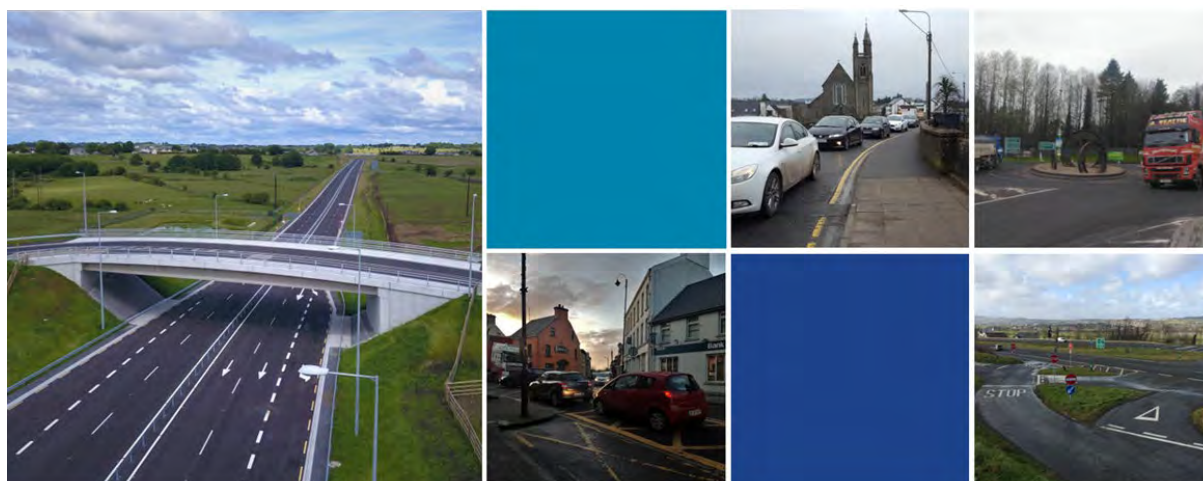


TEN-T Priority Route Improvement Project, Donegal

Option Selection Report Volume B – Constraints Report



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1 INTRODUCTION

1.1 Background

This constraints study comprises Volume B of the Phase 2 Options Selection Report for the TEN-T Priority Route Improvement Project, Donegal. The constraints study presents the various anthropogenic and environmental constraints that are within the Zone of Influence (Zol) of the proposed project. The findings of this report will form a crucial part of the option selection process covered by Phase 2 under the TII Project Management Guidelines (PMG) (2010 and 2017).

The TEN-T Priority Route Improvement Project, Donegal includes the following road sections:

- 1) **Section 1:** The N15 Ballybofey/Stranorlar Urban Region: The N15 from approximately Lough Mourne, through the townland of Cappry along the N15, through Ballybofey and Stranorlar and onto the N13 to Drumkeen.
- 2) **Section 2:** The N56/N13 Letterkenny to Manorcunningham: This section includes the N13 southern and the N56 eastern approach to the Polestar roundabout in Letterkenny and the N13 from the Dry Arch roundabout easterly to the Pluck roundabout near Manorcunningham
- 3) **Section 3:** The N14 Manorcunningham to Lifford/Strabane/A5 Link: This includes the full length of the N14 from the Pluck roundabout, near Manorcunningham to Lifford, and the N15 approach to Lifford.

1.2 Aims and Objectives

The scope of the constraints study is to identify and map the nature and extent of potential anthropogenic and environmental constraints that exist within the identified study area of the project. The purpose of completing this exercise is to identify where such constraints may impact upon the development of the proposed roads and in so doing will inform both the stakeholder consultation and Phase 2 Option Selection process. The constraints study has been compiled with reference to the Transport Infrastructure Ireland (TII) planning guidelines¹, the TII PMG (2010) and the environmental factors provided in Article 3 of the EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) as transposed into Irish legislation by the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, S.I. No. 296 of 2018. The environmental factors assessed in this constraints study are as follows:

- Population and Human Health;
- Biodiversity with particular attention to species and habitats protected under the Habitats Directive and the Birds Directive;
- Land, soil, water, air and climate;
- Material assets, cultural heritage, and landscape.

This constraints study presents the constraints in line with the above environmental factors in the following order:

- Population and Human Health (**Section 5**)
- Biodiversity (**Section 6**)
- Land and Soils (**Section 7**)
- Water (**Section 8**)
- Air and Climate (**Section 9**)

¹ NRA (2008) Environmental Impact Assessment of National Road Schemes – a Practical Guide.

- Material Assets - Utilities (**Section 10**)
- Material Assets - Agriculture (**Section 11**)
- Cultural Heritage including archaeology, architecture and culture (**Section 12**)
- Landscape (**Section 13**)
- External Constraints not included above (**Section 14**)

The constraints study incorporates mapping of the identified constraints across the study areas of the three sections of the project to inform decision making on feasible options. The options should, where possible, avoid constraints. The constraints study also informs the requirement for any additional surveys or targeted investigations.

1.3 Methodology

1.3.1 Study Area and Zone of Influence

The study area for each of the three sections of the project comprises an area around each of the existing road sections selected for improvement including the N15, N56/N13 and N14 to ensure that the study area comprises a sufficiently large area to encompass feasible options to meet the requirements for the project.

The Zol for various disciplines may vary and there may be scientifically appropriate reasons for extending this Zol further afield depending on the pathway of potential impacts.

The study area considered for each of the three sections is described in Section 2.

1.3.2 Identifying and Mapping Constraints

Constraints are divided into three principal categories:

- Natural constraints (naturally occurring landscapes and features);
- Artificial constraints (forming part of the built environment); and
- External parameters (design standards, policy, procedural and legal issues).

This constraints study is comprised of a desktop study and windshield surveys, which includes the review of various documentation, including mapping. The available mapping for this scheme consisted of 1:50,000 Ordnance Survey Ireland (OSI), Discovery Series, and aerial photography which provides information on the physical features of the study area. A Geographic Information System (GIS) has been used to map and present the available data within the study areas. Additionally, a number of datasets such as the National Parks and Wildlife Service (NPWS) ecological database, the Geological Survey Ireland database and the Water Framework Directive (WFD) surface water characteristics have been utilised. The datasets considered within each discipline are provided in the relevant chapter in Volume D of the Option Selection Report.

The constraints identified for each of the three sections are described in **Sections 5 to 13**.

2 STUDY AREA

The section locations and their respective study areas are shown in **Figure 2-1**. A brief description of each study area is provided in the following sections.

2.1 Section 1 N15 Ballybofey/Stranorlar Urban Region

The study area of Section 1 commences in the townland of Drumkeen in the north and extends to Meenacrumlin in the southwest, Carrickshandrum in the east and Crampan to the west. The study area is bound to the north by uplands comprising Liskeran Hills and to the south by the foothills of the Bluestack Mountains, including Croaghierin and Lough Hills. The River Finn flows through the middle of the study area between Stranorlar and Ballybofey.

2.2 Section 2 N56/N13 Letterkenny to Manorcunningham

The western extremity of the study area for Section 2 commences in the centre of Letterkenny and extends east to the N13/N14 Manorcunningham junction, to the townlands Trimnagh in the north and Scribly and Corkey in the south. The N56 from Pole Star Roundabout crosses the River Swilly Estuary and continues eastward to the Dry Arch Roundabout. The N13 extends from the Dry Arch roundabout approximately 2km south towards Lurgy, before turning in an easterly direction crossing the Corkey River prior to a roundabout which forms a junction with the N14.

The study area incorporates significant residential clusters and housing estates located within Letterkenny to the north and south of the existing N13/N14 road network. The River Swilly meanders through the study area, flowing from the west to enter Lough Swilly Estuary in the northeast. The Corkey River flows through the eastern boundary of the study area and also flows into Lough Swilly.

2.3 Section 3 N14 Manorcunningham to Lifford/Strabane/A5 Link

Section 3 comprises the largest study area, commencing at the townland of Pluck in the northern extremity, extending to Lifford in the south, the village of Raphoe in the west and the townland of Drumleen in the east.

The study area is bordered to the west by the Mongorry Hill and the east by the Mullasawny Hills. The Corkey River flows through the northern boundary which flows into Lough Swilly. The Deelee River flows through the southern extremities and is a tributary of the River Foyle. The study area extends to the border between Donegal in the Republic of Ireland and Tyrone in Northern Ireland. The border is defined by the River Finn, which flows in a northerly direction where it joins the River Mourne in Strabane, Co. Tyrone to form the River Foyle.

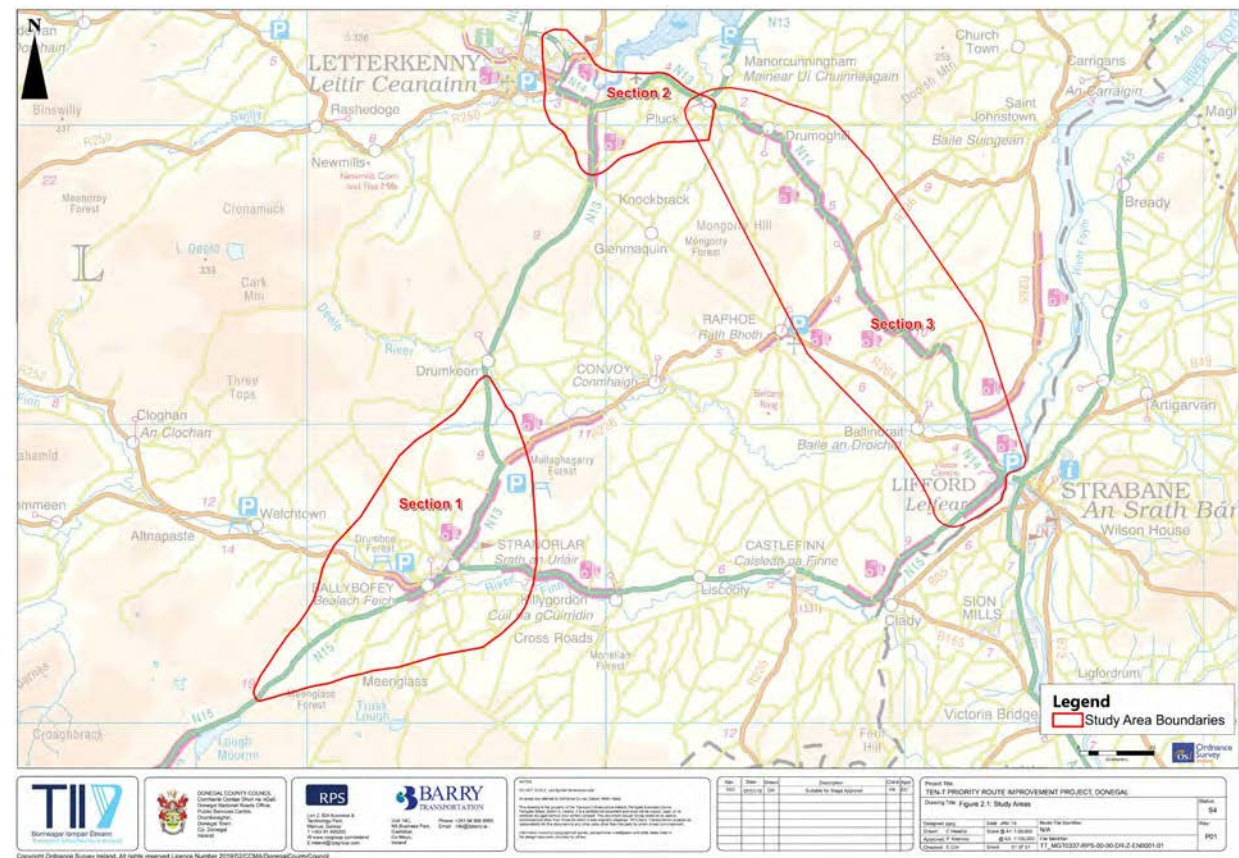


Figure 2-1: Project Study Areas

3 ENVIRONMENTAL LEGISLATIVE CONSTRAINTS

Consideration of relevant environmental policy and legal issues at EU, national, regional and local level may influence the development of a proposed road improvement within the study area. It is prudent to consider such issues at an early stage and ensure the project is progressing in line with such policies and legislation. Relevant legal, planning and policy related requirements are set out in **Table 3-1**.

Table 3-1: Legislative, Policy and Planning Constraints

Legislation, Policy and Planning	Constraints/Requirements
EU Legislation	
EIA Directive (Directive 2011/92/EU, as amended by Directive 2014/52/EU).	Environmental Impact Assessment (EIA) is a very significant instrument in the implementation of EU environmental policy. The EIA Directive (Directive 2011/92/EU, as amended by Directive 2014/52/EU) requires that there is an assessment of the effects of certain public and private projects on the environment and is designed to ensure that projects likely to have significant effects on the environment are subject to a comprehensive assessment of environmental effects prior to development consent being given.
Water Framework Directive (2000/60/EC, as amended by Directive 2014/101/EU)	The Water Framework Directive, Commission Directive 2000/60/EC (as amended by Directive 2014/101/EU. All works during the development and operation of the project must aim to protect surface and groundwater.
Habitats Directive (92/43/EEC)	The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as "The Habitats Directive", provides legal protection for habitats and species of European importance. All works during the development and operation of the project must be assessed by a public authority, in view of best scientific knowledge and in view of the conservation objectives of the European site, if the project, individually or in combination with other plans or projects is likely to have a significant effect on the European site [i.e. Special Areas of Conservation (SACs), designated under the Habitats Directive, and Special Protection Areas (SPAs), designated under the Conservation of Wild Birds Directive (79/409/ECC), as codified by Directive 2009/147/EC].
Directive 2007/60/EC on the Assessment and Management of Flood Risks.	The aim of this Directive is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. Establish a framework for the assessment and management of flood risks.
Birds Directive (2009/147/EC).	All works during the development and operation of the project must aim to maintain/conservate wild bird species occurring in the study area.
National Legislation	
Planning and Development Act, 2000 (as amended)	The planning code is made up of both primary and secondary legislation i.e. acts and regulations. The framework is set out in the Planning and Development Acts 2000 (as amended) and the detail is prescribed in the Planning and Development Regulations 2001 (as amended).
Roads Act (1993) as amended.	The project must undergo screening for Environmental Impact Assessment in accordance of the Roads Act (1993) as amended).
European Communities (Birds and Natural Habitats) Regulations 2011, SI 477/2011.	This legislation gives effect to the Birds Directive 2009/147/EC and the Habitats Directive 92/43/EEC.
The Inland Fisheries Act 2010. EU (Quality of Salmonid Waters) Regulations 1988.	All works during development and operation of the project must aim to conserve fish and other species of fauna and flora habitat; biodiversity of inland fisheries and ecosystems and protect spawning salmon and trout.
The National Monuments Acts 1930-2004. The Heritage Act 1995. Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act, 1999.	All works during development and operation of the project must aim to ensure the satisfactory protection of archaeological remains, which are held to include all man-made structures and to protect and where possible preserve architectural heritage.

Legislation, Policy and Planning	Constraints/Requirements
Planning and Policy	
County Donegal Development Plan 2018-2024	Strategic Objectives S-O-3: To support the role of Letterkenny as a linked urban area in the North West City Region in order to drive investment and produce consequential benefits throughout the entire County and to support regional growth in the context of the Northern and Western Regional Assembly. S-O-6: To protect, enhance and appropriately harness the unique quality and diversity of the environment in the County, through a wide range of measures, supported by proper planning and sustainable development. S-O-7: To prioritise key infrastructural investment required throughout the County, such as in transportation networks, water services, waste disposal, energy and communications networks, the provision of education, healthcare, retail, and a wide range of community based facilities and to collaborate on delivery, including in the regional context. Core Strategy Objectives CS-O-9: To coordinate and promote the delivery of key roads and access infrastructure (including the A5 Western Transport Corridor and A6 road projects, the Ten- T Network, Letterkenny Relief Road and the N14 Letterkenny/ Lifford road) with the other relevant authorities including partners in the North West Strategic Growth Partnership and within the Northern and Western Regional Assembly so as to result in effective strategic connections to and throughout the County. CS-O-10: To prioritise investment in key strategic connections between Letterkenny and the Strategic Towns together with links to transport corridors serving the rest of the County. CS-O-13: To promote the integration of land use and transportation so as to encourage modal shift and the development of sustainable transport policies CS-O-17: It is an objective of the Council to promote sustainable development and transportation strategies in urban and rural areas including the promotion of measures to: (i) Reduce energy demand in response to the likelihood of increases in energy and other costs due to long-term decline in non-renewable resources; (ii) Reduce anthropogenic greenhouse gas emissions; and (iii) Address the necessity of adaptation to climate change Transport Objectives T-O-1: To deliver the Trans European Transport Network (TEN-T), (as required by EU Regulation (EU) No.315/2013 “Guidelines for the development of the Trans European Transport Network (Ten-T)”) as part of the core and comprehensive transport network of Ireland. T-O-2: To achieve quality strategic and important inter-urban transport corridors giving access to regional and international markets with links to sea, air and rail. T-O-3: To provide for high quality connectivity within the County in line with the Core Strategy through the promotion of a quality Strategic Road Network as identified on Map 5.1.2 [of CFDP]. T-O-4: To deliver optimum accessibility, ease of movement and to facilitate appropriate proposals for modal shift. T-O-5: To provide good access to the locations of major economic activity. T-O-6: To safeguard the carrying capacity and safety of National Roads and other specified Regional Roads. T-O-7: To protect the corridors and routes and acquire the lands necessary for transportation improvement projects as identified in Table 5.1 [p.78 of CDP]. T-O-11: To support appropriate enhancement of access to offshore islands. T-O-12: To strengthen cross border transportation links (including the A5 Western Transport Corridor) and support the development of new links to and within the North West City Region. Transport Policies T-P-1: It is a policy of the Council to support and facilitate the appropriate development, extension and improvement of the TEN-T network (Map 5.1.1 refers) within Donegal in accordance with the Core Strategy and subject to environmental, safety and other planning considerations. T-P-2: It is a policy of the Council to support and facilitate the appropriate development, extension and improvement of Donegal's transport network, including the Strategic Road Network (Map 5.1.2 refers), and roads identified in Table 5.1 in accordance with the Core Strategy and subject to environmental, safety and other planning considerations. T-P-3: It is a policy of the Council to work in partnership with the Northern Ireland authorities to strengthen and improve existing cross border transportation links (including walking and cycling

Legislation, Policy and Planning	Constraints/Requirements
	routes) and support the development of new links (including walking and cycling routes) to enable the targeted spatial and economic development of the North West City Region. T-P-5: It is a policy of the Council to promote the quality and connectivity provided through the identified Strategic Road Network (Map 5.1.2), subject to environmental, safety and other planning considerations. T-P-9: It is a policy of this Council that the Finn Valley is recognised as a central geographic location within the County as it acts as a significant access point to and through the County. T-P-15: It is a policy of the Council to require that all development proposals comply with the Development and Technical Standards set out in Appendix 3 to promote road safety Water and Environmental Services Objectives WES-O-5: To maintain, protect, improve and enhance the quality of surface waters and ground waters in accordance with the Programme of Measures contained within the relevant River Basin Management Plan WES-O-6: To provide for environmental protection, through: ▪ The protection of surface water and ground water from pollution in accordance with the relevant 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; and ▪ Ensuring full compliance with relevant EU Directives, and National and European Policies and Regulations and through monitoring and control of relevant activities Water and Environmental Services Policies WES-P-4: It is a policy of the Council to protect the environment from adverse impact through directing and controlling development, enforcement, licensing and direct intervention Flooding Objectives F-O-1: To assess all development proposals in accordance with 'The Planning System and Flood Risk Management - Guidelines for Planning Authorities', (DoEHLG, 2009). F-O-3: To ensure that the requirements of EU and national law in relation to the natural environment and nature conservation are complied with at all stages of flood risk management and to comply with Articles 6 of the Habitats Directive and have regard to the relevant conservation objectives, qualifying interest and threats to the integrity of Natura 2000 site Natural Heritage Objectives: NH-O-1: To protect, sustainably manage and enhance the rich biodiversity of County Donegal for present and future generations. NH-O-2: To comply with Article 6 of the Habitats Directive (92/43/EEC) and have regard to the relevant conservation objectives, management plans, qualifying interests and threats to the integrity of Natura 2000 sites. NH-O-3: To maintain the conservation value of all existing and/or proposed SACs, SPAs and NHAs and RAMSAR sites including those plant and animal species that have been identified for protection under the EU Habitats Directive (92/43/EEC), EU Birds Directive (79/409/EEC as amended by 2009/147/EC), the Wildlife Acts (1976-2014) and the Flora Protection Order (2015). NH-O-4: To ensure the protection and management of the landscape in accordance with current legislation, ministerial and regional guidelines and having regard to the European Landscape Convention 2000. NH-O-5: To protect, manage and conserve the character, quality and value of the landscape having regard to the proper planning and development of the area, including consideration of the scenic amenity designations of this plan, the preservation of views and prospects and the amenities of places and features of natural, cultural, social or historic interest. NH-O-6: To protect and improve the integrity and quality of Designated Shellfish Waters, and Freshwater Pearl Mussel Basins and to take account of any relevant Shellfish Reduction Program or Fresh Water Pearl Mussel Sub-basin Plan. NH-O-7: To protect the areas of Especially High Scenic Amenity from intrusive and/or unsympathetic developments. NH-O-8: To ensure where appropriate the protection and conservation of hedgerows, stone walls and traditional field boundaries as natural heritage corridors and migration routes for wildlife where they are shown to play a significant heritage role. NH-O-10: To maintain and restore ecosystems and to conserve valuable or threatened habitats and species in order to prevent further loss of biodiversity and to meet the EU's target to halt

Legislation, Policy and Planning	Constraints/Requirements
	biodiversity loss by 2020 through the implementation of the EU Biodiversity Strategy (2011) or as updated. Natural Heritage Policies: NH-P-1: It is a policy of the Council to ensure 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-2: It is the policy of the Council to protect the habitats of species listed for protection through the prevention and management of the spread of invasive plant and animal species in the County in accordance with European and National legislation. NH-P-3 It is a policy of the Council to require the consideration of Designated Shellfish Waters and their Shellfish Pollution Reduction Programmes in all development proposals that fall within their catchment. NH-P-4: It is a policy of the Council to require the consideration of Freshwater Pearl Mussel and any relevant Freshwater Pearl Mussel Sub-basin Plans in all development proposals that fall within their basin of catchment. 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 7.1.1: 'Scenic Amenity' (of the plan). 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 on Map 7.1.1: '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-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-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 7.1.1: 'Scenic Amenity'. NH-P-14: 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. Archaeological Heritage Objectives AH-O-1: To conserve and protect the County's archaeological heritage for present and future generations. Archaeological Heritage Policies

Legislation, Policy and Planning	Constraints/Requirements
	AH-P-1: It is a policy of the Council to protect and enhance the integrity of Archaeological Monuments and their settings and to secure the preservation in- situ of all archaeological monuments included on the Record of Monuments and Places. Preservation by record shall only be considered in exceptional circumstances where the principles of the Department of Arts, Heritage, Gaeltacht and the Islands publication entitled, 'Framework and Principles for the Protection of Archaeological Heritage' can be satisfied. AH-P-3: It is the policy of the Council to protect the character, settings of and views from National Monuments and Recorded Monuments and to manage development which would be considered to (visually or physically) intrude upon or inhibit the enjoyment of the amenities of these sites. AH-P-4: It is the policy of the Council to protect where appropriate, the character and setting of any unrecorded archaeological object or site. AH-P-6: It is the policy of the Council to protect and conserve historic graveyards identified in the Record of Monuments and Places (including those in the guardianship of Donegal County Council) in cooperation with the National Monuments Service of the Departments of Arts, Heritage, Regional, Rural and Gaeltacht Affairs and encourage their management in accordance with legislation, conservation principles and best practice. AH-P-8: It is the policy of the Council to protect known battlefield sites and their settings.
River Basin Management Plan for Ireland 2018 - 2021	Public Consultation on the River Basin Management Plan (RBMP) for Ireland (2018 – 2021), began in February 2017. The document (Chapter 4) sets out the condition of Irish waters, and a summary of status for all monitored waters in the 2013 – 2015 period, including a description of the changes since 2007 – 2009. Nationally, both monitored river water bodies and lakes at high or good ecological status, appear to have declined by 3% since 2007 – 2009; nevertheless, this figure does not reflect a significant number of improvements and dis-improvements across these waters since 2009. Provisional figures from the EPA suggest that approximately 900 river water bodies and lakes have either improved or dis-improved. In addition, the previously observed long term trend of decline in the number of high-status river sites has continued. Chapter 5 of the RBMP presents results of the catchment characterisation process, which identifies the significant pressures on each water body that is <i>At Risk</i> of not meeting the environmental objectives of the WFD. Importantly, the assessment includes a review of trends over time to see if conditions were likely to remain stable, improve or deteriorate by 2021. This work was presented in the RBMP for 81% of water bodies nationally, which had been characterised at the time. 1,517 water bodies were classed <i>At Risk</i> out of a total of 4,775, or 32%. An assessment of significant environmental pressures found that agriculture was the most significant pressure in 729 river and lake water bodies that are <i>At Risk</i>. Urban waste water, hydromorphology and forestry were also significant pressures amongst others.

4 CONSULTATIONS

4.1 Stakeholder Consultations

A number of the key stakeholders to the project were identified and contacted in writing to inform them of the proposed TEN-T Priority Route Improvement Project, Donegal. The stakeholders were each invited to contribute observations and comments on environmental elements of the project regarding the Constraints Study. **Table 4-1** lists the stakeholders contacted as part of this stage in the project. All constraints, observations and comments received from these stakeholders are to be considered as part of the constraints study, option selection and subsequent environmental impact assessment of the project.

Constraints consultation with key stakeholders ran from 7th September to 6th October 2017.

Table 4-1: Stakeholders Consulted during the Constraints Study

Stakeholders	Date Issued	Date Observations Received	Constraints/Requirements of the Proposed TEN-T road project
Office of Public Works (OPW)	07/09/17	15/11/17	- The OPW are the lead agency for flood risk management in Ireland. - There may be Arterial Drainage Districts in the specified area and, if this is the case, the requirement is not to interfere with or prevent the maintenance work going ahead or taking place. - The Catchment Flood Risk and Assessment Management (CFRAM) Plans for AFAs in this area of Donegal will be finalised at the end of 2017 and these plans should be considered in your proposals.
EPA Regional Inspectorate	07/09/17		No observations received to date
Department of Communications, Climate Action and Environment	07/09/17		No observations received to date
Department of Culture, Heritage and the Gaeltacht	07/09/17		No observations received to date
Department of Agriculture, Food and the Marine	07/09/17		No observations received to date
Health Service Executive (HSE)	07/09/17		No observations received to date
Geological Survey of Ireland (GSI)	07/09/17	06/10/17	- To respond to request for observations with regard to constraint, I would like to draw attention to our maps and datasets which are currently available for viewing and/or download on the Geological Survey website under "Online Mapping"- direct link: www.gsi.ie/mapping.htm with the "Spatial Resources Viewer": http://dcenr.maps.arcgis.com/apps/MapSeries/?appid=a30af518e87a4c0ab2fbde2aaac3c228 - Of particular interest to this proposed development is our 'Landslide' dataset contained within the map viewer. - There are no County Geological Sites in any of the areas under consideration for this work. - At a later stage, should any significant bedrock cuttings be created, we would ask that they will be designed to remain visible as rock exposure rather than covered with soil and vegetated, in accordance with safety guidelines and engineering constraints. In areas where natural exposures are few, or deeply weathered, this measure would permit on-going improvement of geological knowledge of the

Stakeholders	Date Issued	Date Observations Received	Constraints/Requirements of the Proposed TEN-T road project
			subsurface and could be included as additional sites of the geological heritage dataset, if appropriate.
Royal Irish Academy: Committee for Historical Studies	07/09/17		No observations received to date
Road Safety Authority	07/09/17		No observations received to date
National Museum of Ireland	07/09/17		No observations received to date
Inland Fisheries Ireland	07/09/17		No observations received to date
Teagasc	07/09/17		No observations received to date
Irish Farmers Association (IFA) Donegal Branch	07/09/17		No observations received to date
Coillte	07/09/17		No observations received to date
An Taisce	07/09/17		No observations received to date
The Heritage Council	07/09/17		No observations received to date
Bat Conservation Ireland	07/09/17		No observations received to date
The Irish Cycling Advocacy Network	07/09/17		No observations received to date
Heritage Officer	07/09/17		No observations received to date
Údarás na Gaeltachta	07/09/17		No observations received to date
Birdwatch Ireland	07/09/17		No observations received to date
North Western River Basin District Project Office	07/09/17		No observations received to date
Fáilte Ireland	07/09/17		No observations received to date
Irish Aviation Authority	07/09/17	20/07/17	No observations to make on this application
Donegal County Development Board	07/09/17		No observations received to date
Environment Department, Donegal County Council	07/09/17		No observations received to date
Planning Department, Donegal County Council	07/09/17	26/08/17	The proposed project is to align with the contents of the Draft County Donegal Development Plan 2018-2024. The draft Plan recognises the critical importance of the TEN-T network in Donegal inclusive of the N15, N14 and N13 routes within the County. In recognition of the importance of these routes in general, and of the proposed improvement projects, the Draft Plan includes a range of objectives and policies in support of the achievement of these road projects.

Stakeholders	Date Issued	Date Observations Received	Constraints/Requirements of the Proposed TEN-T road project
Water Services, Donegal County Council	07/09/17	18/10/17	Ballybofey/Stranorlar Urban Area - Lough Mourne adjacent the N15 at the southern end of your study boundary is the current drinking water source for people and business in the Finn Valley from Ballinamore to Ballybofey to Lifford and the Deelee Valley from Drumkeen to Raphoe to St. Johnston. Measures to protect the Lough Mourne catchment should be considered when planning any future road works. - The existing pipes supplying raw water from Lough Mourne to the water treatment plant in Meencrumlin was crossed by the previous route of the Ballybofey-Stranorlar bypass and any future plans will also have to take account of this important pipeline corridor. - There are also plans to impound Lough Mourne and to raise its level by up to 4.5m to increase its capacity to provide drinking water. This will also include upgrading the existing water treatment works at Meencrumlin. - A strategic pipe link will be required between the Lough Mourne Regional Water Supply Scheme (RWSS) and the Letterkenny RWSS and consideration should be given to including a pipeline corridor within any future road corridor over its full length. - All existing water services infrastructure that will be impacted by the proposed works should be replaced on a like for like basis. N56/N13 Letterkenny to Manorcunningham - I assume that this project will also examine the Bonagee Link (a new road corridor crossing the Swilly east of the Port Bridge connecting the Dry Arch Roundabout and the Ramelton Road) A strategic pipe link will be required between the Dry Arch Roundabout and the roundabout at Thomas Keys filling station in Kiltroy and consideration should be given to including a pipeline corridor within any future road corridor over its full length. - All existing water services infrastructure that will be impacted by the proposed works should be replaced on a like for like basis. N14 Manorcunningham to Lifford/Strabane/A5 Link All existing water services infrastructure that will be impacted by the proposed works should be replaced on a like for like basis.
Donegal Co. Co. Pollution Lab	07/09/17		No observations received to date
Donegal Co. Co. Road Services	07/09/17		No observations received to date
The Arts Council	07/09/17		No observations received to date
Siro (ESB & Vodafone joint venture for fibre-based broadband)	07/09/17	27/09/17	i. N15 Ballybofey/ Stranorlar Urban Region: Siro has not got any fibre network in this region yet, but we are planning to rollout a fibre network in Ballybofey/ Stranorlar starting sometime in Q1 2018. ii. N56/N13 Letterkenny to Manorcunningham: Siro has existing fibre network in this area (mapping provided). iii. N14 Manorcunningham to Lifford/ Strabane/ A5 link: Siro does not have any fibre network in this area and there are currently no plans to rollout fibre in this area.
BT Ireland	07/09/17	27/08/17	Link to access BT Ireland telecom service drawings provided.
Gas Network Ireland (GNI)	07/09/17	18/09/17	GNI neither owns nor operates any gas networks in Co Donegal. As such, we don't have any comment to make on the above referenced Project.

Stakeholders	Date Issued	Date Observations Received	Constraints/Requirements of the Proposed TEN-T road project
ESB	07/09/17	08/10/17	Mapping provided on the approximate location of ESB underground cables and overhead lines. There are no current plans for major ESB infrastructure in the study areas.
Three	17/10/17	25/10/17	H3G Ireland radio site infrastructure within the defined polygons of Ten T project as provided

4.2 Public Consultations

Three separate public consultation events were held during the Phase 2 process. Details of the public consultation events are provided in the Phase 2 Options Selection report.

5 POPULATION AND HUMAN HEALTH

5.1 Population

The County Donegal Development Plan 2018-2024 classifies the settlement network of Donegal into three interlinked components as follows:

- Layer 1 - Letterkenny
- Layer 2 - Strategic Towns, made up of two parts:
 - o **Layer 2A:** Strategic towns in the context of housing land supply and due to their 'Special Economic Function'; and
 - o **Layer 2B:** Strategic Towns predominantly due to their 'Special Economic Function'
- Layer 3 – Rural Towns and Open Countryside

The population figures from Census 2016 for each of the main settlements in Section 1, Section 2 and Section 3 are provided in **Table 5-1**. **Table 5-2** provides details on the land supply for Ballybofey-Stranorlar and Letterkenny while **Table 5-3** provides property types on the number of residential, commercial or other property types within the three study areas that make up the project. This data is taken from Geodirectory. Population density is mapped in terms of each Small Area (**Figure 5-1**) and in 1km² areas (**Figure 5-2**). The data for these figures has been taken from the Census 2016 population data from CSO

A brief summary on the population statistics and the property types in each of the three sections that make up the TEN-T Priority Road Improvement Project, Donegal is provided below.

Table 5-1: Census 2016 Populations in the Major Settlements

Census	Donegal County	Ballybofey-Stranorlar	Letterkenny	Manorcunningham	Lifford
Population	159,192	4,852	19,274	675	1,626
Male	79,022	2,330	9,375	344	794
Female	80,170	2,522	9,899	331	832

Table 5-2: Residential Land Supply within Ballybofey-Stranorlar and Letterkenny

Location	Ballybofey-Stranorlar*	Letterkenny*
Core Strategy Population allocation	838	4,190
No. of housing units required	310	1,552
Housing Land Requirement (HLR) (Ha)	39	116.4
Existing zoning @ 01/02/17 (Ha)	10.3	66
Proposed zoning (Primarily residential lands) (HA)	10.3	55.2
Housing yield (Primarily residential lands) (units)	124	1,203
Housing yield (not primarily residential land) (units)	0	286
Shortfall/excess (units)	-344	-839

*County Donegal Development Plan 2018-2024, p.22, Table 2A.6.

Table 5-3: Property Types

Building Category ²	Section 1	Section 2	Section 3	Total
Commercial	351	279	149	776
Residential	3,123	1,394	1,667	6,184
Unknown	95	28	62	185
Both	260	61	194	515
Total	3,829	1,762	2,072	7,663

Note: Geodirectory Data accessed July 2018

5.1.1 Section 1: N15 Ballybofey/Stranorlar Urban Region

5.1.1.1 Population

The twin towns of Ballybofey-Stranorlar are the third largest urban centre located within Donegal County. The *County Donegal Development Plan 2018-2024* classifies Ballybofey-Stranorlar as a Layer 2A *Strategic Towns*. The twin towns are a key retail, commercial, social and recreational centre providing retail shops, cultural venues and sports and educational facilities for the region. The area's population has undergone a significant population growth of 16.2% in the decade between 2006 and 2016, rising to 4,852 in 2016.

The Small Areas Population Statistics (SAPS) density of people per square kilometre (sq.km) for the Ballybofey-Stranorlar area is an average of 933 people per sq. km. Refer to **Figure 5-1** and **Figure 5-2** for specific ranges of population density within Section 1.

5.1.1.2 Properties

Residential development is located in an irregular fashion on the approach roads to the towns of Ballybofey-Stranorlar with much of the development located a considerable distance from the town centre. The towns also benefit from key environmental assets such as the River Finn and associated flood plains, and wooded areas situated at Drumboe and Dunwiley.

There is a mix of commercial and residential development within the Twin Towns with a significant number of residential units contained within the study area for Section 1. The Core Strategy of the County Donegal Development Plan 2018 - 2024 identifies a need for approximately 310 new housing units in Ballybofey-Stranorlar, with a requirement for housing land of 39 hectares. In February 2017, 10.3 ha of land was zoned for primarily residential development.

5.1.2 Section 2: N56/N13 Letterkenny to Manorcunningham

5.1.2.1 Population

Letterkenny is identified as a primary growth centre and a Layer 1 category settlement. Census 2016 indicates a population decrease of 314 (-1.6%) within the Letterkenny settlement area between 2011 (population 19,588) and 2016 (population, 19,274). However, in the decade between 2006 and 2016 there was an increase in population of 1,688 (+9.6%). The County Donegal Development Plan recognises the need for critical mass and suitable infrastructure as great importance for the development of the town. It sees Letterkenny as a major driver of economic growth in the region, particularly with its proximity to Derry.

² Categories abbreviations are according to Geodirectory.ie classifications: "C" indicates Commercial Buildings; "R" indicates Residential properties; "U" indicates Unknown building usage and "B" indicates Both Commercial and Residential usages.

The majority of Section 2 covers a low-density, primarily rural landscape with a SAPS population density of 51 to 100 people per sq.km. However, the study area overlaps with Letterkenny and its associated townlands which has an average population density of 1,240 people sq.km. Refer to **Figure 5-1** and **Figure 5-2** for specific ranges of population density within Section 2.

5.1.2.2 Properties

Letterkenny is a significant urban settlement in Donegal. **Table 5-2** summarises the land supply within the town of Letterkenny as contained in the County Donegal Development Plan 2018-2024. It outlines the number of housing units required and the proposed residential zoning to accommodate projected population growth within Letterkenny. Letterkenny also has its own development plan, the Letterkenny and Environs Development Plan, 2009-2015. The plan includes a landuse zoning map identifying residential areas of various densities, commercial zones, community and education zones, open spaces and opportunity sites for future development and plans.

5.1.3 Section 3: N14 Manorcunningham to Lifford/Strabane/A5 Link

5.1.3.1 Population

Lifford is classified as a Layer 2B Strategic Town due to its special economic function while Manorcunningham is classified as settlement within Layer 3 *Rural Towns and Open Countryside*. Layer 2B strategic towns are those that, “play a critical role in driving growth and development in the county because of their existing special economic function or because there is potential in their existing assets/resources/location or their relationship with other parallel strategies that will boost economic development,” (County Donegal Development Plan, 2018, p15).

The population of Manorcunningham in Census 2016 was 675. Lifford has a greater population of 1,626. The Lifford Local Area Plan 2007-2013 outlines the following sectors as the main employers within the town: local retailers/restaurants, military barracks, the greyhound stadium and the Donegal County Council.

Section 3 has the largest expanse of rural landscape coverage for SAPS population densities of 31 to 50 people per sq.km. The Lifford area has an average population density of 1,347 people per sq.km. Refer to **Figure 5-1** and **Figure 5-2** for specific ranges of population density within Section 3.

5.1.3.2 Properties

The Lifford Local Area Plan, 2007-2013, establishes policies for the development of the town centre, to improve and promote vitality within the town. It identifies an area of undeveloped back-land for an extension of the town. However, Lifford town is identified as an ‘Archaeological Complex’ in the Records of Monuments and Places. It is protected under the National Monuments Acts (1930-2004). The Local Area Plan provides a map of the land use zoning indicating the proposed extension of the town area, existing areas of general employment, neighbourhood centre community, recreation and education. However, it should be noted this land zoning dates from October 2007.



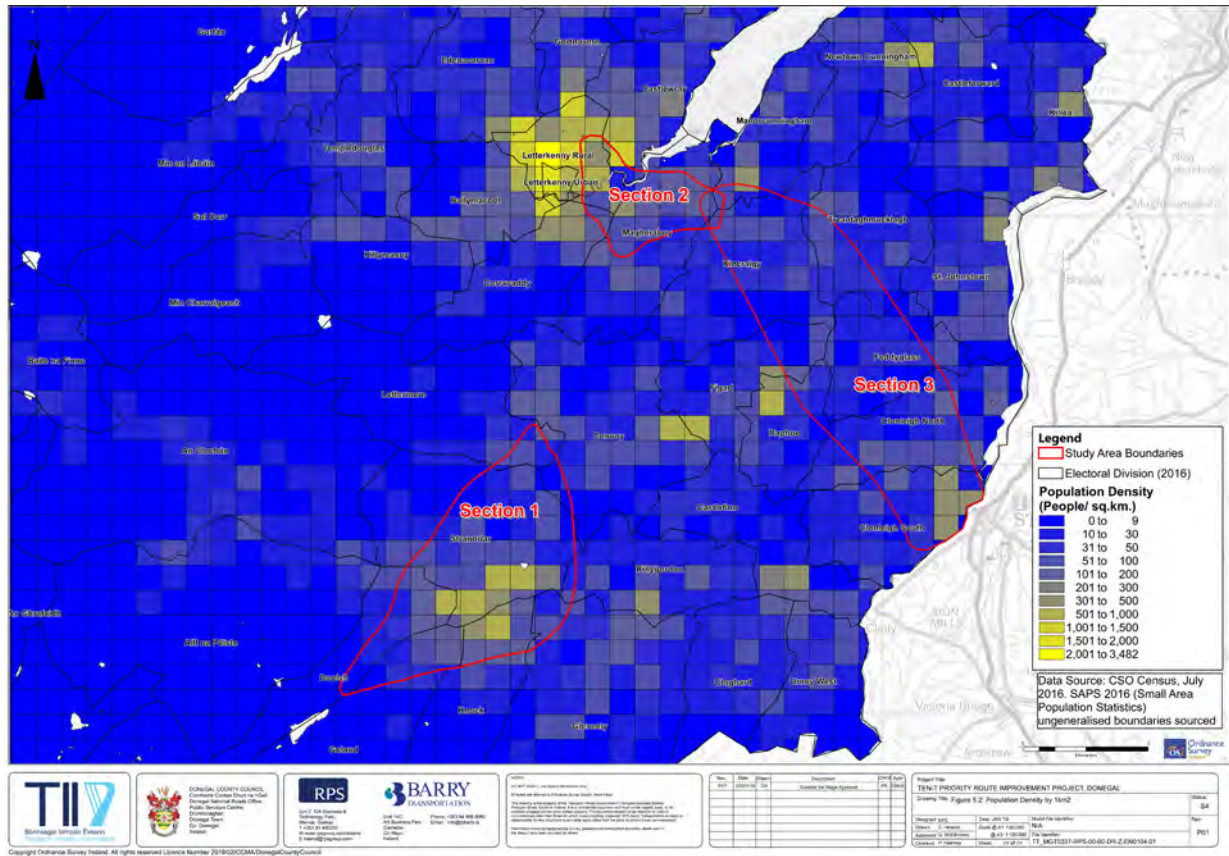


Figure 5-2: Population Density by 1km2 (CSO)

5.2 Human Health

The population of Donegal as recorded in Census 2016 was 159,192. Of this number, 136,206 (85.6%) stated they were in very good or good health. This is in comparison to 87.0% of people nationally. 2,874 (1.8%) of people stated that they were in bad or very bad health, in comparison to 1.6% nationally. The three sections of the study area support various levels of health care facilities. Letterkenny University Hospital (LUH) is an acute general and maternity hospital and forms a significant part of the Health Service Executive North West Region.

Section 1: Stranorlar Health Care Centre, Ballybofey Health Care Centre and St. Joseph's Community Hospital (Stranorlar). St Joseph's Community Hospital also facilitates the Donegal Local Health Office as part of the Health Service Executive. The Donegal Local Health Office facilitates the provision of a range of healthcare services to the community, such as access to GPs and Public Health Nursing up to social inclusion, disability and care for the elderly. The combination of health care facilities in the Ballybofey-Stranorlar area is fundamentally important to the health and wellbeing of both the towns of Ballybofey and Stranorlar and their rural hinterlands.

Section 2: Letterkenny University Hospital (LUH), Manorcunningham Health Centre, Letterkenny Health Centre. LUH is the largest major hospital in the region. It facilitates the acute treatment of patients in need of emergency healthcare and facilitates a maternity department, highlighting both the importance of the hospital's strategic location to healthcare services the North West Region and availability of specialist consultancy services (e.g. orthopaedics, cardiology, surgery and the Regional Kidney Centre). LUH is also designated as an active teaching hospital, with links to the National University of Ireland Galway, the Royal College of Surgeons and the Letterkenny Institute of Technology.

Section 3: Manorcunningham Health Care Centre, Lifford Health Care Centre and Lifford Community Hospital. Manorcunningham Health Care Centre is located south-east of Manorcunningham town centre, off the N13. The facility caters for the largely rural community surrounding Manorcunningham and the town's local population. Non-acute healthcare services are available in the facility, such as GP appointments, public health nursing and rehabilitation therapies (physio, speech and language, etc.). Lifford health centre, located in the centre of Lifford town, acts as an additional provider of non-acute healthcare services within the bounds of the study area. Similar to Manorcunningham, the facility provides a first point of contact for the those in the local community seeking medical treatment and provides important healthcare access for Lifford town's population of 1,626. The other healthcare facility in Lifford, Lifford Community Hospital, is a designated centre for Older Persons, which provides another key outlet for the elderly community and helps to relieve pressures on Lifford Health Centre.

5.3 Identified Constraints

Socio-economic and community facilities have been identified in the study area. Consideration of the locations of these facilities will be considered as part of the development of the Phase 2 Options Selection process. The settlement distributions across the townlands of Ballybofey-Stranorlar, Letterkenny and Lifford, have a range of population densities ranging for rural to dense urban. Cognisance of potential impacts to the commercial and residential impacts to these areas is required when considering potential options.

There is a total of 7,663 properties in the study area. Of this total figure, there are 3,829 properties in Section 1, 1,762 in Section 2 and 2,072 in Section 3. These properties represent a constraint which should, where practicable, be avoided during the options selection process. Properties, whether residential or commercial, generally represent a considerable constraint and avoidance is preferred. However, this may not be practicable in some cases and as such the compulsory purchase or other measures to acquire the properties, or part thereof (including land), may be necessary. **Figure 5-3** illustrates the property locations within the study areas and their associated use categories according to the Geodirectory data (2018).

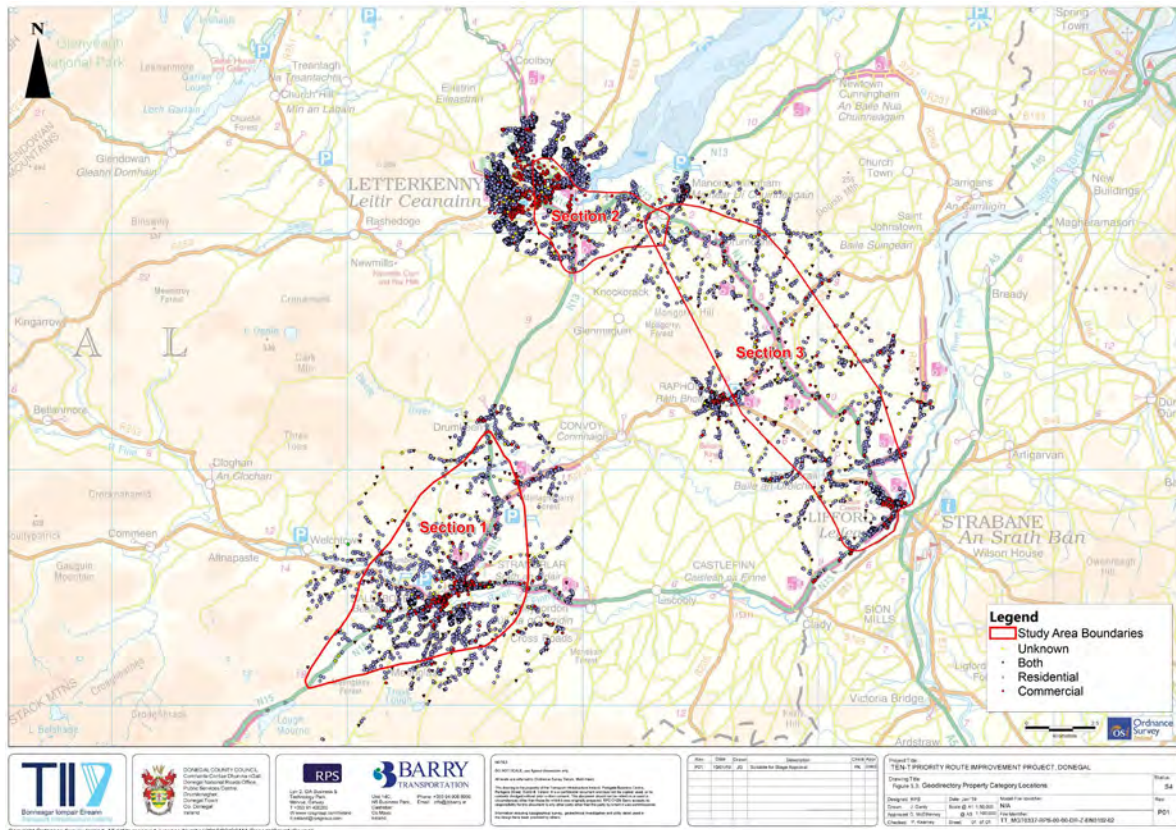


Figure 5-3: Geodirectory Property Category Locations

6 BIODIVERSITY

6.1 Introduction

The aim of this assessment is to identify and describe the biodiversity present within the study area and associated constraints of the project.

The methodology comprised of a desk study and preliminary field surveys. The following sources of information were used to identify and describe areas of known or potential ecological value:

- The NPWS database, consulted for designated sites of nature conservation interest in the study area, accessed September 2019 (www.npws.ie);
- The NPWS database, consulted for data on rare/ protected/ threatened species for Irish National Grid 10km by 10km squares, accessed online September 2019 (www.npws.ie);
- The National Biodiversity Data Centre (NBDC) database (<http://maps.biodiversityireland.ie>), consulted for records of rare, protected and invasive species for Irish National Grid 10km square, accessed online September 2019
- Botanical Society of Britain & Ireland Distribution Database accessed online September 2019 (<https://database.bsbi.org/>);
- GeoHive online mapping (<http://map.geohive.ie/mapviewer.html>);
- Environmental Protection Agency – water bodies and water quality (www.epa.ie);
- Environmental Protection Agency Catchments resource (<https://www.catchments.ie/maps/>);
- Geological Survey of Ireland – geology, soils and hydrogeology (www.gsi.ie);
- WFD website (www.wfdireland.ie);
- Information on the conservation status of birds in Ireland (Colhoun & Cummins, 2013)³;
- New Atlas of the British and Irish Flora (CD-ROM);
- A review of Ordnance Survey Ireland mapping and orthophotography; and
- County Donegal Development Plan 2018-2024.

6.2 Existing Environment

The habitats found in the study area, are classified in accordance with the guidelines set out in '*A Guide to Habitats in Ireland*' (Fossitt, 2000), which classifies habitats based on the vegetation present and management history. The classification is a standard system for identifying, describing and classifying wildlife habitats in Ireland. The habitats found with the study and their potential correspondence with Annex I habitats is also identified.

A review of aerial photography was undertaken alongside a high-level assessment of the habitats within each study area and the Fossitt (2000) classification system was applied. These habitat classifications will be further refined through detailed field assessment.

6.2.1 Section 1

Section 1 is located along the existing N15 in the vicinity of the Twin Towns, Ballybofey and Stranorlar. The north of the study area comprises improved agricultural grassland, with intermitting areas of wet grassland. Scattered patches of broadleaf woodland are located throughout with tracks of conifer woodland. Significant areas of broadleaved woodland can be found at Drumboe and Dunwiley.

³ Colhoun, K. & Cummins, S. (2013) Birds of Conservation Concern in Ireland 2014-2019, Irish Birds, 9, pp. 523-544.

The Cloghroe River flows through the north of the study area and is a tributary of the River Deele that flows into the River Foyle two kilometres downstream of the Lifford Bridge. The River Deele and its tributaries are traditionally known as excellent sea trout rivers from June onwards, and also get a reasonably good run of summer salmon from early July.

The River Finn flows between Stranorlar and Ballybofey and is designated under the River Finn SAC and supports Annex I habitats including Oligotrophic waters [3110], Northern Atlantic wet heaths [4010], Blanket bogs [7130] and Transition mires and quaking bogs [7140]. The River Finn and its tributary the Reelin River further west, which are noted for being the most prolific salmon and grilse rivers in Donegal and the Foyle catchment⁴. Salmon (*Salmo salar*) [1106] is an Annex II species and is a qualifying interest of the River Finn SAC. The Finn is known as a spring salmon river and the grilse arrive in late June and July. The River Finn floodplain and margins support improved grassland, wet grassland and riparian woodland.

Otter (*Lutra lutra*) [1355] is also a qualifying interest of the River Finn SAC and may be found throughout the watercourses within the study area

Lough Alaán is a small lake located north of Stranorlar and supports a good population of brown trout. Its outflowing stream meets the River Finn north of Ballybofey Bridge.

To the south of Ballybofey, the N15 traverses through an area of supporting heath, blanket bog and conifer plantations in the region of Lough Mourne.

Throughout the study area, the agricultural fields support hedgerow, treeline and stonewall boundaries.

From the available aerial photography mapping and windshield surveys the following habitat types (classified using Fossitt 2000) are found within the study area of Section 1:

- Depositing/lowland rivers (FW2)*⁵;
- Drainage ditches (FW4);
- Acid oligotrophic lakes (FL2)*;
- Mesotrophic lakes (FL4);
- Improved agricultural grassland (GA1);
- Amenity grassland (improved) (GA2);
- Dry meadows and grassy verges (GS2)*;
- Dry-humid acid grassland (GS3)*;
- Wet grassland (GS4)*;
- Marsh (GM1)*;
- Dry siliceous heath (HH1)*;
- Wet heath (HH3)*;
- Dense bracken (HD1);
- Upland blanket bog (PB2)*;
- Lowland blanket bog (PB3)*;
- Cutover bog (PB4)*;
- Oak-birch-holly woodland (WN1)*;
- Riparian woodland (WN5)*;
- Wet willow-alder-ash woodland (WN6)*;
- (Mixed) broadleaved woodland (WD1);
- Mixed broadleaved/conifer woodland (WD2);
- Conifer plantation (WD4);
- Scattered trees and parkland (WD5);
- Scrub (WS1)*;
- Hedgerows (WL1);
- Treelines (WL2);
- Stonewalls and other stonework (BL1); and
- Building and artificial surfaces (BL3).

⁴ <http://www.fishinginireland.info/salmon/loughs/finn.htm>

⁵ * denotes that the habitat has the potential for links with EU Annex I habitat types

6.2.2 Section 2

The habitats found within Section 2 highlight Letterkenny as a built urban environment with intermitting amenity grasslands and scattered parklands. From the Polestar Roundabout, the N56 crosses the River Swilly Estuary and continues eastward to the Dry Arch Roundabout. The lower reaches and estuarine element of the River Swilly and surrounding flood plains are designated under the Lough Swilly SAC which is designated for Annex I habitats such as Estuaries [1130], Coastal lagoons [1150], Atlantic salt meadows [1330], Molinia meadows [6410] and Oak woodlands [91A0] and the Annex II species Otter. These estuarine habitats and species are likely to be found within the study area.

The N13 continues from the Dry Arch roundabout towards the east, crossing the Corkey River prior to the Pluck Roundabout junction merging with the N14 near Manorcunningham. The study area terminates at this location. The road is bordered to the north and south by residential housing, agricultural grassland, wet grassland, reedbeds and treelines which occasionally develop into wider areas of woodland. The agricultural fields support hedgerow boundaries.

From the available aerial photography mapping and windshield surveys the following habitat types (classified using Fossitt 2000) are found within the study area of Section 2:

- Depositing/lowland rivers (FW2)*;
- Drainage ditches (FW4);
- Improved agricultural grassland (GA1);
- Amenity grassland (improved) (GA2);
- Dry meadows and grassy verges (GS2)*;
- Wet grassland (GS4)*;
- (Mixed) broadleaved woodland (WD1);
- Mixed broadleaved/conifer woodland (WD2);
- Scrub (WS1)*;
- Hedgerows (WL1);
- Treelines (WL2);
- Marsh (GM1)*;
- Recolonising bare ground (ED3);
- Stonewalls and other stonework (BL1);
- Building and artificial surfaces (BL3);
- Lagoons and saline lakes (CW1)*;
- Tidal rivers (CW2)*; and
- Upper salt marsh (CM2)*.

6.2.3 Section 3

Section 3 is located along the existing N14 connecting Manorcunningham and Lifford. The landscape within the study area of Section 3 is predominantly gently undulating with scattered low drumlin hills. The majority of the land is intensively managed agricultural grasslands subdivided by hedgerows and treelines. The highest point is Mullafin Hill (205m) approximately 3km north of Raphoe, while Mullasawny (approximately 5km northeast of Raphoe) rises to 179m. Lands along the western side of Mullafin are elevated and primarily under coniferous plantation with some areas of heath and blanket bog. Some of the other elevated areas within the study area support small patches of heath, scrub and probably acid grassland. There are occasional small blocks and strips of deciduous woodland and scrub scattered throughout the study area, many of these occurring along watercourses and also along the two sections of disused railway lines.

In the north of the study area, drainage is primarily to the north with the Leslie hill Stream and Corkey River joining to flow into Lough Swilly immediately west of Manorcunningham. Drainage to the south of Raphoe is primarily in an easterly direction with both the Swilly Burn and Deelee Rivers flowing into the River Foyle in its estuarine reaches.

All watercourses within the study area have potential ecological value, particularly the Deelee River, the Swilly Burn, the Leslie hill Stream and the Corkey River. The Deelee and Swilly Burn both flow into the River Foyle which is designated under the River Foyle and Tributaries SAC in the Republic of Ireland (ROI) and under the River Foyle & Tributaries SAC in Northern Ireland (NI). The River Finn marks the southern boundary of

the study area. The Leslie hill Stream and the Corkey River confluence is less than 1km upstream of the Lough Swilly SAC and pNHA.

The Deelee River has good water quality within the study area, though upstream of the bridge at Carrickbrack (c1.5km downstream of Convooy) the water quality is considered poor (EPA Envision website). Brown trout (*Salmo trutta*) stocks are good in the Deelee and it also has a run of sea trout in late summer and early autumn (O'Reilly, 2004). The River Deelee is also likely to support spawning by salmon and contains a breeding population of at least one species of lamprey. Other species likely to occur include European eel (*Anguilla anguilla*), stone loach (*Barbatula barbatula*), three-spined stickleback (*Gasterosteus aculeatus*) and minnow (*Phoxinus phoxinus*).

The Swilly Burn currently has poor water quality and while habitat is suitable for salmonids and lamprey, there appears to be no recent records of either group from the watercourse. There are ongoing proposals to upgrade the waste water treatment plant at Raphoe which may bring about a significant improvement in water quality.

The Leslie hill Stream and Corkey River system currently have good water quality. While there is no current data on their fisheries status, the watercourses are likely to contain resident populations of brown trout and may support a run of sea trout.

The River Finn is one of Ireland's premier salmon waters and the Finn is important in an international context in that its populations of spring salmon appear to be stable, while they are declining in many areas of Ireland and Europe. The salmon fishing season is 1st March to 15th September. Fishing for spring salmon is best east of Stranorlar while the grilse run through to the upper reaches. The grilse run peaks here, depending on water, usually in mid-June. The estimated rod catch from the Finn is approximately 500-800 spring salmon and 4,000 grilse annually, producing about 40% of the total River Foyle count, of which the Finn is a tributary of. The Loughs Agency has a management regime in place called the 'Control of Fishing Regulations'. This regulation permits the Agency to suspend angling and commercial fishing for set periods if enough salmon are not past the counter located at Killygordon by a certain key date.

From the available aerial photography mapping and windshield surveys, the following habitat types (classified using Fossitt 2000) are found within the study area of Section 3:

- Other artificial lakes and ponds (FL8);
- Depositing/lowland rivers (FW2)*;
- Drainage ditches (FW4);
- Improved agricultural grassland (GA1);
- Amenity grassland (improved) (GA2);
- Wet grassland (GS4)*;
- Riparian woodland (WN5)*;
- (Mixed) broadleaved woodland (WD1);
- Mixed broadleaved/conifer woodland (WD2);
- Conifer plantation (WD4);
- Scattered trees and parkland (WD5);
- Scrub (WS1)*;
- Hedgerows (WL1);
- Treelines (WL2);
- Stonewalls and other stonework (BL1); and
- Building and artificial surfaces (BL3).

There are numerous small patches of semi-natural habitat scattered through the study area including areas of wet grassland, scrub or copses of woodland, riparian habitats, etc. which are of potential ecological importance, but which would not be classified as constituting a significant constraint.

6.3 Designated Sites of Conservation Importance

The site synopses, produced by NPWS, are a source of information used when investigating important habitats or species likely to be found within areas that have been officially designated because of their conservation importance.

The main types of designation are:

- Special Area of Conservation (SAC);
- Special Protection Area (SPA);
- Natural Heritage Area (NHA); and
- Proposed Natural Heritage Area (pNHA).

In Ireland, the Natura 2000 network of European sites comprises Special Areas of Conservation (SACs, including candidate SACs), and Special Protection Areas (SPAs, including proposed SPAs). SACs are selected for conservation under the Habitats Directive 92/43/EEC and include habitats listed on Annex I (including priority types which are in danger of disappearance) and Annex II listed species. SPAs are selected for the conservation under the EU Birds Directive protecting birds listed on Annex I and other regularly occurring migratory birds and their habitats. The EU Habitats Directive and EU Birds Directive are both transposed into Irish Law through the European Communities (Birds and Natural Habitats) Regulations 2011 (Statutory Instrument No. 477/2011 (2011, as amended)).

Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) comprise nationally protected sites. NHAs are protected under the Wildlife Amendment Act 2000 (as amended), many of which overlap with European Sites. The pNHAs were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated, however they do have some protection under schemes such as Rural Environment Protection Scheme (REPS), Agri-Environmental Options Scheme (AEOS) and County Development Plans.

The ZoI for the biodiversity constraints assessment considered the project's requirements and deliverables against the biodiversity receptors within the project footprint, in addition to all ecological receptors that could be connected to and subsequently impacted by the project through abiotic and biotic vectors. A buffer zone of 15km is typically taken as the initial ZoI extending beyond the reach of the footprint of the project area, as per guidance (DoEHLG, 2010) although there may be scientifically appropriate reasons for extending this ZoI further afield depending on the pathway expected influence of potential impacts.

To this end, the ZoI extends outside of the study area to include ecological receptors connected to the project through overlap / intersection, proximity and connectivity through features such as watercourses, waterbodies in addition to potential connectivity through groundwater sources and features and migratory/commuting routes of fauna. Section 1 is situated within the Foyle WFD Catchment area, Section 2 is located within the Swilly WFD Catchment area and Section 3 overlaps both the Foyle and Swilly catchment areas. This catchment areas and the 15km buffer zone combined, comprise the ZoI.

6.3.1 Section 1

There is a total of 16 European sites within the ZoI of Section 1 of the proposed study area. They are as follows:

- 1) Cloghernagore Bog and Glenveagh National Park SAC (Site Code:002047);
- 2) Lough Eske and Ardnamona Wood SAC (Site Code:0022047);
- 3) Meentygrannagh Bog SAC (Site Code: 000173);
- 4) River Finn SAC (Site Code: 002301);
- 5) Dunragh Loughs/ Pettigo Plateau SAC (Site Code: 001125);
- 6) Croaghonagh Bog SAC (Site Code: 000129);

- 7) Leannan River SAC (Site Code: 002176);
- 8) Lough Swilly SAC (Site Code: 002287);
- 9) Meenaguse Scragh Bog SAC (Site Code: 001880);
- 10) Meenaguse /Ardbane Bog SAC (Site Code: 000172);
- 11) River Foyle and Tributaries (NI) SAC (Site Code: UK0030320);
- 12) Moneygal Bog NI SAC (Site Code: UK0030211);
- 13) Pettigo Plateau Nature Reserve SPA (Site Code: 004099);
- 14) Lough Derg (Donegal) SPA (Site Code: 004057);
- 15) Lough Swilly SPA (Site Code: 004075); and
- 16) Derryveagh and Glenadown Mountains SPA (Site Code: 004039).

There are four nationally designated NHA and 18 pNHA sites within the ZOI of the study area of Section 1, which are as follows:

- 1) Cashelnavean Bog NHA (Site Code: 000122);
- 2) Meenagarranroe Bog NHA (Site Code: 0002437);
- 3) Barnesmore Bog NHA (Site Code: 002375);
- 4) Lough Hill Bog NHA (Site Code: 002452);
- 5) Croaghonagh Bog pNHA (Site Code: 000129);
- 6) Port Lough pNHA (Site Code: 000180);
- 7) Lough Derg (Donegal) pNHA (Site Code: 000162);
- 8) Lough Eske and Ardnamona Wood pNHA (Site Code: 000163);
- 9) Lough Swilly Including Big Isle, Blanket Nook & Inch Lake pNHA (Site Code: 000166);
- 10) Meenaguse/Ardbane Bog pNHA (Site Code: 000172);
- 11) Meentygrannagh Bog pNHA (Site Code: 000173);
- 12) Dunragh Loughs/Pettigo Plateau pNHA (Site Code: 001125);
- 13) Feddyglass Woods pNHA (Site Code: 001129);
- 14) Leannan Valley Woods pNHA (Site Code: 001155);
- 15) Lough Finn pNHA (Site Code: 001163);
- 16) Tullytrasna Bog pNHA (Site Code: 001870);
- 17) Meenaguse Scragh pNHA (Site Code: 001880);
- 18) Feddyglass Woods pNHA (Site Code: 001129);
- 19) River Swilly Valley Woods pNHA (Site Code: 002011);
- 20) River Foyle, Mongavlin to Carrigans pNHA (Site Code: 002067);
- 21) Owendoo and Cloghervaddy Bogs pNHA (Site Code: 002046); and
- 22) Cloghernagore and Glenveagh National Park pNHA (Site Code: 002047).

Descriptions of the key features of conservation importance of these sites are outlined in **Table 6-1**. Some sites have dual designation, highlighted in the table below. The listed sites of European sites and National Importance are displayed in **Figure 6-1** and **Figure 6-2** respectively.

Table 6-1: Section 1 European and Nationally Designated Sites within the Zol

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*Priority Habitats)	Within Study Area (km)	Within Zol/Distance from Study Area	Connectivity
SAC						
002047	Cloghernagore Bog & Glenveagh National Park	SAC	Habitats Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>) [6410] Blanket bogs (* if active bog) [7130] Depressions on peat substrates of the <i>Rhynchosporion</i> [7150] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Species <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Trichomanes speciosum</i> (Killarney Fern) [1421]	No	Yes, 17.94 km north west	Yes. Streams draining the Glenadown Mountains are tributaries of the River Finn. Though upstream of the study area, there is hydrogeological connectivity and potential for impacts to migrating aquatic QI species salmon and otter.
000163	Lough Eske and Ardnamona Wood	SAC	Habitats Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]* Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Species <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Salmo salar</i> (Salmon) [1106] <i>Trichomanes speciosum</i> (Killarney Fern) [1421]	No	Yes. 11.63km southwest	No. Located outside the Foyle catchment and not connected via hydrological vectors.

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*Priority Habitats)	Within Study Area (km)	Within ZOI/Distance from Study Area	Connectivity
000173	Meentygrannagh Bog	SAC	Habitats Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Alkaline fens [7230] Species <i>Drepanocladus vernicosus</i> (Slender Green Feather-moss) [1393]	No	12.5km west	Yes. Streams draining the Meentygrannagh Bog are tributaries of the River Finn. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002301	River Finn	SAC	Habitats Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Species <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	Yes	Yes, within the Study Area	Yes. The River Finn flows through the study area with numerous streams and tributaries
001125	Dunragh Loughs/Pettigo Plateau	SAC	Habitats Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] Blanket bogs (* if active bog) [7130]	No	Yes, 12km south	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
000129	Croaghonagh Bog	SAC	Habitats Blanket bogs (* if active bog) [7130]	No	Yes, 0.3km south	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002176	Leannan River	SAC	Habitats Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] Species <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]	No	Yes. 13.16km north-west	No

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*Priority Habitats)	Within Study Area (km)	Within ZOI/Distance from Study Area	Connectivity
			<i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Najas flexilis</i> (Slender Naiad) [1833]			
002287	Lough Swilly	SAC	Habitats Estuaries [1130] Coastal lagoons [1150]* Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>) [6410] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Species <i>Lutra lutra</i> (Otter) [1355]	No	Yes. 9.72km north	No.
001880	Meenaguse Scragh Bog	SAC	Habitats Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]	No	Yes. 15.19km west	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
000172	Meenaguse/Ardbane Bog	SAC	Habitats Blanket bogs (* if active bog) [7130]	No	Yes. 16.95km south-west	No
UK0030320	River Foyle & Tributaries	NI_SAC	Habitats Water course of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Species <i>Salmo salar</i> (Atlantic Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]	No	Yes, 6km south, 19km west to confluence with River Foyle	Yes. A tributary of the River Foyle designated under the SAC is 6km south of the study area at its closest point and 19km west where the River Finn meets the main channel of the River Foyle. Finn is a tributary of the River Foyle

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*Priority Habitats)	Within Study Area (km)	Within 200m/Distance from Study Area	Connectivity
UK0030211	Moneygal Bog	NI_SAC	Habitats Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]	No	Yes, 8.5km south east	Potential. No hydrological connectivity, however based on the qualifying interests, hydrogeological connectivity to be investigated
SPA						
004099	Pettigo Plateau Nature Reserve	SPA	Species Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	No	Yes, 12km south	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
004057	Lough Derg (Donegal)	SPA	Species Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] Herring Gull (<i>Larus argentatus</i>) [A184]	No	Yes, 12km south	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
004075	Lough Swilly	SPA	Habitats Wetland and Waterbirds [A999] Species Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Grey Heron (<i>Ardea cinerea</i>) [A028] Whooper Swan (<i>Cygnus cygnus</i>) [A038] Greylag Goose (<i>Anser anser</i>) [A043] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Mallard (<i>Anas platyrhynchos</i>) [A053] Shoveler (<i>Anas clypeata</i>) [A056]	No	Yes. 10.27km north	No

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*Priority Habitats)	Within Study Area (km)	Within Zol/Distance from Study Area	Connectivity
			Scaup (<i>Aythya marila</i>) [A062] Goldeneye (<i>Bucephala clangula</i>) [A067] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Coot (<i>Fulica atra</i>) [A125] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Knot (<i>Calidris canutus</i>) [A143] Dunlin (<i>Calidris alpina</i>) [A149] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Greenshank (<i>Tringa nebularia</i>) [A164] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Sandwich Tern (<i>Sterna sandvicensis</i>) [A191] Common Tern (<i>Sterna hirundo</i>) [A193] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]			
004039	Derryveagh and Glenadown Mountains	SPA	Species Red-throated Diver (<i>Gavia stellata</i>) [A001] Merlin (<i>Falco columbarius</i>) [A098] Peregrine (<i>Falco peregrinus</i>) [A103] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Dunlin (<i>Calidris alpina schinzii</i>) [A466]	No	Yes, 17.94 km north west	Yes. Streams draining the Glenadown Mountains are tributaries of the River Finn. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
NHA						
000122	Cashelnavean Bog	NHA	Peatlands	No	2km south west	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist.
002437	Meenagarranroe Bog	NHA	Peatlands	No	0.2km south	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*Priority Habitats)	Within Study Area (km)	Within 200m/Distance from Study Area	Connectivity
						for hydrogeological connectivity to exist
002375	Barnesmore Bog	NHA	Peatlands	No	6km south	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002452	Lough Hill Bog	NHA	Peatlands	No	0.6km south	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
pNHA						
000129	Croaghonagh Bog	pNHA	Blanket Bog	No	Yes. 2.5km southwest	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
000162	Lough Derg (Donegal)	pNHA	Oligotrophic Lake, blanket bog	No	Yes.14.5km south	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
000163	Lough Eske and Ardnamona Wood	pNHA	Oligotrophic lake, oak woodland, petrifying springs, Freshwater Pearl Mussel, Salmon and Killarney Fern	No	Yes.11.63km southwest	No. Located outside the Foyle catchment and not connected via hydrological vectors.
000166	Lough Swilly Including Big Isle, Blanket Nook & Inch Lake	pNHA	Estuaries, lagoons, Atlantic salt meadows, old oak woods and of high ornithological importance for wintering waterfowl	No	Yes, 9.73 km north east	No. Located outside the Foyle catchment and not connected via hydrological vectors.

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*Priority Habitats)	Within Study Area (km)	Within Zol/Distance from Study Area	Connectivity
000172	Meenaguse/Ardbane Bog	pNHA	Blanket bog, Greenland White-fronted geese	No	Yes. 17km south west	No. Located outside the Foyle catchment and not connected via hydrological vectors.
000173	Meentygrannagh Bog	pNHA	Blanket bog , transition mire and fen communities	No	Yes.12.3km northwest	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
000180	Port Lough	pNHA	Wetlands, wildfowl	No	Yes. 9km north of the Study Area	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
001125	Dunragh Loughs/Pettigo Plateau	pNHA	Blanket bog, wet heath, Greenland White-fronted geese, golden plover and merlin	No	Yes. 13.4km south	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
001129	Feddyglass Woods	pNHA	Variety of wet and dry woodland types	No	Yes. 13.5km northeast	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
001155	Leannan Valley Woods	pNHA	Oak woodland	No	Yes.13.37km northeast	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
001163	Lough Finn	pNHA	Oligotrophic Lake, Arctic Char	No	Yes.15.97km west	Yes. The Lough Finn is the source of the River

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*Priority Habitats)	Within Study Area (km)	Within ZOI/Distance from Study Area	Connectivity
						Finn and within the Foyle catchment
001870	Tullytresna Bog	pNHA	Blanket Bog	No	Yes.7.63km northwest	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
001880	Meenaguse Scragh	pNHA	Wet heath and floating scragh vegetation	No	Yes.14.75km southwest	Yes. Lies just within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002011	River Swilly Valley Woods	pNHA	Variety of woodland types	No	Yes.7.89km northwest	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002046	Owendoo And Cloghervaddy Bogs	pNHA	Blanket Bog	No	Yes.5.42km west	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002047	Cloghernagore Bog & Glenvaeagh pNHA	pNHA	Blanket bog, semi-natural deciduous woodland, heath, oligotrophic lakes and inland cliffs.	No	Yes. 12.8km west of the Study Area	Yes. Within the study area. Though upstream of the study area, there is potential for hydrogeological connectivity to exist

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (*Priority Habitats)	Within Study Area (km)	Within Zol/Distance from Study Area	Connectivity
002067	River Foyle , Mongavlin to Carrigans	pNHA SAC ⁶	N/A (The site overlaps with sections of the River Finn SAC boundaries)	No	Yes. 20km east of the Study Area	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
Nature Reserves						
28	Pettigo Plateau	Nature Reserve	Blanket bog and wet heath	No	Yes. 15.4km south	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
N/A	Ardnamona	Nature Reserve	Oak Woodland	No	Yes. 12.74km southwest	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
6	Meenachullin	Nature Reserve	Blanket Bog	No	Yes. 20km northwest	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist

⁶ Overlaps with the River Finn SAC (002301).

6.3.2 Section 2

There are a total of 13 European sites within the ZOI of the proposed Section 2 study area. They are as follows:

- 1) North Inishowen Coast SAC (Site Code: 002012);
- 2) Lough Swilly SAC (Site Code: 002287);
- 3) Meentygrannagh Bog SAC (Site Code:000173);
- 4) Cloghernagore Bog and Glenveagh National Park SAC (Site Code: 002047);
- 5) Leannan River SAC (Site Code: 002176);
- 6) Ballyar Wood SAC (Site Code: 000116);
- 7) Ballyhorriskey Point to Fanad Head SAC (Site Code: 001975);
- 8) Lough Swilly SPA (Site Code: 004075);
- 9) Horn Head to Fanad Head SPA (Site Code:004194);
- 10) Lough Fern SPA (Site Code: 004060);
- 11) Derryveagh and Glendowan Mountains SPA (Site Code: 004039);
- 12) Mulroy Bay SAC (Site Code: 002159); and
- 13) Fanad Head SPA (Site Code: 004148).

There is a total of 17 pNHAs sites within the ZOI of the proposed Section 2. They are as follows:

- 1) Ballyar Wood pNHA (Site Code: 000116);
- 2) Bulbin Mountain pNHA (Site Code: 000120);
- 3) Old Rectory Fahan (Site Code:002056);
- 4) Lough Fern pNHA (Site Code:001162);
- 5) Ramelton Mill pNHA (Site Code:002057);
- 6) Lough Swilly Incl. Big Isle, Blanket Nook and Inch Lake pNHA (Site Code: 000166);
- 7) River Swilly Valley Woods pNHA (Site Code: 002011);
- 8) Leannan Valleys Woods pNHA (Site Code: 001155);
- 9) Lough Akibbon and Gartan Lough pNHA (Site Code: 000158);
- 10) Cloghernagore Bog and Glenveagh National Park pNHA (Site Code: 002047);
- 11) Meentygrannagh Bog pNHA (Site Code: 000173);
- 12) North Inishowen Coast pNHA (Site Code: 002012);
- 13) Feddyglass Woods pNHA (Site Code: 001129);
- 14) River Foyle, Mongavlin To Carrigans pNHA (Site Code: 002067);
- 15) Port Lough pNHA (Site Code: 000180);
- 16) Ballyhooriskey Point to Fanad Head pNHA (Site Code: 001975); and
- 17) Ballymastocker Dunes pNHA (Site Code: 001089).

Descriptions of the key features of conservation importance of these sites are outlined in **Table 6-2**. Some sites have dual designation; their designations are highlighted in the table below. The listed sites of European sites and National Importance are displayed in **Figure 6-1** and **Figure 6-2** respectively.

Table 6-2: Section 2 European and Nationally Designated Sites within the Zol

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within Zol/Distance from Study Area	Connectivity
SAC						
002012	North Inishowen Coast	SAC pNHA ⁷ /	Habitats Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]* Machairs (* in Ireland) [21A0] European dry heaths [4030] Species <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Lutra lutra</i> (Otter) [1355]	No	Yes. 28km north	Yes. Within the Lough Swilly catchment. Though a considerable distance from the study area, hydrogeological connectivity exists.
002287	Lough Swilly	SAC	Habitats Estuaries [1130] Coastal lagoons [1150]* Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>) [1330] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Species <i>Lutra lutra</i> (Otter) [1355]	Yes	Yes. Within study area	Yes. The River Swilly flows through the study area to Lough Swilly. The estuarine section of the River Swilly is designated under the SAC
000173	Meentygrannagh Bog	SAC pNHA ⁸ /	Habitats Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Alkaline fens [7230]	No	Yes. 13.4km southwest	No. Located outside the Swilly catchment and not connected via hydrological vectors.

⁷ pNHA site synopsis of the pNHA site are not available, though the site directly overlaps the boundaries of the SAC.⁸ pNHA site synopsis of the pNHA site are not available, though the site directly overlaps the boundaries of the SAC.

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within Zol/Distance from Study Area	Connectivity
			Species <i>Drepanocladus vernicosus</i> (Slender Green Feather-moss) [1393]			
002047	Cloghernagore Bog & Glenveagh National Park	SAC	Habitats Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] Blanket bogs (* if active bog) [7130] Depressions on peat substrates of the Rhynchosporion [7150] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Species <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Trichomanes speciosum</i> (Killarney Fern) [1421]	No	Yes. 13km northwest of the Study Area	Yes. Within the Lough Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002176	Leannan River	SAC	Habitats Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130] Species <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Najas flexilis</i> (Slender Naiad) [1833]	No	Yes. 7km northwest of the study area	Yes. Within the Lough Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
000116	Ballyarr Wood	SAC	Habitats Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	No	Yes. 6.6km north of the Study Area	Yes. Within the Lough Swilly catchment.

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within Zol/Distance from Study Area	Connectivity
						Though upstream of the study area, there is potential for hydrogeological connectivity to exist
001975 (SAC)	Ballyhoorisky Point to Fanad Head SAC ⁹	SAC/pNHA	Habitats Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] Species <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Najas flexilis</i> (Slender Naiad) [1833]	No	Yes. 27km north of the study area	Yes. Within the Lough Swilly catchment. Though considerably outside of the study area, there is potential for hydrogeological connectivity to exist
002159	Mulroy Bay	SAC	Habitats Large shallow inlets and bays [1160] Reefs [1170] Species <i>Lutra lutra</i> (Otter) [1355]	No	Yes. 14.51km north of the study area	No.
SPA						
004075	Lough Swilly	SPA	Habitats Wetland and Waterbirds [A999] Species	No	Yes. Within study area	Yes. The River Swilly flows through the study area to Lough Swilly. The estuarine section of

⁹ pNHA site synopsis of the pNHA site are not available, though the site directly overlaps the boundaries of the SAC.

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within Zol/Distance from Study Area	Connectivity
			Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Grey Heron (<i>Ardea cinerea</i>) [A028] Whooper Swan (<i>Cygnus cygnus</i>) [A038] Greylag Goose (<i>Anser anser</i>) [A043] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Mallard (<i>Anas platyrhynchos</i>) [A053] Shoveler (<i>Anas clypeata</i>) [A056] Scaup (<i>Aythya marila</i>) [A062] Goldeneye (<i>Bucephala clangula</i>) [A067] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Coot (<i>Fulica atra</i>) [A125] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Knot (<i>Calidris canutus</i>) [A143] Dunlin (<i>Calidris alpina</i>) [A149] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Greenshank (<i>Tringa nebularia</i>) [A164] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Sandwich Tern (<i>Sterna sandvicensis</i>) [A191] Common Tern (<i>Sterna hirundo</i>) [A193] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]			the River Swilly is designated under the SPA
004194	Horn Head to Fanad Head	SPA	Species Fulmar (<i>Fulmarus glacialis</i>) [A009] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Shag (<i>Phalacrocorax aristotelis</i>) [A018] Barnacle Goose (<i>Branta leucopsis</i>) [A045] Peregrine (<i>Falco peregrinus</i>) [A103]	No	Yes. 28km north	Yes. Within the Lough Swilly catchment. Though considerably outside of the study area, there is potential for hydrogeological connectivity to exist

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within Zol/Distance from Study Area	Connectivity
			Kittiwake (<i>Rissa tridactyla</i>) [A188] Guillemot (<i>Uria aalge</i>) [A199] Razorbill (<i>Alca torda</i>) [A200] Chough (<i>Pyrrhocorax pyrrhocorax</i>) [A346] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]			
004060	Lough Fern	SPA	Habitats Wetland and Waterbirds [A999] Species Pochard (<i>Aythya ferina</i>) [A059]	No	Yes. 25km north	Yes. Within the Lough Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
004039	Derryveagh & Glendowan Mountains	SPA	Species Red-throated Diver (<i>Gavia stellata</i>) [A001] Merlin (<i>Falco columbarius</i>) [A098] Peregrine (<i>Falco peregrinus</i>) [A103] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Dunlin (<i>Calidris alpina schinzii</i>) [A466]	No	Yes. 12.5km North West of the Study Area	Yes. Within the Lough Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
004148	Fanad Head	SPA	Species Corncrake (<i>Crex crex</i>) [A122]	No	Yes. 25km north	Yes. Within the Lough Swilly catchment. Though considerably outside of the study area, there is potential for hydrogeological connectivity to exist
pNHA						
000116	Ballyar Wood	pNHA	Oak woods	No	Yes. 6.6km north of the Study Area	Yes. Within the Lough Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within Zol/Distance from Study Area	Connectivity
000120	Bulbin Mountain	pNHA	Blanket Bog and Grasslands	No	Yes. 32km northeast	Yes. Within the Lough Swilly catchment. Though considerably outside of the study area, there is potential for hydrogeological connectivity to exist
002056	Old Rectory Fahan	pNHA	Leisler's Bat roost	No	Yes. 19km north east	Yes. Within the Lough Swilly catchment. Though considerably outside of the study area, there is potential for hydrogeological connectivity to exist
001162	Lough Fern	pNHA	Lake, wet woodland and ornithological	No	Yes. 7km North East	Yes. Within the Lough Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002057	Ramelton Mill	pNHA	Leisler's Bat roost	No	Yes. 8.3km North East	Yes. Within the Lough Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
000166	Lough Swilly Incl. Big Isle, Blanket Nook and Inch Lake	pNHA	Estuaries, lagoons, Atlantic salt meadows, old oak woods and high ornithological importance.	Yes	Yes. Within the Study Area	Yes. Within the study area
002011	River Swilly Valley Woods	pNHA	Woodland	Yes	Yes. Within the Study Area	Yes. One tract of the woodland within the study area

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within ZOI/Distance from Study Area	Connectivity
001155	Leannan Valleys Woods	pNHA	Woodland	No	Yes. 7.9km North West of the Study Area	Yes. Within the Lough Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
000158	Lough Akibbon and Gartan Lough	pNHA	Oligotrophic lakes and <i>Najas flexilis</i>	No	Yes. 12km West of the Study Area	Yes. Within the Lough Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002047	Cloghernagore Bog & Glenveagh National Park pNHA	pNHA	Blanket bog, semi-natural deciduous woodland, heath, oligotrophic lakes and inland cliffs.	No	Yes. 12.8km West of the Study Area	Yes. Within the Lough Swilly catchment
001089	Ballymastocker Dunes	pNHA	Sand Dunes	No	Yes. 25km northwest of the Study Area	Yes. Within the Lough Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
001129	Feddyglass Woods	pNHA	Woodlands	No	Yes. 8.8km south-east of the Study Area.	No. Though it is within the 15km ZOI, it has no hydrological connectivity. The pNHA is also within the Lough Foyle catchment therefore no hydrogeological connectivity exists to the study area.

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within Zol/Distance from Study Area	Connectivity
002067	River Foyle, Mongavlin To Carrigans	pNHA	N/A ¹⁰	No	Yes. 10.84km east.	No. Though it is within the 15km ZOI, it has no hydrological connectivity. The pNHA is also within the Lough Foyle catchment therefore no hydrogeological connectivity exists to the study area.
000180	Port Lough	pNHA	Habitats Open lake, reed-beds, freshwater march, cutaway bog and lowland wet grassland. Species Wildfowl	No	Yes. 11.73km north-east.	Yes. Within the 15km Zol. Though upstream of the study area, there is potential for hydrogeological connectivity to exist.
Nature Reserve						
24	Rathmullen Wood	Nature Reserve	Woodland	No	Yes. 16km north	Yes. Designated under Lough Swilly SAC
25	Ballygar Wood	Nature Reserve	Oak Woodland	No	Yes. 6.6km north of the Study Area	Yes. Also designated under Ballygar Woodland SAC

¹⁰ No site synopsis for the pNHA are available, though the site partially overlaps with the River Finn SAC (Site Code:002301) and the Qualifying Interests of the SAC shall be considered for this pNHA.

6.3.3 Section 3

Section 3 is located within both the Foyle Catchment Area and Lough Swilly Catchment Area. There is a total of 19 SACs/SPAs sites within the Zol of study area for Section 3. They are as follows:

- 1) North Inishowen Coast SAC (Site Code:002012);
- 2) Lough Swilly SAC (Site Code: 002287);
- 3) Meentygrannagh Bog SAC (Site Code:000173);
- 4) Clogernagore Bog and Glenveagh National Park SAC (Site Code: 002047);
- 5) Leannan River SAC (Site Code: 002176);
- 6) Ballyar Wood SAC (Site Code: 000116);
- 7) Ballyhorriskey Point to Fanad Head SAC (Site Code:001975);
- 8) Horn Head to Fanad Head SPA (Site Code:004194);
- 9) Fanad Head SPA (Site Code:004148);
- 10) Lough Fern SPA (Site Code: 004060);
- 11) Derryveagh and Glendowan Mountains SPA (Site Code: 004039);
- 12) Lough Swilly SPA (Site Code: 004075);
- 13) River Finn SAC (Site Code: 002301);
- 14) Dunragh Loughs/ Pettigo Plateau SPA (Site Code: 001125);
- 15) Croaghonagh Bog SAC (Site Code: 000129);
- 16) Pettigo Plateau Nature Reserve SPA (Site Code: 004099);
- 17) Lough Derg (Donegal) SPA (Site Code: 004057);
- 18) River Foyle and Tributaries NI SAC (Site Code: UK0030320); and
- 19) Moneygal Bog NI SAC (Site Code: UK0030211).

Section 3 has a total of four nationally designated NHAs and 24 pNHA sites within the Zol. They are as follows:

- 1) Cashelnavean Bog NHA (Site Code: 000122);
- 2) Meengarranroe Bog NHA (Site Code: 000173);
- 3) Barnesmore Bog NHA (Site Code: 002375);
- 4) Lough Hill Bog NHA (Site Code: 002452);
- 5) Port Lough pNHA (Site Code: 000180);
- 6) River Foyle, Mongavlin to Carrigans pNHA (Site Code:002067);
- 7) Lough Finn pNHA (Site Code: 001163);
- 8) Feddyglass Woods pNHA (Site Code: 001129);
- 9) Meentygrannagh Bog pNHA (Site Code: 000173);
- 10) Tullytrasna Bog pNHA (Site Code: 001870);
- 11) Meenaguse Scragh pNHA (Site Code: 01880);
- 12) Owendoo and Cloghervaddy Bogs pNHA (Site Code:002046);
- 13) Croaghonagh Bog pNHA (Site Code: 000129);
- 14) Cloghernagore and Glenveagh National Park pNHA (Site Code: 002047);
- 15) Dunragh Loughs/Pettigo Plateau pNHA (Site Code: 001125);
- 16) Lough Derg (Donegal) pNHA (Site Code: 000162);
- 17) North Inishowen Coast pNHA (Site Code: 002012);
- 18) Bulbin Mountain pNHA (Site Code:000120);
- 19) Old Rectory Fahan pNHA (Site Code: 002056);
- 20) Lough Swilly Incl. Big Isle, Blanket Nook and Inch Lake pNHA (Site Code: 000166);
- 21) Lough Fern pNHA (Site Code: 001162);
- 22) Ballyar Wood pNHA (Site Code: 000116);
- 23) Ramelton Mill pNHA (Site Code: 002057);
- 24) River Swilly Valley Woods pNHA (Site Code: 002011);
- 25) Leannan Valleys Woods pNHA (Site Code: 001155);
- 26) Lough Akibbon and Gartan Lough pNHA (Site Code: 000158);

- 27) Ballymastocker Dunes pNHA (Site Code: 001089); and
- 28) Ballyhoorisky Point to Fanad Head pNHA (Site Code: 001975).

Descriptions of the key features of conservation importance of these sites are outlined in **Table 6-3**. Some sites have dual designation; their designations are highlighted in the table below. The listed sites of European sites and National Importance are displayed in **Figure 6-1** and **Figure 6-2** respectively.

Table 6-3: Section 3 Designated Sites within the ZOI

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within ZOI/ Distance from Study Area (Km)	Connectivity
002012	North Inishowen Coast	SAC / pNHA ¹¹	Habitats Mudflats and sandflats not covered by seawater at low tide [1140] Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]* Machairs (* in Ireland) [21A0] European dry heaths [4030] Species <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Lutra lutra</i> (Otter) [1355]	No	Yes. 28km north	Yes. Within the Lough Swilly catchment. Though considerably outside of the study area, there is hydrogeological connectivity.
002287	Lough Swilly	SAC	Habitats Estuaries [1130] Coastal lagoons [1150]& Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>) [1330] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caeruleae</i>) [6410] Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Species <i>Lutra lutra</i> (Otter) [1355]	Yes	Yes. Within study area	Yes. The Corkey River flows through the north of the study area. The last 2km of the River is designated under the Lough Swilly SAC
000173	Meentygrannagh Bog	SAC /pNHA ¹²	Habitats Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Alkaline fens [7230] Species <i>Drepanocladus vernicosus</i> (Slender Green Feather-moss) [1393]	No	Yes. 21 km west	Yes. Located within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist

¹¹ pNHA site synopsis of the pNHA site are not available, though the majority of the site overlaps the boundaries of the SAC.¹² pNHA site synopsis of the pNHA site are not available, though the site directly overlaps the boundaries of the SAC.

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within ZOI/ Distance from Study Area (Km)	Connectivity
002047	Cloghernagore Bog & Glenveagh National Park	SAC / pNHA ¹³	Habitats Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] European dry heaths [4030] Alpine and Boreal heaths [4060] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] Blanket bogs (* if active bog) [7130] Depressions on peat substrates of the Rhynchosporion [7150] Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0] Species <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Trichomanes speciosum</i> (Killarney Fern) [1421]	No	Yes. 18 km northwest	Yes. Located within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002176 / 001162	Leannan River SAC/Lough Fern pNHA ¹⁴	SAC / pNHA	Habitats Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetetea</i> [3130] Species <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	No	Yes. 11km north	Yes. Located within the Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist

¹³ pNHA site synopsis of the pNHA site are not available, though the site directly overlaps the boundaries of the SAC.

¹⁴ pNHA site synopsis of the pNHA site are not available, though the majority of the site overlaps the boundaries of the SAC.

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within ZOI/ Distance from Study Area (Km)	Connectivity
			<i>Najas flexilis</i> (Slender Naiad) [1833]			
000116	Ballyarr Wood	SAC / pNHA ¹⁵	Habitats Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	No	Yes. 10km north	Yes. Located within the Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
001975	Ballyhoorisky Point to Fanad Head ¹⁶	SAC/ pNHA	Habitats Perennial vegetation of stony banks [1220] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoetes-Nanojuncetea [3130] Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140] Species <i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014] <i>Najas flexilis</i> (Slender Naiad) [1833]	No	Yes. 28km north	Yes. Located within the Swilly catchment. Though considerably outside of the study area, there is potential for hydrogeological connectivity to exist
001125	Dunragh Loughs/Pettigo Plateau	SAC / pNHA ¹⁷	Habitats Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] Blanket bogs (* if active bog) [7130]	No	Yes, 32km south	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
000129	Croaghonagh Bog	SAC	Habitats Blanket bogs (* if active bog) [7130]	No	Yes, 25km south	Yes. Within the Foyle catchment. Though

¹⁵ pNHA site synopsis of the pNHA site are not available, though the site directly overlaps the boundaries of the SAC.¹⁶ pNHA site synopsis of the pNHA site are not available, though the site directly overlaps the boundaries of the SAC.¹⁷ pNHA site synopsis of the pNHA site are not available, though the site directly overlaps the boundaries of the SAC.

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within ZOI/ Distance from Study Area (Km)	Connectivity
						upstream of the study area, there is potential for hydrogeological connectivity to exist
002301	River Finn	SAC	Habitats Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110] Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010] Blanket bogs (* if active bog) [7130] Transition mires and quaking bogs [7140] Species <i>Salmo salar</i> (Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355]	Yes	To the south-east of the study area	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
UK0030320	River Foyle & Tributaries	NI_SAC	Habitats Water course of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260] Species <i>Salmo salar</i> (Atlantic Salmon) [1106] <i>Lutra lutra</i> (Otter) [1355] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]	Yes	To the south of the study area	Yes. Within the Foyle catchment and within the study area boundary.
UK0030211	Moneygal Bog	NI_SAC	Habitats Active raised bogs [7110] Degraded raised bogs still capable of natural regeneration [7120] Depressions on peat substrates of the Rhynchosporion [7150]	No	Yes, 10km south-west	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
SPA						
004194	Horn Head to Fanad Head	SPA	Species <i>Fulmar (Fulmarus glacialis)</i> [A009]	No	Yes. 33km north	Yes. Within the Lough Swilly catchment. Though considerably outside of the study

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within ZOI/ Distance from Study Area (Km)	Connectivity
			Cormorant (<i>Phalacrocorax carbo</i>) [A017] Shag (<i>Phalacrocorax aristotelis</i>) [A018] Barnacle Goose (<i>Branta leucopsis</i>) [A045] Peregrine (<i>Falco peregrinus</i>) [A103] Kittiwake (<i>Rissa tridactyla</i>) [A188] Guillemot (<i>Uria aalge</i>) [A199] Razorbill (<i>Alca torda</i>) [A200] Chough (<i>Pyrhacorax pyrrhacorax</i>) [A346] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]			area, there is potential for hydrogeological connectivity to exist
004148	Fanad Head	SPA	Species Corncrake (<i>Crex crex</i>) [A122]	No	Yes. 30km north	Yes. Within the Lough Swilly catchment. Though considerably outside of the study area, there is potential for hydrogeological connectivity to exist
004060	Lough Fern	SPA	Habitats Wetland and Waterbirds [A999] Species Pochard (<i>Aythya ferina</i>) [A059]	No	Yes. 11km north	Yes. Within the Lough Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
004039	Derryveagh and Glenadown Mountains	SPA	Species Red-throated Diver (<i>Gavia stellata</i>) [A001] Merlin (<i>Falco columbarius</i>) [A098] Peregrine (<i>Falco peregrinus</i>) [A103] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Dunlin (<i>Calidris alpina schinzii</i>) [A466]	No	Yes. 19km north	Yes. Within the Lough Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
004075	Lough Swilly	SPA	Habitats Wetland and Waterbirds [A999] Species	No	Yes. 0.6km north	Yes. Within the Lough Swilly catchment and the study area boundary

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within ZOI/ Distance from Study Area (Km)	Connectivity
			Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Grey Heron (<i>Ardea cinerea</i>) [A028] Whooper Swan (<i>Cygnus cygnus</i>) [A038] Greylag Goose (<i>Anser anser</i>) [A043] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Mallard (<i>Anas platyrhynchos</i>) [A053] Shoveler (<i>Anas clypeata</i>) [A056] Scaup (<i>Aythya marila</i>) [A062] Goldeneye (<i>Bucephala clangula</i>) [A067] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Coot (<i>Fulica atra</i>) [A125] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Knot (<i>Calidris canutus</i>) [A143] Dunlin (<i>Calidris alpina</i>) [A149] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Greenshank (<i>Tringa nebularia</i>) [A164] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Common Gull (<i>Larus canus</i>) [A182] Sandwich Tern (<i>Sterna sandvicensis</i>) [A191] Common Tern (<i>Sterna hirundo</i>) [A193] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]			
004099	Pettigo Plateau Nature Reserve	SPA	Species Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	No	Yes. 33km south	Yes. Within the Lough Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
	Lough Derg (Donegal)	SPA/ pNHA	Species Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]	No	Yes. 33km south	Yes. Within the Lough Foyle catchment. Though upstream of the

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within ZOI/ Distance from Study Area (Km)	Connectivity
004057			Herring Gull (<i>Larus argentatus</i>) [A184]			study area, there is potential for hydrogeological connectivity to exist
004060	Lough Fern	SPA	Habitats Wetland and Waterbirds [A999] Species Pochard (<i>Aythya ferina</i>) [A059]	No	Yes. 11km north	Yes. Within the Lough Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
NHA						
000122	Cashelnavean Bog	NHA	Peatlands	No	Yes. 23km south west	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002437	Meenagarranroe Bog	NHA	Peatlands	No	Yes. 20km south west	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002375	Barnesmore Bog	NHA	Peatlands	No	Yes. 27km south	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002452	Lough Hill Bog	NHA	Peatlands	No	Yes. 22km south	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within ZOI/ Distance from Study Area (Km)	Connectivity
pNHA						
000129	Croaghonagh Bog	pNHA	Blanket Bog	No	Yes. 24km southwest	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
000162	Lough Derg (Donegal)	pNHA	Oligotrophic Lake, blanket bog	No	Yes. 30km south	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
000180	Port Lough	pNHA	Wetlands, wildfowl	No	Yes. 9km north of the Study Area	Yes. Within the 15km ZOI and Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
001163	Lough Finn	pNHA	Oligotrophic Lake, Arctic Char	No	Yes. 30km west	Yes. The Lough Finn is the source of the River Finn and within the Foyle catchment. . Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002067	River Foyle, Mongavlin to Carrigans	pNHA	Marl Lakes	No	Yes. 20km east of the Study Area	Yes. Within the Foyle catchment and downstream of the study area
001129	Feddyglass Woods	pNHA	Variety of wet and dry woodland types	No	Yes. Directly within the study area	Yes. Within the Foyle catchment and study area

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within ZOI/ Distance from Study Area (Km)	Connectivity
001870	Tullytresna Bog	pNHA	Blanket Bog	No	Yes. 18km west	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
001880	Meenaguse Scragh	pNHA	Wet heath and floating scragh vegetation	No	Yes. 35km southwest	Yes. Lies just within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002046	Owendoo And Cloghervaddy Bogs	pNHA	Blanket Bog	No	Yes. 25km west	Yes. Within the Foyle catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
000120	Bulbin Mountain	pNHA	Blanket Bog and Grasslands	No	Yes. 31km northeast	Yes. Within the Foyle catchment. Though considerably outside of the study area, there is potential for hydrogeological connectivity to exist
002056	Old Rectory Fahan	pNHA	Leisler's Bat roost	No	Yes. 17km north east	Yes. Within the Swilly catchment. Though considerably outside of the study area, there is potential for hydrogeological connectivity to exist
000166	Lough Swilly Incl. Big Isle, Blanket Nook and Inch Lake	pNHA	Estuaries, lagoons, Atlantic salt meadows, old oak woods and high ornithological importance.	No	Yes. Directly within the Study Area	Yes. Within the study area

Site Code	Site Name	Status	Qualifying Interests Habitats and Species (* = Priority Habitat)	Within Study Area (km)	Within ZOI/ Distance from Study Area (Km)	Connectivity
002057	Ramelton Mill	pNHA	Leisler's Bat roost	No	Yes. 10km North East	Yes. Within the Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
002011	River Swilly Valley Woods	pNHA	Woodland	No	Yes. 4.25km north-west of the study area.	Yes. Within the Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
000158	Lough Akibbon and Gartan Lough	pNHA	Oligotrophic lakes and <i>Najas flexilis</i>	No	Yes. 17km West of the Study Area	Yes. Within the Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist
001089	Ballymastocker Dunes	pNHA	Sand Dunes	No	Yes. 26km northwest of the Study Area	Yes. Yes. Within the Swilly catchment. Though considerably outside of the study area, there is potential for hydrogeological connectivity to exist
001155	Leannan Valley	pNHA	Woodland	No	Yes. 12.58km west of the Study Area	Yes. Within the Swilly catchment. Though upstream of the study area, there is potential for hydrogeological connectivity to exist





6.4 Flora Atlas

The principal source of information regarding the distribution of flora in Ireland is the *New Atlas of the British and Irish Flora* (Preston *et al.*, 2002). The data included in this atlas is from the 1987-1999 atlas survey. This atlas shows data for vascular plants in individual hectads (10km² squares). The grid squares were searched for any rare or protected species which may be recorded in the square during the 1987-1999 atlas survey (and previous surveys) carried out by the Botanical Society of the British Isles (BSBI). The search included the vascular plants listed in Annex II of the EU Habitats Directive, Flora Protection Order (FPO) of 2015 and the Irish Red Data Book (IRDB). The results of the data search are displayed in **Appendix 2 Tables A2.1 to A2.3**.

- 1) Section 1 - C10, H19 and H09
- 2) Section 2 – C10, C11, C20 and C21
- 3) Section 3 - C21, C20, C30 and H39

6.4.1 NPWS Rare and Protected Species Database

The NPWS rare and protected species database was consulted for all records of rare and protected species within the Constraints Study Area. In addition, as the NPWS rare and protected species records are known to be incomplete, the National Biodiversity Data Centre online species database (www.biodiversityireland.ie) was also consulted. A species list was generated for each grid square and all species which are provided protection under Irish or EU law were noted. Records for rare and protected species which occur within these grid squares are listed in **Appendix 2, Tables A2.4 to A2.9**.

Records for rare and protected species which occur within the Study Area for Sections 1, 2 and 3, were consulted and the following Grid Squares were searched:

- Section 1 - C10, H19 and H09
- Section 2 - C11 and C21
- Section 3 - C21, C20, C30 and H39

6.5 Fauna Assessment

6.5.1 Legislation

Species which are afforded statutory protection, whether under International, European or National legislation, are considered in detail in this section. Relevant legislation is as follows:

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) and Directive 2009/147/EC (codified version of Directive (79/409/EEC) as amended) (Birds Directive) – transposed into Irish law as European Communities (Birds and Natural Habitats) Regulations 2011 and 2013 (SI 477/2011 and 499/2013), and
- Wildlife Act 1976 and Wildlife (Amendment) Act 2000, as amended.

6.5.2 EU Habitats Directive (as transposed)

Species protected under the EU Habitats Directive can be separated into three categories: Annex II of the directive lists species that require protection of their habitats, for which SACs are designated, while Annex IV of the directive lists species which are afforded strict protection, wherever they occur in the country (inside or outside of SACs), and Annex V species whose taking from the wild can be restricted by European law.

6.5.3 EU Birds Directive (as transposed)

The EU Birds Directive requires member states to identify and classify SPAs for rare or vulnerable species listed in Annex I of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance (Article 4).

6.5.4 Irish Wildlife Act

Under the Wildlife Act 1976 (as amended), species listed under the Fifth Schedule are afforded statutory protection and are therefore subject to the provisions of Section 23, which make it an offence to:

- kill, injure or take any wild animal listed;
- damage or destroy, or obstruct access to, any structure or place which any wild animal uses for shelter or protection;
- damage or destroy anything which conceals or protects any such structure; or
- disturb any such animal while it is occupying a structure or place which it uses for shelter or protection.

There is a requirement that any proposed development assesses the likelihood of impacting on such species. Surveys will be undertaken to identify those species listed under Schedule 5 of the Wildlife Act 1976 (as amended). All surveys will meet with standard recommended methodologies.

Important areas for birds within and in the vicinity of the study area were identified from the BirdWatch Ireland database and the National Biodiversity Data Centre database. The most significant site within the vicinity of the study area (immediately north of the study area) is Lough Swilly which is designated as a SPA primarily on account of its importance for wintering birds. Lough Swilly is of major ornithological importance for wintering waterbirds, with three species occurring in numbers of international importance and 18 species regularly occurring in numbers of national importance. The site is commonly used by more than 20,000 waterfowl and as such is of international importance. Additionally, it holds nationally important breeding populations of three species, i.e. Sandwich Tern (*Thalasseus sandvicensis*), Common Tern (*Sterna hirundo*) and Black-headed Gull (*Chroicocephalus ridibundus*). The site is used by a number of species that are listed on Annex I of the E.U. Birds Directive. Part of Lough Swilly SPA is a Wildfowl Sanctuary.

Lough Swilly supports internationally important numbers of Whooper Swan (*Cygnus cygnus*) (1,673 - mean peak for the five winters 1995/96-1999/2000), Greenland White-fronted Goose (*Anser albifrons*) (847 for the Lough Swilly flock - mean peak for the five winters 1994/95-1998/99) and Greylag Goose (*Anser anser*) (1,218 - mean peak for the five winters 1995/96-1999/2000). These species are largely utilising the lands within the boundary of the SPA with some localised areas outside, the main areas include Big Isle, Farsetmore, Blanket Nook, Ballylawn and Inch Levels. The flock sizes for Whooper Swan and Greylag Goose are the largest in the country. Considerably higher numbers of Whooper Swan (peak of 1,946) have been recorded, especially early in the season, as this is the area where the swans make their Irish landfall in autumn on their return from breeding grounds in Iceland. Both Greenland White-fronted Goose and Whooper Swan are listed on Annex I of the E.U. Birds Directive.

Flocks of golden plover (*Pluvialis apricaria*), listed on Annex I of the EU Birds Directive) and lapwing (*Vanellus vanellus*), a Red Listed species of Birds of Conservation Concern 2014-2019, may utilise agricultural grasslands throughout the study area during the winter, however neither species is likely to breed within the study area.

Breeding species of note that are likely to occur in the study area include kingfisher (listed under Annex I of the EU Birds Directive) which is expected on all watercourses, and barn owl (*Tyto alba*) which is recorded from all 10km squares in the study area (NBDC database). Barn owl is listed as a Red Listed species (Birds of Conservation Concern 2014-2019).

The study area is likely to support a full suite of terrestrial Irish mammals including otter along all watercourses, badger (*Meles meles*), hedgehog (*Erinaceus europaeus*), pine marten (*Martes martes*), Irish

hare (*Lepus timidus*), Irish stoat (*Mustela erminea hibernica*) and fox (*Vulpes vulpes*) along with various rodents and the pygmy shrew (*Sorex minutus*). Red deer (*Cervus elaphus*) have been recorded west of Ballindrait and a single record also occurs from Dromore (c2km east of Raphoe). The red deer population in Donegal has undergone a considerable range expansion in recent years. Non-native mammals likely to be present include the American mink (*Mustela vison*) and the brown hare (*Lepus europaeus*) which has been recorded along the Dee River to the south of Convoys just outside of the study area.

Otter (*Lutra lutra*), afforded protection under Annex II of the EU Habitats Directive, is also recorded from within the study area and is likely to occur on all watercourses within the study area. Other species protected under the EU Habitats Directive occurring within the study area include Atlantic salmon (*Salmo salar*) and lamprey (unidentified species), both of which are present in the Dee River. The Loughs Agency have previously recorded lamprey ammocoetes (unidentified to species level) from two locations upstream of Ballymonaster Bridge (approximately 3.5km upstream of Ballindrait). The Dee River which flows into the River Finn SAC, is designated for otter and salmon (along with other Annex I habitats as listed in **Table 6.3**).

Kingfisher (*Alcedo atthis*) which is protected under Annex I of the EU Birds Directive is also present on the Dee River and is likely to occur on all watercourses in the study area.

The white-clawed crayfish (*Austropotamobius pallipes*), an Annex II listed species under the EU Habitats Directive, requires waters of a high alkalinity, typically only occurring in water with pH of 7.0 or greater with calcium concentrations of at least 5 mg/l (Reynolds, 1998). There are no records of white-clawed crayfish from any of the watercourses within the study area and the chemistry of the waters appears unsuited for this species.

Section 1 does host a designated freshwater pearl mussel (*Margaritifera margaritifera*) sensitive area which spans the width of the study area within the River Finn SAC. There are no records of the Annex II listed freshwater pearl mussel (*Margaritifera margaritifera*) from any watercourses within the study areas of Sections 2 and Section 3 and the areas are not designated as a Margaritifera Sensitive Area (NPWS database Version 8, 2017).

Bat Conservation Ireland was contacted to determine if there are any known bat roosts within the study area. While data on known sites is limited, the study area is considered to be of low to moderate value for bats on account of the habitats present. Hot-spots of bat activity are likely to be associated with areas of suitable foraging habitat including areas of woodland and scrub, along watercourses and in the vicinity of Oakfield Park. Winter hibernation sites are also a critical requirement for bats and these are typically in sites with uniform temperature regimes such as out-buildings, cellars, caves and souterrains. Only a small number of souterrains are known in Donegal, four of which occur in the study area in the townlands of Labbadish (DG062-009), Gillstown (DG062-012), Castledowey (DG062-013) and Listannagh (DG062-025). All of these structures have the potential to support wintering bats.

In the absence of suitably defined mitigation, these sites and other connecting European sites may be impacted by the project either directly, indirectly or there may be cumulative impacts either alone or in combination with other plans or projects. There are a number of other sites designated for nature conservation within the constraints study. Impacts on these sites will be considered as part of the Appropriate Assessment process.

6.6 Biodiversity Identified Constraints

6.6.1 Section 1

The proposed options within the constraints study area may intersect the River Finn SAC (Site Code: 002301) between Ballybofey and Stranorlar. The River Finn is designated for the following six qualifying features:

- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110];
- Northern Atlantic wet heaths with *Erica tetralix* [4010];
- Blanket bogs (* if active bog) [7130];
- Transition mires and quaking bogs [7140];
- *Salmo salar* (Salmon) [1106]; and
- Otter (*Lutra lutra*) [1355].

6.6.2 Section 2

The proposed options within the constraints study area may intersect Lough Swilly SAC (Site Code: 002287) and Lough Swilly SPA (Site Code: 004075). Lough Swilly SAC is designated for the following six Qualifying Interests:

- Estuaries [1130];
- Coastal lagoons [1150];
- Atlantic salt meadows (*Glaucopuccinellietalia maritima*) [1330];
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410];
- Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]; and
- Otter (*Lutra lutra*) [1355].

6.6.3 Section 3

The proposed options within the constraints study area are unlikely to intersect the River Finn SAC (Site Code: 002301) which is located at the south eastern extremity of the study area, all options are likely to be within 300m of the designated site. The River Finn is designated for the following six qualifying features:

- Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110];
- Northern Atlantic wet heaths with *Erica tetralix* [4010];
- Blanket bogs (* if active bog) [7130];
- Transition mires and quaking bogs [7140];
- *Salmo salar* (Salmon) [1106]; and
- Otter (*Lutra lutra*) [1355].

As the River Finn is a tributary of the River Foyle and subsequently Lough Foyle, the River Finn SAC extends northward to include much of the River Foyle within the Republic of Ireland until the border with Northern Ireland near Carrigans. All options will intersect both the Swilly Burn and River Deelee which are not protected sites but are both tributaries to the River Finn SAC, and subsequently River Foyle and Lough Foyle (Site Code: 004087). Lough Foyle is thirty kilometres north of the study area.

The proposed options within the constraints study area are not anticipated to intersect Lough Swilly SAC (Site Code: 002287) and Lough Swilly SPA (Site Code: 004075) which are located beyond the western extremity of the study area. However, options are likely to be within one kilometre of these sites and are likely to have a direct impact on tributaries of Lough Swilly. Lough Swilly SAC is designated for the following six Qualifying Interests:

- Estuaries [1130];
- Coastal lagoons [1150];
- Atlantic salt meadows (*Glaucopuccinellietalia maritima*) [1330];
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410];
- Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]; and
- Otter (*Lutra lutra*) [1355].

7 LAND AND SOILS

7.1 Introduction

This section provides an overview of the land cover and baseline geological and hydrogeological conditions to identify any constraints which may influence the development of the project. The online databases of the Geological Survey of Ireland (GSI) – <https://www.gsi.ie/>, the Environmental Protection Agency (EPA) – <http://gis.epa.ie/Envision>, the Irish Soil Information System <http://gis.teagasc.ie/soils/map.php> and www.catchments.ie, were consulted for information on:

- Soils and subsoils;
- Bedrock geology;
- Aquifer classification;
- Groundwater Vulnerability;
- Groundwater Well information;
- Orthophotography;
- Corine dataset;
- SACs, NHAs and Geoheritage Sites;
- Water Framework Directive (WFD) data.

This review is carried out in accordance with the TII Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (2008).

Two site investigations were undertaken during the preliminary design stage for the previous scheme – N13/N15 Ballybofey Stranorlar Bypass as follows:

- Preliminary Ground Investigation (McCarthy Hyder 2002) - 25 no. boreholes, 14 no. probes, 36 no. trial pits with related sampling, in situ and laboratory testing;
- Ground Investigation (Geotech Specialists Ltd. 2004) – 82 no. exploratory holes, 13 no. standpipe piezometers and 89 no. trial pits with in-situ and laboratory testing; and
- A seismic refraction survey was also undertaken to map rock head profile and provide information on rock strength (Pelorus Surveys 2004).

Information from these assessments will be used to constrain ground conditions and the need for further ground investigations during option selection and preliminary design.

7.2 Existing Environment – Land Cover

7.2.1 Section 1

The land in the surrounding area and along the existing N15 consists of blanket bog and conifer plantation in the region of Lough Mourne. Further north the study area encompasses improved pastoral agricultural land, with intermitting areas of wet grassland. A significant area of woodland can be found at Drumboe and Dunwiley. The River Finn floodplain and margins provide suitable habitat for riparian woodland and vegetation.

The CORINE 2012 landcover for Section 1 is dominated by *Pastures* (CORINE 2012 code: 231) with significant distributions of *Landcover principally occupied by agriculture with areas of natural vegetation* (CORINE 2012 code: 243) in the south west and western regions. There is a dense clustering of Discontinuous *Urban Fabric* (CORINE 2012 code: 112) within the centre of the study area. The remainder of the CORINE 2012 landcover for Section 1 consists of sparse mosaics of *Coniferous forest* (312), *Mixed Forest* (313), *Sports and Leisure Facilities* (142), and *Transitional woodland-scrub* (324).

7.2.2 Section 2

The Letterkenny Estuary and Farmland Landscape Character Area (LCA) 15¹⁸ describe some of the floodplains within the town area as being developed for commercial and retail use, substantial amount of residential sprawl radiating from Letterkenny and a considerable amount of one-off rural dwellings and linear development along the local road networks.

The CORINE 2012 landcover for Section 2 shows the dominated landcover type in the area to be *Pastures* (231), *Discontinuous urban fabric* (112), and *Industrial or commercial units* (121). *Estuaries* (522), *Non-irrigated Arable Land* (211), *Land principally occupied by agriculture with wet areas of natural vegetation* (243), *Complex cultivation patterns* (242) and *Intertidal flats* (423) are also heavily featured within the study area boundary.

7.2.3 Section 3

CORINE 2012 land cover mapping shows the dominant landcover type for Section 3 is *Pastures* (231) and scattered large areas of *Complex cultivation patterns* (242). There are some areas to the south of the study area, with one area north that is classified as being *Non-irrigated arable land* (211). There is one area, the Lifford locale, which is classified as *Discontinuous urban fabric* (112).

CORINE 2012 Land Cover mapping for all Sections are displayed in **Figure 7-1**.

¹⁸ <http://www.donegalcoco.ie/media/donegalcountyc/planning/pdfs/viewdevelopmentplans/draftlandscapecharacterassessmentofcodonegal/draftlandscapecharacterassessment/LCA15%20Letterkenny%20Estuary%20%20Farmland.pdf>

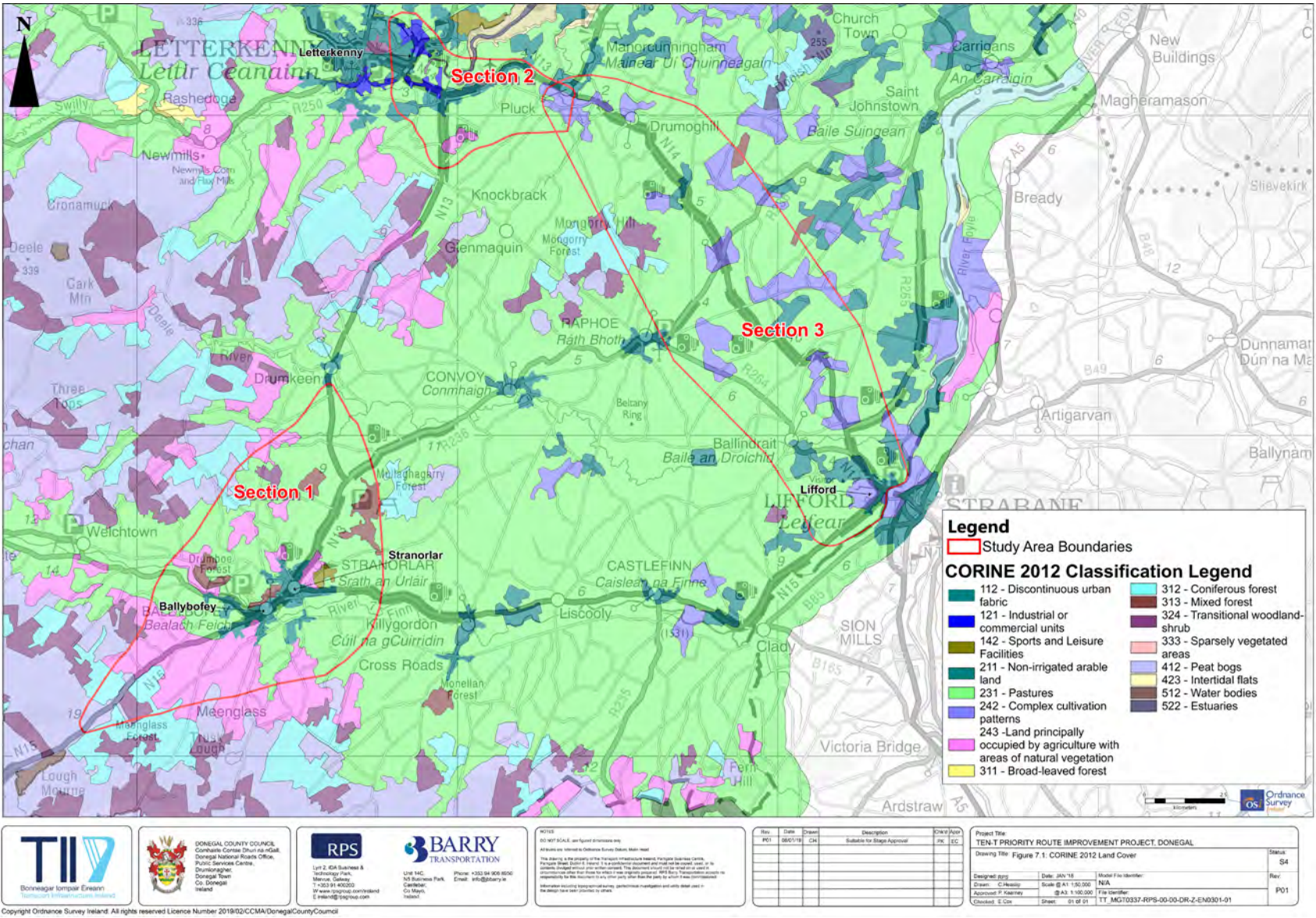


Figure 7-1: CORINE 2012 Land Cover

7.3 Existing Environment - Soils and Subsoils

Soils and subsoils mapping within the study areas are illustrated in **Figure 7-2** and **Figure 7-3** respectively.

7.3.1 Section 1

The most dominant soils in the study area are surface and groundwater water gleys derived from non-calcareous parent materials. Acid brown earths and brown podzolics, derived from mainly non-calcareous parent materials, are present in scattered pockets south of Ballybofey.

Present in scattered pockets west of Stranorlar and south of Ballybofey are lithosols and regosols derived from mainly non-calcareous parent materials, and shallow well- drained material.

There are two main underlying subsoil types in the constraints study area. The dominant subsoil is metamorphic till, present both north and south of Ballybofey and Stranorlar, and the surrounding area. Pockets of blanket bog peat are also found in the north western part of the study area.

7.3.2 Section 2

Alluvium is the dominant soil along the banks of the River Swilly and its estuary.

North of the study area, soils predominantly consists of surface water gleys with a mosaic of lithosols and regosols, with bedrock at the surface.

South of the study area, soils consist of surface water gleys, with scattered pockets of acid brown earths and brown podzolic soils.

The predominant subsoils within the study area consist of a metamorphic till expanding to the north and south with scattered pockets of bedrock at the surface. Alluvium deposits are present along the banks and neighbouring areas of the River Swilly. Soils around Letterkenny town are classified as made ground or built surface.

7.3.3 Section 3

The soils within the study area comprise predominantly metamorphic tills, alluvium, near surface bedrock and sand and gravels.

The alluvium identified along the Swilly Burn and the Deelee River are gravel aquifers. Such areas of alluvium and soft soils will be a constraint to development and will require appropriate consideration.

Subsoils mapping in the study area corresponds to the upper soils layer with alluvium present in the River Finn and proximal areas prone to flood events. The majority of the study area is characterised by metamorphic till.

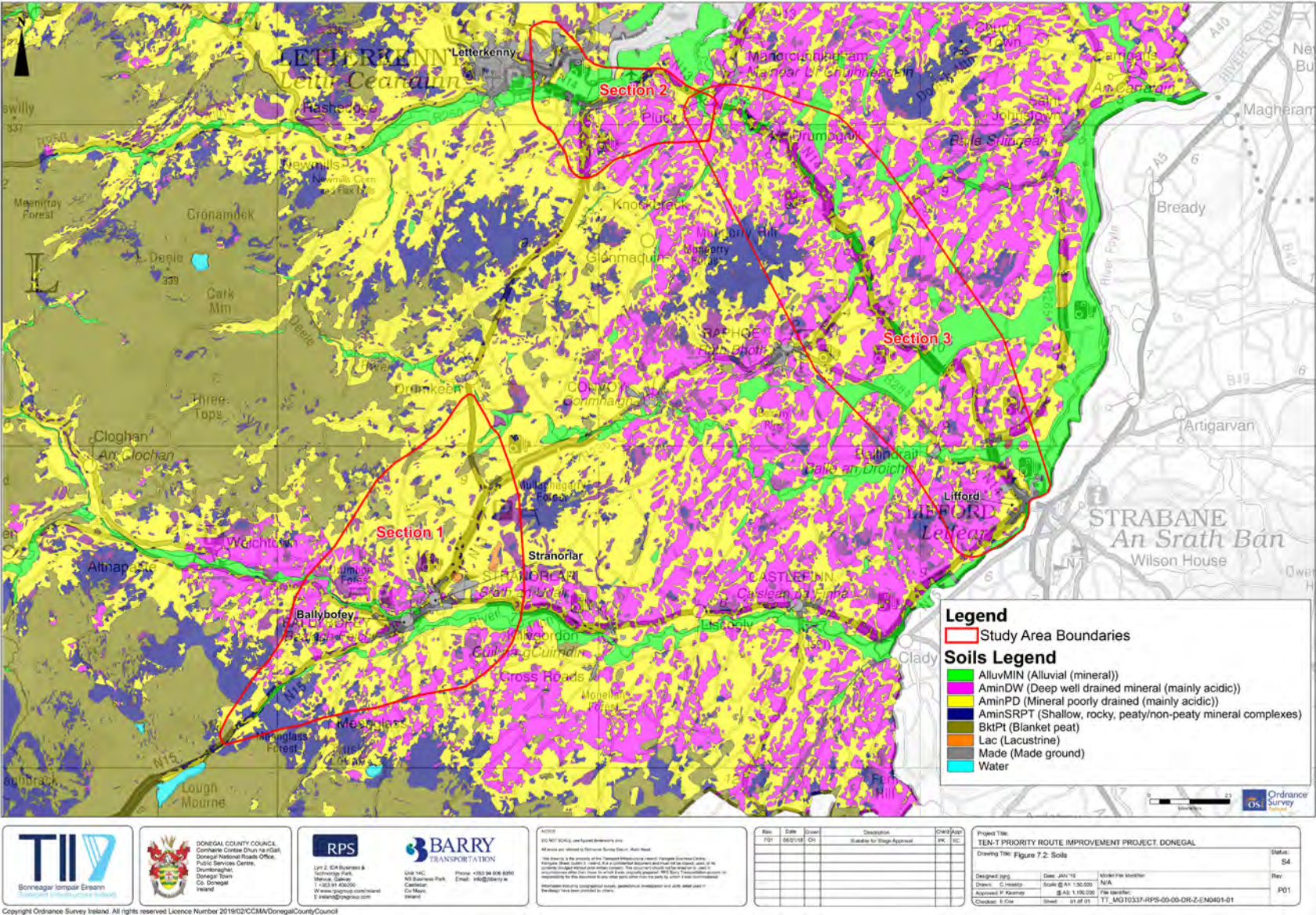


Figure 7-2: Soils

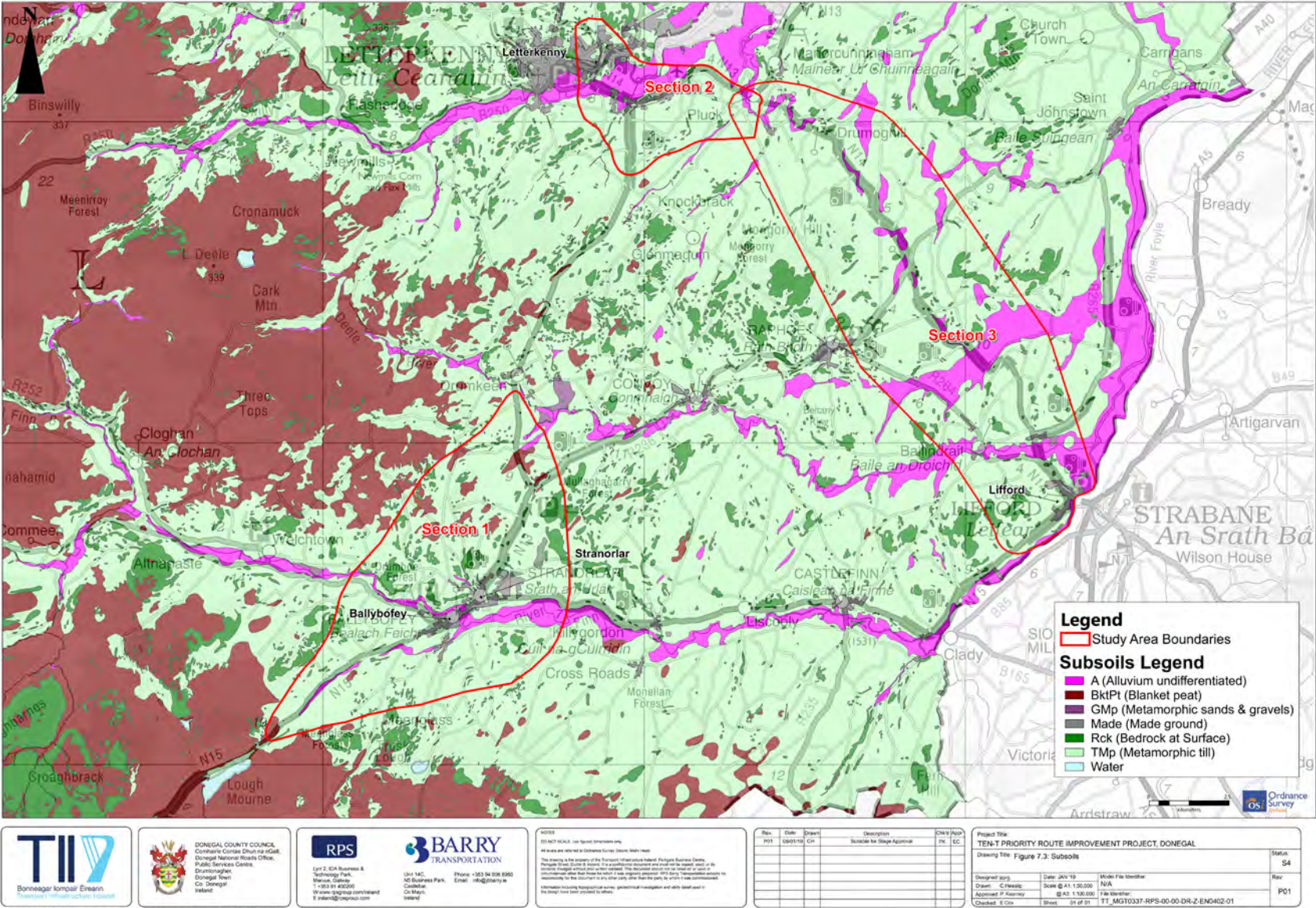


Figure 7-3: Subsoils

7.4 Existing Environment - Bedrock Geology

The bedrock geology map for the study area is provided in **Figure 7-4**. Lithologies generally comprise metamorphic rock. Review of the karst database of the GSI shows no recorded karst features in the study areas, which is expected given the metamorphic geology of the region.

7.4.1 Section 1

The dominant underlying bedrock within Section 1 constraints study area is Lough Eske Psammite Formation which is comprised of feldspathic psammite and quartzite. North of the Stranorlar and the Eske Psammite Formation are narrow bands of Aghyaran and Killygordon Limestone and Killeter Quartzite. A band of Lough Mourne Formation can be found south of Ballybofey in the vicinity of Lough Mourne, this bedrock type consists of quartz and feldspar pebbles.

7.4.2 Section 2

The north western area of Section 2 constraints study area encompassing Letterkenny town and the Polestar Roundabout is underlain by the Termon Formation, which consists of banded semi-pelitic and psammitic schist. The southern section of the study area is comprised of a band of Killeter Quartzite Limestone Formation; this formation consists of slightly impure quartzite. The remainder of the study area is made up of Aghyaran and Killgordon Limestone Formation, this bedrock is comprised of marble, quartzite, psammite and graphite.

7.4.3 Section 3

The existing N14 carriageway within Section 3 is underlain by Precambrian metamorphic rocks. The dominant rock unit underlying the overall study area is the Aghyaran and Killygordon Limestone Formation which comprises both calcific and dolomitic marble, quartzite and psammite. Bedrock lithology in the general vicinity also comprises of:

- Killeter Quartzite formation - a slightly impure quartzite with beds typically 5m thick.
- Termon Formation - banded semi pelite and psammitic schist.
- Lough Foyle Formation - schist and grit with thin marble.
- Lifford Volcanic member - volcanoclastic green beds.



7.5 Existing Environment – Hydrogeology

The GSI online database was consulted for the underlying aquifer type and groundwater vulnerability of the study areas (refer **Figure 7-5** and **Figure 7-6** respectively). Groundwater vulnerability is a term used to describe the intrinsic geological and hydrogeological characteristics that determine the ease at which aquifers may be contaminated by human activities. The groundwater vulnerability within the cumulative study area is predominately high, with pockets of extreme throughout. However, this is more on the basis of shallow bedrock and bedrock exposure in the area. The aquifers in the area are bedrock aquifers of low permeability classified as Poor and Locally Important. Groundwater vulnerability will be further constrained during option selection when all available information on water table levels and soil type is reviewed in the context of each option.

7.5.1 Section 1

The Section 1 study area is underlain with an aquifer classified as a “Poor” Aquifer (PI), or bedrock which is generally unproductive except for local zones. The north of the study area is partially underlain with a “Locally Important” Aquifer (LI), classified as moderately productive only in local zones. The existing N15/N13 traverses two groundwater bodies; Ballybofey Groundwater Body and Raphoe Groundwater Body. The details of these waterbodies and their status are displayed in **Table 7-1**. The following information was obtained from the EPA online mapping resource¹⁹.

Table 7-1: Section 1 - Groundwater Body Descriptions

Groundwater Body	Element	Rating for Groundwater Body (WFD Status 2010 - 2015)	Objectives	Measures to Achieve Objectives
Ballybofey	Water Quality Status	Good	- Restore_2021 - Prevent Deterioration - Restore Good Status - Reduce Chemical Pollution - Achieve Protected Areas Objectives	Basic Measures - The Bathing Water Directive (2006/7/EC) - The Habitats Directive (92/43/EEC) - The Drinking Water Directive (98/83/EC) - The Major Accidents (Seveso) Directive (96/82/EC) - The Environmental Impact Assessment Directive (85/337/EEC) - The Sewage Sludge Directive (86/278/EEC) - The Urban Waste Water Treatment Directive (91/271/EEC) The Plant Protection Products Directive (91/414/EEC) - The Nitrates Directive (91/676/EEC) - The Integrated Pollution Prevention Control Directive (96/61/EEC).
	Risk Category	Not at risk		
Raphoe	Water Quality Status	Good		
	Risk Category	Not at risk		Specific Measures ▪ Cost recovery for water use - Promotion of efficient and sustainable water use - Protection of drinking water sources - Control of abstraction and impoundments - Control of point source discharges - Control of diffuse source discharges

¹⁹ <https://gis.epa.ie/EPAMaps/>

Groundwater Body	Element	Rating for Groundwater Body (WFD Status 2010 - 2015)	Objectives	Measures to Achieve Objectives
				- Authorisation of discharges to groundwater - Controls on other activities impacting on water status Prevention or reduction of the impact of accidental pollution incidents.

The GSI database contains information on a number of wells in close proximity to or within the study area. These are listed in **Table 7-2** below.

Table 7-2: Section 1- GSI Groundwater Well Data

No.	GSI Name	Well Type	Depth	Townland	Source Use	Yield Class	Yield m ³ /day
1	2039SWW003	Dug well	1.8m	Goland	Unknown	Poor	22
2	2039SWW001	Borehole	31m	Drumboe Lower	Agri & domestic use	-	-
3	2039SWW002	Dug well	4.3m	Creggan	Unknown	Poor	8.2
4	2039SEW041	Borehole	45.7	Cavan Upper	Unknown	Poor	4.4
5	2039SEW039	Borehole	91.5	Cavan Upper	Unknown	Failure	1.6
6	2039SEW040	Borehole	67	Cavan Upper	Unknown	Poor	16.4
7	2039NWW002	Dug well	1.8	Cloghroe	Unknown	Poor	6.5
8	2039NEW006	Dug well	3.6	Drumgumerland	Unknown	Poor	8.7
9	2039SEW021	Dug Well	4.5	Mullaghaneary	Unknown	Poor	10.9
10	2039SEW020	Dug Well	0.6	Ballynacor	Unknown	Poor	27.3
11	2039SEW027	Dug Well	5.2	Killgordon	Unknown	Poor	9.8
12	2039SEW007	Dug Well	2.4	Mullingar	Unknown	Poor	13.1

There is no reliance on groundwater as a public or group water supply within the study area. The public water supply for the Ballybofey/Stranorlar area is Lough Mourne located approximately 8km to the southwest. Adequate protection measures will need to be developed for all watercourses connected to this water supply source.

Information from the GSI Groundwater Body (GWB) descriptions²⁰ was also reviewed to ascertain any particular constraints. The description for the Ballybofey GWB corroborates that the region is composed primarily of low transmissivity rocks, with low groundwater flow paths and limited interactions between surface water and groundwater.

²⁰ <https://www.gsi.ie/en-ie/programmes-and-projects/groundwater/activities/understanding-ireland-groundwater/Pages/Groundwater-bodies.aspx>

The potential exists for Groundwater Dependent Terrestrial Ecosystems (GWDTEs) to be present within the study area. It cannot be conclusively determined at this stage whether such GWDTEs are or are not a constraint for the proposed project. This will be investigated following field surveys during Stage 2 and Stage 3 of Phase 2 of the Options Selection process.

Groundwater levels from the 2004 site investigation carried out in the Section 1 area show a range of 0.2m to 4.0m below ground level (b.g.l.) in the superficial deposits and from 5m to 7.4m b.g.l in the bedrock.

7.5.2 Section 2

There are two primary groundwater aquifers within the Section 2 constraints study area. The western section of the study area is underlain by a Poor Aquifer (PI). This bedrock is generally unproductive except for local zones. The eastern half of the study area from Bunnagee eastwards is comprised of a Local Aquifer (Li); this bedrock is moderately productive only in local zones.

The study area traverses two groundwater bodies; Lough Swilly and Manorcunningham Groundwater Bodies. The details of these waterbodies and their status are displayed in **Table 7-3** and the data was obtained from the EPA online mapping resource.

Table 7-3: Section 2 – Groundwater Body Description

Groundwater Body	Element	Rating for Groundwater Body (WFD Status 2010-2015)	Objectives	Measures to Achieve Objectives
Lough Swilly	Water Quality Status	Good	- Restore_2021 - Prevent Deterioration - Restore Good Status - Reduce Chemical Pollution - Achieve Protected Areas Objectives	Basic Measures - The Bathing Water Directive (2006/7/EC) - The Habitats Directive (92/43/EEC) - The Drinking Water Directive (98/83/EC) - The Major Accidents (Seveso) Directive (96/82/EC) - The Environmental Impact Assessment Directive (85/337/EEC) - The Sewage Sludge Directive (86/278/EEC) - The Urban Waste Water Treatment Directive (91/271/EEC) The Plant Protection Products Directive (91/414/EEC) - The Nitrates Directive (91/676/EEC) - The Integrated Pollution Prevention Control Directive (96/61/EEC).
	Risk Category	Not at risk		
Manorcunningham	Water Quality Status	Good		
	Risk Category	Not at risk		Specific Measures ▪ Cost recovery for water use - Promotion of efficient and sustainable water use - Protection of drinking water sources - Control of abstraction and impoundments - Control of point source discharges - Control of diffuse source discharges - Authorisation of discharges to groundwater - Controls on other activities impacting on water status Prevention or reduction of the impact of accidental pollution incidents

The GSI database contains information on a number of wells within close proximity to the study area. These are listed in the **Table 7-4** below.

Table 7-4: Section 2 - GSI Groundwater Well Data

No.	GSI Name	Well Type	Depth	Townland	Source Use	Yield Class	Yield m ³ /day
1	2041SEW025	Dug well	1.8m	Castlebane	Unknown	Poor	3.3
2	2041SEW016	Borehole	91.4m	Letterkenny	Unknown	Poor	22
3	2041SEW017	Borehole	30.5	Letterkenny	Unknown	Poor	10.9
4	2041SEW020	Borehole	30.5	Letterkenny	Unknown	Moderate	43.6
5	2039NEW015	Dug Well	2.4	Scribly	Unknown	Poor	21.8
6	2039NEW002	Dug Well	1.5	Lurgy	Unknown	Poor	21.8
7	2039NEW013	Dug Well	5.2	Aghilehard	Unknown	Poor	3.8

Information from the GSI Groundwater Body (GWB) descriptions was also reviewed to ascertain any particular constraints. The description for the Lough Swilly West GWB corroborates that owing to the poor productivity of the aquifers in this body and low transmissivities, it is unlikely that any significant interaction between surface water and groundwater occurs.

The public water supply for the Letterkenny area is Lough Mourne. Adequate protection measures will need to be developed for all watercourses connected to this water supply source. An upgrade to the Letterkenny Regional Water Supply Scheme is currently in progress by Irish Water. These works will result in the construction of a new water treatment plant at Goldrum (which supplies Letterkenny). The existing water treatment plants at Letterkenny and Creeslough will be decommissioned.

7.5.3 Section 3

The bedrock aquifer to the north of the study area is classified as LI: locally important and moderately productive, south of the Deele River the bedrock aquifer is classifying as PI: poor non-productive except for local zones. There are two gravel aquifers identified, associated with the Deele River and the Swilly Burn. The details of these waterbodies and their WFD Status 2010-2015 is provided in **Table 7-5**. The following information was obtained from the EPA online mapping resource.

Table 7-5: Section 3 – Groundwater Body Descriptions

Groundwater Body	Element	Rating for Groundwater Body (WFD Status 2010-2015)	Objectives	Measures to Achieve Objectives
Ballybofey	Water Quality Status	Good	- Restore_2021 - Prevent Deterioration - Restore Good Status - Reduce Chemical Pollution - Achieve Protected Areas Objectives	Basic Measures - The Bathing Water Directive (2006/7/EC) - The Habitats Directive (92/43/EEC) - The Drinking Water Directive (98/83/EC) - The Major Accidents (Seveso) Directive (96/82/EC) - The Environmental Impact Assessment Directive (85/337/EEC) - The Sewage Sludge Directive (86/278/EEC) - The Urban Waste Water Treatment Directive (91/271/EEC) The Plant Protection Products Directive (91/414/EEC)
	Risk Category	Not at Risk		
Raphoe	Water Quality Status	Good		
	Risk Category	Not at Risk		

Groundwater Body	Element	Rating for Groundwater Body (WFD Status 2010-2015)	Objectives	Measures to Achieve Objectives
Manorcunningham	Water Quality Status	Good		- The Nitrates Directive (91/676/EEC) - The Integrated Pollution Prevention Control Directive (96/61/EEC). Specific Measures - Cost recovery for water use - Promotion of efficient and sustainable water use - Protection of drinking water sources - Control of abstraction and impoundments - Control of point source discharges - Control of diffuse source discharges - Authorisation of discharges to groundwater - Controls on other activities impacting on water status Prevention or reduction of the impact of accidental pollution incidents
	Risk Category	Not at risk		
River Foyle	Water Quality Status	Good		
	Risk Category	Not at Risk		
Foyle gravels	Water Quality Status	Good		
	Risk Category	Not at Risk		

The GSI database contains information on a number of wells in close proximity to or within the study area these are listed in **Table 7-6** below.

Table 7-6: Section 3 – GSI Groundwater Well Data

No.	GSI Name	Well Type	Depth	Townland	Source Use	Yield Class	Yield m ³ /day
1	2041SEW140	Borehole		Raymogh	Donegal County Council Manorcunningham PWS	Good	327
2	2014SEW049	Borehole	90	Raymogh	Donegal County Council exp. In Lagan area	Good	333
3	2014SEW137	Borehole	61	Tullybogly	Domestic use only	Excellent	1090
4	2039NEW018	Borehole	31.7	Drumoghill	Agri & domestic use	Moderate	66.0
5	2039NEW019	Borehole	22.2	Drumoghill	Agri & domestic use	Poor	31.4
6	2039NEW017	Borehole	30.5	Drumoghill	Agri & domestic use	Moderate	66.0
7	2039NEW052	Borehole	55	Drumcarn	Agri and domestic use	Poor	10.9
8	2041SEW073	Borehole	60	Galdonagh	Magherabeg/Veagh PW1 Public Water Supply One of two wells the other being 2039NEW031	Reportedly good, reportedly hard water	N/A
9	2039NEW026	Borehole	51.8	Galdonagh	Agri & domestic use	Poor	13.0
10	2039NEW027	Borehole	52	Galdonagh	Agri & domestic use	Poor	25.0
11	2037NEW030	Borehole	44	Doorabble	Public Water Supply	Good	150
12	2339NWW001	Dug Well	4.6	Momeen	Unknown	Poor	3.2
13	2039NEW011	Dug Well	4.6	Oakfield Demense	Unknown	Poor	19.6

No.	GSI Name	Well Type	Depth	Townland	Source Use	Yield Class	Yield m ³ /day
14	2339NWW006	Dug Well	1.5	Drumleen	Unknown	Poor	5.1
15	2039NEW009	Dug Well	2.1	Sheercloon	Unknown	Poor	29.5
16	2339NWW002	Borehole	67	Cavan	Unknown	Moderate	45.7
17	2339NWW003	Borehole	45.7	Cavan	Unknown	Poor	4.4
18	2339NWW004	Borehole	91.4	Cavan	Unknown	Failure	1.6
19	2339NWW005	Dug Well	2.4	Glencash	Unknown	Poor	29.3
20	2339SWW001	Dug Well	3.1	Portinure	Unknown	Poor	3.1
21	2339SWW002	Borehole	37	Lifford Common	Domestic use only	Poor	35

7.5.3.1 Groundwater Resources

Public Water supply wells are present at Raymoghly, Doorabble and Galdonagh Cross Roads, a drinking water protection area is identified at Galdonagh Cross Roads. All of these public water supply boreholes will require due consideration during the development of the options. There are also a number of private wells and a considerable number of historic wells drilled during the Geological Survey of Ireland's Drilling Programme in 2002 and no longer exist. The location of these public supply wells is shown in **Figure 7-5**.

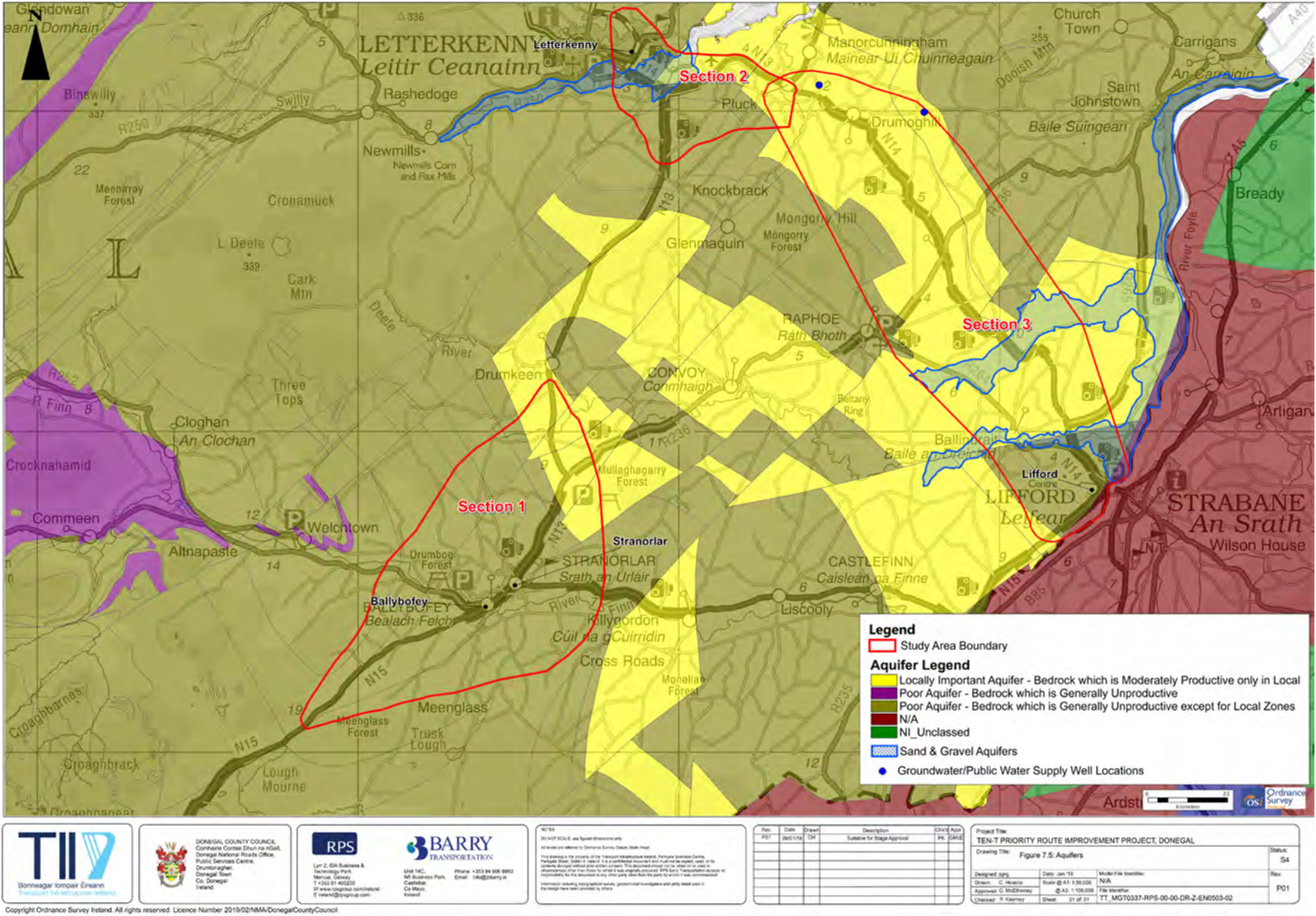


Figure 7-5: Aquifers

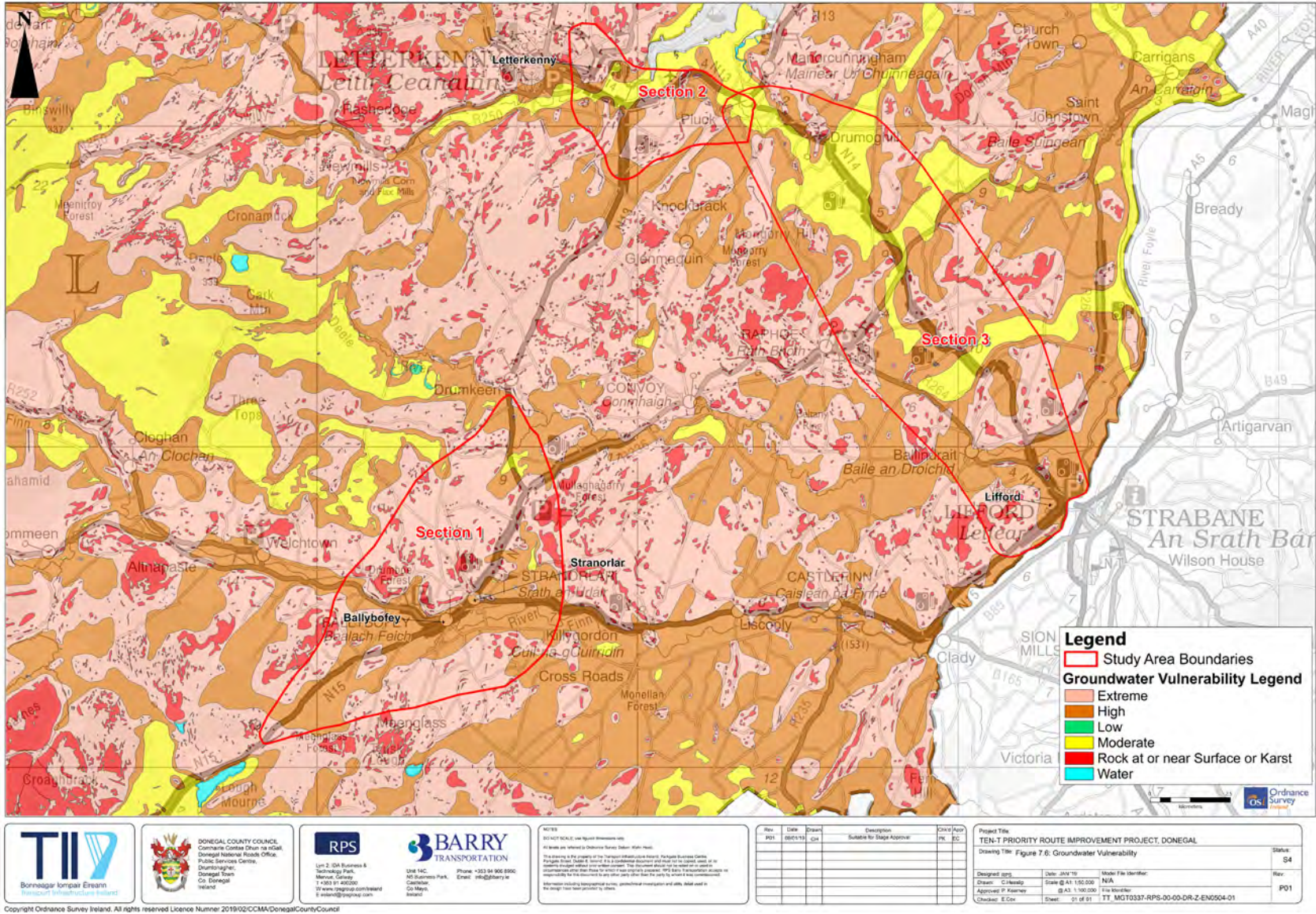


Figure 7-6: Groundwater Vulnerability

7.6 Mineral Site Locations

Kiltale Quarry outside Convooy village is the only active quarry in the Section 1 study area. This is situated approximately 11.4km north east of the study area. There are six mineral site locations within the Section 1 study area or in close proximity. There are three mineral site locations within the Section 2 study area. Section 3 has seven mineral site locations either within or in close proximity to the study area boundaries. Mineral site locations within each section are outlined in **Table 7-7** and shown in **Figure 7-7**.

Table 7-7: Mineral Site Locations within the Constraints Study Areas

Section	Location No.	Mineral	Townland	Notes
Section 1	1,305	Clay, boulder	Cashelnavean	-
	1,306	Clay, boulder	Cashelnavean	-
	5,300	Slate	Dunwiley	Disused slate quarry noted here by Kinahan (1886)
	1,329	Marble	Cloghroe	GSI memoir records beds of white marble of a quality suitable for statuary work. No large blocks were obtained.
	1,331	Marble	Cloghroe	Old survey records white and greenish limestone.
	238	Quartz	Callanacor	Interesting vein quartz consisting of one thick vein and several thinner ones.
Section 2	1,337	MEMA –Marble	Magheranan	Greenish white limestone was recorded by the Old Survey at this site. No outcrop was visible when McCluskey visited the site in 1935. In Termon or Milford Pelites.
	258	CLBR – Clay, Brick	Milkisle	Brickclay
	1,338	MELS – Limestone, metamorphic	Magheraboy	Small outcrops of flaggy, finely crystalline, whitish-grey, iron stained marble, deeply weathered recorded by McCluskey, In Termon or Milford Pelites.
Section 3	2495	Limestone	Drumoghill	Quarry in fine grained limestone. No evidence from orthographic mapping of a quarry
	229	Camstone and Talc	Knockbrack	50m x 3m stream showing camstone lenses (poor quality limestone) in quartzites. No evidence from orthographic mapping of a quarry
	230	Quartz	Drumoghill	Quartz vein at Giants Grave of little interest. No evidence from orthographic mapping of a quarry
	233	Greenstone	Raphoe	Inactive quarry-metadolerites for road material. Wall rocks are quartz rich metasediments 200 x 200 x 20m. Bedrock is metadolerites emplaced in Termon pelites. Evidence from orthographic mapping of a disused quarry.

Section	Location No.	Mineral	Townland	Notes
	2499	Limestone	Raphoe	Quarry in grey fine grained Limestone. No evidence from orthographic mapping
	2494	Limestone	Raphoe	Quarry in fine grained limestone. Evidence from orthographic mapping of a disused quarry
	241	Clay, Brick	Lifford	Clay, brick found at two localities here covering an area of 300m x 110m and 500m x 500m section variable from fine beach sand to clay, contains a high proportion of organic material. Evidence from orthographic mapping of a disused quarry surrounded by forestry

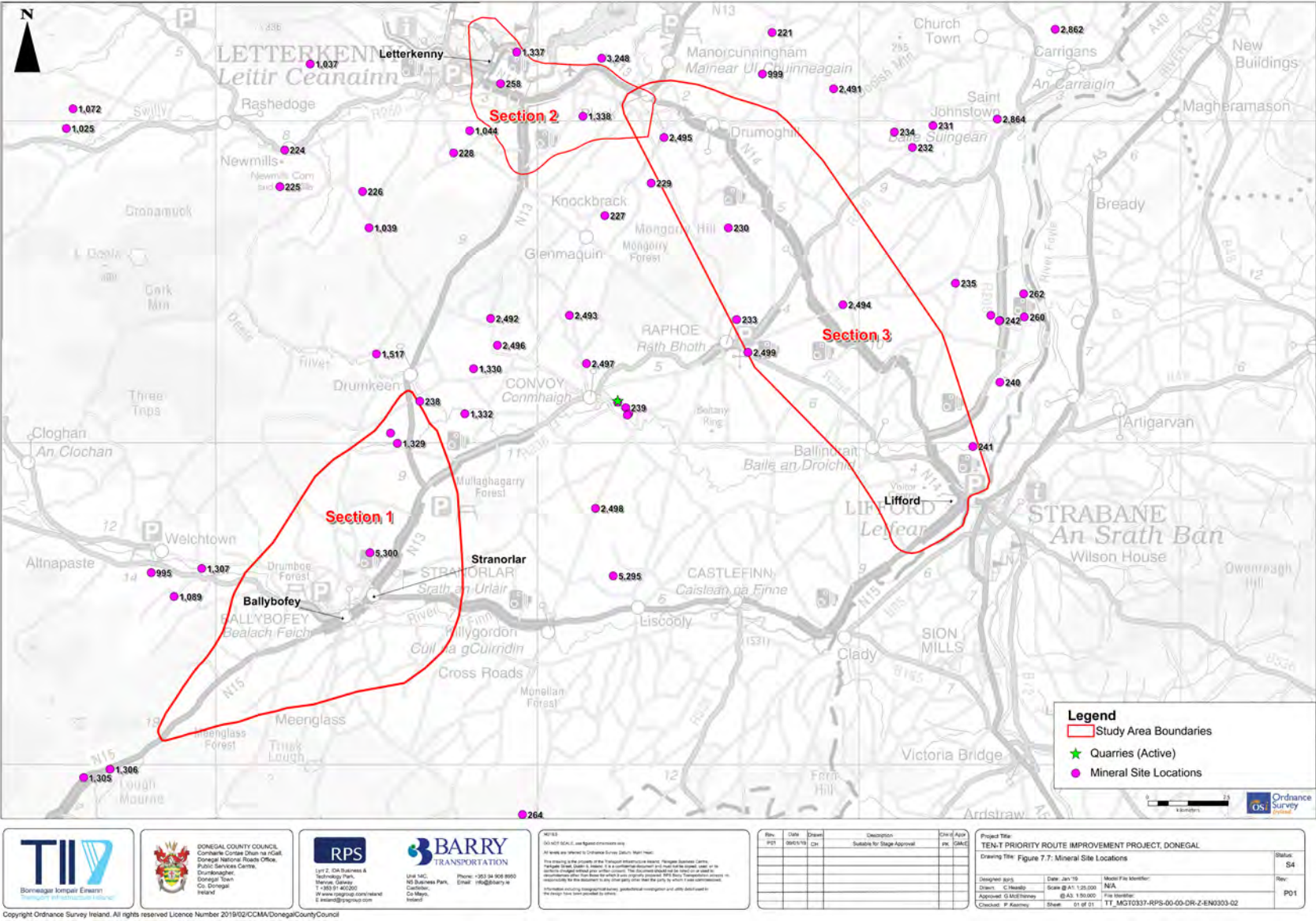


Figure 7-7: Mineral Site Locations

7.7 Landfills

Section 1 does not have any landfills within or in relative proximity to the study area boundary and therefore no landfill constraints exist with regards to this study area.

There is one landfill within proximity of the overlapping area between Sections 2 and 3, near Manorcunningham located approximately 0.6km north-east and 0.3km north-west respectively from both study area boundaries.

There is a landfill south of Lifford at Churchtown, approximately 3.5km south-west of the Section 3 study area boundary.

7.8 Geological Heritage

The GSI and the Irish Geological Heritage programme (IGH) are in partnership with the NPWS of the Department of Culture, Heritage and the Gaeltacht (DCHG) to identify and select important geological and geomorphological sites throughout the country for designation as NHAs (Natural Heritage Areas). The GSI database for the constraints study area was searched for evidence of geological heritage sites. The results for each section are as follows:

- Section 1 - There are two sites of Geological Heritage located on the N15, south of the study area location:
 - Barnesmore Gap - consisting of lateral moraines.
 - Barnesmore Gap - consisting of secondary uranium minerals.
- Section 2 - No sites of Geological Heritage were identified within the study area.
- Section 3 - No sites of Geological Heritage were identified within the study area.

Geological heritage sites in proximity to the study areas are shown in **Figure 7-8**.

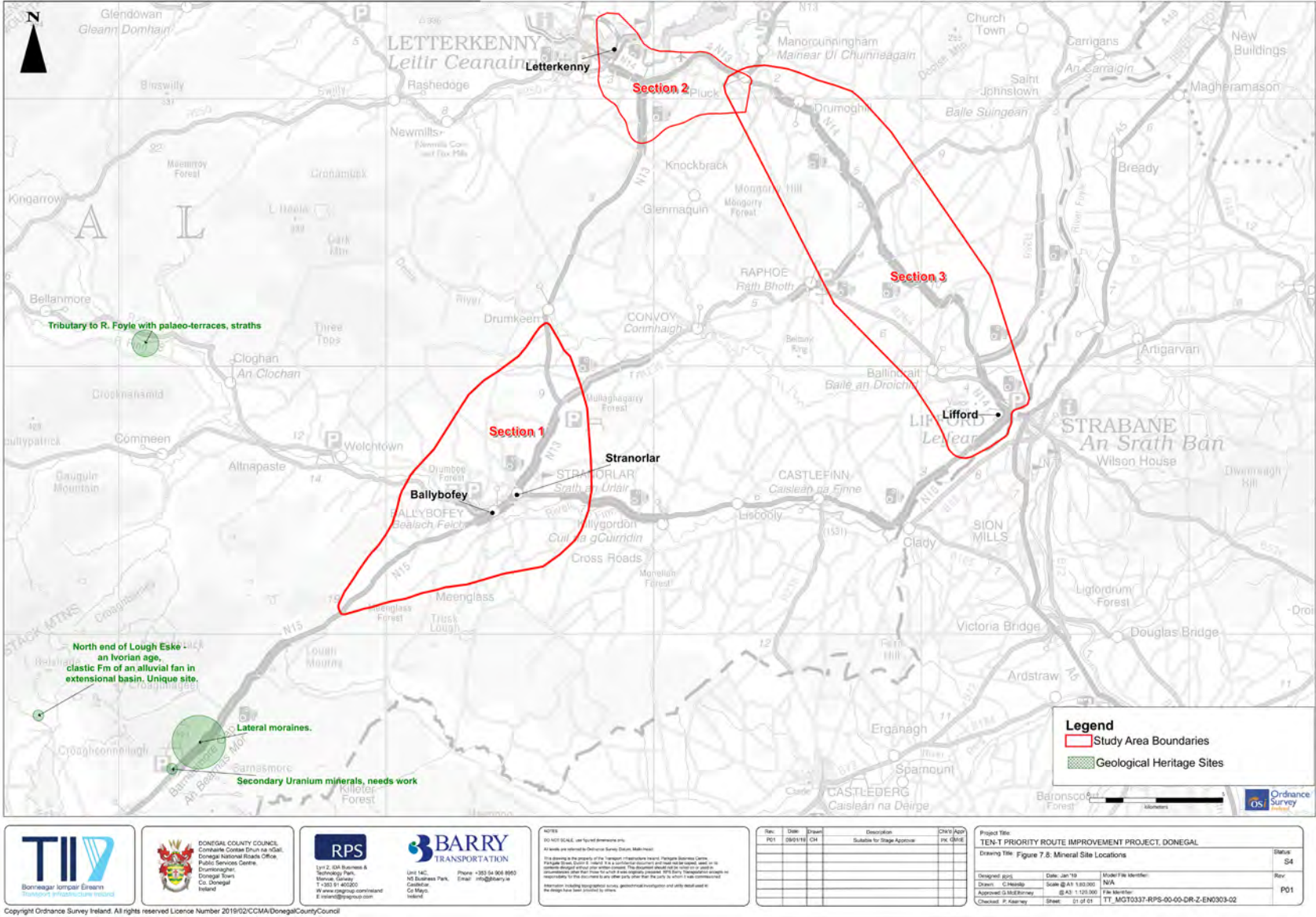


Figure 7-8: Geological Heritage Sites

7.9 Geohazards

A review of the GSI database indicated that there is no past evidence or record of landslides in any of the study areas.

7.9.1 Section 1

The majority of the landscape within the Section 1 study area is identified on the Geological Survey of Ireland (GSI) Landslide Susceptibility Map²¹ as being of a *Low* risk for landslides to occur. South-west of Ballybofey (Meencargagh, Mullanachose) has a clustered area with a mosaic of *Moderately low (C²²) / moderately high (B) to High (A)* risk of landslide events. This is likely due to the incline of the contouring in the area. The majority of any *moderate* or *high-risk* landslide areas in the study area lie between areas that have steeply elevated contours e.g. 60m to 100m contour areas. Due to the undulating landscape present within Section 1, particularly spanning west of Stranorlar and north-westwards to Drumkeen townland, there are numerous but discrete *moderately low* and *moderately high* areas. This pattern is similar east of Stranorlar extending to Knockagarran. Any high-risk areas will be considered further during the Stage 2 and Stage 3 of the Phase 2 Option Selection process and on review of the available site investigation data for the area.

7.9.2 Section 2

Due to the heavily urbanised landscape present in Letterkenny town and environs, there is a limited and sparsely distributed coverage of *moderately low (C)* and *moderately high (B)* landslide risk areas. These moderately sensitive areas are all situated at low elevations at the foot of small-moderate hills surrounded mostly by urbanised areas.

7.9.3 Section 3

The study area is predominantly displaying a D or low risk landslide vulnerability, however there is an area west of the N14/R236 staggered junction (Woodlands, Lettergull) which is identified as having an A rating which indicates a high susceptibility. Any high-risk areas will be considered further during the Stage 2 and Stage 3 Option Selection process and on review of the available site investigation data for the area.

7.10 Land and Soils Identified Constraints

The CORINE (2012) landcover indicates that the dominant land use type is *Pastures* (231) for both Section 1 and Section 2 and all also having significant areas of *Discontinuous Urban Fabric* (112) represented by Ballybofey-Stranorlar (Section 1) and Letterkenny (Section 2). The main grouping of *Discontinuous Urban Fabric* for Section 3 is represented by the Lifford locale. For all three sections, outside of *Discontinuous Urban Fabric* areas, there is a mixture of various agricultural land use types.

Regarding Soils, each section area has some lateral distribution of alluvial mineral soils across the study areas in the form of areas of watercourse or flood-prone areas. Crossings of waterbodies associated with this soil type will require adherences to best practice and construction standards to avoid any potential negative impacts.

Cognisance must be given to avoiding impacting groundwater aquifers during the option selection process across all three sections. Sections 1 and 2 have *Locally Important Aquifers* and *Poor Aquifers – bedrock*

²¹ GSI Landscape Susceptibility Map:

<https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=b68cf1e4a9044a5981f950e9b9c5625c>

²² Categorised codes defined as per Landslide Susceptibility Bands of the National Landslide Susceptibility Mapping Project Summary; "A" indicates High; "B" Moderately High; "C" Moderately Low; and "D" Low landslide susceptibility risk. https://www.gsi.ie/documents/National_Sus_Map_Summary_FINAL_NEW.pdf

which generally unproductive except for Local Zones. The Locally Important Aquifers in both Section 1 and Section 2 are situated in the north–west of the respective study areas. Gravel aquifers as shown in **Figure 7-5** are also present in Sections 2 and 3. The locally important gravel aquifers and the public supply groundwater wells are the principal hydrogeological constraints for this project. Vulnerability can also be included as a constraint. Similarly, on Section 3, existing Locally Important Gravel Aquifers occur within the study area surrounding the Swilly Burn and Deelee Rivers.

All groundwater bodies present across the three Section areas have *Good* quality status and are all identified as being *Not at risk* for negative impacts in their current state. Due consideration is to be given to any design and option selection process to avoid any negative adverse impacts to these receptors.

Groundwater wells are present throughout all three sections of the project, both domestic and public supply wells. Public water supply wells are shown in **Figure 7-5**, Consideration must be given to these features during the option selection process to avoid any unnecessary interactions or impacts to such features.

Adequate protection measures will need to be developed for all watercourses connected to the Lough Erne water supply source.

The mineral sites in Section 1 comprise marble, clay, boulder, slate and quartz sites. Section 2 hosts sites for marble, clay, brick, pottery, limestone, metamorphic rock. Section 3 has limestone, camstone and talc, quartz, greenstone and clay, brick mineral sites. These are all relatively minor mineral occurrences and are not considered to be a constraint.

No landfills are within the study areas. There is one located north-east of Sections 2 and Section 3, but outside any area of influence.

There are no Geological Heritage Sites present in any of the three sections.

Section 1 has landslide vulnerability risks of *moderate* to *high* risk due to the undulating topographic landscape of the area. Section 2 is heavily dominated by an urbanised landscape which limits the risks of landslide in the area to only sparsely distributed *moderately* ranked areas in the study area. Section 3 has predominantly *Low* risk susceptibility for landslides with the exception of the area north of White Cross with an area of *High* susceptibility risk.

8 WATER

8.1 Introduction

The hydrological and drainage features of the study area were determined by consulting the following data sources:

- OS survey vector, six inch and 'discovery' series mapping;
- Aerial photography;
- The Office of Public Works (www.floodmaps.ie);
- North Western River Basin Management Plan (2009-2015) (<http://www.nwirbd.com/>);
- Water Framework Directive (WFD) national website and Water Maps viewer; (www.wfdireland.ie) and;
- Environmental Protection Agency, (<https://www.epa.ie/>).

This section summarises the surface waterbodies that flow through each of the three sections. The surface waterbodies found within the study are shown in **Figure 8-1**. Details on infrastructure associated with the surface water bodies, i.e. water treatment and waste water treatment, are considered in Section 10.2.8 of Material Assets: Non-agricultural.

8.2 Existing Environment

8.2.1 Section 1

The N15/N13 currently spans four watercourses within the vicinity of Ballybofey-Stranorlar in the constraints study area as outlined in **Table 8-1**. A search of the EPA monitoring database was conducted to establish the river water quality and the WFD Status of the identified watercourses. The proposed road improvement works are located in the River Foyle Catchment Area.

There are two Section 4 of the Water Pollution Act of 1977/90 discharges directly to the River Finn in Ballybofey-Stranorlar, Lwat10 and Lwat19. A third Section 4 discharge, Lwat63, enters a tributary of the River Finn in the townland of Gortletteragh northeast of Stranorlar. All three are within the study area for Section 1.

Table 8-1: Section 1 Surface Water Quality Data²³

River	River Waterbody WFD Status 2010-2015	WFD Risk Scores	River Water Quality 2004-2015	Monitoring Location
Burn Durnett River	Poor	At risk of not achieving good status	Q2-3, Q3 Poor Status	Bridge north west of Daisy Hill and Blackburn Bridge
River Finn (Lower)	Moderate	At risk of not achieving good status	Q3-4 Moderate Status	Bridge 2.5km upstream of Ballybofey and Bridge south of Stranorlar
Cloghroe River	Good	Expected to achieve good status	Q4 Good Status	Bridge downstream – Callan Bridge and Cloghroe Bridge
Deele River	Good	At risk of not achieving good status	Q4 Good Status	2nd Br d/s Br near Newtown

²³ <https://www.catchments.ie/> Accessed: January 2017

8.2.2 Section 2

A search of the EPA monitoring data base was conducted to establish the river water quality and the WFD Status of the identified watercourses. **Table 8-2** outlines the surface water quality of the rivers within Section 2 constraints study area.

There are two Section 4 of the Water Pollution Act of 1977/90 discharges in the study area for Section 2. Lwat8, located just south of the N56 four lane road, discharges to a tributary of the River Swilly, while Lwat2, in the townland of Magheraboy, discharges to a tributary of the Corkey River.

Table 8-2: Section 2 Surface Water Quality Data²⁴

River	River Waterbody WFD Status 2010-2015	WFD Risk Scores	River Water Quality 2004-2015	Monitoring Location
NW_Swilly51_Magheranan1	Unassigned	Review	Not monitored	Not monitored
River Swilly	Moderate	Review	Not monitored	Not monitored
Corkey River	Unassigned	Review	Q2-3, Q3 Poor Status	Bridge at Leslie Hill
NW_Swilly51_LeslieHill Trib_Pluck	Good	Review	Q4 Good Status	Bridge at Pluck Mill
NW_Swilly51_Corravaddy1	Poor	Review	Q2-3, Q3 Poor Status	Bridge near Bunnagee
NW_Swilly51_SwillyTRIBDrumnaoagh	Unassigned	Review	Not monitored	Not monitored

8.2.3 Section 3

Summaries of the main rivers within the Section 3 constraints study area are summarised below. There is one Section 4 of the Water Pollution Act of 1977/90 discharge in the study area, namely Lwat2 in the townland of Magheraboy, which discharges to a tributary of the Corkey River. This is within both the study area of Section 2 and Section 3.

8.2.3.1 Corkey River

The Corkey River and its tributaries are in the northern section of the study area. The Corkey River is a tributary of the Isle Burn River, which flows into Lough Swilly.

8.2.3.2 Swilly Burn

The Swilly Burn flows west to east across the study area, approximately 2km north of Lifford. The lower reach of the Swilly Burn flows into the River Foyle and its source is Mongorry Hill. Currently the water quality as per the EPA River Water Quality Status 2010-2015 assessments in the Swilly Burn is poor, which may be as a result of the current over capacity operation of the wastewater treatment works at Raphoe.

8.2.3.3 Deelee River

The Deelee River is situated to the north of Lifford and flows through the villages of Convoys and Ballindrait and is subsequently bridged by the N14 where it subsequently flows into the River Foyle on the east of the study area. At the source of the River Deelee (Lough Deelee), which is approximately 25km west of Lifford,

²⁴ <https://www.catchments.ie/> Accessed: August 2017

the river collects water from numerous tributaries. Within the study area the water quality of the Dee River is good, with poorer quality experienced upstream near Convoy²⁵).

8.2.3.4 River Finn

The River Finn is situated in the southern extremity of the study area and runs along the border between the Republic of Ireland and Northern Ireland. The River Finn's source is Lough Finn, which is approximately 40km west of Lifford. The River Finn joins with the River Mourne to form the River Foyle. The River Foyle forms the border between the Republic of Ireland and Northern Ireland jurisdictions, and flows in a northerly direction into Lough Foyle. The River Foyle is nationally and internationally recognised for its salmon waters.

Table 8-3: Section 3 Surface Water Quality Data

River	River Waterbody WFD Status 2010-2015	WFD Risk Scores	River Water Quality 2004-2015	Monitoring Location
Leslie Hill (IE_NW_39_L050660)	Poor	Probably not at risk	Q2-Q3	Haugheys Isle
	Good	Not at risk		Connaghans Bridge
	Poor	At risk		Bridge West of Kinraigy
	Poor	Probably not at risk		Bridge at Leslie Hill
Dooballagh Burn (IE_NW_39_D020200)	Poor	Not at risk	Q4	Bridge at Pluck Mill
St Johnstons (IE_NW_01S010280)	Poor	Probably at risk	Q2-Q3	Bridge North of Magheracloy
	Good	At risk		
Swilly Burn (IE_NW_01S030500)	Good	At risk	Q2-Q3	Bridge near Massmore
	Poor	At risk		
	Good	Probably not at risk		
Deele (IE_NW_01D10650)	Poor	At risk	Q4	Bridge North of Ballindrait
				Bridge in Ballindrait
				Downstream of Ballindrait Bridge
				Bridge at Murlough
Finn (UKGBNI1NW01010407)	Poor	N/A	Q2-Q3, Q4	Approximately 30 meters upstream of Bridge Access A38
Foyle	The River Foyle does not have an assigned quality status under any of the WFD or River Water Quality Status categories			Approximately 100 meters downstream of Bridge Across A38 in Lifford
				Approximately 800 meters downstream of bridge across A38 in Lifford

²⁵ <https://www.catchments.ie/> Accessed: November 2017

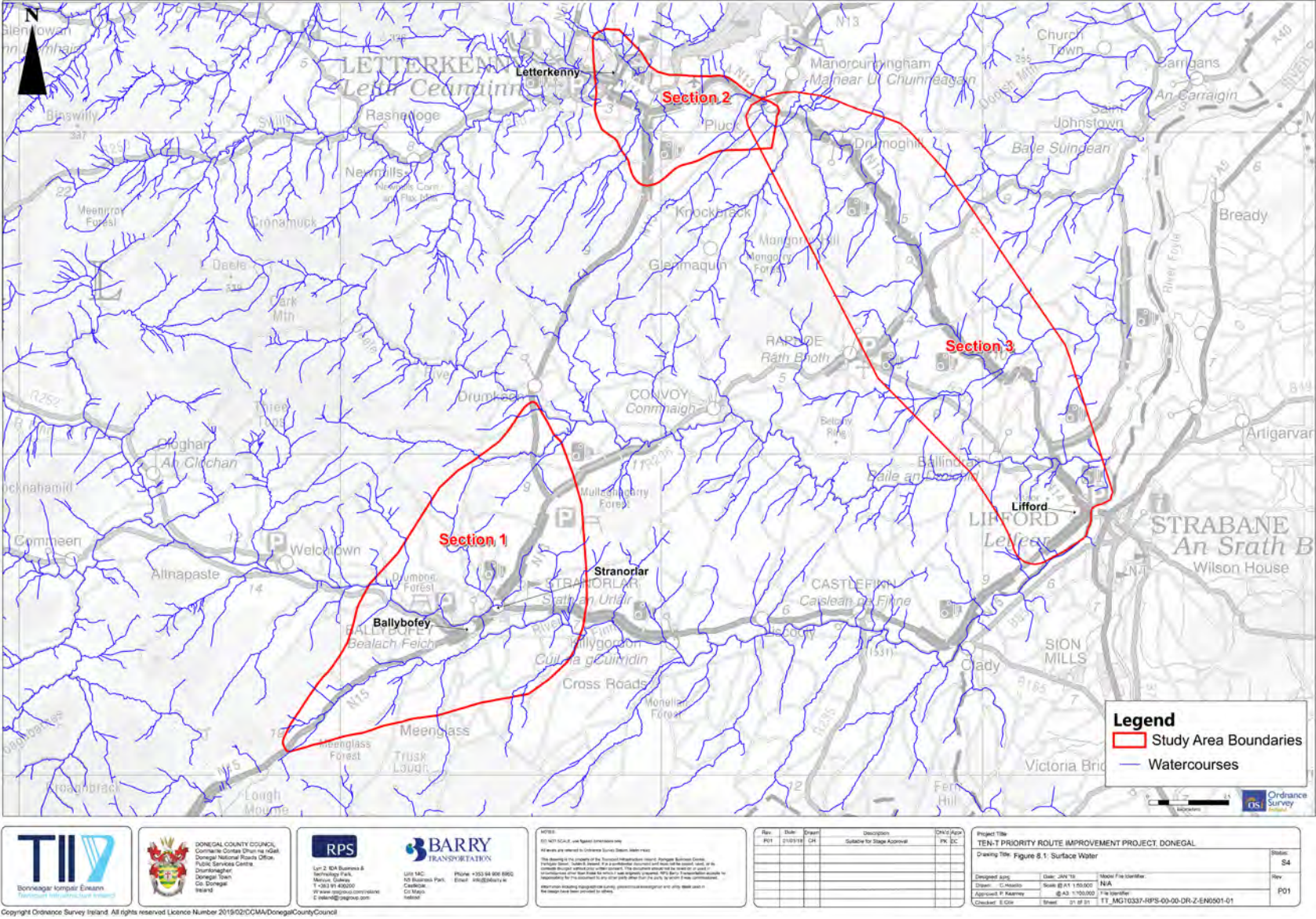


Figure 8-1: Surface Water

8.2.4 Flooding

A search of the Office of Public Works National Flood Hazard Mapping website (www.floodmaps.ie) was carried out to obtain information on the flood history of the study area. The OPW indicative flood maps were used to identify areas that had the potential for significant flooding within the study area and to identify areas where hazards of flooding are likely due to historical flooding of those areas. The OSI Historical Mapping dataset was also consulted to investigate whether any areas are liable to flooding. **Table 8-4** outlines areas that are prone to flooding as highlighted by the OPW flood maps within the three study areas and are shown in **Figure 8-2**.

Table 8-4: Historical Flooding Summary within the Constraints Study Area

Section	Flood Event	Flood ID	Description
Section 1	Naveeny Bridge, Stranorlar	4176	River Finn overflows its banks every year after heavy rain. The road is liable to flood and can be blocked.
	Dreenan Bridge, Stranorlar	4177	River Finn overflows its banks every year after heavy rain. The road is liable to flood and can be blocked.
	Ballybofey	4188	Runoff from high ground causes flooding every year after heavy rain. The road is liable to flood, and properties are affected. Surface water system is unable to cope with the volume of water.
	Ballybofey	N/A	Historical flood event within the town during 1985 along with recurring flood events have been recorded on www.floodmaps.ie .
	Edenmore	4178	River Finn overflows its banks every year after heavy rain.
Section 2	Letterkenny 1.	4036	A combination of low-lying land and a stream overflowing its banks every year due to heavy rain and high tides. The road is liable to flood, and properties are affected. The Halting site is also prone to flooding. Area affected is from the Port roundabout to the Dry Arch roundabout.
	Drumnahoagh, Letterkenny	4037	Low lying land floods every year through a combination of heavy rain and high tides.
	Letterkenny 2.	4038	A combination of low-lying land and a stream overflowing its banks every year due to heavy rain and high tides.
	Neil T. Blaney Road Letter	4039	A combination of low-lying land and a stream overflowing its banks every year due to heavy rain and high tides. Areas either side of the Neil T. Blaney road are flooded.
	Ballymacool, Letterkenny	4041	Runoff from high ground causes flooding every year after heavy rain. The road is liable to flood.
	Kiltoy, Letterkenny	4042	River overflows its banks every year after heavy rain upstream of a culvert. The road is liable to flood once every 3 years.
	Letterkenny Hospital, Letterkenny	4043	River overflows its banks once every 3 years after very heavy rain. The Hospital is liable to flood.
	Swilly Bridge	4054	River Swilly Burn overflows its banks every year after heavy rain.
	Manorcunningham 2.	4057	Runoff from high ground causes flooding every 10 years approximately after very heavy rain. The road is liable to flood, and properties are affected.
Section 3	Rossgier, Ballindrait, Lifford	N.A	Historical flood event of a homeowner's garden on the 28th of October 2000. The site in question is drained by the River Deelee which was subject to drainage works in the 1960's as part of the Deelee and Swilly Burn Scheme. Correspondence from the regional engineer suggests that the flooding of the garden was due to the flooding of the back-drain system, as the flooding event occurred during high tide.

Section	Flood Event	Flood ID	Description
	Lifford Town	4052	River Foyle overflows its banks occasionally (Approximately once every 30 years), through a combination of heavy rains and tides. Properties are liable to flood.
	Lifford (lands to the south west of the town)	4053	River Finn overflows its banks every year after heavy rain between Lifford to Stranorlar.
	Ballindrait	4051	River Deelee overflows its banks every year after heavy rain. The road is liable to flood every 5 years approximately.
	Mullnaveagh	4050	River Swilly Burn overflows its banks every year after heavy rain.
	Manorcunningham	4057	River from high ground causes flooding every 10 years approximately, after heavy rain. The road is liable to flood, and properties are affected.

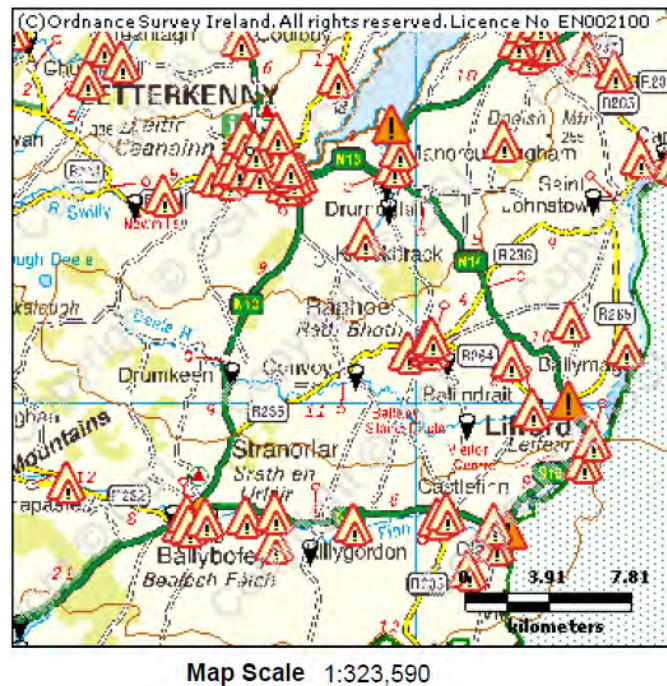


Figure 8-2: Historical Flood Events Map (Source: www.floodmaps.ie)

The Catchment Flood Risk Assessment and Management (CFRAM) website (www.cfram.ie) was searched to identify predictive flood risk areas to highlight areas mapped as part of the Preliminary Flood Risk Assessment (PFRA) for the study area. The Preliminary Flood Risk Assessment (PFRA) is a national screening process that incorporates existing information and broad-scale modelling techniques to allow the identification of areas where there are potentially significant risks of flooding. The objective of a PFRA exercise is to identify areas which need more detailed assessments.

The most likely flood sensitive areas identified through the CFRAM and PFRA studies are illustrated in **Figure 8-3** below.



8.3 Water Identified Constraints

There are numerous waterbodies that intersect the widths of each study area, as illustrated in **Figure 8-1** which will require applications of design standards and construction best practice being applied at the option selection (TII Phase 2), design and environmental evaluation (TII Phase 3) and construction (TII Phase 6) phases of the project in order to avoid degrading any surface or groundwater quality rating for each study area.

Any proposed option for the N15/N13 within the Section 1 study area will cross the River Finn and consequently the River Finn SAC. The River Finn currently has a “*Moderate*” status as per the EPA River Water Quality 2004-2015. Biological water quality baseline studies will be carried out during Phase 2 at locations areas where works are likely to be carried out. Lough Mourne is the public water supply for the study area and is located approximately 7.6km south of Ballybofey town, immediately east of the N15. Suitable mitigation measures should be devised in line best practice measures.

Any proposed option for the N56/N13 within the north-western area of the Section 2 study area will cross the River Swilly and consequently the Lough Swilly SAC and possibly the Lough Swilly SPA as well. The River Swilly currently has a “*Moderate*” status as per the EPA River Water Quality 2004-2015. Biological water quality baseline studies will be carried out during Phase 2 at locations areas where works are likely to be carried out. Suitable mitigation measures should be devised in line with best practice measures.

Any proposed option for the N14 within the Section 3 study area will cross the Swilly Burn and Deelee River, which are both tributaries to the River Finn which is a designated SAC. The Swilly Burn currently has a “*Good*” water quality status and the Deelee River has a “*Poor*” status. Biological water quality baseline studies will be carried out during Phase 2 at locations areas where works are likely to be carried out. Suitable mitigation measures should be devised in line with best practice measures.

9 AIR, CLIMATE AND NOISE

9.1 Introduction

The constraints of the project on air quality within the study area is discussed in this section. The TII guidance document, '*Guidance for the treatment of Air Quality during the Planning and Construction of National Road Schemes*' (NRA 2011) has been followed in this process.

9.2 Existing Environment

9.2.1 Air Quality and Climate

EU member states must designate "Zones" for the purpose of managing air quality, under the Clean Air for Europe Directive (2008/50/EC). For Ireland, four zones were defined in the Air Quality Standards Regulations (2011), namely: A, B, C and D taking into account population counts from the 2011 CSO Census and categorised as follows:

- Zone A: Dublin
- Zone B: Cork
- Zone C: Other cities and large towns comprising Limerick, Galway, Waterford, Drogheda, Dundalk, Bray, Navan, Ennis, Tralee, Kilkenny, Carlow, Nass, Sligo, Newbridge, Mullingar, Wexford, Letterkenny, Athlone, Celbridge, Clonmel, Balbriggan, Greystones, Leixlip and Portlaoise.
- Zone D: Rural Ireland; i.e. the remainder of the State excluding Zones A, B and C.

The air quality monitoring station within closest proximity to the study areas for Section 1, Section 2 and Section 3 is located in Letterkenny, Co. Donegal; this is categorised as Zone C. The air quality at this location is assigned as "Good", which is calculated on measurements of ozone, nitrogen dioxide, and PM₁₀. There is limited data available from the national air quality monitoring database for air quality specifically in Donegal station with collated data from Letterkenny available from May 2008 to July 2009.

Table 9-1 and **Figure 9-1** illustrate the monthly rainfall amount that occurred in Letterkenny, Ballybofey and Raphoe during the calendar year 2018. The total annual rainfall during the calendar year was 1093 mm. Generally, the higher the rate of rainfall that occurs the cleaner the ambient air quality becomes as rain precipitates out the airborne particulate matter.

Table 9-1: Monthly Rainfall in Letterkenny, Ballybofey and Raphoe in 2018

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Letterkenny (Dromore)	217.6	93.2	52.4	71.7	66.1	40.6	51	88.4	87.6	78	118.5
Ballybofey (Navenny)	248.7	103.6	60.6	88.8	49.1	74	61.6	110.5	116.7	95.5	138
Raphoe (Tops)	197.6	84.6	48.9	66	72	69.7	60.4	98.6	86.2	70.7	111

Source Met Eireann: <https://www.met.ie/climate/available-data/historical-data> .

Data only available from January 2018 to November 2018.

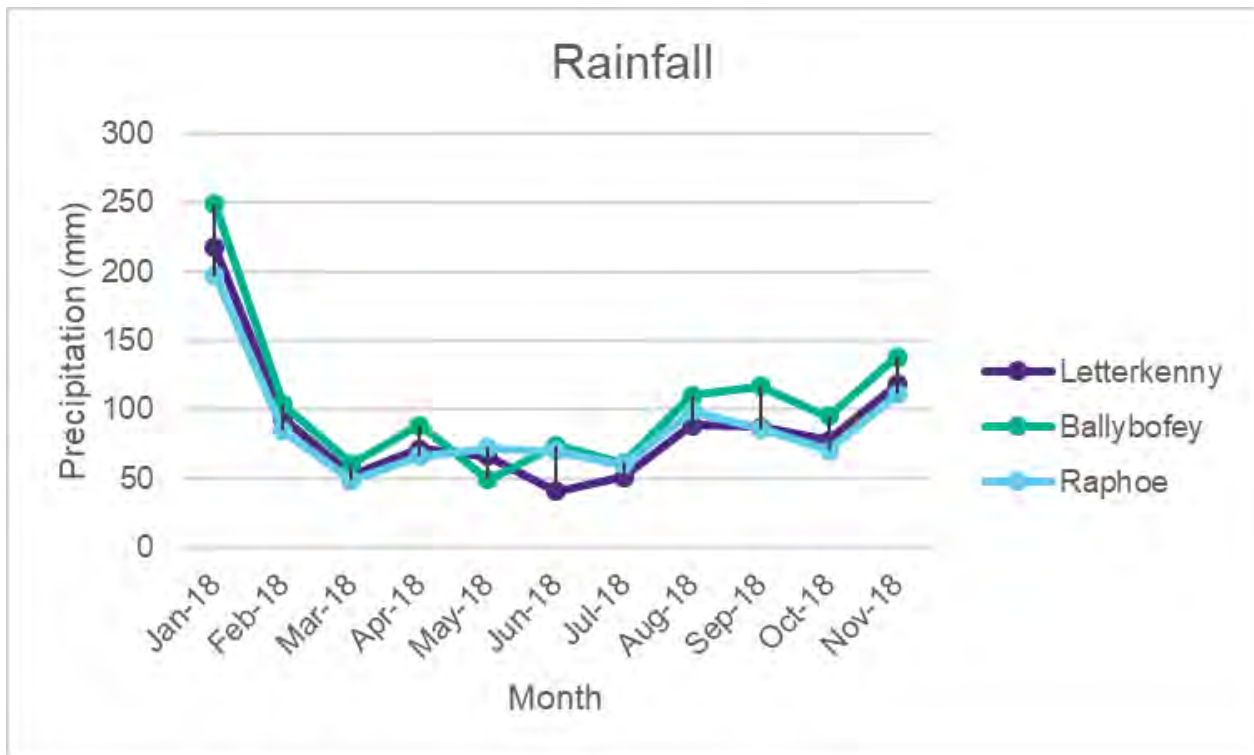


Figure 9-1: Monthly Rainfall in Letterkenny, Ballybofey and Raphoe (2018)

Air quality at the Letterkenny ambient air monitoring station during this period is summarised in **Table 9-2**. Between the monitoring period 2008/2009 the PM₁₀ concentration of 160 µg/m³ exceeded the 24-hour limit value of 50 µg/m³.

Table 9-2: Air Quality Data for Letterkenny Station Co. Donegal (EPA, 2009).

Pollutant	Criteria	Limit Value ^a	Letterkenny Station 2009
Nitrogen Dioxide	Hourly limit for protection of human health – not to be exceeded more than 18 times/year	200 µg/m ³ NO ₂	76.6 µg/m ³ NO ₂ (99.7 percentile) 13.1 µg/m ³ NO ₂ (mean hourly value) 111.9 µg/m ³ (maximum hourly value)
	Annual limit for protection of human health	40 µg/m ³ NO ₂	-
	Annual limit for protection of vegetation	30 µg/m ³ NO + NO ₂	22.1 µg/m ³ NO _x (mean hourly value)
Sulphur Dioxide	Hourly limit for protection of human health – not to be exceeded more than 24 times/year	350 µg/m ³	25.5 µg/m ³ (98 percentile) 6.3 µg/m ³ (mean hourly value) 131.9 µg/m ³ (maximum hourly value)
	Daily limit for protection of human health – not to be exceeded more than 3 times/year	125 µg/m ³	17.9 µg/m ³ (mean hourly value) 33.9 µg/m ³ (maximum 24-hour value)
	Annual limit for protection of vegetation	20 µg/m ³	-
Particulate Matter (PM ₁₀)	24-hour limit for protection of human health - not to be exceeded more than 35 times/year	50 µg/m ³ PM ₁₀	18.0 µg/m ³ (mean daily value) 160 µg/m ³ (maximum daily value)
	Annual limit for protection of human health	40 µg/m ³	-
Particulate Matter (PM _{2.5})	Annual target value for the protection of human health	25 µg/m ³ PM _{2.5}	Not measured

Pollutant	Criteria	Limit Value ^a	Letterkenny Station 2009
Ozone ^b	Maximum daily 8 hour mean for the protection of human health – not to be exceeded more than 25 days per calendar year averaged over 3 years	120 µg/m ³	Not measured
	AOT40 calculated from 1-hour values from May to July for protection of vegetation (2020 objective)	6,000 µg/m ³ -h	Not measured

Source: EPA (2009) *Ambient Air Monitoring at Letterkenny, Co. Donegal*.

(<https://www.epa.ie/pubs/reports/air/monitoring/Letterkenny%20final%20report%20March%202011.pdf>).

^a Air Quality Standards Regulations (S.I. 180 of 2011).

^b Target values and long-term objectives of CAFÉ Directive (2008/50/EC)

The ambient air quality in Northern Ireland can be used to assess the current quality of air surrounding the proposed development due to its close proximity. Strabane ambient air monitoring station, Springhill Park, is located east of Section 3 of the constraints study area and 1.5km from Lifford. Analysis of PM₁₀ from ambient monitoring stations in Strabane, Co. Tyrone, show a measurement of 15µg/m³ which is below the annual limit of PM₁₀ in 2017. There was no exceedance recorded of the daily mean limit of 50µg/m³ or the annual mean limit of 40µg/m³ during this period.

The ambient monitoring station Derry Rosemount is located approximately 30km north-west of Section 2 and situated west of Derry City centre. The results for the monitoring station in 2017 indicate *Good* ambient air quality. The annual average PM₁₀ result for Derry Rosemount was 11µg/m³ which is well below the annual and daily mean limits set out by the EU Stage 1 and Stage 2 limit values. The station also recorded an average of 8µg/m³ NO₂ which is below the annual mean of 40µg/m³ NO₂, with no hourly exceedance above 200µg/m³ NO₂. Ozone measured at Derry Rosemount was below the limit value of 120µg/m³.

The current air quality status in Derry and Strabane from the Air Pollution in Northern Ireland 2017 report²⁶ ascertains that a 'Good' status of air quality based on the Air Quality Monitoring assessment conducted by the EPA²⁷ in 2008/2009 has been maintained in Letterkenny.

The sensitive receptors (pertaining to air and human health) identified in the constraints study area involve high numbers of amenities and residential receptors along the existing N15 Ballybofey–Stranorlar Urban Region, N56/N13 Letterkenny to Manorcunningham, and N14 Manorcunningham–Lifford/ A5 routes, particularly in the urban environs.

9.2.2 Noise

The Environmental Noise Directive (2002/29/EC) sets out the obligation of member states to assess and manage environmental noise and is the main EU instrument to identify noise pollution levels. The directive mandates that Member States must prepare and publish, every 5 years, noise maps and noise management action plans for:

- Agglomerations with more than 100,000 inhabitants;
- Major roads (more than 3 million vehicles a year);
- Major railways (more than 30,000 trains a year); and

²⁶ http://www.airqualityni.co.uk/assets/documents/technical-reports/Air_Pollution_in_Northern_Ireland_2017_screen_version_2018-12-12.pdf

²⁷ <https://www.epa.ie/pubs/reports/air/monitoring/Letterkenny%20final%20report%20March%202011.pdf>

- Major airports (more than 50,000 movements a year, including small aircrafts and helicopters).

Based on a desktop review of available mapping depicting the study area with regard to potential constraints, along with the EPA noise mapping tool and Donegal Local Authorities Noise Action Plan 2013-2018, it was identified that all three sections of the N13, N14 and N15 located in the study area fall within the thresholds as set out in the directive. Modelling of national roads is undertaken by TII as the designated Noise Mapping Body for National Roads. TII also mapped the non-national Major Roads on behalf of Donegal County Council.

Donegal Local Authorities' Noise Action Plan 2013–2018 has been prepared to address environmental noise from sections of major roads in the county with more than three million vehicles per annum. The Donegal County Council Draft Noise Action Plan 2018-2023 was published in 2018 but has not, as of the date of this report, been adopted. The latest road traffic noise modelling (Round 3) data for daytime noise is presented in **Figure 9-2** and night-time noise is presented in **Figure 9-3**. The main source of noise in the area is currently the road traffic on the existing N15 Ballybofey–Stranorlar Urban Region, N56/N13 Letterkenny to Manorcunningham, and N14 Manorcunningham – Lifford/ A5 national roads. The road traffic on these roads dominate the noise climate. Other sources include typical domestic noise sources and agriculture.

Matrix A (Table 6, p.46, Draft Noise Action Plan 2018-2023), a decision support matrix to identify and prioritise noisy areas, was developed in GIS software to apply a score range to each building contained in the Geodirectory in 2017. In summary the results of the application of Matrix A for noisy areas indicated that within areas where there are exceedances of the thresholds for noise along the assessed roads, there are approximately 109 buildings affected and these areas were brought forward for further assessment. For the most part these are spread out sporadically along the national routes with a small percentage in urban areas and a small portion located on the regional roads. The Round 3 Strategic Noise Mapping for County Donegal maps are included in Appendix C of the Draft Noise Action Plan 2018-2023. The mapping for L_{den} and L_{night} includes estimates on the number of dwellings and people affected by levels of noise ranging from 55dB up to greater than 75dB.

The Round 3 Noise Mapping for County Donegal is available online at: <http://donegal.maps.arcgis.com/apps/View/index.html?appid=cf49cd4f4b65453eb2f6f3e00ca9a575&extent=-8.3033,54.6994,-7.1497,55.0781>.

9.2.2.1 Section 1

The Noise Round 3 Road - L_{den} (day) results range from 70-74dB immediately along the N15, to 55-59dB further away from the road boundary.

The Noise Round 3 Road – L_{night} reading indicates a lower noise recording value, with 60-64dB recorded at the road, reducing to 50-54 dB as the distance increases from the source.

With regard to the study area for Section 1, a list of noise sensitive receptors has been collated from Geodirectory data and is detailed below:

▪ Residential receptors	3,122
▪ Residential and Commercial (Both) receptors	293
▪ Amenity Areas	16

Geodirectory property types were selected using the above criteria largely due to the residential element (i.e. other building types such as Commercial and Unknown have been excluded as they are not deemed to be noise sensitive). Amenity Areas have also been included as additional receptors as many do not appear in Geodirectory data (e.g. forest walks, heritage sites, sports pitches, etc.).

9.2.2.2 Section 2

The Noise Round 3 Road - L_{den} (day) results for the N13 range from 70-74dB immediately along the N13, to 55-59 dB further away from the road boundary. A section of the N56 between the Polestar Roundabout and the Dry Arch Roundabout has a noise level of >75dB.

The Noise Round 3 Road – L_{night} mapping indicates a lower noise recording value at night, with 65-69 dB recorded on the N56 between the Polestar Roundabout and the Dry Arch Roundabout, reducing to 50-54dB as the distance increases from the source. On the N13 between the Dry Arch Roundabout and the Pluck Roundabout near Manorcunningham there are sections of the road that are 65-69dB reducing to 50-54db with increasing distance.

With regard to the study area for Section 2, a list of noise sensitive receptors has been collated from Geodirectory data and is detailed below:

▪ Residential receptors	1,381
▪ Residential and Commercial (Both) receptors	68
▪ Amenity Areas	5

Geodirectory property types were selected using the above criteria largely due to the residential element (i.e. other building types such as Commercial and Unknown have been excluded as they are not deemed to be noise sensitive). Amenity Areas have also been included as additional receptors as many do not appear in Geodirectory data (e.g. forest walks, heritage sites, sports pitches, etc.).

9.2.2.3 Section 3

The Noise Round 3 Road- L_{den} (day) results range from 70-74dB immediately along the N15, to 55-59dB further away from the road boundary.

The Noise Round 3 Road – L_{night} mapping indicates a lower noise recording value at night, with 55-59dB over most of the route. However, there are sections within the range of 60-64dB. These levels reducing to 50-54dB as the distance increases from the source.

With regard to the study area for Section 3, a list of noise sensitive receptors has been collated from geodirectory data and is detailed below:

▪ Residential receptors	1,662
▪ Residential and Commercial (Both) receptors	199
▪ Amenity Areas	4

Geodirectory property types were selected using the above criteria largely due to the residential element (i.e. other building types such as Commercial and Unknown have been excluded as they are not deemed to be noise sensitive). Amenity Areas have also been included as additional receptors as many do not appear in Geodirectory data (e.g. forest walks, heritage sites, sports pitches, etc.).

9.3 Air, Climate and Noise Identified Constraints

There will be airborne emissions associated with the project both during construction phase and after the road becomes operational. Particulate matter and other gases are produced by internal combustion engines and these contribute to a reduction in the overall air quality in the vicinity of roads. Vehicle emissions also contribute to greenhouse gas emissions and as such will have an impact on climate in terms of the macro scale.

At the constraints study stage air quality is considered in terms of the current or baseline condition. This provides context for the air quality assessments carried out within the Phase 2 Option Selection process. Where feasible, this is achieved by routing of the potential route corridors away from the sensitive receptors.

In terms of air quality and the protection of human health, a 50m buffer is typically applied as the distance from a road within which a sensitive receptor may experience a significant air quality impact.

The main noise impacts associated with the project will be during the operational phase due to vehicle movements. The impacts can be mitigated by avoiding noise sensitive receptors, the construction of noise barriers, low noise surfacing, etc. Noise during the construction phase is temporary but there is the potential for noise and vibration to be an issue, particularly for sensitive receptors.

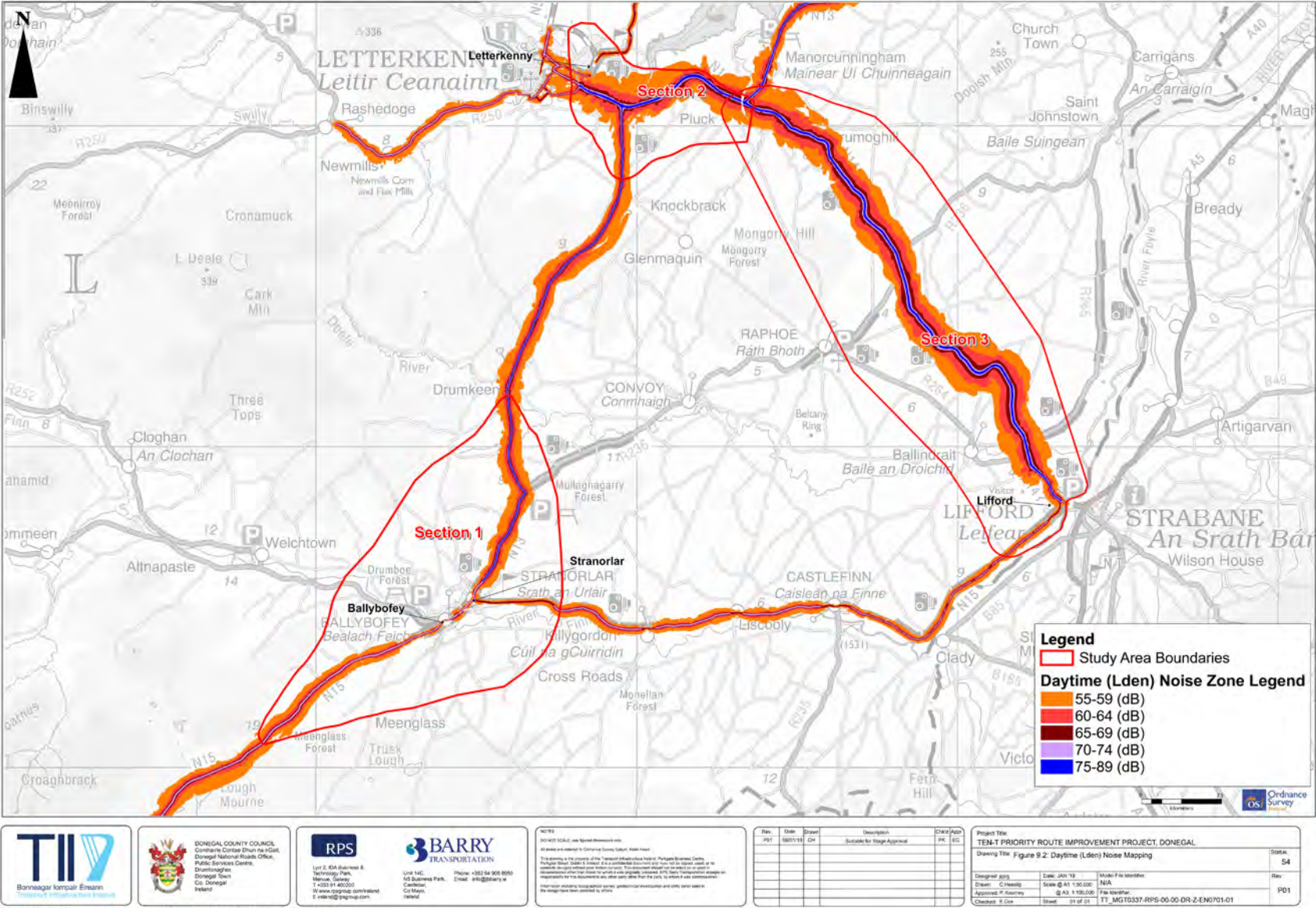


Figure 9-2: Daytime (Lden) Noise Mapping

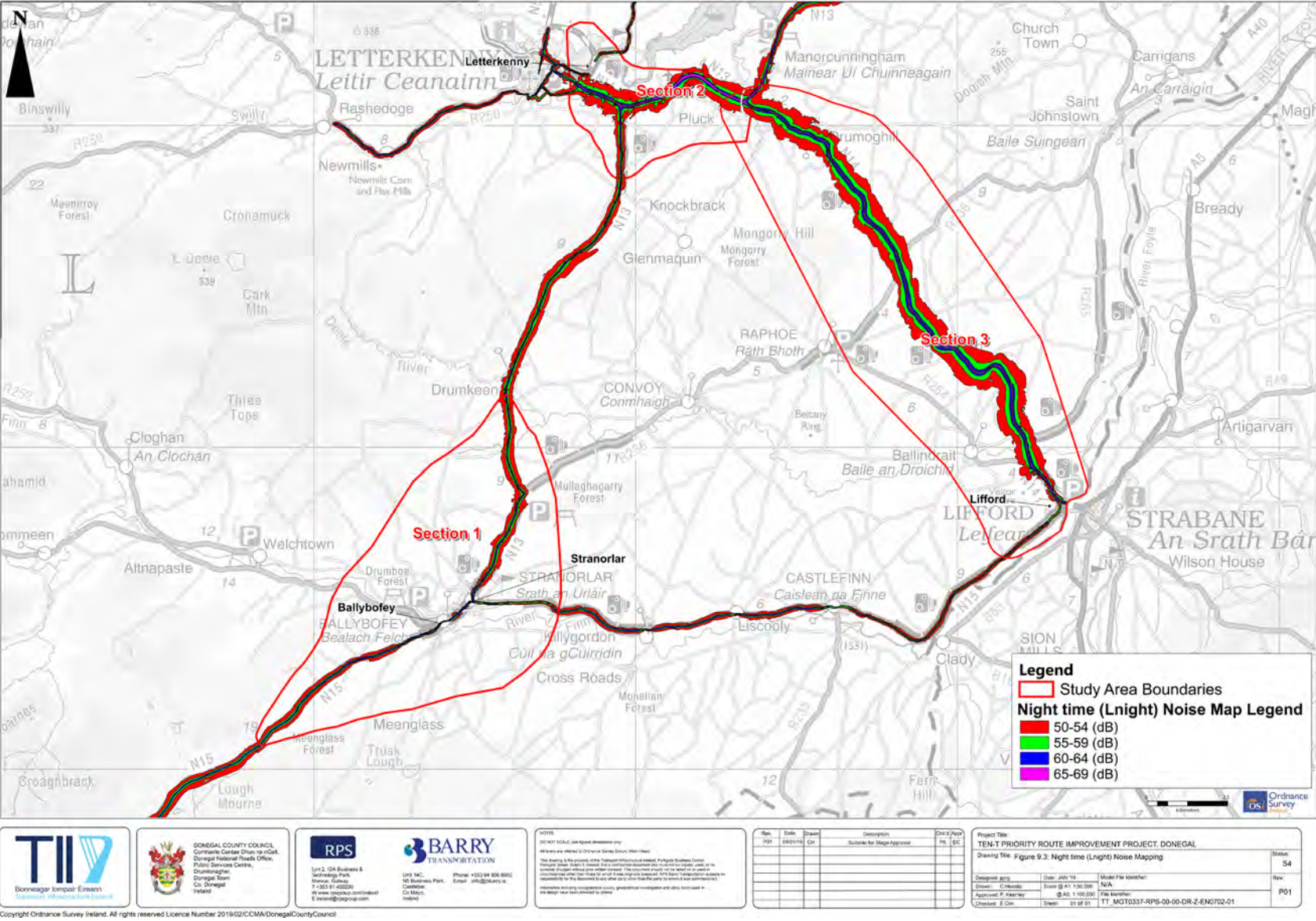


Figure 9-3: Night time (L_{night}) Noise Mapping

10 MATERIAL ASSETS: NON-AGRICULTURAL

10.1 Introduction

Material assets can be defined as economic assets of natural and human origin, or cultural assets of a physical and social type. This section identifies the constraints aspects of the proposed scheme in relation to material assets with particular reference to transport infrastructure, utilities and non-agricultural land use.

10.2 Existing Environment

The three key routes in County Donegal are the N56/N13, N14 and N15. The N56/N13 is a strategic route connecting Letterkenny and north Donegal to Belfast via Derry and the rest of the National Primary network in County Donegal. The N13 and N14 are linked at Manorcunningham, joining Letterkenny to Lifford (the County Town) and onto the A5 at Strabane in County Tyrone, Northern Ireland. The N15 runs from the border with Northern Ireland at Lifford through Ballybofey and Stranorlar to Leitrim and Sligo, where it joins the N16 to Manorhamilton, the N4 to Dublin, and the N17 to Galway. The N15 is the only National Primary route connecting Donegal directly to the rest of the Republic of Ireland and is also a key route linking south Donegal to Derry and Belfast.

These routes form part of the Trans-European Transport Network (TEN-T) – a selection of strategic transport corridors throughout the European Union (EU) that have been identified to play a key role in the mobility of goods and passengers through the EU.

10.2.1 Importance of the TEN-T Network

A lack of available transport modes increases reliance on the road network for private and commercial movements. The TEN-T network in County Donegal performs a variety of functions and is particularly important for:

- Businesses – supporting cross-border relations and key transport hubs, including Killybegs harbour, Ireland's largest fishing port;
- Commuters – providing access to employment and facilitating cross border trips;
- Leisure, including tourist trips – providing connectivity between County Donegal and the rest of the island of Ireland.

Whilst the TEN-T network in Donegal connects to TEN-T routes in Northern Ireland, vehicles travelling to/from the county often use alternative local/regional routes to travel between communities and jurisdictions due to the poor infrastructure characteristics on the TEN-T routes in Donegal.

The expected impact on road users during implementation will likely act as a constraint to some degree on the nature of improvement options considered.

10.2.2 Resilience

Maintenance and incidents on the existing road network within the TEN-T study areas can result in extensive diversions and delays due to poor network resilience²⁸. This is particularly prevalent in Letterkenny and its environs due to reliance on the N56 four-lane carriageway section between the Polestar roundabout and

²⁸ Resilience is the ability of the road network to adapt to, absorb and recover from adverse events, disruptions etc.

the Dry Arch roundabout. Maintenance and incidents on this road into Letterkenny affect traffic approaching Letterkenny from Derry, Strabane and Dublin, or Ballybofey/Stranorlar and Sligo or Galway.

In addition to the existing TEN-T National Primary routes, there are numerous regional roads within the study area. These include:

- R252 which forms a junction with the N15 in Ballybofey town centre in Section 1.
- R236 which begins north of Stranorlar at a priority junction with the N13 within the Section 1 study area and aligns in a westerly direction through the towns of Convoys and Raphoe until it creates a junction with the N14 in the Section 3 Study area. At this point, the R236 forms a staggered junction with the existing N14 and continues onto St. Johnston. The regional road then continues along the River Foyle to form a cross-border route into Derry;
- R265 which leads from the N14 in a north easterly direction, eventually meeting the R236 to St Johnston;
- R264 which leads from the N14 in a westerly direction through Ballindrait and onto Raphoe.

These regional roads are supplemented by local roads connecting communities along and across the N13, N14 and N15. Many of these regional roads take direct and straight alignments and accommodate many direct one-off residential and agricultural accesses.

10.2.3 Existing Traffic Conditions

10.2.3.1 Traffic Flows

Traffic Surveys were undertaken in 2017 to establish traffic volumes across the road network within the area of influence of the project. Surveys were undertaken over a two-week period. The average 7-day traffic volumes observed during the surveys are presented in **Figure 10-1**.

Traffic flows on the N15 / N13 within the vicinity of Ballybofey and Stranorlar range from approximately 7,000 daily average on the N15 to the south to approximately 10,100 AADT on the N13 to the north.

Average traffic levels over the survey period within the vicinity of Letterkenny are approximately 29,800 on the N56 4-Lane Road. AADTs recorded on the N13 dual carriageway to the east near Manorcunningham (TMU 01132) are 26,629.

Traffic flows on the N14 to the northwest of Lifford and Strabane, were in the order of 5,271 increasing to average volumes of 6,600 at the River Deele and subsequently to 17,070 at the Lifford Bridge.



Figure 10-1: Average Observed Traffic Volumes (2017)

10.2.3.2 Level of Service

The minimum acceptable Level of Service (LOS) is 'D', where a Level of Service 'A' describes free-flow operation and a Level of Service 'E' describes operating at design capacity. The LOS "D" is a parameter set out in TII standard GEO-03031 (formally TD9/12). The capacity in terms of AADT for LOS "D" for each type of road are summarised in **Table 10-1**.

Table 10-1: Type of Road and Capacity at a Level of Service "D"

Type of Road	Capacity (AADT) – Level of Service D
Type 3 Single Carriageway (6.0m)	5,000
Type 2 Single Carriageway (7.0m)	8,600
Type 1 Single Carriageway (7.3m)	11,600
Type 3 Dual (7.0m x 2)	14,000
Type 2 Dual (7.0m x 2)	20,000
Type 1 Dual (7.0m x 2 + 2.5m HS)	42,000

Table 10-2: Comparison of current AADT against Level of Service "D" below compares the existing AADT against the LOS D AADT based on the existing road cross section. The figures below are considered conservative as, for example, road widths for the N15 Ballybofey-Stranorlar and N14 Manorcunningham to Lifford are less than 7m in sections with no hard strips of verges, which would reduce the AADT required for a LOS D to below 8,600.

Table 10-2: Comparison of current AADT against Level of Service “D”

	TEN-T Priority Route Improvement Project, Donegal		
	Section 1 - N15 Ballybofey/ Stranorlar	Section 2 - N56/N13 Letterkenny to Manorcunningham	Section 3 - N14 Manorcunningham to Lifford
AADT Required for LOS D based on existing Cross Section	8,600	15,000/42,000*	5,000 to 8,600
Average Observed Daily Traffic Volumes in 2017	7,000 to 10,100	29,800/26,629	5,200 to 17,070

*15,000 assumed as LOS D N56 4-lane road, which is likely to have a higher LOS than Type 1 single carriageway, but less than a segregated Type 2 dual carriageway. 42,000 is LOS D for Type 1 dual carriageway on N13 section of the route.

The results show that all the Sections in the TEN-T Priority Route Improvement Project, Donegal currently experience traffic volumes in excess of the prescribed AADT to achieve a LOS D. The above figures are considered conservative as, for example, road widths for the N15 Ballybofey and N14 Manorcunningham to Lifford are less than 7m in sections with no hard strips of verges, which would reduce the AADT required for a LOS D to below 8600. This highlights the inadequacy of the existing road network which will be exacerbated as a result of any future traffic growth.

10.2.3.3 Road Safety

The Network Safety Ranking for the three sections for 2014-2016 are represented diagrammatically in **Figure 10-2: Network Safety Rankings for the N15, N56, N56/N13 and N14 TEN-T Corridors for 2014-2016.** below. The colours identify areas as follows:

- Red – Collision rate is twice above the expected rate for that type of road;
- Yellow - Collision rate is above the expected rate for that type of road;
- Green – Collision rate is below the expected rate for that type of road;
- Blue – Collision rate is twice below the expected rate for that type of road.



Figure 10-2: Network Safety Rankings for the N15, N56, N56/N13 and N14 TEN-T Corridors for 2014-2016.²⁹

The Network Safety Ranking shows a significant portion of each section of the TEN-T as having a collision rate above the expected rate (yellow) or twice above that rate (red), with no length of any section having a collision ranking lower than expected. It is evident, therefore, that intervention is required in order to improve the safety of the network at these three prioritised locations.

10.2.4 Future Conditions on the Road Network

10.2.4.1 Flows

As part of the Phase 2 – Option Selection traffic modelling, traffic growth predictions have been determined by applying traffic growth forecasts, as set out in TII's *Project Appraisal Guidelines for National Roads Unit 5.3 - Travel Demand Projections*, (PE-PAG-02017) published in October 2016. These growth forecasts have been applied to each option assessed within the SATURN model to determine the predicted AADTs. The growth predictions were also applied to a "Do-Minimum" scenario which provides a prediction of AADTs on the existing road network.

²⁹ Source: <https://data.gov.ie/dataset/collision-rates-2014-to-2016>

Table 10-3: Predicted AADTs on the existing road network within each section

Existing Road Network Section		AADT Required for LOS D based on existing Cross Section	2028 Predicted Traffic Volumes	2043 Predicted Traffic Volumes
Section 1:	N13 North of Stranorlar	8,600	10,500	10,500
	N15 Ballybofey/Stranorlar town centre		12,200	13,000
	N15 South of Ballybofey		8,400	9,100
Section 2:	N56 4-Lane Road	15,000*	33,400	35,400
	N13 Lurgeybrack	15,000	16,800	16,500
	N13 dual carriageway	42,000	25,700	26,600
Section 3:	N14 Manorcunningham	5,000-8,600	11,000	11,300
	N14 at Lifford		12,600	13,600
	*N14 Lifford Bridge		17,800	18,000

*The predicted traffic figures do not incorporate the influences of the A5 Western Transport Corridor.

The predicted traffic growth across each section will result in a decreasing in operational efficiency, journey time reliability and journey times. As such, provision of adequate road infrastructure in County Donegal will ensure that the transport network does not act as a barrier, or constraint, to growth and will be key in providing an opportunity for the economic development of the County, and wider, North West region to be realised.

10.2.4.2 Level of Service

Increased traffic volumes will have a negative effect on the LOS for a given road cross-section. Much of the existing priority sections are already operating at a LOS worse than D. Without intervention, these problems are likely to deteriorate further into the future. This highlights the inadequacy of the existing road network which will be exacerbated as a result of any future traffic growth and may act as a constraint to growth.

10.2.4.3 Road Safety

Much of the priority sections are already operating with collision rates above that expected for the type of road. Without intervention, the number of collisions is likely to increase into the future and may act as a constraint to growth.

10.2.4.4 Proposed Changes to Road Network

The A5 in Northern Ireland is an existing road corridor leading from Derry in the north west through County Tyrone and connecting to the N2 in Monaghan. The A5/N2 forms the key route from Derry/Donegal to Dublin. The A5 aligns to the west of Strabane in Co. Tyrone. This is located to the east of Lifford and currently connected with a single carriageway bridge across the River Foyle. This connection links the roundabout formed by the N14/N15 at Lifford, see **Figure 10-3**.

Investment has been secured for an upgraded A5, called the A5 Western Transport Corridor (WTC). The A5 WTC will replace the current A5 link that exists on the west side of Strabane and is shown in **Figure 10-3**. The new A5 WTC will be a high standard, dual carriageway road connecting Derry to the Tyrone/Monaghan border at the N2, replacing the existing A5 route and improving connectivity from the

North West to Dublin. The decision to grant planning for A5 WTC is currently subject to a legal challenge (as of November 2018).

A new link connecting the N14/N15 to the A5 WTC has gone through the statutory processes and a final position for the link has been fixed. The new N14/N15 to A5 Link and the position of the new A5 WTC are outlined in red and black respectively in **Figure 10-3** below.

Any proposed realignment of the N14 must consider the fixed location of the A5 link and provide ease of access to the cross-border link, while also independently providing for the needs of the National Road network in the Republic of Ireland, providing connectivity to the N15 and to local routes in the vicinity of Lifford. Any improvements or changes made to the transport network in Donegal (to the N14 or N15) must be feasible independently and shall not rely on the implementation of the A5 Link to meet the TEN-T Priority Route Improvement project, Donegal objectives.

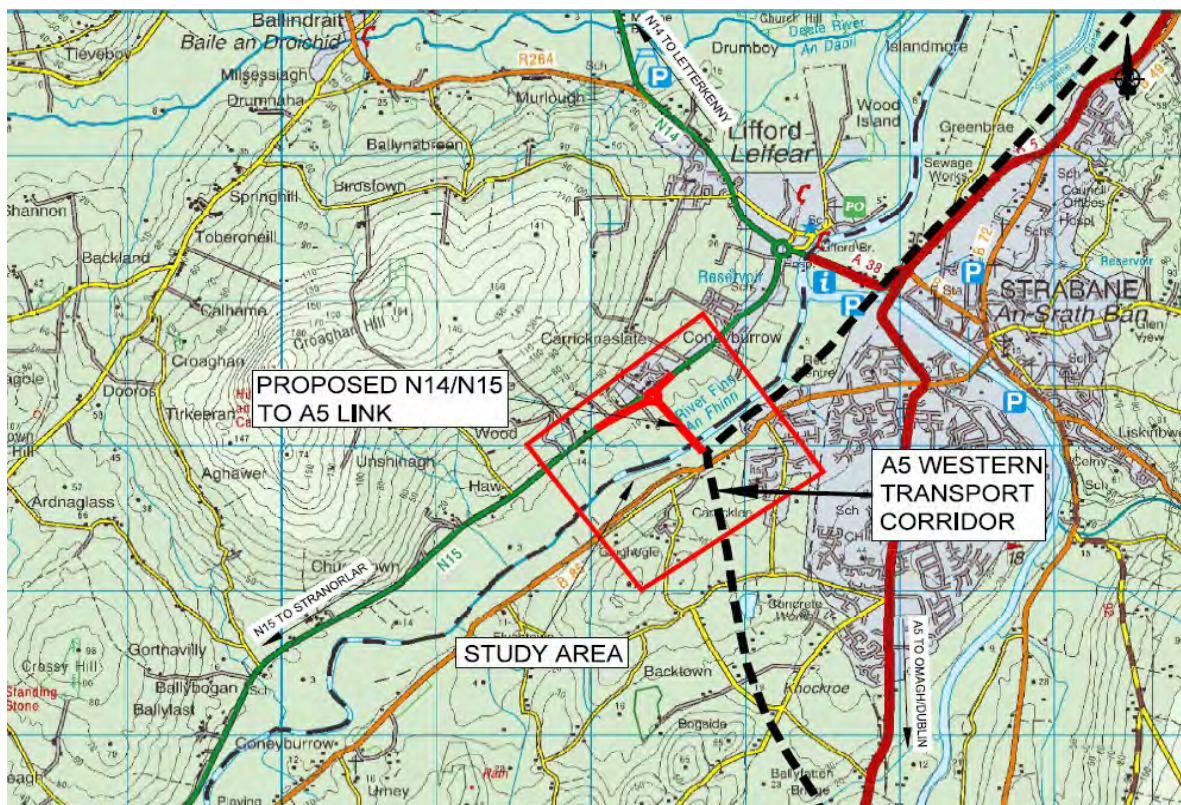


Figure 10-3: Location of Proposed N14/N15 to A5 Link

10.2.5 Buildings and Structures

Identified buildings and structures collated from the Geodirectory data are mapped in **Figure 5-3**. Significant buildings/structures across the study area include:

- Existing N15 bridge that crosses the River Finn connecting Ballybofey and Stranorlar;
- Existing N56 bridge which currently crosses the River Swilly in Letterkenny and accommodates a four-lane carriageway link to the rest of the National Primary road network;
- Existing bridges on the N14 over the River Deelee and Swilly Burn;
- Culverts across the study area which allow the N56/N13, N14 and N15 to cross existing watercourses;
- The town centres of Ballybofey/Stranorlar, Letterkenny and Lifford all have dense development which includes larger structures and community facilities such as industrial units, cinemas, health centres/hospitals, schools, sportsgrounds and a greyhound racing stadium; and

- Section 3 study area has more agricultural buildings of note, one of which is an abattoir (Edenmore Farm Meats) which is situated on the north of Lifford.

Housing in the study area is largely centred around local villages with ribbon development along the local roads and national roads evident. Section 12 addresses buildings and structures of significant architectural or cultural significance.

10.2.6 Utilities

10.2.6.1 Section 1

The Section 1 study area hosts two 110kV electricity transmission overhead lines (OHL), one on either side of the N15 along with one 110kV EirGrid substation west of the Drumkeen area proximal to the study area. A 38kV electricity distribution OHL transects the study area boundary in a south-west-to-north-east direction overlapping with Ballybofey, Stranorlar and the N15 in several places. This line continues onto the Convoy area where it also connects to Letterkenny, within the Section 2 study area. The Ballybofey area hosts the 38kV substation associated with this 38kV line. The area is serviced for the phone and broadband networks by Eir which operates a DSL exchange within the study area at Ballybofey.

10.2.6.2 Section 2

Section 2 hosts both a 110kV OHL and a 38kV OHL within the study area boundary along with two 110kV substations and three 38kV sub-stations to service these lines situated within the environs of Letterkenny town. Existing utilities infrastructure in the study area also includes an Eir DSL exchange, the Eir broadband backbone and the broadband interconnector for Letterkenny to Derry.

10.2.6.3 Section 3

A search for utilities within the study area was conducted by issuing an inquiry via Before You Dig and individual inquiries to service providers. Additionally, a consultation letter and leaflet was issued to numerous stakeholders, including utility providers. Following this, the below utilities have been identified as being present within the study area:

- Phone network – Eircom including an Eircom DSL Exchange;
- Electricity network – ESB have 38Kv and 10kv overhead lines which feed into a substation in Rossgier; and
- Mobile phone apparatus: Three Ireland – mast present at Croaghan Hill, near Lifford at E:231871 N:398551.

10.2.7 Rail Network

There is a dismantled rail line within the study area. No live railway network exists in Donegal.

10.2.8 Water and Wastewater Treatment

10.2.8.1 Section 1

The study area is located in the Finn/ Derg/ Foyle Water Management Unit (WMU) Action Plan area. Lough Mourne is the public water supply source for Ballybofey-Stranorlar and its environs. Lough Mourne is located approximately 7.6km south of Ballybofey town, immediately east of the N15. The N15 is located adjacent to the Burn Daurnett, a tributary of the River Finn.

The primary waste water treatment plant (WWTP) located with the study area is in Stranorlar just south of the N15 bridge crossing of the River Finn. The Ballybofey-Stranorlar WWTP was assigned as a “priority area” requiring improvements in the EPA Urban Waste Water Treatment in 2017 report³⁰.

10.2.8.2 Section 2

The study area is located in the Swilly Water Management Unit (WMU); this encompasses Letterkenny, Rashedoge, Manorcunningham and Newtowncunningham. The WMU is 262km² and is located in the North Western IRBD (NWIRBD). Lough Gartan is the public water supply source for Letterkenny and its environs. Lough Gartan is located approximately 13km west of Letterkenny town.

The primary WWTP for Letterkenny is located at Magheranan north of the River Swilly. The WWTP was upgraded in 2012 and Irish Water and Donegal County Council commenced work on Phase 3 of the Letterkenny sewerage scheme in September 2018.

10.2.8.3 Section 3

Similar to Section 1, The study area is located in the Finn/ Derg/ Foyle Water Management Unit (WMU) Action Plan area. There are a number of water mains that exist within the constraints study area. These generally run adjacent to the road network.

There is one WWTP within the study area which is situated on the north-eastern boundary of Lifford town, approximately 0.4km upstream of Lifford Bridge. This facility is within the NWIRBD area. The WWTP was assigned as a “priority area” requiring improvements in the EPA Urban Waste Water Treatment in 2017 report. A second WWTP is also located just outside the study area in the town of Raphoe and was also assigned as a “priority area” requiring improvements in the EPA Urban Waste Water Treatment in 2017 report.

There is one site, Cassidy Brothers Topmix Ltd., Magheraboy, Letterkenny which is within the overlapping boundaries of both Sections 2 and 3. This facility is listed as Laboratory Number Lwat2 on the register of premises in County Donegal Licenced under Section 4 of the Water Pollution Act of 1977/90. Consideration of this facility along with the other water/wastewater constraints when assessing for the option selection phase of the project.

10.2.9 Waste Management

There will be a requirement to handle, store, remove and dispose of waste material in accordance with the relevant waste management legislation. Waste material will be generated from two sources:

- Wastes resulting from general construction on-site; i.e. waste fuels, oils from machinery, cement and concrete from required masonry works and wastewater from sanitary facilities.
- Excess excavated materials generated from general site clearance and earthwork excavations, including, where necessary, bridge abutments, as well as construction and demolition waste from proposed bridge works and other construction activities.

The nature of the wastes generated from site clearance and earthworks will generally be vegetation, topsoil, subsoil and stone. Where this material is to be stored on-site and reused it is important that it is not stored close to any watercourses or lakes. Any excavated material which is deemed unacceptable for re-use in the works will have to be removed off-site for disposal or for processing and as such may be required to be removed or disposed of under a waste permit or certificate of registration from the local authority.

³⁰ Urban Waste Water Treatment in 2017 (EPA, 2018):
<http://www.epa.ie/pubs/reports/water/wastewater/Final%20report%20for%20website.pdf>

10.2.9.1 Section 1

There is one recycling centre located in Stranorlar, operated by Bryson recycling, which accepts a range of recyclable materials free of charge, while charges are applied to other household waste. This facility is located on Railway Road in Stranorlar, a location in close proximity to the town centre.

10.2.9.2 Section 2

Waste management facilities in Section 2 are based in Letterkenny and include:

- WERS waste is located near the N56 four-lane road at Section 2, who offer commercial and domestic waste collection; and
- Letterkenny Recycling Centre which is operated by Bryson Recycling and located on the north side of Letterkenny and outside of the study area.

10.2.9.3 Section 3:

One waste management facility was identified within the study area of Section 3. This is located in the area of Pluck, the townland on the north western end of the study area (D&M Environmental Services). This facility handles recyclable and food waste, sludge, hazardous waste and glass. The company also offers septic tank emptying.

10.2.10 EPA licenced Facilities

10.2.10.1 Section 1

There is one Integrated Pollution Control (IPC) licenced facility in Section 1. This is IPC PO318 attached to McCool's Sawmills in Stranorlar.

10.2.10.2 Section 2

There are no active EPA licenced facilities within the Section 2 study area. The former Unifi Texture Yarns Europe Limited facility in Ballyraine was licenced by the EPA (surrendered Industrial Emission licence P0235).

10.2.10.3 Section 3

There are two facilities within the Section 3 study area that are subject to EPA licences. One facility is a piggery licensed under Industrial Emissions Licence P0968 for activity class 6.2, intensive agriculture. The piggery is located in the townland of Coolaghy, near Raphoe. The second site is located in the townland of Ballindrait, Lifford and is currently subject of a licence application with the EPA (Industrial Emissions Licence P1040) seeking approval for activity class 7.8, food and drink. It

10.2.11 Telecommunications

Progress had been achieved through National and EU co-funded projects in addressing the broadband core network and international connectivity deficits, through the implementation of the Metropolitan Area Networks Schemes in towns such as Ballybofey/Stranorlar and Letterkenny.

The County Donegal Development Plan 2018-2024 includes two principle objectives related to telecommunications:

TC-O-1: To facilitate the development and delivery of a sustainable telecommunications network across the County through a range of telecommunication systems, developed with due regard to natural and built heritage and to environmental considerations,"

and

TC-O-2: “To support and facilitate the deployment of the National Broadband Plan the National subvention plan to deliver High Speed Broadband to every rural household outside the commercially served areas as defined on the National Broadband Plan Map and similar projects, subject to the proper planning and sustainable development of the area”.

The completion of the ‘Project Kelvin’ initiative has established international connectivity focused on the Letterkenny-Derry Gateway. This technology provides direct access to a trans-Atlantic submarine fibre optic cable that extends to land based fibre optic cable networks with connectivity throughout Canada, USA, UK and mainland Europe. The Letterkenny & Environs Development Plan 2009-2015³¹ outlines in Policy PI3: that the Council will continue to work with the telecommunications industry to develop and extend the broadband infrastructure servicing Letterkenny to ensure the availability of up-to-date facilities.

Figure 10-4 illustrates the telecommunication and electrical network structure as sourced from Map 5.3.1 from the County Donegal Development Plan 2018-2024.

10.3 Material Assets: Non-agricultural Identified Constraints

The primary constraints within the study area are the utilities and existing transport infrastructure. Early consideration of how options can integrate with the existing material assets in the area is essential and will require engagement with service providers to ensure that utilities can be avoided and/ or modified to mitigate impacts.

³¹ Letterkenny & Environs Development Plan 2009-2015

<http://www.donegalcoco.ie/media/donegalcountyc/planning/pdfs/viewdevelopmentplans/developmentplanscountyandtownareas/letterkenny/lkennyenvironsdevplan2009-2015asvaried/Volume1CoreCocument.pdf>

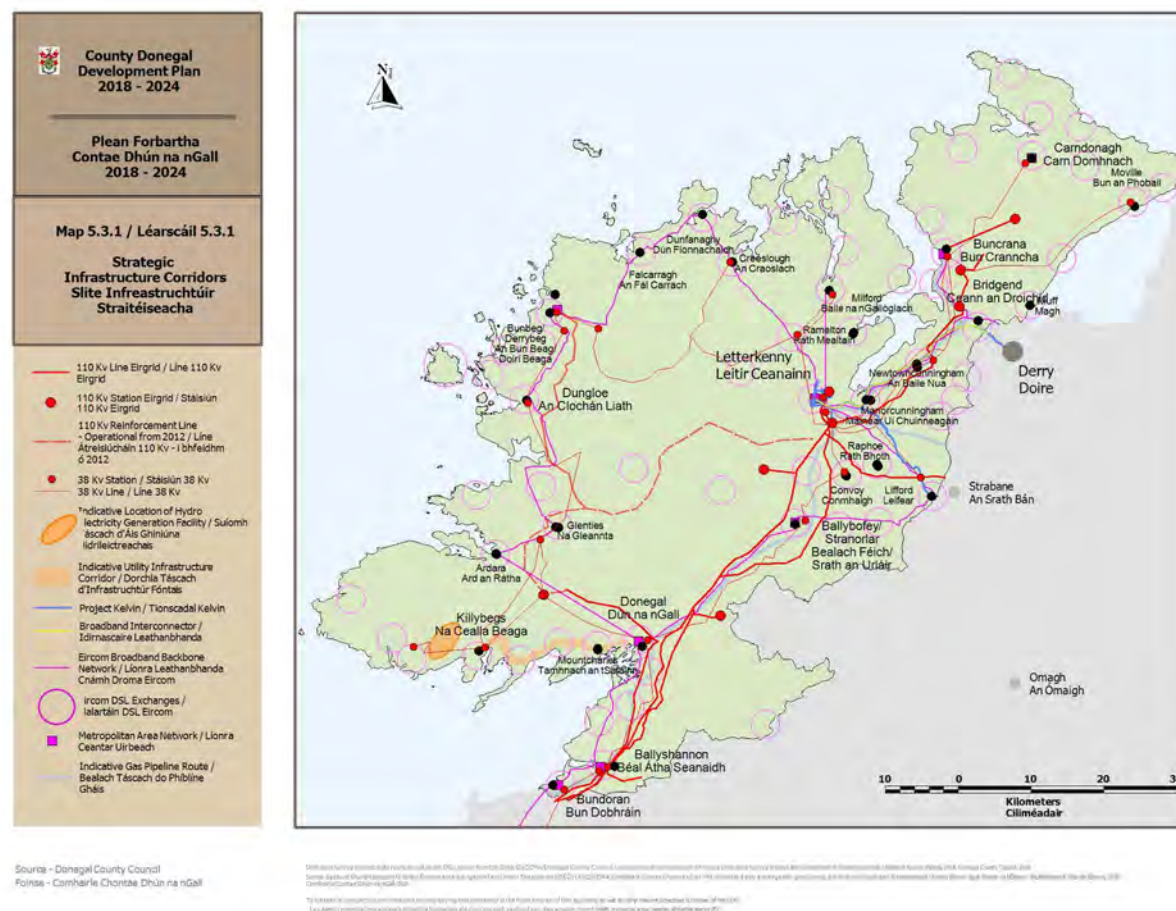


Figure 10-4: Telecommunications and Electrical Networks in Donegal County³²

³² Source: County Donegal Development Plan 2018-2024

11 MATERIAL ASSETS: AGRICULTURE

11.1 Introduction

The following information was considered during the assessment of agricultural constraints in the three study areas;

- Census of Agriculture, 2010;
- CORINE (Co-Ordinated Information on the Environment) 2012;
- 'Google Earth' 2011 to 2016,
- Property Registration Authority of Ireland website; and
- Teagasc EPA Soil & Subsoil Mapping, 2006.

11.2 Existing Environment

The Census of Agriculture (2010) figures recorded a total of 9,240 farms in County Donegal. The total area of farmed land excluding commonage was approximately 257,841 hectares, with an average farm size of approximately 28 hectares. Approximately 47% of the county is in agricultural use. In 2016, 68.4% of the specialist sheep farms were located in the Border, Midland and Western (BMW) region, the average sheep flock size was 118 sheep. There was 37.4% of Ireland's cattle population location in the BMW region with an average herd size of 47 cattle³³.

Table 11-1: Farming Practices in Donegal³⁴

Enterprise Type	Number of Farms	Percentage of Total (%)
Specialist tillage	141	1.52%
Specialist dairying	180	1.95%
Specialist beef production	3,462	37.5%
Specialist sheep	3,393	36.7%
Mixed grazing livestock	1,163	12.59%
Mixed crops and livestock	140	1.5%
Mixed field crops	704	7.6%
Other	57	0.6%
Total	9,240	100

The CORINE (Co-Ordinated Information on the Environment) land cover mapping was generated and is maintained by the European Community (EC). The impetus for this mapping was to provide a comparable and standardised data source of geo-spatial information across the European environment, with the most recent iteration of the land use and habitat classification data series made available in 2012 (Referred to in this report as CORINE 2012). **Figure 7-1** illustrates the CORINE (2012) land cover distributions across the study areas. These areas correlated well with the aerial photography and with the available soil mapping.

³³ <http://www.cso.ie/en/releasesandpublications/ep/p-fss/farmstructuresurvey2013/>

³⁴ Data sourced from the 2010 Census of Agriculture

The identification of these possible farming practices was undertaken by reviewing aerial photography and recognising the following features;

- Dairy paddock systems and internal roadways. While these features are not exclusively associated with dairy enterprises, they are the norm;
- Circular collecting yards were a feature with older dairy facilities but are becoming less common place with more modern systems;
- Horse facilities such as covered walkers, semi-circular gallops, sand rings and jumps are all features associated with horse farms. Gallops are indicative of racing stables; and
- Pig and poultry housing are quite distinctive when viewed from aerial photography. Differentiating between the two enterprises can be more challenging but features such as free-range paddocks, slurry storage facilities and building type can all be aids to differentiate between these enterprises;

The aerial photography used was 'Google Earth' and the imagery date varied from 2011 in Section 1 to 2016 in Section 2 and Section 3.

At this stage of the project there are no details on the extent of land ownership and therefore the size of these farms is not known. However, there is an understanding of the likely farm size from the field patterns observed from the aerial photography and from information available on the Property Registration Authority web site which, together were combined to give a greater understanding, from a high level, of agricultural practices and the intensity at which they may be farmed. Further consideration of these features will be undertaken during the Phase 2 Option Selection process.

Consideration was also taken of the soils within the three study areas by reviewing the Teagasc EPA Soil & Subsoil Mapping, 2006 (refer to **Figure 7-2** and **Figure 7-3** respectively). From this mapping the following soils were identified within the study areas;

- 1) Alluviums;
- 2) Deep well drained mineral;
- 3) Shallow well drained mineral;
- 4) Deep poorly drained mineral;
- 5) Peats;
- 6) Poorly drained mineral soils with peaty topsoil; and
- 7) Miscellaneous.

Soils numbered 1 to 3 above would be considered the better soils in the region and coincide well with tillage and good grassland seen in the aerial photography. Furthermore, soils numbered 4 to 6 would be considered the poorer soils, with impaired drainage, and coincide with the smaller field patterns, forestry and poor grassland/scrub seen in the CORINE 2012 mapping and aerial photography. Soils number 7 relate primarily to the urban areas within the study areas.

11.3 Assessment

The development of any new road in Ireland has the potential to impact agriculture as this is the most common land use. However, while there is a level of certainty that agriculture will be affected, the significance of that effect will be a function of the following factors.

- Area of lands acquired (temporary and permanent) for the construction and operation;
- Area and orientation of lands severed;
- Farm enterprises; and
- Intensity of farming practices; and
- Impacts on farm/road boundaries and landscape connectivity through the removal of hedgerows and associated vegetation.

At this early stage of the project (Stage 1 of Phase 2) the area of lands required is not known. Furthermore, the direction, length and orientation of any of the proposed options in relation to land parcels are also not known. Therefore, only a high-level examination of agriculture practices was undertaken in the three study areas to identify aspects of agriculture that could represent a constraint to the development of a new road within these areas.

The following are the farming practices considered in this constraints study and the unique aspects of these practices that can be significantly impacted by a road scheme:

- Dairy Farming – This is one of the more profitable farming enterprises in this country. These farms require stock to be moved to and from the place of milking to the grazing area twice daily. Due to this frequency of movement difficulties, such as accessing grazing areas that have been severed by a road, will greatly increase the significance of impact on these holdings. Where possible dairy farms, particularly the paddocks used by the dairy herd for daily grazing, should be avoided. Avoidance of the areas used for silage, hay or the areas used for grazing replacement stock, while desirable, would have a much lower significance if affected by linear developments.
- Horse Facilities – Horses, particularly thoroughbred horses are of a more nervous disposition than other stock types and are prone to stress caused by irregular noise and moving vehicles, which may arise from the close proximity of a new scheme to the grazing area. Land take and severance of land parcels may result in fields of an irregular shape (e.g. triangular shaped fields with sharp/ narrow corners). These fields may be less suitable for grazing with equine stock due to an increased risk of injury.
- Poultry/ Pig Units – These are intensive agricultural facilities and while the foot print occupied by these facilities may be small, they can be particularly sensitive to disturbance which is reflected in reduced productivity. Furthermore, and of particular note, these facilities have very strict disease control protocols and access to these facilities for site investigations should be by invite only.
- Drystock – Enterprises such as beef and sheep are generally less affected than dairy farms. Stock on these farms is not moved from field to field as frequently as on a dairy farm. Although there may be an impact, the farming practices on these farms may be adapted to mitigate the overall impact and therefore these farms are better able to absorb potential impacts from new linear development.
- Tillage – This farm enterprise is generally less severely affected than livestock farms. Machinery can easily move from one land parcel to another although there are additional costs involved especially where the remaining areas are of a less regular shape. The size of the remaining areas may be considered too small or awkward to operate large machinery and therefore may require a change in enterprise type.
- Forestry – Forestry within the study areas is mostly associated with the state organisation Coillte. However, there is some private forestry in the area. Regardless of the ownership severance of commercial forestry blocks can cause a number of effects. The severance may isolate blocks of forestry that are too small or too triangulated to allow for harvesting with processor and forwarder. Furthermore, removing the outer trees from a forestry block or exposing inner trees can considerably increase the effects of wind blow.
- Farm Buildings – Removal or severance of farm buildings may significantly impact on the day-to-day management of a farm and in the case of dairy farms may make the continuation of the enterprise unviable.

11.4 Material Assets: Agriculture Identified Constraints

A brief description of the agricultural practices, number of farms, soils and possible constraining enterprises are shown in **Figure 11-1**. Based on this high-level review, a considerable number of forestry blocks were identified within the Section 1 study area but no other agricultural constraints of note. In the Section 2 study area there were no constraining agricultural or forestry features identified. A number of possible dairy farms and other intensive enterprises were identified in the Section 3 study area and also a number of forestry blocks.



Table 11-2: Agricultural Constraints Identified in the Study Area

Study Area	Description	Area (ha)	Approx. No. of Farms	Soils Good (%)	Soils Poor (%)	Possible constraining enterprises ³⁵
1	In the Section 1 study area the soil type and topography limit the type of agriculture and little or no tillage occurs in this area. The farms appear to be primarily drystock, with some forestry occurring on the more elevated areas and in particular in the south west of the study area. The River Finn runs through the centre of the study area and the towns of Ballybofey and Stranorlar are situated in the centre of the study area. There is considerable single house development in the surrounding areas. Field patterns and soil types south of the River Finn are suggestive of small farms of low intensity and there are large blocks of commercial forestry in this area. The predicted small farm size was supported by a review of folio size on the PRAI web site. Careful review of the aerial photography would also indicate that many fields in this area have limited grass growth, possibly influenced by impeded drainage. This is further supported by CORINE and by the soil mapping of the area. North of the River Finn grass growth appears to be better, except in elevated areas. There are a number of extensive blocks of forestry north of the river. There were no obvious dairy farms, pig farms or horse facilities identified from the review of aerial photography. The occurrence of these types of farms will be considered in more detail during the option selection process. Forestry is the most prevalent agricultural landuse that may constrain option selection.	5,233	133	27	70	17 Forestry blocks

³⁵ The location of these possible forestry blocks, dairy farms and other facilities are shown on **Figure 11.1**.

Study Area	Description	Area (ha)	Approx. No. of Farms	Soils Good (%)	Soils Poor (%)	Possible constraining enterprises ³⁵
2	The Section 2 study area is the most northerly and is within the environs of the town of Letterkenny, which is situated to the north west of the study area and there is little or no farming occurring in this area. The lands to the south and east of Letterkenny town are influenced by the River Swilly and Lough Swilly and the area is dominated with alluvial soils. Reviewing the vegetative cover in the aerial photography would suggest that some fields may be subject to flooding or elevated groundwater limiting grass growth. The lands rise to the west of the study area with some scrub and bog land apparent. The lands further south of this study area are of better quality with larger field patterns and more intensively farmed. The average farm sizes in the southern section of this study area certainly appear to be bigger than those in the north but are still likely to be smaller than the county average. No dairy or other intensive farming types were identified in this review. Furthermore, no forestry blocks were identified in this study area. Agriculture is unlikely to be a constraining factor in this study area.	1,365	50	49	38	None
3	This is the largest study area and is situated on either side of the N14 from Lifford in the south to Manorcunningham in the north. Much of the land in Section 3, particularly in the southern part, is of good quality with a strong tradition of tillage and potato production. There are some elevated lands in the central part of the study area, north of the R236 with commercial forestry on the western side. Field patterns, soil type and farm size would suggest lower intensity farming in this area. This is further supported by the aerial photography. No dairy farm or pig facilities were identified in this north central area. There appears to be a considerable number of dairy farms and two pig facilities south of the R236. The farm size in this area also appears to be greater than the county average and areas of tillage are common.	7,202	258	55	43	12 Dairy Farms 2 Pig Facilities 1 Horse Facility 10 Forestry blocks

Study Area	Description	Area (ha)	Approx. No. of Farms	Soils Good (%)	Soils Poor (%)	Possible constraining enterprises ³⁵
	Soils in the whole area are a mix of well and poorly drained mineral soils. However, in the southern part of the study area there are large areas of alluvial soils associated with the rivers crossing the area. There are also a number of dairy farms north of the previously discussed central area and possibly one-horse facility. This horse facility may be riding stables. There is no evidence, from the aerial photography reviewed, of an outdoor 'gallops' but there does appear to be a covered 'walker' and an indoor facility. Two possible pig units were identified just south east of Raphoe. These two farms are close together and may be linked through family/business associations. One of the pig units is an EPA licenced facility (P0968). The dairy farms, pig units and horse facilities, together with the forestry blocks all represent potential constraints, and will all require further consideration during the option selection process.					

12 CULTURAL HERITAGE

12.1 Introduction

Cultural Heritage can be divided loosely into the archaeological resource covering sites and monuments from the prehistoric period to the 18th century, and the architectural resource, encompassing standing structures and sites of cultural importance of a post-18th century date. For the purposes of this report, the term 'Cultural Heritage' encompasses archaeological sites, architectural heritage, folklore and tradition.

The following sources are the basis for archaeological, architectural and historical research for the study areas. Each source was examined and a list of sites and areas of archaeological, architectural and cultural heritage potential compiled:

- Record of Monuments and Places (RMP), County Donegal;
- Sites and Monuments Record (SMR), County Donegal;
- National Monuments (in State Care), County Donegal;
- Preservation Orders, County Donegal;
- Register of Historic Monuments, County Donegal;
- National Inventory of Architectural Heritage (NIAH);
- *County Donegal Development Plan 2012–2018 and 2018-2024*;
- Database of Irish Excavation Reports;
- National Museum of Ireland Topographical Finds Database;
- Ordnance Survey (OS) maps, including the 1st editions of the 6-inch and 25-inch maps surveyed during the 19th and early 20th centuries;
- The Place-names Branch (Department of Culture, Heritage and the Gaeltacht); and
- Various published documentary sources relevant to the Study Areas.

This study has been compiled based on the *Guidelines for the Assessment of Archaeological and Architectural Heritage Impacts of National Road Schemes* as published (2005) by Transport Infrastructure Ireland (TII), formerly the National Roads Authority. The objective of the constraints study is to identify all known archaeological monuments, protected (architectural) structures and other features of cultural heritage significance within the defined study areas including the legal status and local importance, if any, of these features. The identification of these constraints is based on a desk-top study of the recorded archaeological, architectural and cultural heritage within the study area which was undertaken to inform the Design Team of all relevant constraints, including sites vulnerable to impact.

The principal source reviewed for the assessment of the known archaeological resource was the online form of the Archaeological Survey of Ireland (ASI) 'Historic Environment Viewer' (www.archaeology.ie). Published inventory descriptions are presented in **Appendix 3**.

The principal sources for the identification of the architectural heritage resource within the study area were the Record of Protected Structures (RPS), as published in the *County Donegal Development Plan 2018-2024*, and the National Inventory of Architectural Heritage (NIAH). The RPS and NIAH structures within the study areas are presented in table formats in **Appendix 3**.

A number of other sources were consulted in order to collate a preliminary assessment for the potential presence of unrecorded archaeological sites within the study areas. This included various literary sources in order to assess the written archaeological, historical and architectural record of the study areas.

A synopsis of the results of the Database of Irish Excavation Reports (www.excavations.ie) search on site investigations within each study area are presented in **Appendix 3**.

The archive in National Museum of Ireland (NMI), Kildare Street, Dublin was inspected on the 20th October and the 8th November 2017 and the information on the archaeological artefacts discovered within townlands in the study areas are presented in table formats within **Appendix 3**.

The potential also exists for the presence of unrecorded, sub-surface archaeological remains within areas where no sites have been recorded.

12.2 National Monuments

There is one National Monument in state ownership/guardianship within the study area and this comprises a standing stone (DG054-038---- / National Monument No. 453) located in Pluck townland within the Section 2 study area.

12.3 Existing Environment – Archaeological Heritage

The following sections present details on the locations of the protected archaeological heritage resource within the three defined study areas as well as general overviews of their development during the prehistoric and historic periods.

12.3.1 Section 1

The Historic Environment Viewer records 41 archaeological RMP sites within the Section 1 study area, 2 of which are classified as redundant records and are non-archaeological in origin³⁶. The ASI also records that 16 of the 41 recorded sites within this study area no longer display any visible surface traces. It is likely that the surface elements of many of these sites were removed during land improvement works undertaken during the 19th and 20th centuries but in all instances the potential exists for the survival of sub-surface archaeological features and artefacts.

The presence of one unclassified megalithic tomb within the study area demonstrates that this area has been settled since the Neolithic period. There are no visible surface remains of the example in Knockfair townland (DG078-044----).

Archaeological Artefacts listed from the National Museum of Ireland Topographical Files contain entries for a wide range of stray archaeological artefacts from 8 separate findspots within the study area. These comprise an assortment of early prehistoric lithic tools and occasional Bronze Age artefacts which further attest to the widespread settlement of the area during prehistory. Many of the artefacts were sourced from private collections with no record of context other than townland name. **Appendix 3** presents the relevant entries and recorded information on the environment from where the artefacts were discovered.

The excavations database for the Section 1 study area refers to a total of 10 archaeological site excavations having been previously undertaken, details of which are presented in **Appendix 3**.

12.3.2 Section 2

The Historic Environment Viewer records 22 recorded archaeological sites within the Section 2 study area and are listed in **Appendix 3**.

Of the 22 recorded archaeological sites within the study area the ASI notes that visible remains of only 3 examples, all standing stones, were evident when inspected, although there are a further 4 sites that

³⁶ <http://webgis.archaeology.ie/historicenvironment/>

presently have no associated descriptive entry on the database records. One of the recorded archaeological sites includes that of Pluck standing stone, National Monument No. 453. The majority of the levelled sites were identified during examinations of the 19th century OS maps and this may attest to the impact of more intensive agricultural practices and land improvement works during the 20th century. There is the potential for the survival of sub-surface archaeological features, deposits and artefacts at all of the locations of these recorded sites. The potential also exists for the presence of unrecorded, sub-surface archaeological remains within areas where no sites have been recorded.

Archaeological Artefacts listed from the National Museum of Ireland Topographical Files for Section 2 contain one entry for a stone axe-head on a farmstead within the townland of Scribly, details of which are provided in **Appendix 3**.

The excavations database for the Section 2 study area refers to a total of 8 archaeological site excavations having been previously undertaken, details of which are presented in **Appendix 3**.

12.3.3 Section 3

The Historic Environment Viewer records 74 recorded archaeological sites within the Section 3 study area, details of which are provided in **Appendix 3**. Of the 74 recorded archaeological sites within the study area the ASI notes that visible remains of 31 examples were not evident when their recorded locations were inspected. The majority of the levelled sites were identified during examinations of the 19th century OS maps and the absence of extant remains may attest to the impact of extensive land improvement works during the 19th and 20th centuries. There is the potential for the survival of sub-surface archaeological features, deposits and artefacts at all of the locations of these recorded sites. The potential also exists for the presence of unrecorded, sub-surface archaeological remains within areas where no sites have been recorded.

Archaeological Artefacts listed from the National Museum of Ireland Topographical Files contain entries for a wide range of stray archaeological artefacts from 23 separate findspots within the study area. The National Museum of Ireland topographical files contain entries for a wide range of stray archaeological finds within the study area and these comprise an assortment of early prehistoric lithic tools and occasional Bronze Age artefacts which add further evidence suggesting that the area was widely settled during prehistory. Many of the artefacts were sourced from private collections with no record of context other than townland name. **Appendix 3** provides details on the artefacts found in the Section 3 study area.

12.4 Existing Environment –Architectural Heritage

12.4.1 Section 1

There are 66 recorded NIAH structures located within the study area and 18 of these are also listed in the Record of Protected Structures per *County Donegal Development Plan 2018-2024*. Details are provided in **Appendix 3**.

12.4.2 Section 2

There are 21 recorded NIAH structures located within the study area and none of these are included in the Record of Protected Structures per *County Donegal Development Plan 2018-2024*. Details are provided in **Appendix 3**.

12.4.3 Section 3

There are 86 recorded NIAH structures located within the study area and 10 of these are also included in the Record of Protected Structures per *County Donegal Development Plan 2018-2024*. Details are provided in **Appendix 3**.

12.5 Cultural Heritage Identified Constraints

A summary of archaeological and architectural heritage constraints are illustrated in **Figure 12-1** and **Figure 12-2**.

The combined study area for Sections 1, 2 and 3, cumulatively contain a total of 137 recorded archaeological sites that range in date from the Neolithic onwards, indicating that the lands in the area have been continuously settled at least during the past six thousand years. There is one National Monument in state ownership/guardianship within the study area and this comprises a standing stone (DG054-038---- / National Monument No. 453) located in Pluck townland within the Section 2 study area. The records of the ASI indicate that c. 45% of these recorded archaeological sites no longer display any above ground remains but, as previously noted, the potential for the presence of sub-surface archaeological features and artefacts exists at the recorded locations of these sites.

The potential for the presence of unrecorded archaeological sites within the area is also attested to by a number of the sources consulted as part of this study. The NMI topographical files record the discovery of numerous archaeological artefacts within townlands throughout the study areas while a range of previously unrecorded archaeological sites have also been uncovered during the course of site investigations (archaeological excavations) undertaken in the area in recent decades. The translations of the Gaelic origins of a number of the townland names within the study area also indicate the potential presence of unrecorded archaeological sites.

The combined study area around the study areas for Sections 1, 2 and 3, cumulatively contains a total of 173 buildings and structures that are listed in the NIAH and 28 of these have been designated as Protected Structures in the *Donegal County Development Plan 2018-2024*. These structures form an extant built record of the development of the area in recent centuries and include a wide range of features such as domestic houses, agricultural structures, boundary features, hospitals, churches, mills, bridges and railway features. Whilst inclusion in the NIAH does not afford statutory protection to architectural heritage structures it is a policy of Donegal County Council (BH-P-4) to ensure the repair, reuse and appropriate refurbishment of vernacular/historic buildings, which make a positive contribution to the built heritage of the area including those listed in the NIAH.

Any option corridor evaluation process and subsequent environmental impact assessment, which will involve a desk study and field inspection, will ensure that known and standing monuments, architectural and cultural heritage sites and features are identified and any potential likely impacts measured as appropriate. It will be difficult to identify previously unrecorded sites by simply field-walking proposed corridors at option selection stage. Many sites, due to low visibility factors or lack of definition, may now have been extinguished as surface features 'gone under' completely as a result of agricultural development. Specific mitigation requirements to address potential 'unknowns' can only be identified as items for review once the location of any chosen preferred option is defined. The judicious use of LiDAR survey, geophysical survey and topographic survey techniques may be advised if an area of significant potential is identified. In some locations, exploratory test excavation may be considered, as cultivated soils can be extremely deep, masking the presence of below-ground remains, even to geophysical survey.

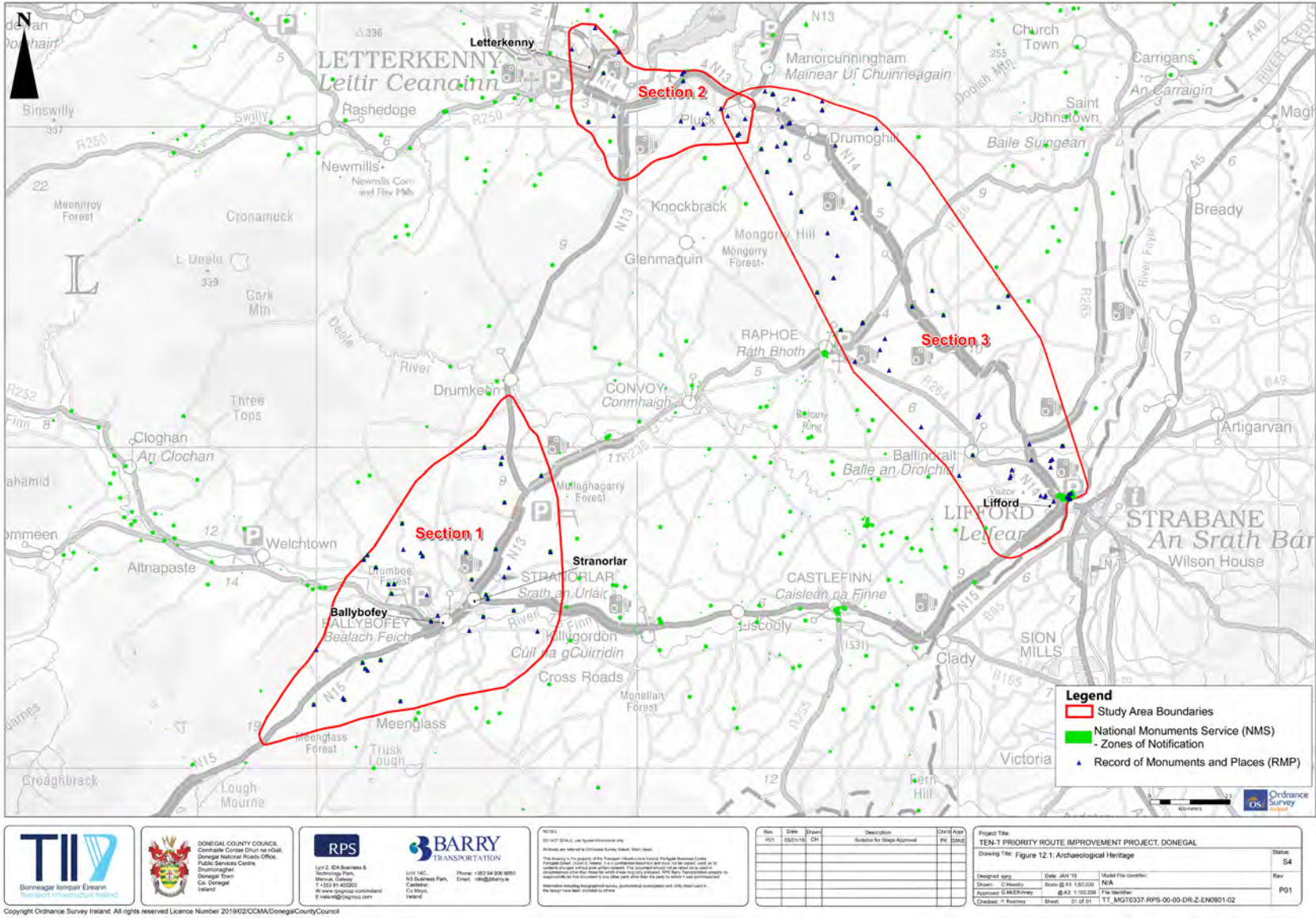


Figure 12-1: Archaeological Heritage



13 LANDSCAPE

13.1 Introduction

This section identifies the Landscape constraints for the proposed project. It does so in relation to the assessment of landscape and visual impacts which comprises both natural and built elements including: landform, vegetation and historical and cultural components. Landform relates in general to topography and geology (see Section 7 Land and Soils). Historical and cultural components include historic landscapes, listed buildings, conservation areas and historic designed landscapes (see Section 12 Cultural Heritage).

A desktop study was undertaken using the following sources of information:

- Ordnance Survey mapping accessed online May 2019 (www.osi.ie);
- Aerial photography; and
- Donegal County Development Plan (2018 - 2024).

13.2 Existing Environment

13.2.1 Landscape Character Assessment

The landscape character is assigned through a desktop examination of various layers of spatial data on the physical attributes of the county, in combination with historical mapping, photography surveys, 3D photography and aerial photography. Landscape Character Types (LCT) were identified in the Landscape Character Assessment of County Donegal (2016) and these are shown in **Table 13-1**.

There are 23 different LCTs throughout County Donegal of which the seven LCTs below are located within the study areas assessed as part of this report:

- Agricultural arable and pasture, agricultural riverine, agricultural coastal, agricultural drumlin and agricultural estuarine;
- Natural grassland;
- Forestry/woodland;
- Atlantic, mountainous and highland blanket bog;
- Urban fabric and golf courses;
- Dunes and beach, inter-tidal flats, inland marsh, salt marsh; and
- Mountain peaks, bare rock, sparsely vegetated, heath, upland heath and moorland and water bodies.³⁷

³⁷ Landscape Character Assessment of County Donegal
<http://www.donegalcoco.ie/media/donegalcountyc/planning/pdfs/viewdevelopmentplans/landscapecharacterassessmentofcountydongal/landscapecharacterassessmentofcountydongal/Landscape%20Character%20Assessment%20Part%201.pdf>

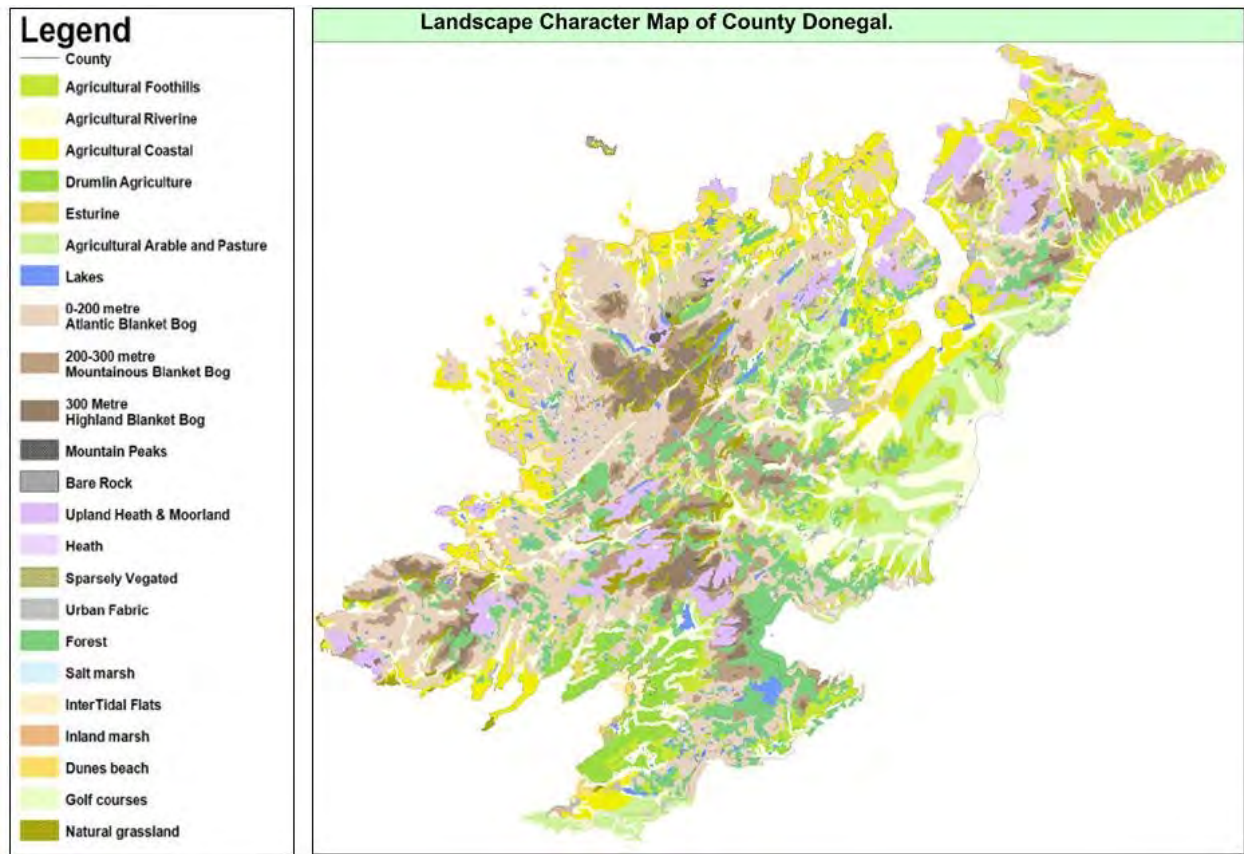


Figure 13-1: Landscape Character Map for County Donegal

Donegal is further divided into 44 Landscape Character Assessment (LCAs) areas. The LCAs in which the study area sections are situated are described in detail in **Table 13-1** below.

Table 13-1: Landscape Character Assessments of Study Areas³⁸

Section	Landscape Character Assessment	Description
Section 1	Finn Valley LCA 14	Finn Valley LCA is dominated by the River Finn, its tributaries and associated valleys carved from the surrounding uplands. The LCA has 3 distinct areas within that change from west to east following the meandering River Finn through this LCA. In the west of this LCA the Rivers Finn and Reelan cut through highland bog areas creating 2 steep narrow river valleys that have an interesting rectilinear field pattern of strips extending from the river edge into the upland bog in a 'rundale' fashion. These smaller rivers converge as the River Finn close to Cloghan into a notably broader and more level valley of larger square agricultural fields overlooked by mountainous areas of upland bog. The landscape eastwards from Ballybofey Stranorlar towards Castlefinn is a fertile agricultural plain alongside the river within a wider gently undulating

³⁸ Landscape Character Assessment Breakdown

<http://www.donegalcoco.ie/services/planning/viewdevelopmentplans/landscape%20character%20assessment%20of%20county%20donegal/landscape%20character%20assessment%20of%20county%20donegal/>

Section	Landscape Character Assessment	Description
		agricultural landscape of large square fields similar to the adjoining Lagan Valley and Foyle Valley LCAs. Finn Valley LCA borders Northern Ireland at its eastern extremity and abuts 2 separate LCAs within NI sharing a similar landscape type and character area. The local road network affords multiple physical linkages with the adjoining landscape in Northern Ireland. The eastern edge of this LCA borders Northern Ireland and the Northern Ireland Landscape Character Areas Foyle Valley (27) and Derg Valley (20), a continuum of the landscape type of the Finn Valley, namely good quality agricultural riverine lands of semi-improved geometric fields, with scattered farms, farmsteads and one-off rural dwellings served by a number of rural villages and towns.
Section 2	Letterkenny Estuary & Farmland LCA 15	Letterkenny Estuary and Farmland LCA is characterised by a wide, fertile valley of the River Swilly flowing through heath and bog covered uplands east towards Lough Swilly, a large intertidal estuary encircled by higher hills and mountains to the north and south and rolling arable lands in the east. Letterkenny is the largest town in the County and dominates much of this LCA; the town sprawls out from its historic core in the centre of this LCA in all directions, only somewhat curtailed by the floodplains of the River Swilly and steep rugged land to the north and west of the town. The area is accessible from all directions via a network of National Primary, Regional and county roads.
Section 3	Lagan Valley LCA 12 Foyle Valley LCA 13 Foyle Valley LCA27³⁹	Lagan Valley LCA is a vast undulating agricultural landscape of good quality pasture and arable land characterised by large, geometric, hedge trimmed agricultural fields extending over a wide geographical area, with a long shore along Lough Swilly. This LCA is permeated by a network of national, regional and county roads that connect the large farms and plantation towns of Manorcunningham, Convoy and Raphoe to each other and to the wider hinterland. Foyle Valley LCA 13 is a broad river valley extending along the River Foyle from outside Lifford in the south of the area to the border with Northern Ireland on the outskirts of Derry City in the north of this LCA including the 'border villages' of Ballindrait, Carrigans, Lifford and St. Johnston. This LCA is characterised by undulating fertile agricultural lands with a regular field pattern of medium to large geometric fields, bound by deciduous trees and hedgerow. There is a dispersed scatter of rural residential development within this LCA comprising of farmsteads and one-off rural dwellings along with areas of ribbon development along the county road network; there are a number of large detached historic houses and associated grounds within this landscape, particularly along the Foyle. The River Foyle is an ecologically, strategically and historically (including the fishing economy) important feature in this landscape. <i>Foyle Valley LCA 27 follows the border with the Republic to the south of Londonderry, before turning eastwards at Strabane to follow the meandering course of the river (known as the Mourne and, to the south of the confluence with the Derg, the Strule). It is steeply enclosed to the east by the slopes of the hills to the west of the Sperrins range. It continues to the east of Newtownstewart and includes the lower reaches of the Owenkillew River. The character of the river channel varies from an open sheet of water between agricultural fields to the north of Ballymagorry, to an incised, wooded channel to the south of Strabane. The river flows within a deeper valley in areas where it is influenced by</i>

³⁹ Foyle Valley LCA 27 is identified as part of the Northern Ireland Landscape Character Assessment (2000). It is the only proximal LCA designated in Northern Ireland associated with the study areas assessed within this report. Website: <https://www.daera-ni.gov.uk/sites/default/files/publications/doe/environment-land-information-ni-landscape-character-assessment-foyle-valley-2010.pdf>

Section	Landscape Character Assessment	Description
		glacial moraine. The steep, irregular mounds of moraine on the banks of the Strule to the west of Newtownstewart are a distinctive local landmark. The valley landscape blends with that of the surrounding hills; a well-enclosed, geometric patchwork of fields and hedgerows sweeps up onto the steep slopes of the Sperrins. There are arable fields as well as pastures in areas with a shallower landform and in the Maghereagh area, where there is an alluvial plain alongside the Foyle. By contrast, the tributary valleys of the Burdennet (near Milltown Burdennet) and the Glenmoran River (by Artigarvan) to the west of this flat valley floor have a deeply undulating, secretive character. The villages in these steep valleys retain some of the large mill buildings. There is a transition from hedgerows to stone walls on the upper pastures. Stone bridges are a feature of the river valley, which is highly accessible as local roads follow the low terraces towards the margins of the valley floor. The valley is well-settled, and the towns of Newtownstewart, Sion Mills and Strabane are on the banks of the Mourne and the Strule (Northern Ireland Landscape Character Assessment, 2000).

13.3 Landscape Amenity

The County Donegal Development Plan 2018-2024 defines rural Areas of Especially High Scenic Amenity (EHSA) as “areas of highest quality landscape in the County, with characteristics of wilderness, and few if any manmade structures. They include the high-cliffed coastal zone, and upland mountain areas.”

Figure 13-3 illustrates the areas of Especially High Scenic Amenity (EHSA); High Scenic Amenity (HSA); and Moderate Scenic Amenity (MSA) areas within County Donegal which will be considered during the Phase 2 Options Selection process.

Section 1 is situated in close proximity to, but not overlapping with, an area of EHSA. It does overlap with a HSA region extending northwards from Ballybofey. Manorcunningham, just north of the overlapping study areas of Section 2 and Section 3, although not located within an EHSA, does however support views and prospects towards Lough Swilly. The Wild Atlantic Way (WAW) travels the route of the National Primary Road through the north west of this LCA and there is a ‘WAW’ discovery point at ‘Manorcunningham Viewpoint’, overlooking Lough Swilly. Lifford is neither located in an EHSA nor supports views or prospects.

The County Donegal Development Plan 2018 – 2024 provides descriptions for the scenic amenity areas which should be considered when assessing sensitive areas during the option selection process. The definitions for relevant areas considered within this report are follows:

- **Especially High Scenic Amenity Areas (EHSA):** are sublime natural landscapes of the highest quality that are synonymous with the identity of County Donegal. These areas have extremely limited capacity to assimilate additional development.
- **High Scenic Amenity Areas (HSA):** are landscapes of significant aesthetic, cultural, heritage and environmental quality that are unique to their locality and are a fundamental element of the landscape and identity of County Donegal. These areas have the capacity to absorb sensitively located development of scale, design and use that will enable assimilation into the receiving landscape and which does not detract from the quality of the landscape, subject to compliance with all other objectives and policies of the plan.
- **Moderate Scenic Amenity Areas (MSA):** are primarily landscapes outside Local Area Plan Boundaries and Settlement framework boundaries that have a unique, rural and generally agricultural quality. These areas have the capacity to absorb additional development that is suitably located, sited and designed subject to compliance with all other objectives and policies of the plan.

13.4 Settlement Character Assessment

A Settlement Character Assessment⁴⁰ was carried out for County Donegal. Within the Settlement Character Assessment, settlements were classified within four tiers included in the assessment:

- 1) Gateway
- 2) Strategic Support Towns
- 3) Strong Towns and Villages
- 4) Small Villages

The Donegal County Development Plan 2018-2024⁴¹ also provides classification guidelines for towns and villages marked for renewal and regeneration. The strategy for renewal and regeneration of towns is provided across the following categories:

1. 'Gateway' town(s) that make up the primary centre(s) for economic growth and population settlement in the county as Layer 1.
2. 23 towns described as the County's 'Strategic Towns' that perform a 'Special Economic Function' identified in the settlement structure of the Core Strategy as Layer 2 (A & B).
3. 7 towns/rural areas of smaller scale (included in Layer 3 in the settlement structure) for which a focus on regeneration and renewal, primarily through enhancement schemes, will strengthen communities.

The towns identified as 'Gateway Towns', 'Strategic Towns' and 'Rural Areas' are represented visually in **Figure 13-2**.

13.4.1 Section 1

Ballybofey-Stranorlar falls in the 'Strategic Towns' that perform a 'Special Economic Function' classification. The two separate towns of Ballybofey-Stranorlar located at either side of the River Finn have merged to form a larger linear settlement; colloquially known as the Twin Towns, they combine to provide a strong critical mass with resultant high-level facilities for the town and its wider hinterland.

The Donegal County Development Plan defines a Strategic Town as:

Towns with 'Special Economic Function' in Layer 2(A and B) are all described as the County's 'Strategic Towns'. The distinction between Layer 2A and 2B is largely for the purposes of appropriate distribution of the projected population growth having regard to the greater infrastructural capacity and critical mass of the Layer 2A settlements to service a significant proportion of this projected growth. The Council is equally committed to driving the agenda for both groups of settlements. However, in order to retain some consistency with the structure applied to the settlements in the Core Strategy and only for ease of reference the Layer 2A and 2B approach is retained throughout reporting.

⁴⁰

<http://www.donegalcoco.ie/media/donegalcountyc/planning/pdfs/viewdevelopmentplans/landscapecharacterassessmentofcountydongal/settlementcharacterassessmentofcountydongal/Settlement%20Character%20Assessment.pdf>

⁴¹ <http://www.donegalcoco.ie/media/donegalcountyc/planning/pdfs/viewdevelopmentplans/countydongaldevelopmentplan2018-2024/partaandb/Document.pdf>

13.4.2 Section 2

Letterkenny falls into the 'Gateway' classification as per the Donegal County Development Plan 2018- 2024. Letterkenny is defined as follows:

Letterkenny is identified as a layer in its own right within the settlement structure. As the largest town, it provides a broad range of services across the sectors including employment, education, health, cultural services, community services, entertainment and many more. Its growth and strengthening as a major centre of population together with its wider metropolitan area is important in the regional context particularly in terms of its relationship with Derry City. A strong, vibrant, connected Letterkenny with growing population will provide benefits across the County and within the region in terms of attracting private sector investment in jobs and the economy and in securing investment in infrastructure that is critical to the county as a whole.

13.4.3 Section 3

Manorcunningham and Lifford are categorised separately as per the Donegal County Development Plan 2018-2024. The Donegal County Development Plan defines Lifford as Layer 2B Strategic Town as follows:

Towns with 'Special Economic Function' in Layer 2(A and B) are all described as the County's 'Strategic Towns'. The distinction between Layer 2A and 2B is largely for the purposes of appropriate distribution of the projected population growth having regard to the greater infrastructural capacity and critical mass of the Layer 2A settlements to service a significant proportion of this projected growth. The Council is equally committed to driving the agenda for both groups of settlements. However, in order to retain some consistency with the structure applied to the settlements in the Core Strategy and only for ease of reference the Layer 2A and 2B approach is retained throughout reporting. Lifford is additionally afforded this status due to the fact that it is positioned to take advantage of its border location including opportunities that may arise as a result of Brexit.

Manorcunningham is classified under 'Layer 3: Rural Towns and Open Countryside'. The Donegal County Development Plan defines 'Layer 3: Rural Towns and Open Countryside' as follows:

Layer 3 comprises the County's network of smaller rural towns together with their surrounding rural hinterlands. Generally, Layer 3 provides for small scale clusters of urban development in rural towns and one-off rural housing supported by specific water services provided in the main as individual and private systems. The core strategy recognises that Layer 3 is a critical component of the social, community and cultural identity of the County and that strengthening of rural communities is essential in order to ensure the survival of the unique character of the county. The rural areas of Layer 3 provide an important and diverse resource for the county as a place to live; to express cultural identity; to establish and strengthen rural communities; to provide a unique quality of life; to provide a natural tourism product; for health, recreation and wellbeing; for its natural resource potential and; for providing economic opportunities directly related to rural areas.

Lifford is regarded as an 'Archaeological Complex' town, with specific policies in the Lifford Local Area Plan 2007-2013 (TC2 Town Centre Extension) outlining aspects of visual urban design to maintain its historic and architectural aspects. Policy TC3 Area of Strong Townscape Character states; Much of the centre of Lifford has been identified as an Area of Strong Townscape Character. Special care will be required for all development proposals within this area having regard to the established townscape character and its archaeological and architectural significance.

Therefore, cognisance must be taken with regards to development and visual impacts upon the town.

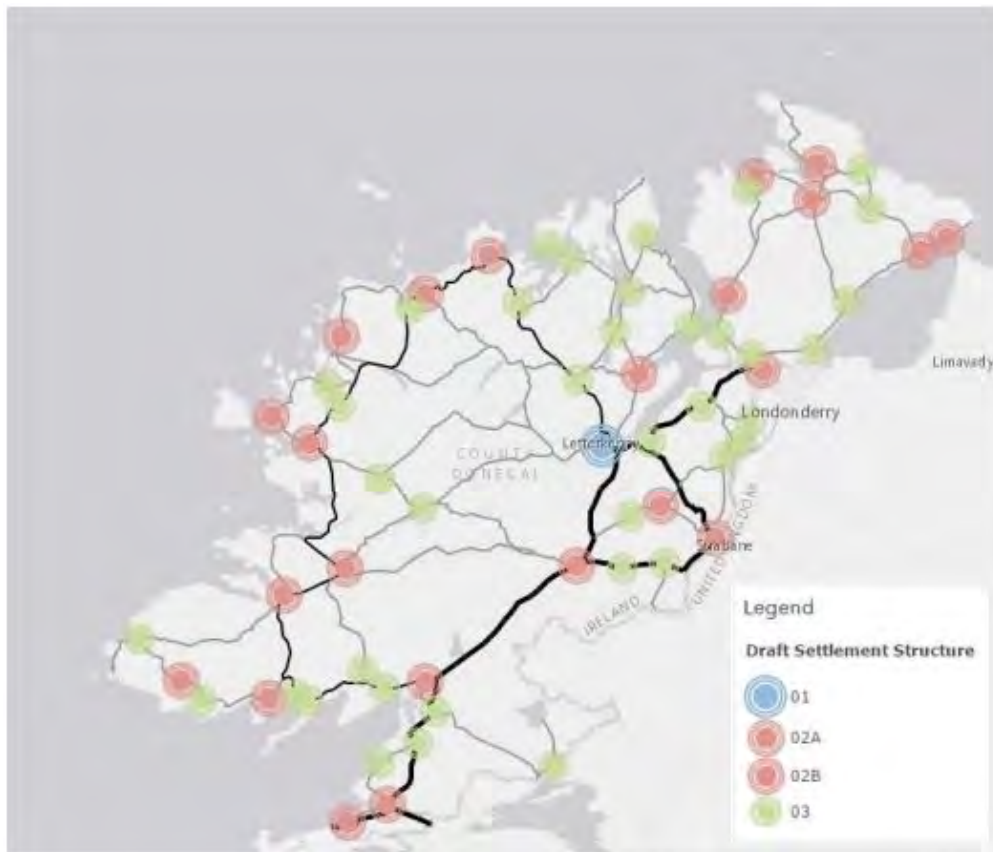


Figure 13-2: The Settlement Structure

13.5 Landscape Identified Constraints

Due to the expansive land coverage of the study areas for all three sections, there is a significant degree of interaction with various landscape constraints which have been discussed in detail in this chapter.

Section 1 lies within the landscape character area (LCA) Finn Valley (LCA14), identified from the Landscape Character Assessment for County Donegal. The Finn Valley LCA is dominated by the River Finn, its tributaries and associated valleys carved from the surrounding uplands. The mountainous landscape is a prominent feature of the study area with parts of the study area overlapping with areas of both 100m and 150m (above sea level) contours, particularly the northern extents of the study area. This directly correlates as to why the northern extents of the study area are classified as *Especially High Scenic Amenity Areas* and the southern extents of the study area are identified as *Moderate Scenic Amenity Area* dominated with some sporadic points and two regional roads of *Especially High Scenic Amenity Area* within it also.

Section 2 lies within the Letterkenny Estuary and Farmland (LCA15) and is characterised by a wide, fertile valley of the River Swilly flowing through heath and bog covered uplands east towards Lough Swilly, a large intertidal estuary encircled by higher hills and mountains to the north and south and rolling arable lands in the east. Letterkenny is the largest town in the county and therefore its urban fabric plays a dominant role in the landscape. The landscape in the study area is dominated by landscape valued as *High Scenic Amenity Area* with the southern region of the study area is classified as being of *Moderate Scenic Amenity Area* value.

Section 3 is heavily influenced by the mountainous landscape present on the east and west of the existing N14 national road, leading to the area falling between two LCA areas; Lagan Valley (LCA 12) and Foyle Valley (LCA 13). These valleys present large expansive areas of undulating agricultural landscape with carefully maintained geometric hedgerow features throughout along the lowlands of the valley footprints. As

a result of this, the majority of Section 3 is spanning an area identified as being a *High Scenic Amenity Area* and also hosts large patches of *Moderate Scenic Amenity Areas* in the north-west of the area near Letterkenny, the Raphoe townland area in the middle of the study area and the lands to the south of the study area at Lifford.

Cognisance of the sensitive landscape areas present within the study areas will be required during the option selection process in order not to significantly impact the characteristic features of the landscape character areas present.

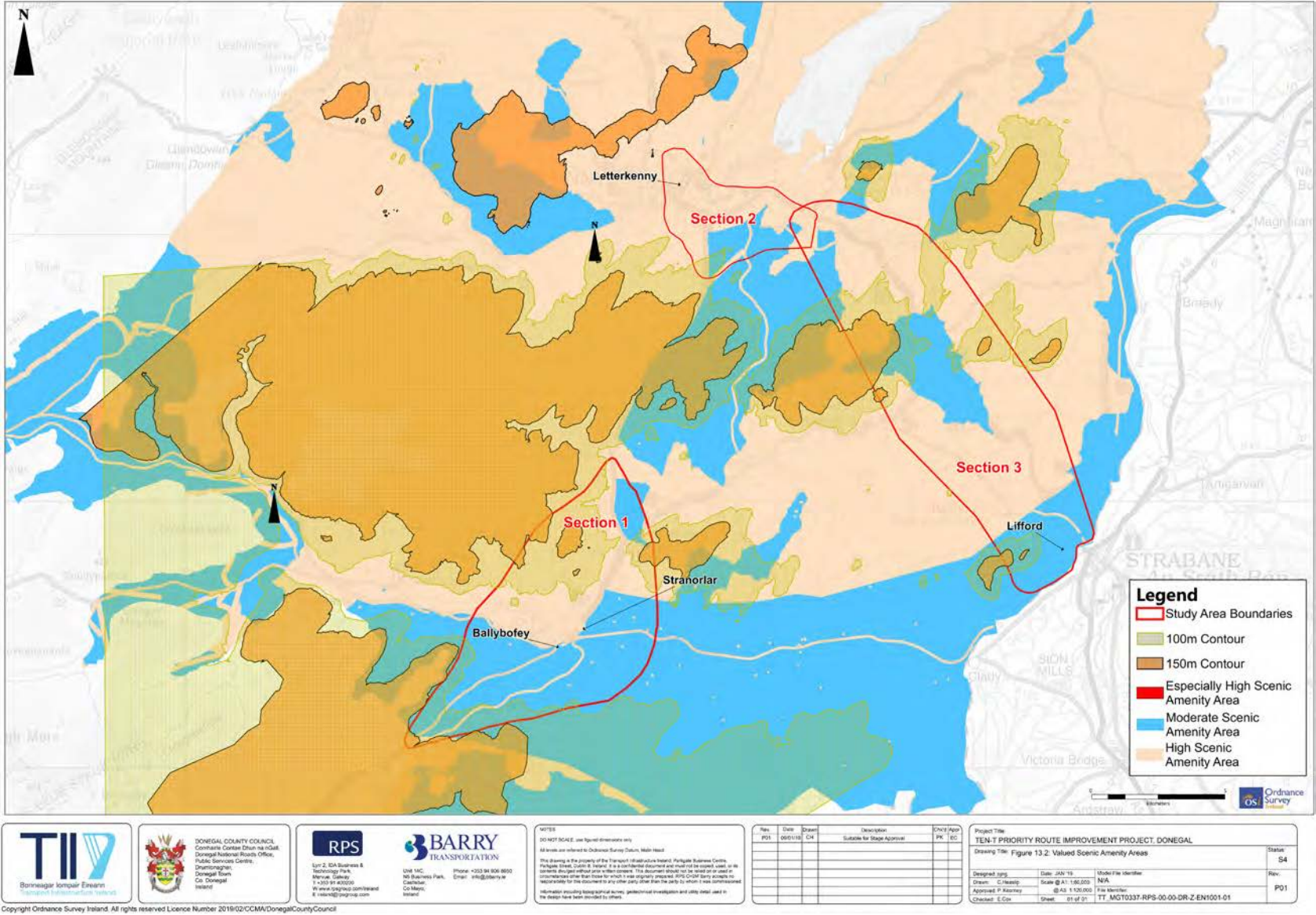


Figure 13-3: Valued Scenic Amenity Areas

14 EXTERNAL PARAMETERS

14.1 Funding and Scope

The TEN-T Priority Route Improvement Project, Donegal is currently being brought through Phases 0 to 4 (Scope and Pre-Appraisal, Concept and Feasibility Studies, Options Selection, Design and Environmental Evaluation and Statutory Processes) of the TII Project Management Guidelines mechanism of delivery. The project is not currently committed or funded beyond Phase 4.

The scope of this Constraints Study is based on the extremities of each study area which are fixed at the time of preparation. At the beginning of the Constraints study, no proposed changes to the existing N15 (Section 1), N56/N13 (Section2) or N14 (Section 3) routes are proposed, and therefore would not have any influence on the potential options.

A new cross-border link road, however, between the N14/N15 and the A5 in Northern Ireland has currently been through Planning, and the principle design and location for the link is fixed. The scope of this report is not to revisit potential changes to this link but to simply look at the N14 in its own context. At Phase 2 Option Selection, the various options may be assessed with respect to ease of connectivity to the agreed termination point of N14/N15 to A5 link road in the Republic of Ireland.

14.2 Required Levels of Service

The Level of Service (LOS) of a road is a measure used to rate the quality of traffic service on a given road width and cross-section, for a given traffic volume. The LOS is rated as follows:

- LOS A describes free-flow conditions, describing traffic travelling at speed limits and providing complete mobility between lanes;
- LOS D is approaching unstable flow, where a slight increase in traffic volumes decreases speed;
- LOS E describes unstable flow, where a road is operating at capacity, and flow becomes irregular and speed varies.

TII standard for Rural Road Link Design (DN-GEO-03031) outlines the approximate vehicle flows that accommodate a Level of Service D, which is the minimum acceptable LOS expected on the National Road network.

14.3 Technical Standards

The design standards used in the design development of the project will be the TII design standards.

The option selection and design will follow the process as set down by TII in its Project Management Guidelines 2010, as supplemented by the 2017 and now 2019⁴² update.

The TII Project Appraisal Guidelines will be used to guide road designers and the decision makers through the process of ensuring that the best choices are made and the best value for money is obtained on this national road project.

⁴² The Constraints Study was substantially complete prior to the publication of the TII Project Management Guidelines (PMG) 2019. However, the Constraints Study has been reviewed to ensure compliance with the PMG 2019 revision.

14.4 Access Control

On new National Primary roads and on those routes forming the TEN-T transport network, direct access from properties will be avoided. Access from local roads onto the proposed options will be provided using a discrete number of junctions with the existing road network. As the scheme develops junction treatments and strategies will be developed in accordance with TII design standards.

14.5 Policy Document

The project is proposed in the context of a planning structure that underpins the proposal in terms of planning objectives and policies. The project will be considered with respect to all relevant planning policies including National Planning Framework, Capital Investment Plans, national policy, County Donegal Development Plan 2018-2024 and relevant local area plans. Details of how the proposed project meets the objectives of these plans and policies is outlined in the Project Brief.

14.6 Procedural and Legal Requirements

As part of any constraints study, consideration of procedural and legal issues, which may arise during the design and construction process, must be considered at as early a stage as possible so as not to delay the timely completion of the project. On this basis the following should be noted at the appropriate stages:

- European and Irish environmental legislation;
- Amendments of and replacements to local authority development plans;
- Guidelines on process and codes of practice relating to environmental and legal aspects of road design and construction;
- EIA and CPO format and procedures;
- Requirements under Section 50 of the 1945 Arterial Drainage Act for the construction or alteration of any bridge or culvert over any watercourse;
- Rights of statutory undertakers;
- Wayleaves, public and private rights of way; and
- Site investigation notices.

15 NEXT STEPS

The TEN-T Priority Route Improvement Project, Donegal aims to provide a high-quality road along the key National Primary routes in Donegal to reduce the negative effects of a peripheral location in Europe and address the existing technical, operational and safety issues. Following the completion of an environmental appraisal of the study area, a number of constraints have been identified. The next stage of the project will be to identify suitable options within the study area for each of the three sections. The subsequent study and the corridor options for new roads and improvements will be determined and assessed against the framework of constraints outlined in this report.

Appendix 1: Constraints Letter



Lyrr 2, IDA Business & Technology Park, Mervue,
Galway, H91 H9CK, Ireland
T +353 (0)91 400 200 E ireland@rpsgroup.com
W rpsgroup.com/ireland

XXXXXXX
XXXXXXX
XXXXXXX

Our Ref:

Your Ref:

7th September 2017

Dear Sir/Madam,

RE: Trans-European Transport Network Priority Route Improvements, Donegal

RPS CH2M Barry have been appointed by Donegal County Council as Consulting Engineers for the development of Trans-European Transport Network (TEN-T) in Donegal from Constraints, through Route Selection to planning consent. Three sections of the TEN-T in Donegal (roads recognized at a European level as having regional and national significance) have been identified as requiring intervention. The road sections include:

- (i) N15 Ballybofey/Stranorlar Urban Region
- (ii) N56/N13 Letterkenny to Manorcunningham
- (iii) N14 Manorcunningham to Lifford/Strabane/A5 Link

Currently, RPS CH2M Barry is conducting a Constraints Study along the study area to assist in the future development of possible route options for road improvements. We enclose an information leaflet indicating the project scope and study area under consideration.

To assist us in this phase, we would greatly appreciate your observations regarding constraints within the study area.

Please forward your correspondence to the undersigned at RPS, Lyrr 2, IDA Business & Technology Park, Mervue, Galway, Ireland or paula.kearney@rpsgroup.com no later than the 6th October 2017.

It is our intention to consult with you again as the project progresses.

Yours faithfully,

Paula Kearney

Encl. TEN-T Donegal Road Project Information Leaflet

The Trans-European Transport Network (TEN-T) is a selection of strategic transport corridors throughout the European Union (EU) that have been identified to play a key role in the mobility of goods and passengers through the EU. The TEN-T network in Donegal consists of three National Primary Roads (N13, N14 and N15). Three sections of the TEN-T network in Donegal have been prioritised for improvement to address existing safety and operational issues, and together, they form the TEN-T Priority Route Improvement Project, Donegal.

1. The N15 Ballybofey / Stranorlar Urban Region

The N15 from approximately Lough Mourne, through the townland of Cappry along the N15, through Ballybofey and Stranorlar and onto the N13 to Drumkeen.

2. The N56/N13 Letterkenny to Manorcunningham

This section includes the N56 approach to the Polestar roundabout in Letterkenny, the N14 4-lane road to the Dry Arch Roundabout and the N13 from Dry Arch Roundabout along the dual carriageway to Pluck Roundabout at Manorcunningham, and also includes the proposed corridor for the Letterkenny Inner Relief Road between Dry Arch Roundabout and Kiltory Roundabout.

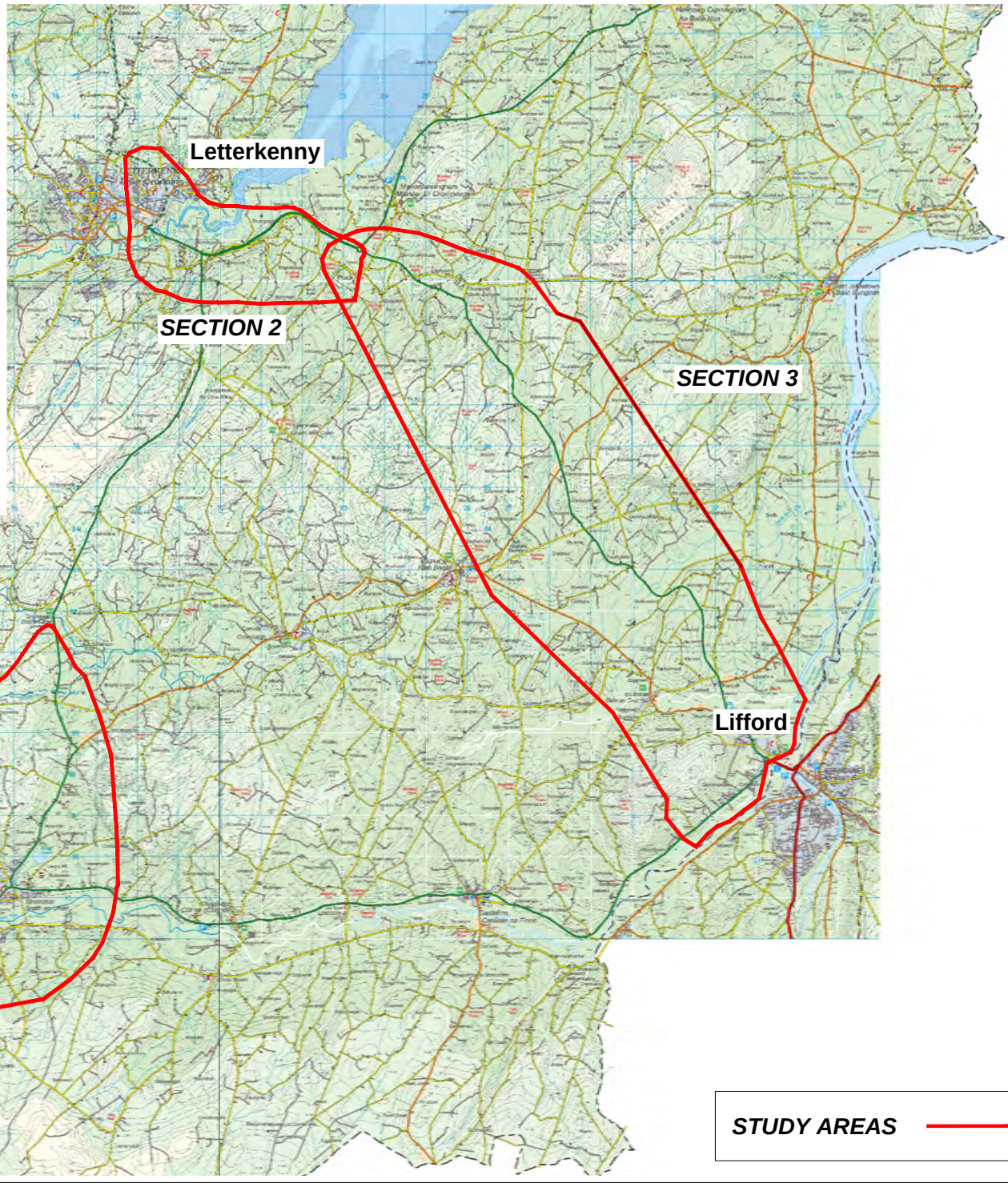
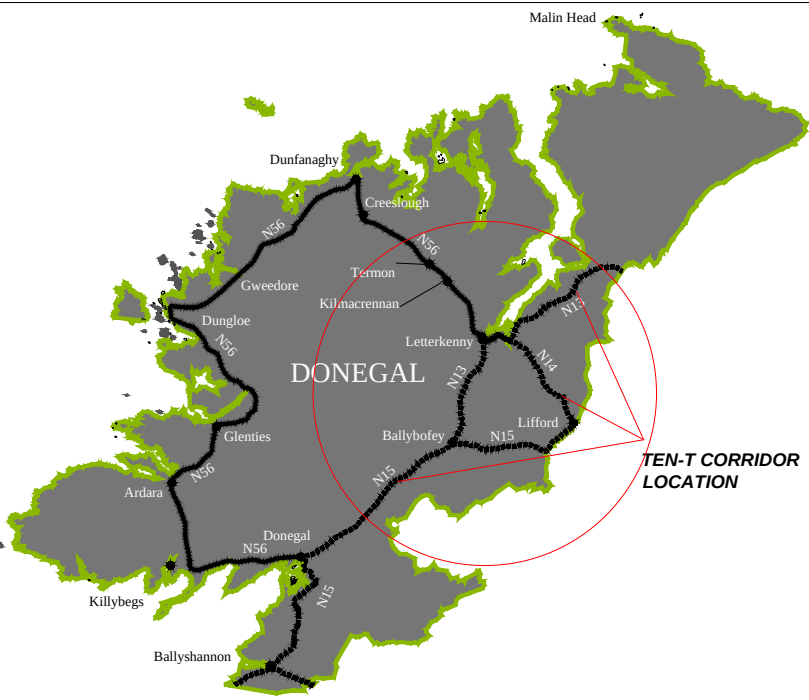
3. The N14 Manorcunningham to Lifford / Strabane / A5 Link

This includes the full length of the N14 from Manorcunningham to Lifford, and the N15 approach to Lifford.

Three study area boundaries have been derived for analysing options along the three sections which are shown in the attached Map.

RPS CH2M Barry have assessed the Constraints within the defined study areas for the Project and a public consultation will be held on 6th December 2017 in Stranorlar, Letterkenny and Lifford to display the constraints mapping and seek feedback from members of the public.

RPS CH2M Barry will subsequently complete route selection during the first half of 2018, with a further public consultation being held in the second quarter of 2018 to present the route options considered during the route selection process. Following this, a Preliminary Design and Environmental Impact Statement will be produced.



STUDY AREAS ———

Appendix 2:

Biodiversity Datasets

Table A2-1: Section 1 - Protected and Endangered Flora

Scientific Name	Common Name	Grid Square ⁴³			Conservation Status ⁴⁴	Potential Effects on the Project
		C10	H19	H09		
<i>Jungermannia parvica</i>	Shining Flapwort			*	NT	Yes: Potential impacts to flora and fauna species during the construction and operation of the proposed road improvement. Targeted species surveys required when options are developed.
<i>Sphagnum strictum</i>	Pale Bog-Moss			*	dd	
<i>Spiranthes romanzoffiana</i>	Drooping Lady's-tresses		+ x		FPO, R	
<i>Prunus podus</i>	Bird Cherry	+	+	+	NT	
<i>Carex acuta</i>	Acute Sedge			+	NT	
<i>Trollis europaeus</i>	Globe Flower	+ x		+ x	FPO, V	
<i>Galeopsis speciosa</i>	Large Flowered Hemp Nettle			+	NT	
<i>Sorbus hibernica</i>	Irish Whitebeam	+			Vu	
<i>Cladonia portentosa</i>	Reindeer Moss			x	V (EU HD)	
<i>Cladonia arbuscula</i>	Reindeer Lichen			x	V (EU HD)	
<i>Ulota drummondii</i>	Drummond's Pincushion			x	RE	

Table A2-2: Section 2 - Protected and Endangered Flora

Scientific Name	Common Name	Grid Square				Conservation Status	Potential Effects on the Project
		C10	C11	C20	C21		
<i>Gnaphalium sylvaticum</i>	Heath Cudweed	X	X +			EN	Yes: Potential impacts to flora and fauna species during the construction and operation of the proposed road improvement. Targeted species surveys required when options are developed.
<i>Cladonia portentosa</i>	Reindeer Moss		x			V (EU HD)	
<i>Prunus podus</i>	Bird Cherry	+		+		NT	
<i>Pseudorchis albida</i>	Small-White Orchid		X+			VU	
<i>Coeloglossum viride</i>	Frog Orchid		+			NT	
<i>Galeopsis speciosa</i>	Large Flowered Hemp-Nettle		+		+	NT	
<i>Chenopodium bonu-henricus</i>	Good King Henry				+	VU	
<i>Trollis europaeus</i>	Globe Flower	+ X		X+		FPO, V	

⁴³ National Biodiversity Data Centre (*), Flora Atlas (+) and NPWS (x)⁴⁴ Protection status following criteria set out in Plant Red Data Book (Curtis & McGough, 1988; Stewart & Church, 1992) – Ex: Extinct, E: Endangered, V: Vulnerable, R: Rare, I Indeterminate, K Insufficiently known. Ireland Red Lists using IUCN (2001) - RE Regionally Extinct, CR Critically Endangered, EN: Endangered, VU: Vulnerable, NT: Near threatened, lc: least concern, dd: data deficient, na: not assessed. FPO denotes that the species is protected under the Flora Protection Order, 1999. EU HD Annex I-V – denotes EU Habitats Directive Annexed I to V Species.

<i>Geranium pratense</i>	Meadow Crane's Bill				+	VU	
<i>Parentucellia viscosa</i>	Yellow Bartsai			+	+	NT	
<i>Sorbus hibernica</i>	Irish Whitebeam	+				Vu	

Table A2-3: Section 3 - Protected and Endangered Flora

Scientific Name	Common Name	Grid Square				Conservation Status	Potential Effects on the Project
		C21	C20	C30	H39		
<i>Galeopsis speciosa</i>	Large Flowered Hemp-Nettle	+				NT	Yes: Potential impacts to flora and fauna species during the construction and operation of the proposed road improvement. Targeted species surveys required when options are developed.
<i>Chenopodium bonu-henricus</i>	Good King Henry	+				VU	
<i>Geranium pratense</i>	Meadow Crane's Bill	+				VU	
<i>Parentucellia viscosa</i>	Yellow Bartsia	+				NT	

Table A2-4: Section 1 - Rare and Protected Mammal, Aquatic and Invertebrate Species

Scientific Name	Common Name	Grid Square ⁴⁵			Conservation Status ⁴⁶	Potential Effects on the Project
		C10	H19	H09		
<i>Rana temporaria</i>	Common Frog	x*	x*		V (EU HD), X (WA), lc.	Yes: Potential impacts to species during the construction and operation of the proposed road improvement. Targeted species surveys required when options are developed.
<i>Coenonympha pamphilus</i>	Small Heath		*		NT (Red Status)	
<i>Euphydryas aurinia</i>	Marsh Fritillary	*	*	*	II (EU HD), VU	
<i>Phoca vitulina</i>	Common Seal		*		II, V (EU HD), X (WA)	
<i>Leiostryla (Leiostryla) anglica</i>	English Chrysalis Snail	*	*	*	VU (Red Status)	
<i>Spermodea lamellata</i>	Plated Snail		*		EN (Red Status)	
<i>Zonitoides (Zonitoides) excavatus</i>	Hollowed Glass Snail		*	*	VU (Red Status)	
<i>Cervus elaphus</i>	Red Deer	*x	x*	x*	X (WA), lc	

⁴⁵ Data obtained from National Biodiversity Data Centre (NBDC)* NPWS x⁴⁶ Protection status following criteria set out in Plant Red Data Book (Curtis & McGough, 1988; Stewart & Church, 1992) - Ex Extinct, E Endangered, V Vulnerable, R Rare, I Indeterminate, and K Insufficiently known. Ireland Red Lists using IUCN (2001) - RE Regionally Extinct, CR Critically Endangered, EN Endangered, VU Vulnerable, NT Near threatened, lc least concern, dd data deficient, na not assessed. FPO denotes that the species is protected under the Flora Protection Order, 2015. EU HD Annex I-V – denotes EU Habitats Directive Annexed I to V Species. X (WA) denotes species listed under the Wildlife Acts.

Scientific Name	Common Name	Grid Square ⁴⁵			Conservation Status ⁴⁶	Potential Effects on the Project
		C10	H19	H09		
<i>Cervus Nippon</i>	Sika Deer	x	x		X (WA)	
<i>Dama dama</i>	Fallow Deer		x		X (WA), lc	
<i>Erinaceus europaeus</i>	West European Hedgehog	*	*x	x	X (WA),lc	
<i>Lepus timidus subsp. Hibernicus</i>	Irish Hare	x	x	x	V (EU HD), X (WA), lc	
<i>Lutra lutra</i>	Otter	*x	*x	*x	II IV(EU HD), X (WA), NT	
<i>Martes martes</i>	Pine Marten		*	*	V (EU HD), X (WA), lc	
<i>Meles meles</i>	Badger	*x	x*	x*	X (WA), lc	
<i>Mustela erminea subsp. hibernica</i>	Irish Stoat	x	x	x	X (WA), lc	
<i>Nyctalus leisleri</i>	Leisler's Bat (Lesser Noctule)	*	*	*	IV (EU HD), X (WA)	
<i>Pipistrellus pipistrellus sensu lato</i>	Common Pipistrelle Bat	*	*	*	IV (EU HD), X (WA)	
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	*	*	*	IV (EU HD), X (WA)	
<i>Plecotus auritus</i>	Brown Long-eared Bat		x*	*	IV (EU HD), X (WA), lc	
<i>Myotis daubentonii</i>	Daubenton's Bat	*	*	*	IV (EU HD), X (WA)	
<i>Myotis nattereri</i>	Natterer's Bat			*	IV (EU HD), X (WA)	
<i>Pipistrellus nathusii</i>	Nathusius's Pipistrelle			*	IV (EU HD), X (WA)	
<i>Sciurus vulgaris</i>	Eurasian Red Squirrel	*	*	*	X (WA)	
<i>Agabus (Acatodes) arcticus</i>	No Common Name			*	NT (Red Status)	
<i>Nebrioporus (Nebrioporus) depressus</i>	No Common Name			*	Dd (Red Status)	
<i>Pisidium lilljeborgii</i>	No Common Name			*	VU (Red Status)	
<i>Ameletus inopinatus</i>	No Common Name	*			NT (Red Status)	
<i>Ecdyonurus torrentis</i>	No Common Name	*			dd (Red Status)	
<i>Bombus (Melanobombus) lapidarius</i>	Large Red Tailed Bumble Bee		*		NT (Red Status)	

Table A2-5: Section 2 - Rare and Protected Mammal, Aquatic and Invertebrate Species

Scientific Name	Common Name	Grid Square ⁴⁷				Conservation Status ⁴⁸	Potential Effects on the Project
		C10	C11	C20	C21		
<i>Rana temporaria</i>	Common Frog	X*	x*	X*	x*	V (EU HD), X (WA), lc	Yes: Potential impacts to flora and fauna species during the construction and operation of the proposed road improvement. Targeted species surveys required when options are developed.
<i>Euphydryas aurinia</i>	Marsh Fritillary	*	x*	X*	*	II (EU HD), VU	
<i>Margaritifera margaritifera</i>	Freshwater Pearl Mussel		x*			II V (EU HD), X (WA)	
<i>Cervus elaphus</i>	Red Deer	x*	x*	X*		X (WA), lc	
<i>Cervus Nippon</i>	Sika Deer	x				X (WA)	
<i>Erinaceus europaeus</i>	European Hedgehog	*	x*	X*	*	X (WA), lc	
<i>Lepus timidus subsp. hibernicus</i>	Irish Hare	X*	*	*		V (EU HD), X (WA), lc	
<i>Lutra lutra</i>	Otter	x*	x*	X*	x*	II IV (EU HD), X (WA), NT	
<i>Meles meles</i>	Badger	X*	x*	X*	x*	X (WA), lc	
<i>Mustela ermine subsp. hibernica</i>	Irish Stoat	X*	X*	X*		X (WA), lc	
<i>Sciurus vulgaris</i>	Eurasian Red Squirrel	*		*		X (WA)	
<i>Myotis daubentonii</i>	Daubenton's Bat	*	*	*	*	IV (EU HD), X (WA), lc	
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle		*			IV (EU HD), X (WA), lc	
<i>Sorex minutus</i>	Pygmy Shrew		*	*	*	X (WA)	
<i>Lagenorhynchus acutus</i>	Atlantic White-sided Dolphin				*	IV (EU HD), X (WA)	
<i>Phoca vitulina</i>	Common Seal			*	x*	II, V (EU HD), X (WA)	
<i>Phocoena phocoena</i>	Common Porpoise				*	II, IV (EU HD), X(WA) Threatened	
<i>Leiostryla (Leiostryla) anglica</i>	English Chrysalis Snail	*				VU (Red Status)	
<i>Tursiops truncatus</i>	Bottle-nosed Dolphin				*	II,IV (EU HD), X (WA)	
<i>Martes martes</i>	Pine Marten				*	V (EU HD)	

⁴⁷ NBDC (*), NPWS (x)⁴⁸ Protection status following criteria set out in Plant Red Data Book (Curtis & McGough, 1988; Stewart & Church, 1992) - Ex Extinct, E Endangered, V Vulnerable, R Rare, I Indeterminate, and K Insufficiently known. Ireland Red Lists using IUCN (2001) - RE Regionally Extinct, CR Critically Endangered, EN Endangered, VU Vulnerable, NT Near threatened, lc least concern, dd data deficient, na not assessed. FPO denotes that the species is protected under the Flora Protection Order, 2015. EU HD Annex I-V – denotes EU Habitats Directive Annexed I to V Species.

Scientific Name	Common Name			Grid Square ⁴⁷		Conservation Status ⁴⁸	Potential Effects on the Project
		C10	C11	C20	C21		
<i>Nyctalus leisleri</i>	Lesser Noctule	*		*	*	IV (EU HD) X (WA)	
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	*		*	*		
<i>Pipistrellus pipistrellus sensu lato</i>	Pipistrelle spp	*		*	*	IV (EU HD), X(WA)	
<i>Plecotus auritus</i>	Brown Long Eared Bat			*		IV (EU HD) X (WA)	
<i>Ameletus inopinatus</i>	No Common Name	*				NT (Red Status)	
<i>Ecdyonurus torrentis</i>	No Common Name	*				dd (Red Status)	
<i>Bombus (Bobus) cryptarum</i>	No Common Name			*		dd (Red Status)	
<i>Bombus (Melanobombus) lapidarius</i>	Large Red Tailed Bumblebee			*		NT (Red Status)	

Table A215-6: Section 3 - Rare and Protected Mammal, Aquatic and Invertebrate Species (NBDC)

Scientific Name	Common Name	Grid Square ⁴⁹				Conservation Status ⁵⁰	Potential Effects on the Project
		C21	C20	C30	H39		
<i>Rana temporaria</i>	Common Frog	x*	*	*		V (EU HD), X (WA), lc	Yes: Potential impacts to flora and fauna species during the construction and operation of the proposed road improvement. Targeted species surveys required when options are developed.
<i>Euphydryas aurinia</i>	Marsh Fritillary	*	*			II (EU HD), VU	
<i>Margaritifera margaritifera</i>	Freshwater Pearl Mussel					II V (EU HD), X (WA)	
<i>Cervus elaphus</i>	Red Deer		*			X (WA), lc	
<i>Erinaceus europaeus</i>	European Hedgehog	*	*			X (WA), lc	
<i>Lutra lutra</i>	Otter	x*	*			II IV (EU HD), X (WA), NT	
<i>Meles meles</i>	Badger	x*	*			X (WA), lc	
<i>Mustela ermine subsp. hibernica</i>	Irish Stoat					X (WA), lc	

⁴⁹ NBDC (*), NPWS (x)⁵⁰ Protection status following criteria set out in [Marnell, F., Kingston, N. & Looney, D. (2009) Ireland Red List No. 3: Terrestrial Mammals.]- Ex Extinct, E Endangered, V Vulnerable, R Rare, I Indeterminate, K Insufficiently known. Ireland Red Lists using IUCN (2001) - RE Regionally Extinct, CR Critically Endangered, EN Endangered, VU Vulnerable, NT Near threatened, lc least concern, dd data deficient, na not assessed. FPO denotes that the species is protected under the Flora Protection Order, 2015. EU HD Annex I-V – denotes EU Habitats Directive Annexed I to V Species.

Scientific Name	Common Name	Grid Square ⁴⁹				Conservation Status ⁵⁰	Potential Effects on the Project
		C21	C20	C30	H39		
<i>Myotis daubentonii</i>	Daubenton's Bat	*	*			IV (EU HD), X (WA), Ic	
<i>Sorex minutus</i>	Pygmy Shrew	*	*			X (WA)	
<i>Lagenorhynchus acutus</i>	Atlantic White-sided Dolphin	*				IV (EU HD), X (WA)	
<i>Phoca vitulina</i>	Common Seal	x*	*			II, V (EU HD), X (WA)	
<i>Phocoena phocoena</i>	Common Porpoise	*				II, IV (EU HD), X(WA) Threatened	
<i>Tursiops truncatus</i>	Bottle-nosed Dolphin	*				II,IV (EU HD), X (WA)	
<i>Martes martes</i>	Pine Marten	*				V (EU HD)	
<i>Nyctalus leisleri</i>	Lesser Noctule	*	*			IV (EU HD) X (WA)	
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	*	*			IV (EU HD),X (WA), Ic	
<i>Pipistrellus pipistrellus sensu lato</i>	Pipistrelle spp	*	*			IV (EU HD), X(WA)	
<i>Plecotus auritus</i>	Brown Long Eared Bat		*			IV (EU HD) X (WA)	
<i>Lissotriton vulgaris</i>	Smooth Newt			*		X(WA)	

Table A2-7: Section 1 - Rare and Protected Bird Species (NBDC)

Scientific Name	Common Name	Grid Square ⁵¹			Conservation Status ⁵²	Potential Effects on the Project
		C10	H19	H09		
<i>Alcedo atthis</i>	Common Kingfisher		*		I (EU BD), X (AEWA), X (WA), Amber Listed	Yes: Potential impacts to bird species during the construction and operation of the proposed road improvement. Targeted species surveys required options are developed.
<i>Hirundo rustica</i>	Barn Swallow	*			X (AEWA), X (WA), Amber Listed	
<i>Anas acuta</i>	Northern Pintail		*		II(I), III(II) (EU BD), X (AEWA), X (WA), Red Listed	
<i>Anas penelope</i>	Eurasian Wigeon		*		II(I), III(II) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Anas platyrhynchos</i>	Mallard	*	*	*	II(I) III(I) (EU BD), X (AEWA), X (WA)	

⁵¹ Data obtained from National Biodiversity Data Centre (NBDC)

⁵² Protection status following criteria set out in Birds of Conservation Concern in Ireland 2014 - 2019 (Colhoun & Cummins, 2013) - Red-listed species are those of highest conservation priority, Amber listed species those which are of lesser priority and Green-listed species those of least conservation priority. EU BD Annex I-V – denotes EU Birds Directive Annexed I to V Species. X (AEWA) denotes the species is listed under the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) Convention (1999). X (WA) denotes species listed under the Wildlife Acts.

Scientific Name	Common Name	Grid Square ⁵¹			Conservation Status ⁵²	Potential Effects on the Project
		C10	H19	H09		
<i>Aythya ferina</i>	Common Pochard		*	*	II(I), III (II) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Anas crecca</i>	Eurasian Teal			*	II(I), III(II) (EU BD), X (AEWA), X (WA), Amber List	
<i>Aythya fuligula</i>	Tufted Duck		*	*	II(I), III(II) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Branta canadensis</i>	Canada Goose		*		II(I) (EU BD), X (AEWA), X (WA)	
<i>Columba livia</i>	Rock Pigeon		*	*	II(I) (EU BD), X (AEWA), X (WA)	
<i>Columba palumbus</i>	Common Wood Pigeon	*	*	*	II(I) III(I) (EU BD), X (AEWA), X (WA)	
<i>Crex crex</i>	Corncrake	*	*	*	I (EU BD), X (AEWA), X (WA), Red Listed	
<i>Cygnus cygnus</i>	Whooper Swan		*	*	I (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Fulica atra</i>	Common Coot		*		II(I), III(II) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Gallinago gallinago</i>	Common Snipe	*	*	*	II(I), III(III) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Lagopus lagopus</i>	Red Grouse		*		II(I), III(I) (EU BD), X (AEWA), X (WA), Red Listed	
<i>Larus argentatus</i>	Herring Gull		*		X (WA), Red List	
<i>Larus ridibundus</i>	Black-headed Gull	*	*	*	X (WA), Red List	
<i>Lymnocyptes minimus</i>	Jack Snipe		*		II(I) III(III) (EU BD), X (AEWA), X (WA)	
<i>Numenius arquata</i>	Eurasian Curlew	*	*	*	II(II) (EU BD), X (AEWA), X (WA), Red Listed	
<i>Phasianus colchicus</i>	Common Pheasant	*	*	*	II(I), III(I) (EU BD), X (AEWA), X (WA)	
<i>Scolopax rusticola</i>	Eurasian Woodcock	*	*	*	II(I), III(III) (EU BD), X (AEWA), X (WA), Amber List	
<i>Tyto alba</i>	Barn Owl		*		X (WA), Red Listed	
<i>Vanellus vanellus</i>	Northern Lapwing	*	*	*	II(II) (EU BD), X (AEWA), X (WA), Red Listed	
<i>Bucephala clangula</i>	Common Goldeneye			*	II(II) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Calidris alpina</i>	Dunlin			*	I (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Circus cyaneus</i>	Hen Harrier			*	I (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Emberiza citrinella</i>	Yellowhammer	*	*	*	X (AEWA), X (WA), Red Listed	
<i>Falco peregrinus</i>	Peregrine Falcon			*	I (EU BD), X (AEWA), X (WA)	

Scientific Name	Common Name	Grid Square ⁵¹			Conservation Status ⁵²	Potential Effects on the Project
		C10	H19	H09		
<i>Lagopus lagopus</i>	Red Grouse	*		*	II(I), III(I) (EU BD), X (AEWA), X (WA), Red List	
<i>Pluvialis apricaria</i>	Golden Plover	*		*	I, II(II) (EU BD), X (AEWA), X (WA), Red Listed	
<i>Carduelis flavirostris</i>	Twite	*			X (WA), Red Listed	
<i>Falco columbarius</i>	Merlin	*			I (EU BD), X (AEWA), X (WA), Amber Listed	

Table A2-8: Section 2 - Rare and Protected Bird Species

Scientific Name	Common Name	Grid Square ⁵³				Conservation Status ⁵⁴	Potential Effects on the Project
		C10	C11	C20	C21		
<i>Gallinula chloropus</i>	Moorhen	*		*	X*	X (AEWA), X (WA)	Yes: Potential impacts to bird species during the construction and operation of the proposed road improvement. Targeted species surveys required when options are developed.
<i>Alauda arvensis</i>	Sky Lark	*	*	*	*	X (AEWA), X (WA), Amber List.	
<i>Alca torda</i>	Razorbill				*	X (AEWA), X (WA), Amber List,	
<i>Anas acuta</i>	Northern Pintail	*			*	II(I) III(II) (EU BD), X (AEWA), X (WA), Red List	
<i>Anas clypeata</i>	Northern Shoveler				*	II(I) III(III) (EU BD), X (AEWA), X (WA), Red List	
<i>Actitis hypoleucos</i>	Common Sandpiper	*	*			X (AEWA), X (WA), Amber List	
<i>Anas crecca</i>	Eurasian Teal		*		*	II(I), III(II) (EU BD), X (AEWA), X (WA), Amber List	
<i>Anas platyrhynchos</i>	Mallard	*	*	*	*	II(I) III(I) (EU BD), X (AEWA), X (WA)	
<i>Anas penelope</i>	Eurasian Wigeon				*	II(I) III(II) (EU BD), X (AEWA), X (WA), Amber List	
<i>Anser anser</i>	Greylag Goose		*		*	II(I) III(II) (EU BD), X (AEWA), X (WA), Amber List	
<i>Branta leucopsis</i>	Barnacle Goose				*	X (AEWA), X (WA), Amber List	

⁵³ Data obtained from National Biodiversity Data Centre NBDC(*), NPWS (x)⁵⁴ Protection status following criteria set out in Birds of Conservation Concern in Ireland 2014 - 2019 (Colhoun & Cummins, 2013) - Red-listed species are those of highest conservation priority, Amber listed species those which are of lesser priority and Green-listed species those of least conservation priority. EU BD Annex I-V – denotes EU Birds Directive Annexed I to V Species. X (AEWA) denotes the species is listed under the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) Convention (1999). X (WA) denotes species listed under the Wildlife Acts.

Scientific Name	Common Name	Grid Square ⁵³				Conservation Status ⁵⁴	Potential Effects on the Project
		C10	C11	C20	C21		
<i>Apus apus</i>	Common Swift	*	*	*	*	X (AEWA), X (WA), Amber List	
<i>Carduelis cannabina</i>	Common Linnet	*	*	*	*	X (AEWA), X (WA), Amber List	
<i>Columba livia</i>	Rock Pigeon	*	*	*	*	II(I) (EU BD), X (AEWA), X (WA)	
<i>Columba palumbus</i>	Common Wood Pigeon	*	*	*	*	II(I) III(I) (EU BD), X (AEWA), X (WA)	
<i>Crex crex</i>	Corncrake	*	*	*	*	I (EU BD), X (AEWA), X (WA), Red List	
<i>Cygnus cygnus</i>	Whooper Swan		*	*	*	I (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Emberiza citrinella</i>	Yellowhammer	*	*	*	*	X (AEWA), X (WA), Red Listed	
<i>Delichon urbicum</i>	House Martin	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Falco columbarius</i>	Merlin	*	*	*	*	I (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Falco tinnunculus</i>	Common Kestrel	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Fulica atra</i>	Common Coot		*		*	II(I), III(II) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Gallinago gallinago</i>	Common Snipe	*	*	*	*	II(I), III(III) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Haematopus ostralegus</i>	Eurasian Oystercatcher		*		*	X (AEWA), X (WA), Amber Listed	
<i>Hirundo rustica</i>	Barn Swallow	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Lagopus lagopus</i>	Red Grouse	*	*	*		II(I), III(I) (EU BD), X (AEWA), X (WA), Red Listed	
<i>Larus argentatus</i>	Herring Gull		*	*	*	X (AEWA), X (WA), Red Listed	
<i>Larus canus</i>	Mew Gull		*		*	X (AEWA), X (WA), Amber Listed	
<i>Larus marinus</i>	Great Black-backed Gull		*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Larus ridibundus</i>	Black-headed Gull	*	*	*	*	X (AEWA), X (WA), Red Listed	
<i>Larus fuscus</i>	Lesser Black-backed Gull				*	X (AEWA), X (WA), Amber Listed	
<i>Locustella naevia</i>	Grasshopper Warbler	*	*	*		X (AEWA), X (WA), Amber Listed	
<i>Muscicapa striata</i>	Spotted Flycatcher	*	*	*	*	X (AEWA), X (WA), Amber Listed	

Scientific Name	Common Name	Grid Square ⁵³				Conservation Status ⁵⁴	Potential Effects on the Project
		C10	C11	C20	C21		
<i>Numenius arquata</i>	Eurasian Curlew	*	*	*	*	II(II) (EU BD), X (AEWA), X (WA), Red Listed	
<i>Oenanthe oenanthe</i>	Northern Wheatear	*	*	*		X (AEWA), X (WA), Amber Listed	
<i>Passer domesticus</i>	House Sparrow	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Passer montanus</i>	Eurasian Tree Sparrow		*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Perdix perdix</i>	Grey Partridge		*			II(I) II(I) (EU HD), X (AEWA), X (WA), Red List	
<i>Phalacrocorax carbo</i>	Great Cormorant		*		*	II(I) II(I) (EU HD), X (AEWA), X (WA)	
<i>Phylloscopus sibilatrix</i>	Wood Warbler		*			X (AEWA), X (WA), Amber Listed	
<i>Riparia riparia</i>	Sand Martin	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Saxicola rubetra</i>	Whinchat	*	*			X (AEWA), X (WA), Amber Listed	
<i>Scolopax rusticola</i>	Eurasian Woodcock	*	*	*	*	II(I), III(III) (EU BD), X (AEWA), X (WA), Amber List	
<i>Sturnus vulgaris</i>	Common Starling	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Tadorna tadorna</i>	Common Shelduck		*		*	X (AEWA), X (WA), Amber Listed	
<i>Tringa totanus</i>	Common Redshank		*		*	X (AEWA), X (WA), Red Listed	
<i>Tyto alba</i>	Barn Owl		*	*	*	X (AEWA), X (WA), Red Listed	
<i>Vanellus vanellus</i>	Northern Lapwing	*	*	*	*	II(II) (EU BD), X (AEWA), X (WA), Red Listed	
<i>Anser albifrons</i>	Greater White-fronted Goose				*	II(II) III(III) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Anser brachyrhynchus</i>	Pink-footed Goose				*	II(II) (EU BD), X (AEWA), X (WA),	
<i>Aythya fuligula</i>	Tufted Duck				*	II(I) III(II) (EU BD),), X (AEWA), X (WA), Amber Listed	
<i>Aythya marila</i>	Greater Scaup				*	II(II) III(III) (EU BD),), X (AEWA), X (WA), Amber Listed	
<i>Branta bernicla</i>	Brent Goose				*	X (AEWA), X (WA), Amber Listed	

Scientific Name	Common Name	Grid Square ⁵³				Conservation Status ⁵⁴	Potential Effects on the Project
		C10	C11	C20	C21		
<i>Bucephala clangula</i>	Common Goldeneye				*	II(II) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Calidris alpina</i>	Dunlin				*	I (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Calidris canutus</i>	Red Knot				*	X (AEWA), X (WA), Red Listed	
<i>Charadrius hiaticula</i>	Ringed Plover				*	X (AEWA), X (WA), Amber Listed	
<i>Clangula hyemalis</i>	Long-tailed Duck				*	II(II) EU BD, X (AEWA), X (WA)	
<i>Cygnus olor</i>	Mute Swan				*	X (AEWA), X (WA), Amber Listed	
<i>Egretta garzetta</i>	Little Egret				*	I (EU BD), X (AEWA), X (WA)	
<i>Falco peregrinus</i>	Peregrine Falcon				*	I (EU BD), X (AEWA), X (WA)	
<i>Gavia arctica</i>	Black-throated Diver				*	I (EU BD), X (AEWA), X (WA), Amber List	
<i>Limosa limosa</i>	Black-tailed Godwit				*	X (WA), Amber List	
<i>Gavia immer</i>	Great Northern Diver				*	I (EU BD), X (AEWA), X (WA)	
<i>Gavia stellata</i>	Red-throated Diver				*	I (EU BD), X (AEWA), X (WA), Amber List	
<i>Limosa lapponica</i>	Bar-tailed Godwit				*	I (EU BD), X (AEWA), X (WA), Amber List	
<i>Mergus serrator</i>	Red-breasted Merganser				*	II(II) (EU BD), X (AEWA), X (WA)	
<i>Phasianus colchicus</i>	Common Pheasant	*	*	*	*	II(I) III(I) (EU BD), X (AEWA), X (WA)	
<i>Pluvialis apricaria</i>	Golden Plover	*			*	I II(II) III(III) (EU BD), X (AEWA), X (WA), Red List	
<i>Pluvialis squatarola</i>	Grey Plover				*	X (AEWA), X (WA), Amber List	
<i>Podiceps cristatus</i>	Slavonian Grebe				*	X (AEWA), X (WA), X (WA), Amber List	
<i>Podiceps cristatus</i>	Great Crested Grebe				*	X (AEWA), X (WA), Amber List	
<i>Sterna hirundo</i>	Common Tern				*	I (EU BD), X (AEWA), X (WA), Amber List	
<i>Sterna sandvicensis</i>	Sandwich Tern				*	I (EU BD), X (AEWA), X (WA), Amber List	
<i>Tachybaptus ruficollis</i>	Little Grebe				*	X (AEWA), X (WA), Amber List	

Scientific Name	Common Name	Grid Square ⁵³				Conservation Status ⁵⁴	Potential Effects on the Project
		C10	C11	C20	C21		
<i>Tringa nebularia</i>	Common Greenshank				*	X (AEWA), X (WA), Amber List	
<i>Uria aalge</i>	Common Guillemot				*	X (AEWA), X (WA), Amber List	
<i>Scolopax rusticola</i>	Eurasian Woodcock	*				II(I), III(III) (EU BD), X (AEWA), X (WA), Amber List	
<i>Carduelis flavirostris</i>	Twite	*				X (WA), Red Listed	
<i>Alcedo atthis</i>	Kingfisher			*		I (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Columba oenas</i>	Stock Pigeon	*			*		

Table A2-9: Section 3 - Rare and Protected Bird Species (NBDC)

Scientific Name	Common Name	Grid Square ⁵⁵				Conservation Status ⁵⁶	Potential Effects on the Project
		C21	C20	C30	H39		
<i>Cygnus olor</i>	Mute Swan	*		*		X (AEWA), X (WA), Amber Listed	Yes: Potential impacts to bird species during the construction and operation of the proposed road improvement. Targeted species surveys required when options are developed.
<i>Circus cyaneus</i>	Hen Harrier			*	*	I (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Alcedo atthis</i>	Kingfisher		*	*	*	I (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Gallinula chloropus</i>	Moorhen	X		*	*	X (AEWA), X (WA)	
<i>Alauda arvensis</i>	Sky Lark	*	*	*	*	X (AEWA), X (WA), Amber List	
<i>Alca torda</i>	Razorbill	*				X (AEWA), X (WA), Amber List	
<i>Anas acuta</i>	Northern Pintail	*				II(I) III(II) (EU BD), X (AEWA), X (WA), Red List	
<i>Anas clypeata</i>	Northern Shoveler	*				II(I) III(III) (EU BD), X (AEWA), X (WA), Red List	
<i>Actitis hypoleucos</i>	Common Sandpiper				*	X (AEWA), X (WA), Amber List	
<i>Anas crecca</i>	Eurasian Teal	*		*	*	II(I), III(II) (EU BD), X (AEWA), X (WA), Amber List	

⁵⁵ Data obtained from National Biodiversity Data Centre NBDC(*), NPWS (x)⁵⁶ Protection status following criteria set out in Birds of Conservation Concern in Ireland 2014 - 2019 (Colhoun & Cummins, 2013) - Red-listed species are those of highest conservation priority, Amber listed species those which are of lesser priority and Green-listed species those of least conservation priority. EU BD Annex I-V – denotes EU Birds Directive Annexed I to V Species. X (AEWA) denotes the species is listed under the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA) Convention (1999). X (WA) denotes species listed under the Wildlife Acts.

Scientific Name	Common Name	Grid Square ⁵⁵				Conservation Status ⁵⁶	Potential Effects on the Project
		C21	C20	C30	H39		
<i>Anas platyrhynchos</i>	Mallard	*	*	*	*	II(I) III(I) (EU BD), X (AEWA), X (WA)	
<i>Anas penelope</i>	Eurasian Wigeon	*		*		II(I) III(II) (EU BD), X (AEWA), X (WA), Amber List	
<i>Anser anser</i>	Greylag Goose	*		*		II(I) III(II) (EU BD), X (AEWA), X (WA), Amber List	
<i>Apus apus</i>	Common Swift	*	*	*	*	X (AEWA), X (WA), Amber List	
<i>Carduelis cannabina</i>	Common Linnet	*	*	*	*	X (AEWA), X (WA), Amber List	
<i>Columba livia</i>	Rock Pigeon	*	*	*	*	II(I) (EU BD), X (AEWA), X (WA)	
<i>Columba oenas</i>	Stock Pigeon	*		*		X (WA)	
<i>Columba palumbus</i>	Common Wood Pigeon	*	*	*	*	II(I) III(I) (EU BD), X (AEWA), X (WA)	
<i>Crex crex</i>	Corncrake	*	*	*	*	I (EU BD), X (AEWA), X (WA), Red List	
<i>Cygnus cygnus</i>	Whooper Swan	*	*	*	*	I (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Emberiza citrinella</i>	Yellowhammer	*	*	*	*	X (AEWA), X (WA), Red Listed	
<i>Delichon urbicum</i>	House Martin	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Falco columbarius</i>	Merlin	*	*	*		I (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Falco tinnunculus</i>	Common Kestrel	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Fulica atra</i>	Common Coot	*		*		II(I), III(II) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Gallinago gallinago</i>	Common Snipe	*	*	*	*	II(I), III(III) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Haematopus ostralegus</i>	Eurasian Oystercatcher	*				X (AEWA), X (WA), Amber Listed	
<i>Hirundo rustica</i>	Barn Swallow	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Lagopus lagopus</i>	Red Grouse		*	*	*	II(I), III(I) (EU BD), X (AEWA), X (WA), Red Listed	
<i>Larus argentatus</i>	Herring Gull	*	*	*	*	X (AEWA), X (WA), Red Listed	
<i>Larus canus</i>	Mew Gull	*		*	*	X (AEWA), X (WA), Amber Listed	
<i>Larus marinus</i>	Great Black-backed Gull	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Larus ridibundus</i>	Black-headed Gull	*	*	*	*	X (AEWA), X (WA), Red Listed	

Scientific Name	Common Name	Grid Square ⁵⁵				Conservation Status ⁵⁶	Potential Effects on the Project
		C21	C20	C30	H39		
<i>Larus fuscus</i>	Lesser Black-backed Gull	*		*	*	X (AEWA), X (WA), Amber Listed	
<i>Locustella naevia</i>	Grasshopper Warbler		*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Muscicapa striata</i>	Spotted Flycatcher	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Numenius arquata</i>	Eurasian Curlew	*	*	*	*	II(II) (EU BD), X (AEWA), X (WA), Red Listed	
<i>Oenanthe oenanthe</i>	Northern Wheatear		*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Passer domesticus</i>	House Sparrow	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Passer montanus</i>	Eurasian Tree Sparrow	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Perdix perdix</i>	Grey Partridge				*	II(I) II(I) (EU HD), X (AEWA), X (WA), Red List	
<i>Phalacrocorax carbo</i>	Great Cormorant	*		*	*	II(I) II(I) (EU HD), X (AEWA), X (WA)	
<i>Riparia riparia</i>	Sand Martin	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Scolopax rusticola</i>	Eurasian Woodcock	*	*	*	*	II(I), III(III) (EU BD), X (AEWA), X (WA), Amber List	
<i>Sturnus vulgaris</i>	Common Starling	*	*	*	*	X (AEWA), X (WA), Amber Listed	
<i>Tadorna tadorna</i>	Common Shelduck	*				X (AEWA), X (WA), Amber Listed	
<i>Tyto alba</i>	Barn Owl	*	*	*	*	X (AEWA), X (WA), Red Listed	
<i>Vanellus vanellus</i>	Northern Lapwing	*	*	*	*	II(II) (EU BD), X (AEWA), X (WA), Red Listed	
<i>Anser albifrons</i>	Greater White-fronted Goose	*		*		II(II) III(III) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Anser brachyrhynchus</i>	Pink-footed Goose	*		*		II(II) (EU BD), X (AEWA), X (WA)	
<i>Aythya fuligula</i>	Tufted Duck	*		*		II(I) III(II) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Aythya marila</i>	Greater Scaup	*				II(II) III(III) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Branta bernicla</i>	Brent Goose	*				X (AEWA), X (WA), Amber Listed	
<i>Branta leucopsis</i>	Barnacle Goose	*				X (AEWA), X (WA), Amber List	
<i>Bucephala clangula</i>	Common Goldeneye	*		*		II(II) (EU BD), X (AEWA), X (WA), Amber Listed	
<i>Calidris alpina</i>	Dunlin	*				I (EU BD), X (AEWA), X (WA), Amber Listed	

Scientific Name	Common Name	Grid Square ⁵⁵				Conservation Status ⁵⁶	Potential Effects on the Project
		C21	C20	C30	H39		
<i>Calidris canutus</i>	Red Knot	*				X (AEWA), X (WA), Red Listed	
<i>Charadrius hiaticula</i>	Ring Plover	*				X (AEWA), X (WA), Amber Listed	
<i>Clangula hyemalis</i>	Long-tailed Duck	*				II(II) EU BD, X (AEWA), X (WA)	
<i>Cygnus olor</i>	Mute Swan	*		*	*	X (AEWA), Amber Listed	
<i>Egretta garzetta</i>	Little Egret	*				I (EU BD), X (AEWA), X (WA)	
<i>Falco peregrinus</i>	Peregrine Falcon	*		*	*	I (EU BD), X (AEWA) X (WA)	
<i>Gavia arctica</i>	Black-throated Diver	*				I (EU BD), X (AEWA), X (WA), Amber List	
<i>Gavia immer</i>	Great Northern Diver	*				I (EU BD), X (AEWA), X (WA)	
<i>Gavia stellata</i>	Red-throated Diver	*				I (EU BD), X (AEWA), X (WA), Amber List	
<i>Limosa lapponica</i>	Bar-tailed Godwit	*				I (EU BD), X (AEWA), X (WA), Amber List	
<i>Limosa limosa</i>	Black-tailed Godwit	*				X (AEWA), X (WA), Amber List	
<i>Mergus serrator</i>	Red-breasted Merganser	*		*	*	II(II) (EU BD), X (AEWA), X (WA)	
<i>Phasianus colchicus</i>	Common Pheasant	*	*	*	*	II(I) III(I) (EU BD), X (AEWA), X (WA)	
<i>Pluvialis apricaria</i>	Golden Plover	*		*	*	I II(II) III(III) (EU BD), X (AEWA), X (WA), Red List	
<i>Pluvialis squatarola</i>	Grey Plover	*				X (AEWA), X (WA), Amber List	
<i>Podiceps cristatus</i>	Slavonian Grebe	*				X (AEWA), X (WA), Amber List	
<i>Podiceps cristatus</i>	Great Crested Grebe	*		*		X (AEWA), X (WA), Amber List	
<i>Sterna hirundo</i>	Common Tern	*				I (EU BD), X (AEWA), X (WA), Amber List	
<i>Sterna sandvicensis</i>	Sandwich Tern	*				I (EU BD), X (AEWA), X (WA), Amber List	
<i>Tachybaptus ruficollis</i>	Little Grebe	*		*	*	X (AEWA), X (WA), Amber List	
<i>Tringa nebularia</i>	Common Greenshank	*				X (AEWA), X (WA), Amber List	
<i>Tringa totanus</i>	Common Redshank	*		*	*	X (AEWA), X (WA), Red List	
<i>Uria aalge</i>	Common Guillemot	*				X (AEWA), X (WA), Amber List	
<i>Rallus aquaticus</i>	Water Rail			*		X (AEWA), X (WA), Amber List	
<i>Lymnocyrtus minimus</i>	Jack Snipe			*	*	II(I) III(III) (EU BD), X (AEWA), X (WA)	

Scientific Name	Common Name	Grid Square ⁵⁵				Conservation Status ⁵⁶	Potential Effects on the Project
		C21	C20	C30	H39		
<i>Tadorna tadorna</i>	Common Shelduck	*		*		X (AEWA), X (WA), Amber List	
<i>Carduelis flavirostris</i>	Twite			*	*	X (WA), Red List	

Appendix 3:

Cultural Heritage Datasets

Archaeological Sites Datasets

Table A3-1: Archaeological Sites recorded within Section 1 Study Area

Monument No.	Townland	Monument Type	ITM (E)	ITM (N)
DG078-039---	Gortletteragh	Souterrain	617248	896780
DG078-039001-	Gortletteragh	Ringfort - cashel	617240	896803
DG069-029----	Magheracorran	Ringfort - rath	616959	899161
DG078-027----	Carn (Gleneely Ed)	Standing stone	616838	894306
DG078-018----	Mullandrait	Ringfort - unclassified	616101	894959
*DG078-044----	Knockfair	Megalithic tomb - unclassified	615948	896292
*DG069-028----	Teevickmoy	Ringfort - unclassified	615811	898332
DG078-007----	Lough Hill (Stranorlar Ed)	Ritual site - holy well	615799	896005
DG069-023----	Meenavoy	Bullaun stone	615739	899724
DG069-024----	Meenavoy	Ringfort - unclassified	615698	899517
DG078-004----	Dunwiley	Ringfort - cashel	615541	896875
^DG078-016----	Glebe (Stranorlar Ed)	Church	615290	895321
DG078-015----	Glebe (Stranorlar Ed)	Enclosure	615236	895452
DG069-021----	Cloghroe (Lettermore Ed)	Ringfort - rath	615188	900028
*DG078-017----	Stranorlar	Ringfort - unclassified	615149	894762
DG078-006----	Admiran	Ringfort - rath	614791	895925
DG078-045----	Navenny	Kiln - corn-drying	614712	894331
DG078-003----	Backlees, Dunwiley	Ringfort - rath	614615	896773
DG078-014----	Drumboe Lower	House - 16th/17th century	613729	894801
*DG078-013----	Ballybofey	Ringfort - unclassified	613519	894622
*DG078-005----	Drumboe Lower	Church	613389	895443
*DG078-002----	Ballynaglack	Ringfort - unclassified	613259	896650
*DG078-001----	Ballynaglack	Redundant record	613199	896762
^DG077-017----	Creggan	Standing stone	612656	896860
*DG068-022001-	Creggan (Stranorlar Ed)	Ringfort - unclassified	612622	897675
*DG068-022002-	Creggan (Stranorlar Ed)	Souterrain	612622	897675
DG077-016----	Carrickmagrath	Ringfort - cashel	612566	892130
DG077-010----	Creggan	Ringfort - rath	612374	895782
*DG077-011----	Creggan	Enclosure	612288	895485
*DG077-009----	Creggan (Stranorlar Ed)	Ringfort - unclassified	612193	895774
*DG077-012----	Goland	Ringfort - unclassified	611949	893413
*DG077-020----	Curraghomongan	Ringfort - unclassified	611801	896302
^DG077-026----	Goland	Standing stone	611543	893083
*DG077-018----	Curraghomongan	Ringfort - unclassified	611535	896681
DG077-013----	Goland	Ringfort - cashel	611469	893143
DG077-019----	Curraghomongan	Ringfort - cashel	611424	896542
*DG077-033----	Cappry	Souterrain	611386	893330

Monument No.	Townland	Monument Type	ITM (E)	ITM (N)
DG077-015----	Goland	Ringfort - cashel	610812	892173
DG077-029----	Goland	Redundant record	610775	892228
^DG077-027----	Dooish	Standing stone	609942	893730
*DG077-014----	Goland	Ringfort - cashel	609863	892026

(* ASI records that no surface trace of site is visible / ^ no entry on the Historic Environment Viewer)

Table A3-2: Archaeological Sites recorded within Section 2 Study Area

Monument No.	Townland	Monument Type	ITM (E)	ITM (N)
DG054-038----	Pluck	Standing stone	623314	910283
*DG062-001----	Corkey	Souterrain	623078	909769
*DG062-002----	Corkey	Standing stone	623127	909824
DG054-037----	Rossbrackan	Standing stone	622773	910376
^DG054-036----	Rossbrackan	Standing stone	622561	910598
DG053-036----	Magheraboy (Magheraboy Ed)	Ritual site - holy well	621292	910208
*DG053-037----	Magheraboy (Magheraboy Ed)	Standing stone	622143	910455
DG053-038----	Magheraboy (Magheraboy Ed)	Standing stone	621697	910009
*DG053-039----	Magheraboy (Magheraboy ED)	Cairn -unclassified	622004	910122
*DG061-005----	Lurgybrack	Souterrain	619103	909575
^DG053-035----	Bunnagee	Bullaun stone	619215	910372
DG053-034----	Scribly	Enclosure	618429	910189
*DG053-027004-	Trimragh	Rock art	621548	911808
*DG053-027003-	Trimragh	Rock art	621522	911825
*DG053-027002-	Trimragh	Rock art	621504	911811
*DG053-027001-	Trimragh	Rock art	621418	911764
*DG053-028----	Trimragh	Church	621387	911469
*DG053-028001-	Trimragh	Graveyard	621387	911469
^DG053-056----	Ballyboe Lisenan, Ballyraine, Farsetmore, Gortlee, Kiltory, Magheranan, Glebe (Castleway Ed)	Battlefield	619370	912380
*DG053-026----	Ballyraine	Ringfort - unclassified	618900	911715
*DG053-017----	Lisnenan	Ritual site - holy well	618636	913128
^DG053-021----	Carnamogagh Lower	Bullaun stone	617915	912462

(* ASI records that no surface trace of site is visible / ^ no entry on the Historic Environment Viewer)

Table A3-3: National Monuments recorded within Section 3 Constraints Study Area

Monument No.	Townland	Monument Type	ITM (E)	ITM (N)
DG071-008001-	Lifford	Church	633485	898611
DG071-008003-	Lifford	Graveyard	633485	898611
DG071-008007-	Lifford Town	Wall monument - effigial	633485	898611
*DG071-008005-	Lifford	Town defences	633453	898446
DG071-010----	Lifford	Bullaun stone (present location)	633425	898430
DG071-008004-	Lifford	House - 16th/17th century	633415	898466
*DG071-008006-	Lifford	Fortification	633406	898597
DG071-008----	Lifford, Townparks (Clonleigh South Ed)	Historic town	633345	898491
DG071-002002-	Edenmore (Clonleigh North Ed)	Church	633220	900079
DG071-002003-	Edenmore (Clonleigh North Ed)	Architectural fragment	633220	900079
DG071-002004-	Edenmore (Clonleigh North Ed)	Cross-slab	633220	900079
*DG071-002001-	Edenmore (Clonleigh North Ed)	Ecclesiastical enclosure	633201	900076
DG071-002005-	Edenmore (Clonleigh North Ed)	Graveyard	633201	900076
DG071-002006-	Edenmore (Clonleigh North Ed)	Ecclesiastical site	633201	900076
*DG071-009----	Townparks (Clonleigh South Ed)	Standing stone	632933	898361
*DG071-003002-	Drumboy (Clonleigh South Ed)	Standing stone	632892	899662
*DG071-004----	Drumboy (Clonleigh South Ed)	Standing stone	632842	899413
*DG071-003001-	Drumboy (Clonleigh South Ed)	Standing stone	632833	899615
*DG071-006----	Lifford	Standing stone	632682	898548
*DG071-007----	Townparks (Clonleigh South Ed)	Standing stone	632654	898504
*DG071-005----	Lifford	Standing stone	632525	898541
*DG070-047----	Rossgier	Standing stone	632238	899638
*DG070-034----	Rossgier	Standing stone	632177	900133
*DG070-048----	Murlough (Clonleigh South Ed)	Standing stone	631630	899335
*DG070-049----	Murlough (Clonleigh South Ed)	Standing stone	631595	899154
*DG070-050----	Murlough (Clonleigh South Ed)	Standing stone	631564	899095
*DG062-025----	Listannagh	Souterrain	631216	904408
*DG070-032----	Gortin North	Standing stone	630611	901048
*DG070-033----	Gortin North	Standing stone	630570	900977
DG070-081----	Ballindrait, Millseesiagh	Bridge	630409	899791
*DG062-027----	Drummucklagh	Enclosure	629496	904159
*DG062-022----	Woodlands	Ringfort - unclassified	629149	904919
^DG062-024----	Carnshannagh	Enclosure	628523	904427
*DG070-007----	Drumnabraty	Standing stone	627803	902436
^DG062-013----	Castledowey	Souterrain	627802	908252
DG070-002----	GLAIDHB AN Tseanteampail	Standing stone	627674	903422
DG070-006----	GLAIDHB AN Tseanteampail	Standing stone	627516	903075
^DG054-043----	Galdonagh	Bullaun stone	627405	909985
*DG062-028----	Magherasollus	Souterrain	626988	903921

Monument No.	Townland	Monument Type	ITM (E)	ITM (N)
^DG062-029----	Magherasollus	Bullaun stone	626964	903904
*DG062-015----	Ballyholey Far	Standing stone	626786	907518
*DG062-016----	Ballyholey Far	Standing stone	626746	907177
DG070-005----	Gortaquigley	Standing stone	626738	902709
^DG062-033----	Ballyholey Far	Souterrain	626666	907350
DG062-006----	Droim Eochaille	Standing stone	626128	909451
DG054-042001-	Baile Na Bo, Tullybogly	Standing stone	625717	910570
*DG054-042002-	Tullybogly	Standing stone	625716	910547
*DG054-034----	Grawky	Standing stone	625715	910834
*DG054-033----	Errity	Megalithic tomb - unclassified	624821	910904
DG054-040----	Carrickballydooley	Cross-inscribed stone	624719	910164
DG062-009----	Labbadish	Ringfort - rath	624712	908995
*DG054-041----	Carrickballydooley	Cist	624674	910140
*DG062-005----	Labbadish	Souterrain	624570	909522
^DG054-048----	Labbadish	School	624466	910035
*DG054-039----	Labbadish	Cist	624343	910582
DG062-004----	Labbadish	Fortification	624309	909427
DG054-032002-	Raymoghy	Architectural fragment	624192	911058
DG054-032----	Raymoghy	Church	624171	911046
DG054-032001-	Raymoghy	Graveyard	624170	911057
*DG054-031----	Raymoghy	Standing stone	623933	911151
DG062-003----	Labbadish	Stone row	623820	909342
DG070-046----	Droim na hátha	Megalithic Tomb - unclassified	629985	899165
DG070-031----	Gortinreagh	Standing Stone	628802	900669
^DG062-031----	Magherasollus	Enclosure	626295	903697
^DG062-021----	Mountainpark	Enclosure	625558	904870
DG062-035----	Magheestown	Rock art	626064	905313
DG062-036----	Magheestown	Megalithic tomb - unclassified	626078	905314
DG062-019----	Ballyholey Far	Rock Art	626189	906015
DG062-017----	Mondooley Upper	Megalithic Tomb - unclassified	625882	906721
^DG062-014----	Mondooley Upper	Enclosure	625062	907390
DG062-011----	Carricknamart	Standing Stone	624745	907971
DG062-008----	Lisclamerty	Ringfort	623997	908627
DG062-003----	Labbadish	Stone Row	623818	909343
DG062-023----	Baile Na Bo	Ringfort - cashel	631512	904764

(* ASI records that no surface trace of site is visible / ^ no entry on the Historic Environment Viewer)

Table A3-4: Recorded Archaeological Artefacts within study area for Section 1

Townland	NMI ref.	Artefact types	Notes
Backlees	1979:103:1-11	22 worked flints comprising retouched objects, cores and fragments of waste	Found in potato field
Croaghonagh	2006:31	Rope (straw?)	Excavated by NMI staff in bogland
Dooish	SA1899:64	Stone axe	Polished
Liskeran	1960:545/514	Flint and polished stone axe	Donated by County Donegal Historical Society
Ballybofey	1930:544	Polished stone axe	-
Drumboe Upper	1972:212	Flint scraper	-
Dreenan	1941:1419 1935:525/526	Stone axe Flint flake/Stone axe	Found in bog Found at base of hill, near a fort
Teevickmoy	1959:34	Rotary quern stone	-

Table A3-5: Recorded archaeological Artefacts within Section 2 Study Area

Townland	NMI ref.	Artefact types	Notes
Scribly	1937:2490	Stone axehead	Purchased from Mr. William Scott, Scribly, who found it by farmstead.

Table A3-6: below presents artefacts found in relative proximity from this database.

Townland	NMI ref.	Artefact	Notes
Labbadish	1964:25	Bronze Age tripartite food vessel	Found in cist grave in Comé Hills
Errity	1930:29, 30, 70	Three stone axes	Found in field
Carrickballydooley	1976: 10, 11	Flint plano-convex knife and human remains	Found in wall
Ballyholey Far	1962:20	Bronze dagger	
Magherasollus	1992C1:16	Polished stone axe	
Gortaquigley	1936:2003	Hammerstone	Found in field
Galdonagh	1930:55 1962:54	Two stone axes	1930:55 found in plot attached to cottage 1962:54 found in bog
Mullaghanny	1931:156-9 1934:255-6 1936:2005-7 1937:3638 1992C1:52-7 1992C1:12, 13, 15	Four flint blades/scrapers Flint blade, scraper Three flint blades/scrapers Flint point Six flint blades/scrapers Three polished stone axes	Various lithic artefacts found in fields and bog land
Guystown	1992C1:9 1992C1:43	Polished stone axe Retouched flint flake	
Woodlands Lower	1962:11-3	Three stone heads	Built into garden wall
Mulnaveagh	1931:208	Polished hammerstone	Found in "The Mullan" garden
Lettergull	1992C1:44	Flint convex end scraper	
Ballindrait	P1948:187	Polished stone axe	

Townland	NMI ref.	Artefact	Notes
Ballynabreen	1972:158	Polished flint discoidal blade	Found 3 feet deep during drain digging
Murlough	2010C2:269-99	Collection of flints	Rev. L.M. Hewson collection
Creaghadoos	1985:1, 2	Two worked flints	Found in potato field
Edenmore	1932:7037	Socketed bronze axe-head (decorated)	
Braade	1967:61 1967:62 1967:166 1967:167	Copper alloy pin Polished stone adze head Copper alloy stick pin Copper alloy needle	Artefacts found in Carrickfin Sandhills. 1967:166/167 found by E. Rynne in blackish soil layer
Lifford	1939:387 1992C1:3	Rubbing stone Polished stone axe	1992C1:3 was found in the Belmont area
Tieveboy	1934:247	Broken flint javelin head	Presented by Mr. Andrew Lowry, Argy, Ballindrait
Gortnesk	1931:149	Stone ring	Purchased from Andrew Lowry, found in sandy ford across river
	1992C:42	Flint convex end scraper	Purchased at auction
Lismontigley	1931:151	Tracked stone	Purchased from Mr Andrew Lowry
	1931:152	Flint scraper	Purchased from Mr Andrew Lowry
	1934:251	Flint knife fragment	Purchased from Mr Andrew Lowry
	1934:252	Flint hollow scraper	Purchased from Mr Andrew Lowry
	1936:1998	Polished stone axehead	Found in field, purchased from Mr Lowry
	1936:1999	Tracked stone	Found in field, purchased from Mr Lowry
	1992C1:46	Flint flake	Fragment of leaf-shaped blade, proximal end, butt-trimmed. Purchased at auction, Lowry collection
	1992C1:47	Flint convex side scraper	Purchased at auction, Lowry collection
	1992C1:80	Flint convex scraper	Purchased at auction, Lowry collection
	1992C1:81	Flint convex end and side scraper	Purchased at auction, Lowry collection
	1992C1:82	Flint convex scraper	Purchased at auction, Lowry collection
	1992C1:83	Flint convex scraper	Purchased at auction, Lowry collection
	1992C1:84	Flint convex end scraper	Continuous semi-abrupt to abrupt retouch along edges, probably to shape rather than a tool edge – slightly uneven apart from distal end. Purchased at auction, Lowry collection.
	1992C1:85	Flint convex end scraper	Scraper edge is incomplete, possibly unfinished. Purchased at auction, Lowry collection
	1992C1:86-88	Flint convex end scrapers	Purchased at auction, Lowry collection
	1992C1:89	Invasively retouched flint flake	Sub-triangular flake with invasive retouch one lateral edge, also a bifacial retouch on distal point. Possible unfinished arrowhead or a type of knife. Purchased at auction, Lowry collection
	1992C1:90	Retouched flint blade	Pointed blade with discontinuous very short retouch, small notch on one edge towards distal point. Purchased at auction, Lowry collection

Townland	NMI ref.	Artefact	Notes
Possibly Lismontigley	1992C1:127-9, 134, 138 1992C1:137	Flint convex end scrapers Retouched plano-convex flake	Purchased at auction, Lowry collection Purchased at auction, Lowry collection

Architectural Heritage Datasets

Table A3-7: Structures within Section 1 listed in the NIAH and RPS

NIAH ref	RPS ref	Townland	Building Type	ITM (E)	ITM (N)
40907721		Carrickmagrath	Bridge	611915	892516
40907813		Edenmore (Gleneely)	Country House	616326	894589
40907814	40800911	Dreenan	Country House	615176	894003
40907829		Carrickmagrath	Bridge	612839	892905
40907830		Navenney	House	614344	893127
40907833		Edenmore (Gleneely)	Outbuilding	616306	894598
40907834		Drumboe Upper	House	613895	896285
40907835		Dunwiley	House	614773	896488
40907836		Mullandrait	Graveyard/Cemetery	616012	895514
40907838		Treanamullin	House	616762	895674
40907839		Corcam	House	617281	895202
40838001		Drumboe Lower	Monument	613645	894997
40838002		Ballybofey	Gates/ / railings	613847	894532
40838003		Ballybofey	House	613862	894550
40838004		Ballybofey	House	613875	894625
40838005		Ballybofey	House	613927	894603
40838006		Ballybofey	Office / house	613873	894524
40838007		Ballybofey	House	613909	894566
40838008		Ballybofey	House	613934	894588
40838009		Ballybofey	Retail outlet / house	613950	894596
40838010		Ballybofey	Bank/Financial Institution	613995	894612
40838011		Ballybofey	House	614069	894530
40838012		Ballybofey	House	614075	894526
40838013		Ballybofey	House	613977	894633
40838014		Ballybofey	House	613993	894637
40838015		Ballybofey	House	614003	894640
40838016		Ballybofey	House	614014	894644
40838017		Ballybofey	House	614057	894626
40838018		Ballybofey	House	614066	894624
40838019		Ballybofey	Market Building	614093	894634
40838020		Ballybofey	House	614122	894668
40838021		Ballybofey	Cinema	614150	894699
40838022	40800907	Ballybofey	Bridge	614396	894828
40838023	40800901	Stranorlar	Church/Chapel	614442	894886
40838024		Stranorlar	School	614477	894940
40838025		Stranorlar	House	614478	895039
40838026		Stranorlar	House	614622	895090
40838027		Stranorlar	House	614626	895095

NIAH ref	RPS ref	Townland	Building Type	ITM (E)	ITM (N)
40838029		Stranorlar	House	614658	895107
40838030		Stranorlar	House	614717	895186
40838031	40800912	Stranorlar	Church/Chapel	614741	895220
40838032		Stranorlar	House	614753	895157
40838033		Stranorlar	House	614814	895219
40838034		Stranorlar	House	614869	895227
40838035		Stranorlar	House	614877	895233
40838036	40800913	Stranorlar	House	614891	895233
40838037		Stranorlar	House	614902	895235
40838038		Stranorlar	Water Pump	615003	895219
40838039		Stranorlar	Water Pump	615100	895203
40838040	40907816	Glebe (Stranorlar)	Church/Chapel	615294	895320
40838041		Stranorlar	Church/Chapel	614855	895451
40838042		Stranorlar	House	614869	895508
40838043		Stranorlar	Vent pipe	614769	895417
40838044		Stranorlar	House	614682	895533
40838045	40907832	Stranorlar	Guest House/B&B	615092	895708
40838046		Stranorlar	House	614792	895241
40838047		Drumboe Lower	Coach House	613505	894791
40838048		Stranorlar	Church/Chapel	614786	895396
40906908		Mullaghagarry (Stranorlar)	Folly	617483	897960
40906914		Tircallan	House	616472	897547
40906923		Meenavoy	Kiln	614249	899529
40907707		Meencargagh (Dooish)	School	609444	891955
40907708		Ironworks	Corn Mill	612476	895211
40907720		Cappry	Outbuilding	612106	894673
40906913		Teevickmoy	House	616228	898609
40907837		Castlebane	Outbuilding	616209	896381

Table A3-8: Structures within Section 2 listed in the NIAH and RPS

NIAH ref	RPS ref	Townland	Building Type	ITM (E)	ITM (N)
40905305	-	Gortlee	Church/Chapel	617937	912093
40905321	-	Ballyraine	Church/Chapel	618348	912207
40905322	-	Drumnahoagh	Bridge	618540	911016
40905326	-	Bunnagee	Bridge	619252	910695
40905339	-	Dromore (Magheraboy)	House	620524	910935
40905305	-	Drumnahoagh	Church/Chapel	617937	912093
40905392	-	Kiltoy	House	618820	912890
40905380	-	Drumnahoagh	Bridge	618548	911034
40905394	-	Dromore	Bridge	619982	910477

NIAH ref	RPS ref	Townland	Building Type	ITM (E)	ITM (N)
40905390	-	Dromore	Mill	620478	910952
40905323	-	Drumnahoagh	House	618466	910823
40905324	-	Cullion	House	618697	909873
40905338	-	Dromore	Level Crossing	621105	910201
40905337	-	Aglehard	Bridge	622451	910280
40905425	-	Pluck	Bridge	622701	910069
40905455	-	Pluck	Water mill	622878	910346
40905454	-	Pluck	House	622929	910355
40906228	-	Corkey	Bridge	623252	909686
40905456	-	Corkey	Bridge	623467	910234

Table A3-9: Structures within Section 3 listed in the NIAH and RPS

NIAH ref	RPS ref	Townland	Building Type	ITM (E)	ITM (N)
40827009		Raymoghly	church/chapel	624167	911049
40827011		Glebe (Manorcunningham)	house	623693	910767
40905394		Dromore (Magheraboy)	bridge	619984	910481
40905457		Drumcarn	house	625154	909836
40834001	40907026	Cavanacor	country house	631320	900238
40834002		Murlough (Clonleigh South)	house	631819	899516
40834003		Lifford Common	church/chapel	631972	899460
40834004	40907020	Murlough (Clonleigh South)	bell tower/stand	631913	899459
40834005		Murlough (Clonleigh South)	mill (wind)	631548	899064
40834006		Murlough (Clonleigh South)	outbuilding	631362	899576
40834007		Birdstown	house	630773	899461
40834008		Birdstown	house	630576	899522
40834009		Ballindrait	water pump	630460	899640
40834010		Ballindrait	bridge	630409	899794
40834013		Ballindrait	church/chapel	630464	899920
40834017		Ballindrait	goods shed	630816	900024
40835001		Lifford	church/chapel	633482	898598
40835002	40800802	Lifford	church hall/parish hall	633457	898569
40835003		Lifford	barracks	633472	898536
40835005		Lifford	Railway station	633610	898527
40835006	40800806	Lifford	court house	633496	898487
40835007		Lifford	house	633469	898473
40835008		Lifford	house	633475	898477
40835009	40800813	Lifford	community centre	633441	898496
40835010	40800810	Lifford	garda station/constabulary barracks	633393	898453
40835011		Lifford	house	633434	898479
40835012		Lifford	house	633423	898476

NIAH ref	RPS ref	Townland	Building Type	ITM (E)	ITM (N)
40835013		Lifford	house	633417	898470
40835014		Lifford	house	633418	898442
40835015		Lifford	house	633407	898433
40835016		Lifford	house	633156	898506
40835017		Townparks (Clonleigh South)	country house	633031	898406
40835018		Townparks (Clonleigh South)	outbuilding	632989	898418
40835019	40800814	Lifford	house	633034	898558
40835020		Lifford	house	633249	898461
40835021		Lifford	hospital	633194	898281
40835022		Lifford	barracks	633152	898462
40835025		Lifford	post box	633197	898492
40835026		Drumboy (Clonleigh South)	house	632522	899331
40835027		Lifford	house	632942	898668
40835028		Carricknaslate	house	632331	897999
40905401	40905401	Labbadish	charter school	624462	910043
40905407		Drumoghill (Kincraig)	church/chapel	625812	910087
40905445		Drumoghill (Kincraig)	house	626296	910046
40905446		Drumoghill (Kincraig)	mill	625745	910031
40905447		Drumoghill (Kincraig)	bridge	625610	910074
40905452		Ballyboe (Kincraig)	bridge	625702	910052
40905457		Drumcarn	Railway station	625153	909835
40906201	40906201	Oakfield Demesne	country house	627203	903641
40906202		Listannagh	church/chapel	631372	904542
40906204		Corkey	house	623670	909727
40906203	40906203	Drumbeg (Feddyglass)	house	628776	903969
40906205		Drummucklagh	kiln	629448	904301
40906214		Oakfield Demesne	outbuilding	627180	903656
40906215		Ballyholey Far	house	626914	907306
40906216		Ballyholey Far	building misc.	627149	907007
40906218		Oakfield Demesne	walled garden	627232	903708
40906219		Oakfield Demesne	icehouse	627364	903601
40906233		Labbadish	bridge	623878	909704
40906234		Corkey	house	623831	909666
40906236		Labbadish	outbuilding	623906	909707
40906238		Slievebuck	bridge	627288	905915
40906239		Ballyholey Far	school	627302	906276
40906242		Mondooey Middle	bridge	626611	907458
40906244		Drumcarn	bridge	625013	908475
40906245		Mondooey Lower	outbuilding	625893	908742
40906246		Drumcarn	bridge	624806	908984
40906262		Carnshannagh	house	628673	904128

NIAH ref	RPS ref	Townland	Building Type	ITM (E)	ITM (N)
40907004		Moneen	house	631108	900730
40907049		Guystown	house	629837	900403
40907053		Feddyglass	house	629978	903067
40907063		Coolaghy Glebe	house	627522	901978
40907064		Coolaghy	house	628362	902304
40907065		Broadlea	house	628989	902446
40907066		Feddyglass	outbuilding	629991	903177
40907111		Blackrock	house	633526	901009
40907114		Braade (Clonleigh South)	mill (wind)	632881	900913
40907130		Coneyburrow	house	632964	897896
40907140		Coneyburrow	guest house/b&b	633014	897905
40907014		Drumnaha (Clonleigh)	house	629777	899302
40907063		Coolaghy Glebe	house	627522	901977
40906243		Carricknamart	house	624983	907952
40906225		Carricknamart	bridge	623591	909092
40906260		Corkey	mill (water)	623818	909683
40907116		Coolatee	house	633626	900743
40907117		Gortgranagh	walled garden/outbuilding	633938	901496