to Fri, 22nd October 2021

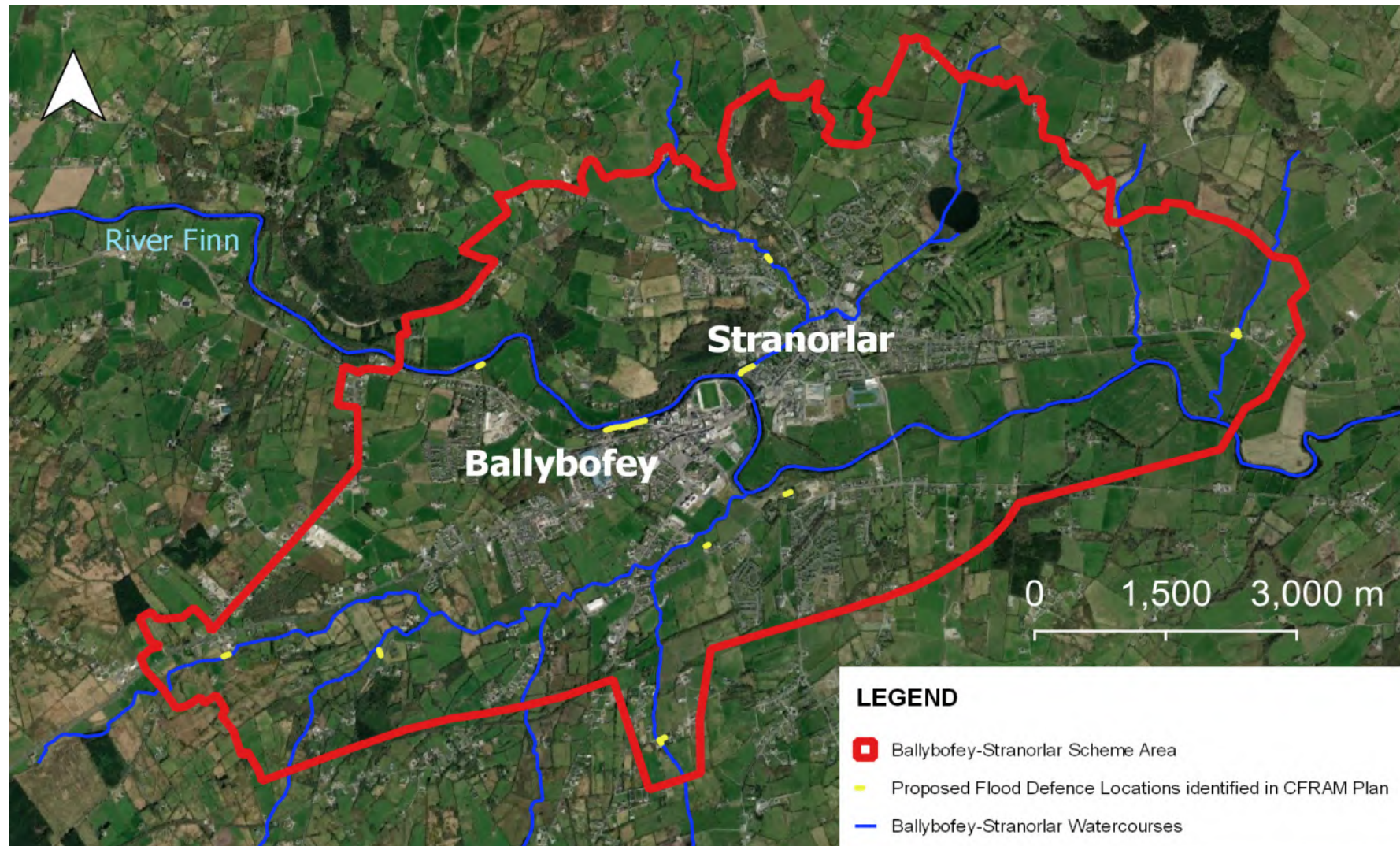


Log onto: www.floodinfo.ie/frs/en/ballybofey-stranorlar/project-info/public-engagement/



Updates: <https://www.floodinfo.ie/frs/en/ballybofey-stranorlar/home/>

**Read about the project
and submit your comments**



THE STUDY AREA

SCHEME PURPOSE: The purpose of the scheme is to alleviate the risk of flooding to the communities of **Ballybofey** and **Stranorlar** delivering a scheme that is technically, socially, environmentally, and economically acceptable.

Donegal County Council has appointed Engineering and Environmental Consultants **ByrneLooby** to design and implement a Flood Relief Scheme for **Ballybofey** and **Stranorlar**. Donegal County Council is working with the Office of Public Works to deliver the project.

This is the first public consultation event. From **Monday 27th September to Friday 22nd October 2021**, we are gathering feedback from the public about their experiences of flooding in the scheme area, along with thoughts and preferences on possible flood relief measures. **Your opinions are important to us;** they help us build a picture of your experiences, local knowledge and insight, which will help deliver a **Successful Flood Relief Scheme**.

Please share **your comments**, experiences and concerns on potential **environmental issues**, **constraints**, **risks** and the implementation of solutions within **the Study Area**.

What actions can we take to **lessen the effects of flood events** and to prevent flooding?

EXAMPLES OF FLOOD RELIEF MEASURES

DO NOTHING	NON STRUCTURAL MEASURES	RELOCATION OF PROPERTIES AND/OR INFRASTRUCTURE	FLOW DIVERSION	FLOW REDUCTION	FLOW CONTAINMENT	INCREASE CONVEYANCE OF CHANNEL	SEDIMENT DEPOSITION	STORM WATER PUMPING
Example Implement no new flood alleviation measures	Example Install a flood warning system or individual property protection	Example Reconstruct properties and/or infrastructure to a higher elevation/level	Example: Creation of river diversions or flow bypass channel)	Example Upstream catchment management or flood storage	Example through the construction of flood defences	Example increase the conveyance of the town's channel flows upstream and/or through and/or downstream	Action Sediment deposition and possible sediment traps	Action Pump storm water from behind flood defences

Please **share your comments** with us

BALLYBOFEY AND STRANORLAR FLOOD RELIEF SCHEME

Online Stakeholder and Public Consultation from Monday 27th September 2021 to Friday 22nd October 2021



Your Experiences

We want to hear about **your past experiences** of flooding and your local knowledge



Your Concerns

We welcome **your concerns** on important issues including environmental and ecological impacts and risks



Your Ideas

You may have **some ideas**, please share them with us



Your Opinions

By listening to all stakeholders, we can build a successful flood relief scheme **together**.

Please read about the scheme and submit your comments online from: 27/9/2021 - 22/10/2021

 **LEARN**
<https://www.floodinfo.ie/frs/en/ballybofey-stranorlar/home/>

 **COMMENT**
www.floodinfo.ie/frs/en/ballybofey-stranorlar/project-info/public-engagement/

Why a flood relief scheme?

The purpose of a **Flood Relief Scheme** is to lessen the effects of flooding and to protect the communities of Ballybofey and Stranorlar against future flood events. The aim is to provide a scheme that is technically, socially, environmentally, and economically acceptable.

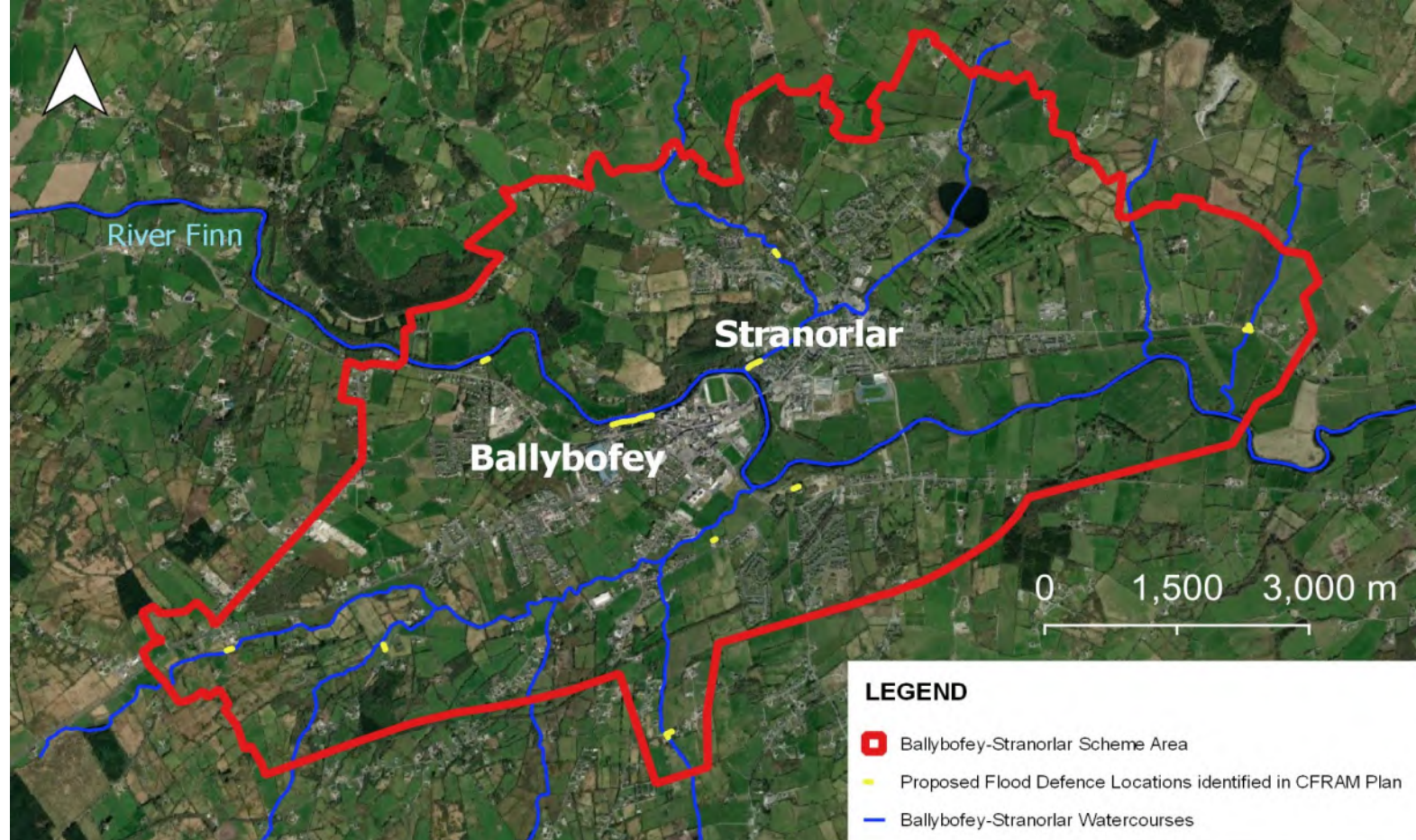
Donegal County Council has appointed Engineering and Environmental Consultants **ByrneLooby** to design and implement the proposed Flood Relief Scheme.

Donegal County Council will be working with the Office of Public Works to deliver the project.

From **Monday 27th September to Friday 22nd October 2021**, we are gathering feedback from the public online, about your experiences of flooding in the scheme area, along with thoughts and preferences on potential flood relief measures.

We welcome **your comments** on potential environmental risks, constraints and issues within the Study Area. Your views on the implementation of solutions are appreciated.

Your opinions are important to us; they help us build a picture of your experiences, local knowledge and insight, which will help deliver *a Successful Flood Relief Scheme*.



THE STUDY AREA

Play your part

Your Feedback is Important

We invite the general public and all interested parties to give their opinions on the study area online. Please take the opportunity to **play your part** in the early stages of the planning for the Ballybofey and Stranorlar Flood Relief Scheme.

All comments received in response to the public consultation event will be considered by the Donegal County Council and the Office of Public Works.

Your comments form part of our engineering and environmental studies during Stage 1 of the **Ballybofey and Stranorlar Flood Relief Scheme**.

We appreciate your time and thank you for your input.

What Happens Next?

Please examine the **Study Area above** and let your views be known by completing and returning the questionnaire **by Friday 22nd October 2021**.

All completed questionnaires, queries and comments in relation to this project can sent to either of the following:



EMAIL: Ballybofey-StranorlarFRS@ByrneLooby.com



POST: Project Manager Ballybofey and Stranorlar FRS
ByrneLooby
Building 2100
Cork Airport Business Park
Kinsale Road
Cork



CALL: +353 (0) 21 240 7988



LOG ONTO THE PUBLIC CONSULTATION: From Mon 27/09/21 to Fri 22/10/21

www.floodinfo.ie/frs/en/ballybofey-stranorlar/project-info/public-engagement/



VISIT FOR UPDATES:

<https://www.floodinfo.ie/frs/en/ballybofey-stranorlar/home/>

Freedom of Information

Any information provided will be subject to the provisions of the Freedom of Information Act.

Personal information will be subject to the provisions of the Data Protection Acts and will not be disclosed.

Ballybofey-Stranorlar Flood Relief Scheme

Stakeholder and Public Consultation Event

Questionnaire

(Please complete this questionnaire and return to ByrneLooby, Attention: Project Manager,
Building 2100, Cork Airport Business Park, Kinsale Road, Cork,
Email: Ballybofey-StranorlarFRS@ByrneLooby.com by **Friday 22nd October 2021**.
Kindly sign GDPR Compliance on Pg 3 of 3 of this questionnaire.

1 Name: _____

Address: _____

Phone (Optional): _____ Email: (Optional): _____

2 Are you aware of the North-Western - Neagh Bann (NWNB) Catchment Flood Risk Assessment and Management (CFRAM) Study and its findings or recommendations?

Yes ☐ No ☐

3 Do you own, rent or occupy a property within the study area being considered?

Yes ☐ No ☐

4 Address of Property (if different from home address)

5 Have you had any personal experience of flooding?

Yes ☐ No ☐

6 If yes, do you have information which can be used to inform the scheme? Please describe information available? Can Donegal Co. Co. contact you to collect this information?

7 Do you have photographs or videos of flooding?

Yes ☐ No ☐

8 If yes, may Donegal County Council have permission to use them?

Yes ☐ No ☐

Note: Photographs / videos can be collected at a later date.

9 Also if yes, could you please describe the photograph?

10 Type of property flooded?

Residential

☐

Retail

☐

Office

☐

Workshop

☐

Open Space

☐

Other

☐

If other, please describe:

11 Approximate maximum depth of flooding? (Please state whether the depth is in meters or feet):

12 Source of Flooding:

Directly from river/ Stream ☐

From Drains/ Sewer ☐

Overground flow (surface water) ☐

13 How do you think the issue of flooding can be resolved?

14 In your opinion, how important are the following environmental constraints to the proposed

Flood Relief Scheme?

(Please tick appropriate boxes)

Environmental Constraints	Rating				
	Not Important	Less Important	Moderately Important	Important	Very Important
	1	2	3	4	5
Socio-Economic and Social Issues					
Biodiversity (Flora, Fauna, Habitats, etc)					
Water Quality & River Flows					
Soil/Geology/ Groundwater					
Air Quality and Odours					
Climate					
Traffic					
Noise and Vibration					
Architectural and Cultural Heritage					
Landscape and Visual Amenity					
Angling, Tourism and Recreation					
Local Fisheries					
Others, Please Specify:					

15 Please provide below any other comments or observations you wish to make with respect to flooding on the Ballybofey-Stranorlar Flood Relief Scheme?

GDPR COMPLIANCE

Your contact details have been collected to aid the development of the flood relief scheme for Ballybofey and Stranorlar. The details will only be used for the purposes of contacting you in relation to the scheme, which may include some or all of the following:

- Notifying you of future consultation opportunities
- Arranging access to your lands for the purposes of data collection by project staff and approved third party surveyors
- Clarifying information, you have already provided to the project team and obtaining further inputs

Your details will be securely kept on file for the duration of the project.

Signature:	I agree to the above use and retention of my contact details
------------	--

Donegal County Council is committed to protecting your privacy. Any personal information which you provide will be treated with the highest standards of security and confidentiality, in accordance with the Data Protection Acts 1988 - 2018. For further information <https://countydonesgalfrs.ie/index.php/cookie-policy/>

Freedom of Information: Any information provided will be used to the provisions of the Freedom of Information Act. Personal information will be subject to the provisions of the Data Protection Acts and will not be disclosed.

THANK YOU FOR YOUR CO-OPERATION

Appendix B – Responses to Project Level Initial Environmental Consultation

A summary of responses received up to and on 10th January 2022 is provided below.

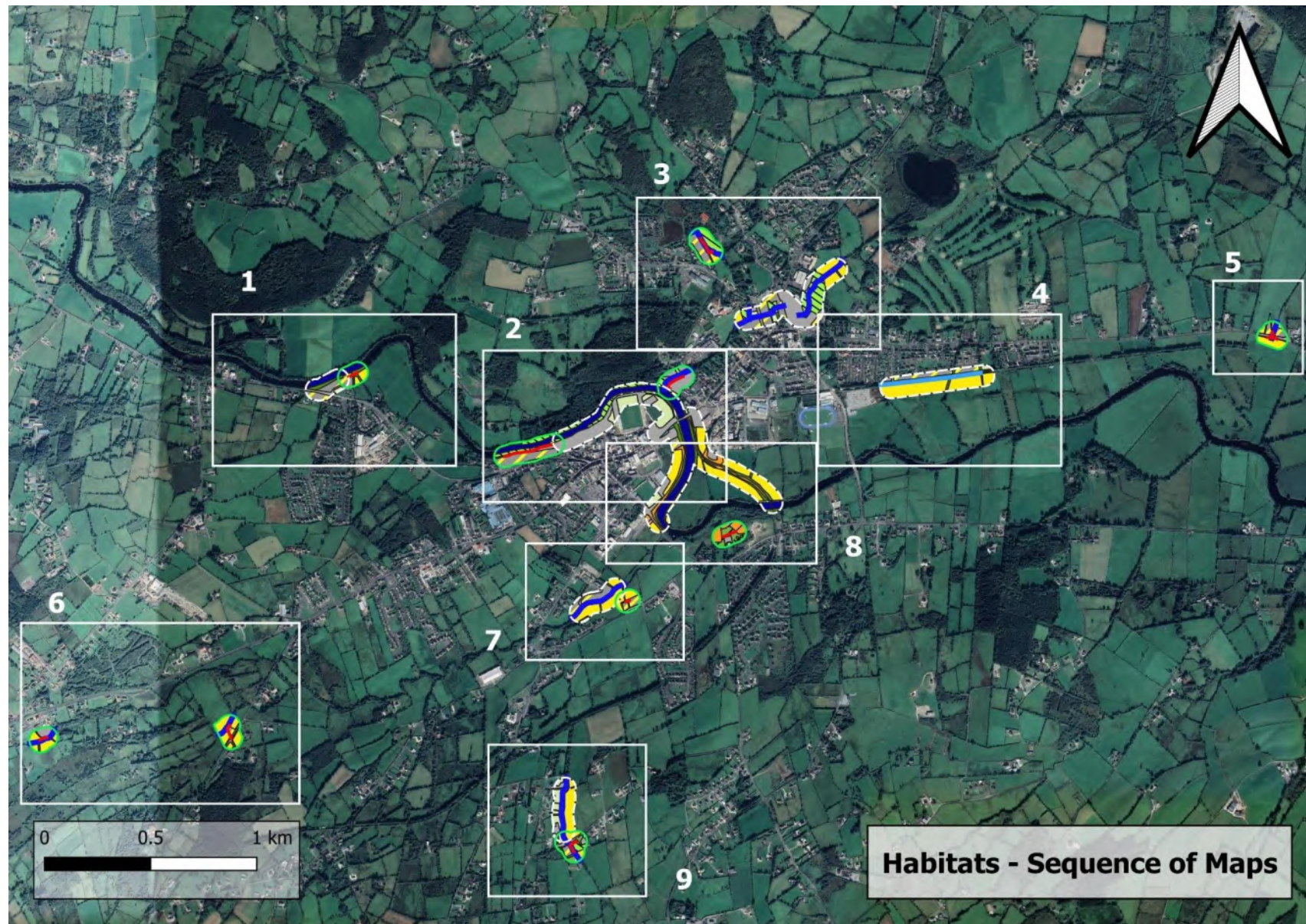
Organisation	Feedback to initial stakeholder engagement/environmental consultation
Transport Infrastructure Ireland (TII)	<p>Email received 04/11/2021.</p> <p>The developer should have regard, inter alia, to the following:</p> <ul style="list-style-type: none"> • Consultations should be had with the relevant Local Authority/National Roads Design Office with regard to the locations of existing and future national road schemes in the area, e.g., the Donegal TEN-T Scheme within the Ballybofey and Stranorlar FRS area. • TII would be specifically concerned as to potential significant impacts the development would have on the national road network (and junctions with national roads) in the proximity of the proposed development, e.g., N13 and N15 within the Ballybofey and Stranorlar FRS area. • The developer should assess visual impacts from existing national roads. • The developer should have regard to any Environmental Impact Assessment Report/Statement and all conditions and/or modifications imposed by An Bord Pleanála regarding road schemes in the area. The developer should, in particular, have regard to any potential cumulative impacts. • The developer, in conducting Environmental Impact Assessment, should have regard to TII Publications (formerly 'DMRB' and the 'Manual of Contract Documents for Road Works'). • The developer, in conducting Environmental Impact Assessment, should have regard to TII's Environmental Assessment and Construction Guidelines, including the 'Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Scheme's (National Roads Authority (NRA), 2006). • The EIAR should consider the 'Environmental Noise Regulations 2006' (SI 140 of 2006) and, in particular, how the development will affect future action plans by the relevant competent authority. The developer may need to consider the incorporation of noise barriers to reduce noise impacts (see 'Guidelines for the Treatment of Noise and Vibration in National Road Schemes' (1st Rev., NRA, 2004)).

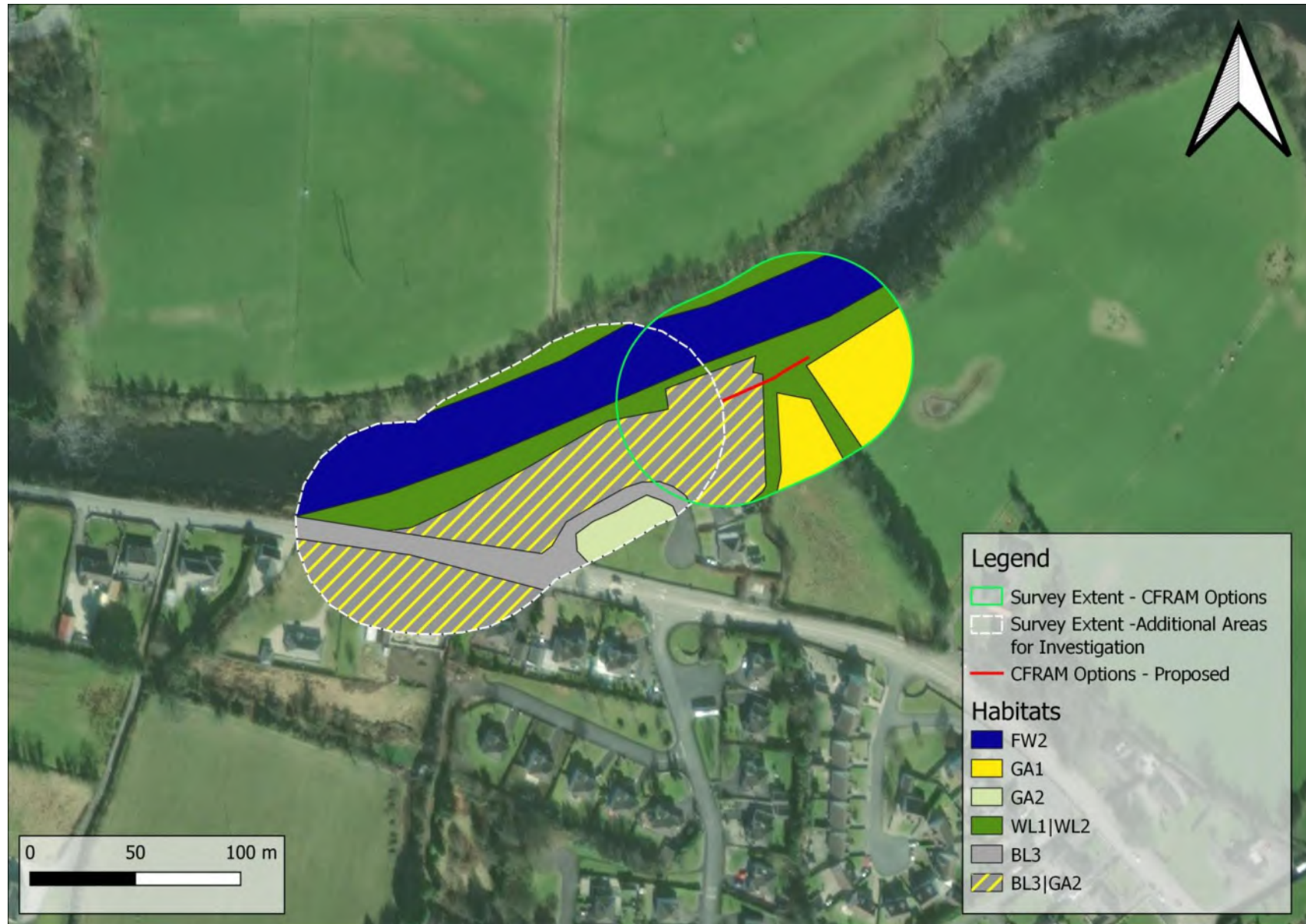
Organisation	Feedback to initial stakeholder engagement/environmental consultation
	<ul style="list-style-type: none"> Where new structures may be proposed on national roads, the developer is reminded of the requirements of the TII publication 'Technical Acceptance of Road Structures on Motorways and Other National Roads' (DN-STR-03001). This Standard specifies the procedures to be followed in order to obtain Technical Acceptance for structures on motorway and other national road schemes and for the submission of as built records. The procedures cover the design of all road structures, including bridges, tunnels, subways, culverts, buried corrugated steel structures, retaining walls, reinforced earth structures, gantries, environmental noise barriers and temporary structures under or over motorways or other roads carrying public traffic. The developer should also be aware that there is Technical Acceptance requirements relating to the assessment, alteration, modification, strengthening and repair of all existing road structures (national roads) and same shall be agreed with the Bridge Management Section of TII. TII notes the following national road structures within the Ballybofey and Stranorlar FRS area: <ul style="list-style-type: none"> N15 Structure ID DL-N15-005.00 (Cappry Bridge). N15 Structure ID DL-N15-004.00 (Finn Bridge). N15 Structure ID DL-N15-003.00 (Mullandrait Bridge). N15 Structure ID DL-N15-002.70 (Corcam Bridge). A hydraulic analysis should be undertaken to identify the impact of proposed flood alleviation works on the hydraulic capacity of any TII Structures impacted and the potential for scour at the structure. An assessment of scour and other hydraulic actions on national road structures in accordance with UK BD 97/12 should be undertaken where necessary. Scour prevention measures will be required if the assessment illustrates the potential for scour beneath the foundations. It would be important that, where appropriate, subject to meeting the appropriate thresholds and criteria and having regard to best practice, a Traffic and Transport Assessment (TTA) be carried out in accordance with relevant guidelines, noting traffic volumes attending the site and traffic routes to/from the site, with reference to impacts on the national road network and junctions of lower category roads with national roads. TII's 'Traffic and Transport Assessment Guidelines' (2014) should be referred to in relation to

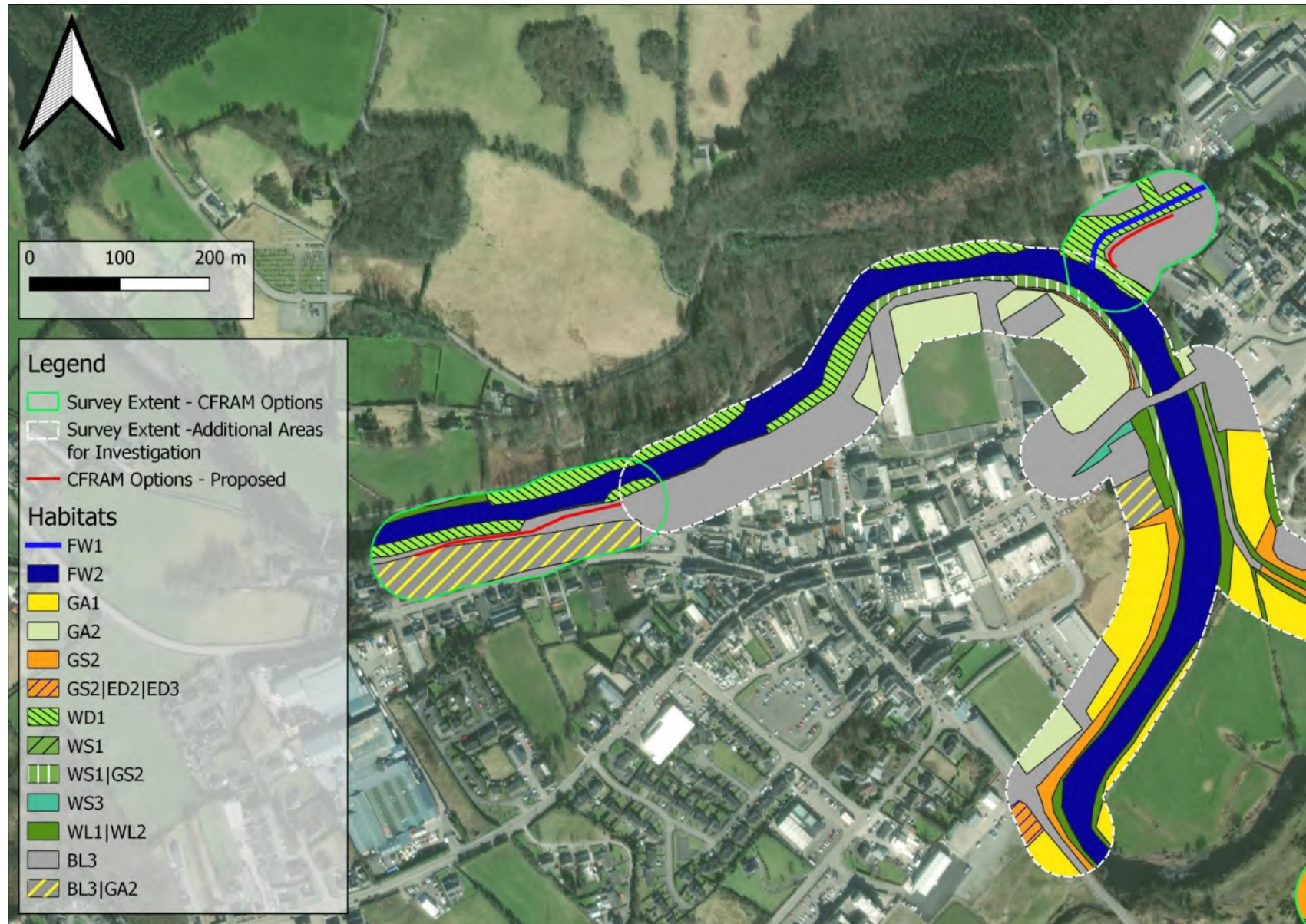
Organisation	Feedback to initial stakeholder engagement/environmental consultation
	<p>proposed development, with potential impacts on the national road network. The scheme promoter is also advised to have regard to Section 2.2 of TII's TTA Guidelines, which addresses requirements for sub-threshold TTA.</p> <ul style="list-style-type: none"> • The designers are asked to consult TII Publications to determine whether a Road Safety Audit is required. • In the interests of maintaining the safety and standard of the national road network, the EIAR should identify the methods/techniques proposed for any works traversing/in proximity to the national road network. • In relation to haul route identification, the applicant/developer should clearly identify haul routes proposed and fully assess the network to be traversed. Where abnormal loads are a feature of the proposed development, separate structure approvals/permits and other licences may be required in connection with the proposed haul route and all structures on the haul route should be checked by the applicant/developer to confirm their capacity to accommodate any abnormal load. <p>Notwithstanding, any of the above, the developer should be aware that this list is non-exhaustive, thus site and development specific issues should be addressed in accordance with best practice.</p>
<p>Development Applications Unit (DAU)</p> <p>National Monuments Services of the DAU</p>	<p>Email received 04/11/2021.</p> <ul style="list-style-type: none"> • Advise OPW to appoint dedicated FRS Project Archaeologist(s). • Advised that the methodologies and processes outlined in the 'Guidelines for the Archaeological Assessment of Flood Relief Schemes' (DHLGH 2021) are consulted and adhered to in undertaking the archaeological assessments for these projects. • Draw the applicant's attention to the Department's published policy in relation to the archaeological assessment, including 'Framework and Principles for the Protection of the Archaeological Heritage – Published by Dúchas The Heritage Service' the 'Guidelines for the Archaeological Assessment of Flood Relief Schemes' (DHLGH 2021). • Highlight available datasets to be used in the archaeological impact assessment. • Comments on the requirements of the assessment of the FRS project is included.

Organisation	Feedback to initial stakeholder engagement/environmental consultation
Eamon Ryan TD, Minister for Transport	<p>Letter attached to email received 20/10/2021.</p> <p>Observations provided comprise:</p> <ul style="list-style-type: none"> • All of the hard measures identified and assessed in 2018 scored quite high negative environmental consequences. The planners are advised to weigh nature-based criteria compared to hard defences when designing these flood relief schemes and when going to tender. • The designer of the scheme should ensure that the threat of flooding along the public road network (where it exists) is reduced by the proposed design and that the drainage of the public road network is improved where possible and not impaired by the proposed development.
Geological Survey Ireland	<p>Letter and reference sheet attached to email received 18/10/2021.</p> <p>Observations provided comprise:</p> <ul style="list-style-type: none"> • Advise on online data sources to use for the environmental assessment for Geoheritage, Groundwater, Geotechnical database, Geohazards, and Marine and Coastal. • Recommended that the following guidelines are consulted: Institute of Geologists of Ireland, 2013. Guidelines for the Preparation of the Soils, Geology and Hydrogeology Chapters of Geology in Environmental Impact Statements. • Should development go ahead, all other factors considered, Geological Survey Ireland would much appreciate a copy of reports detailing any site investigations carried out. The data would be added to Geological Survey Ireland's national database of site investigation boreholes, implemented to provide a better service to the civil engineering sector. Data can be sent to Beatriz Mozo, Geological Mapping Unit, at Beatriz.Mozo@gsi.ie, 01-6782795.

Appendix C – Habitat Mapping






















Appendix D – Land Use Zoning Map for Ballybofey and Stranorlar

The figure overleaf is reproduced from the Variation to the County Donegal Development Plan 2018-2024 in respect of the TEN-T Priority Route Improvement Project, Donegal (Variation No. 1, 31st May 2021).



**County Donegal
Development Plan
2018 - 2024**

**Contae Dhún na nGall
Plean Forbartha
2018 - 2024**

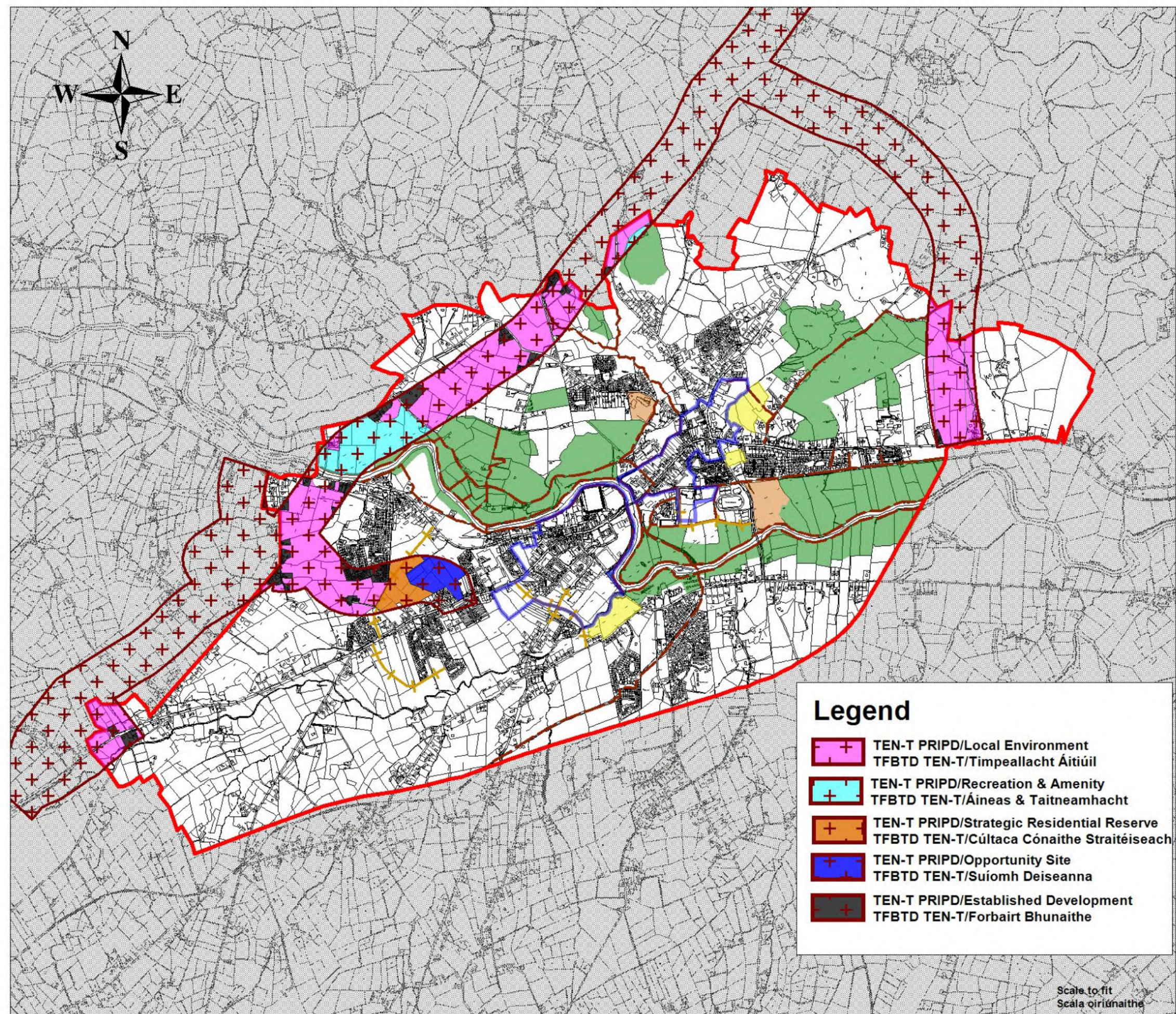
**Layer 2A - Map 15.2
Sraith 2A - Learscail 15.2**

**Ballybofey-Stranorlar
Bealach Féich-
Srath an Urláir**

**Settlement Framework
Creatlach Lonnaíochta**

Legend

- Settlement Envelopes
Imchlúdaigh Lonnaíochta
- Town Centre
Lár an Bhaile
- Residential
Cónaitheach
- Education
Oideachas
- Amenity Areas
Limistéir Thaitneamhachta
- Road Linkages
Naisc Bhóithre
- Pedestrian Linkages
Naisc Coisithe
- TEN-T Priority Route
Improvement Project,
Donegal Preferred
Route Corridor
Tionscadal Feabhsúcháin
Bhealach Tosaíochta,
Dún na nGall, TEN-T
Rogha Conaire Bealaigh



Ordnance Survey Ireland data reproduced under OSI Licence Number 201902/CCMA/Donagall County Council. Unauthorised reproduction infringes Ordnance Survey Ireland and Government of Ireland copyright. Ordnance Survey Ireland, 2018. Donagall County Council, 2018.

Sonraí de chuid Shuirbhíreacht Ordála Éireann anna atá gearrthar faoi Uimhir Chaidunála SOE 201902/CCMA. Comhairle Contae Dhún na nGall. Ma dhéantar é seo a athghealltú gan údarás, saróidh se coipeacht Shuirbhíreacht Ordála Éireann agus Riail na nÉireann. Shuirbhíreacht Ordála Éireann, 2018. Comhairle Contae Dhún na nGall, 2018.

To be read in conjunction with relevant accompanying text contained in the front section of this appendix as well as other relevant objectives & policies of the CDP.

Le léamh i gcomhar leis an téacs aghartha tionlacan atá chun tosaigh sa chuid seo den aguisin chomh math le cuspóirí agus beartaí aghartha eile sa PFC.

Appendix E – County Donegal Development Plan 2018-2024: policies associated with landscape

This appendix does not contain a fully comprehensive list of policies stated in the County Donegal Development Plan 2018-2024 related to landscape and the reader is directed to that document should further information be required. Text in italic within this appendix is reproduced from County Donegal Development Plan 2018-2024.

Natural Heritage policies outlined in Donegal County Development Plan where landscape is a consideration are as follows:

NH-P-1: It is a policy of the Council to ensure that development proposals do not damage or destroy any sites of international or national importance, designated for their wildlife/habitat significance in accordance with European and National legislation including: SACs, Special SPAs, NHAs, Ramsar Sites and Statutory Nature Reserves.

NH-P-5: It is a policy of the Council to require consideration of the impact of potential development on habitats of natural value that are key features of the County's ecological network and to incorporate appropriate mitigating biodiversity measures into development proposals.

NH-P-6: It is a policy of the Council to protect areas identified as Especially High Scenic Amenity on Map [therein]: 'Scenic Amenity'. Within these areas, only developments assessed to be of strategic importance or developments that are provided for by policy elsewhere in this Plan shall be considered.

NH-P-7: Within areas of 'High Scenic Amenity' (HSC) and 'Moderate Scenic Amenity' (MSC) as identified [in maps therein]: 'Scenic Amenity', and subject to the other objectives and policies of this Plan, it is the policy of the Council to facilitate development of a nature, location and scale that allows the development to integrate within and reflect the character and amenity designation of the landscape.

NH-P-8: It is the policy of the Council to safeguard the scenic context, cultural landscape significance, and recreational and environmental amenities of the County's coastline from inappropriate development.

NH-P-9: It is the policy of the Council to manage the local landscape and natural environment, including the seascape, by ensuring any new developments do not detrimentally impact on the character, integrity, distinctiveness or scenic value of the area.

NH-P-10: It is a policy of the Council to retain and protect significant stands of existing trees/hedgerows/woodlands, and seek increased planting of native trees where appropriate in new developments.

NH-P-11: It is a policy of the Council to seek the protection of stone wall boundaries where they are shown to play a significant heritage role. Where the demolition of such stone walls is unavoidable, the reinstatement of stone walls at revised location/set back within the site using agreed local materials and techniques, will be required.

NH-P-12: It is a policy of the Council to protect the integrity of the Shore Walks from Moville to Greencastle, Bundoran to Tullaghan, Buncrana to Stragill and the walkway encircling Trusk Lough and

Ballybofey by the management of development that would intrude upon or inhibit the amenities of those walks and surrounding areas.

NH-P-13: It is a policy of the Council to protect, conserve and manage landscapes having regard to the nature of the proposed development and the degree to which it can be accommodated into the receiving landscape. In this regard the proposal must be considered in the context of the landscape classifications, and views and prospects contained within this Plan and as illustrated on Map [therein]: ‘Scenic Amenity’.

NH-P-14: It is a policy of the Council to protect the character of the following approach roads to Glenveagh National Park:

- *Glendowan to Doochary Road.*
- *Dunlewey to Termon Road.*
- *Churchill to Termon/Dunlewy Road.*
- *Muckish Gap to Cabiber Bridge.*

NH-P-15: It is a policy of the Council to safeguard prominent skylines and ridgelines from inappropriate development.

NH-P-16: It is a policy of the Council to protect and enhance the landscape character, culture and heritage of the Islands whilst facilitating appropriate development. All development must be considered in the context of the landscape classification contained within this Plan and as illustrated on [therein]: Scenic Amenity.

NH-P-17: It is a policy of the Council to seek to preserve the views and prospects of special amenity value and interest, in particular, views between public roads and the sea, lakes and rivers. In this regard, development proposals situated on lands between the road and the sea, lakes or rivers shall be considered on the basis of the following criteria:

- *Importance value of the view in question.*
- *Whether the integrity of the view has been affected to date by existing development.*
- *Whether the development would intrude significantly on the view.*
- *Whether the development would materially alter the view. In operating the policy, a reasonable and balanced approach shall be implemented so as to ensure that the policy does not act as a blanket ban on developments between the road and the sea, lakes and rivers.*

NH-P-19: It is a policy of the Council to protect County Geological Sites (CGS) through a precautionary approach to development proposals with the potential to impact upon a CGS. Proposals should be accompanied by a detailed report from a competent person setting out the potential impact to ensure that an informed decision can be made. Where significant harm to the CGS is deemed likely, planning permission will not be granted unless there are overriding considerations of public importance to the County.

NH-P-20: It is the policy of the Council to ensure the protection of Cró na mBraonáin habitats and Grouse sanctuary given its high concentration of Red Grouse and its importance to the national Red Grouse population, which is a protected species under the EU Birds Directive.

Build heritage policies outlined in Donegal County Development Plan where landscape is either directly or indirectly a consideration are as follows:

BH-P-1: It is a Policy of the Council to conserve and protect all structures (or parts of structures) and sites contained in the Record of Protected Structures that are of special architectural, historic, archaeological, artistic, cultural, scientific, social or technical interest.

BH-P-2: It is a policy of the Council to review the RPS on an ongoing basis, and to add structures (or parts of structures) of special interest, including, those recommended by the Minister through the NIAH Survey of Donegal or other buildings which the Council consider to have special interest.

BH-P-3: It is a policy of the Council to ensure retention of vernacular and/or historic structures (and parts of structures), including their functional and decorative details, that are sensitive to traditional construction methods and materials and do not have a detrimental impact on the character or appearance of a structure and are in accordance with current conservation guidelines and best practice.

BH-P-4: It is a policy of the Council to ensure the repair, reuse and appropriate refurbishment of vernacular and/or historic buildings, which make a positive contribution to the built heritage of the area including those as referred to on the National Inventory of Architectural Heritage.

BH-P-5: It is a policy of the Council to protect and preserve vernacular and/or historic industrial and maritime buildings. Proposals for restoration or adaptive re-use should be facilitated subject to a full architectural assessment.

BH-P-6: It is a policy of the Council to ensure, where appropriate, measures to extend, modify or materially alter the fabric of vernacular and/or historic buildings are sensitive to traditional construction methods and materials and craftsmanship and do not have a detrimental impact on the character or appearance of a structure.

BH-P-7: It is a policy of the Council to promote and retain building fabric such as lime mortar, slate, thatch, timber windows, rendering and joinery and the reinstatement of such will be encouraged.

BH-P-8: It is a policy of the Council to facilitate appropriate and high quality design solutions including considerations of scale, proportion, detailing and material specification for development proposals affecting vernacular and/or historic buildings in both urban and rural settings.

BH-P-9: It is a policy of the Council to conserve and enhance the quality, character and distinctiveness of towns and streetscapes in the County, including street layouts, historic structures, building lines, traditional plot widths, signage and historical street furniture as well as the character of the area.

BH-P-10: It is a policy of the Council to ensure the retention of historic shop fronts, pub fronts and traditional (hand-painted) signage as part of the streetscape of towns and villages and roads of both urban and rural Donegal.

BH-P-11: It is a policy of the Council to ensure proposals on the Islands will conserve and/or enhance the intrinsic character, scale and visual amenity of the architectural heritage respecting the character of existing buildings, important views and spaces and the historic settlement pattern in terms of scale, height, grouping, density, design, materials, traditional building techniques and workmanship.

BH-P-12: It is a policy of the Council to ensure the sensitive design, siting and rationalisation of modern street furniture and elements such as lighting, seats and benches, litter boxes, bollards, railings, street signs, post boxes, telephone kiosks, paving, kerbstones, utility boxes, cables, posts, antenna, statues, plaques and other monuments, which will visually integrate with their host locations.

BH-P-13: It is a policy of the Council to identify and promote the re-use of traditional building clusters/groupings in both rural and urban settings which add to the unique and specific value of a given landscape character.

BH-P-14: It is a policy of the Council to continue to protect the built heritage fabric of the County by identifying appropriate Architectural Conservation Area designations.

BH-P-15: It is a policy of the Council to preserve, protect and enhance the special built character and functions of the 'Heritage Towns' of Ardara, Ballyshannon, Moville, Ramelton and Raphoe.

BH-P-16: It is a policy of the Council to carry out village design statements for its five 'Heritage towns' to contribute to a greater understanding of these townscapes resources of the County and plan for future appropriate development.

BH-P-17: It is a policy of the Council to require that any historic structures that have to be demolished or significantly altered are photographed and recorded (including scaled drawings) to agreed professional standards.

BH-P-18: It is a policy of the Council to preserve the integrity of Historic Gardens and Designed Landscape sites in County Donegal identified in the National Inventory of Architectural Heritage (www.buidingsofireland.ie/Surveys/Gardens/).

Community Culture and The Gaeltacht policies outlined in Donegal County Development Plan where landscape is a consideration are as follows:

CCG-07: To promote, protect, harness and sustainably develop the Culture of Donegal by inter alia:

- *Implementing the Capital Programme/Infrastructural Plan of the Cultural services strategy 2016-2020 and any subsequent related capital programme/infrastructural plan.*
- *Supporting the public arts programme of the Council.*
- *Engaging with local communities to harness the cultural and creative resource of the county.*

- *Promoting the cultural and creative sector as an integral part of a sustainable tourism sector including the cultural tourism product associated with the Wild Atlantic Way and cultural tourism products associated with the history, geography, folk traditions and language and musical tradition of Donegal.*
- *Recognising and protecting the landscape and built heritage of Donegal as key elements of our culture.*
- *Nurturing and harnessing the cultural and creative resource of the Donegal Islands.*
- *Engaging with the cultural and creative resource that of the worldwide Donegal Diaspora and Donegal's new communities.*
- *Promoting the artistic sector including: visual arts, performance arts, literature, and contemporary arts including the reuse and redevelopment of vacant and derelict buildings for the arts sector.*



IRELAND | UK | UAE | BAHRAIN | KSA

BYRNELOOBY

www.byrnelooby.com

Email: info@byrnelooby.com