GALWAY TO ATHLONE CASTLE NATIONAL CYCLEWAY

CONSTRAINTS AND OPPORTUNITIES REPORT

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CASTLE NATIONAL
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CONSTRAINTS AND OPPORTUNITIES REPORT

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1 INTRODUCTION

1.1 Background

This document presents the findings of the Constraints Study for the Galway to Athlone Castle National Cycleway Scheme.

The Constraints Study presents the various anthropogenic and environmental constraints that are within the Study Area. The findings of this report will form a crucial part of the option selection process covered in Phase 2 under the TII Project Management Guidelines (PMG).

1.2 Aims and Objectives

The scope of the Constraints Study is to identify and map the nature and extent of potential constraints that exist within the 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 Cycleway and in so doing will inform both the stakeholder consultation and Phase 2 Option Selection process. 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** Error! Reference source not found.)
- Biodiversity (**Section** Error! Reference source not found.)
- Land and Soils (**Section** Error! Reference source not found.)
- Water (**Section** Error! Reference source not found.)
- Air and Climate (**Section** Error! Reference source not found.)
- Material Assets - Utilities (**Section** Error! Reference source not found.)
- Material Assets - Agriculture (**Section** Error! Reference source not found.)
- Cultural Heritage including archaeology, architecture and culture (**Section** Error! Reference source not found.)
- Landscape (**Section** Error! Reference source not found.)
- External Constraints not included above (**Section** Error! Reference source not found.)

This Study incorporates mapping of the identified constraints across the Study Area of the project to inform decision making on feasible Cycleway route 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

The Study Area for examination is large enough to include all reasonable Cycleway route options for consideration between Galway and Athlone. The Study Area considered is described in Section **Error! Reference source not found.** of this report.

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 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 Area. Additionally, a number of datasets such as the National Parks and Wildlife Service (NPWS) ecological database, the Geological Survey Ireland database and the Office of Public Works (OPW) flood mapping databases have been utilised. The constraints identified are described in **Sections 5** to **14.**

2 STUDY AREA

This scheme forms part of the Galway to Dublin Cycleway that will be an entirely traffic free route designed exclusively for the use of pedestrians and cyclists. The Galway to Athlone section will commence at Ballyloughane Strand on the east side of Galway City and end at Athlone Castle in County Westmeath.

The geographical Study Area for examination is large enough to include all reasonable route options for consideration between Galway and Athlone. The area in question, shown in Figure 2.1 below, should not be exceeded without compromising the directness and length of the route. This is based on the maximum desired scale of the Cycleway, identified through international market research, and the desire to connect to larger towns at reasonable intervals.

The area extends from the west side of Ballyloughane Strand in Galway City along the coastline of Galway Bay to the natural boundary of the River Shannon in Athlone. The most southern extremity extends to Lough Derg and Coole Park to capture available amenities and recreational facilities offered in Gort and Portumna. The most northern point then extends as far as Tuam for consideration.

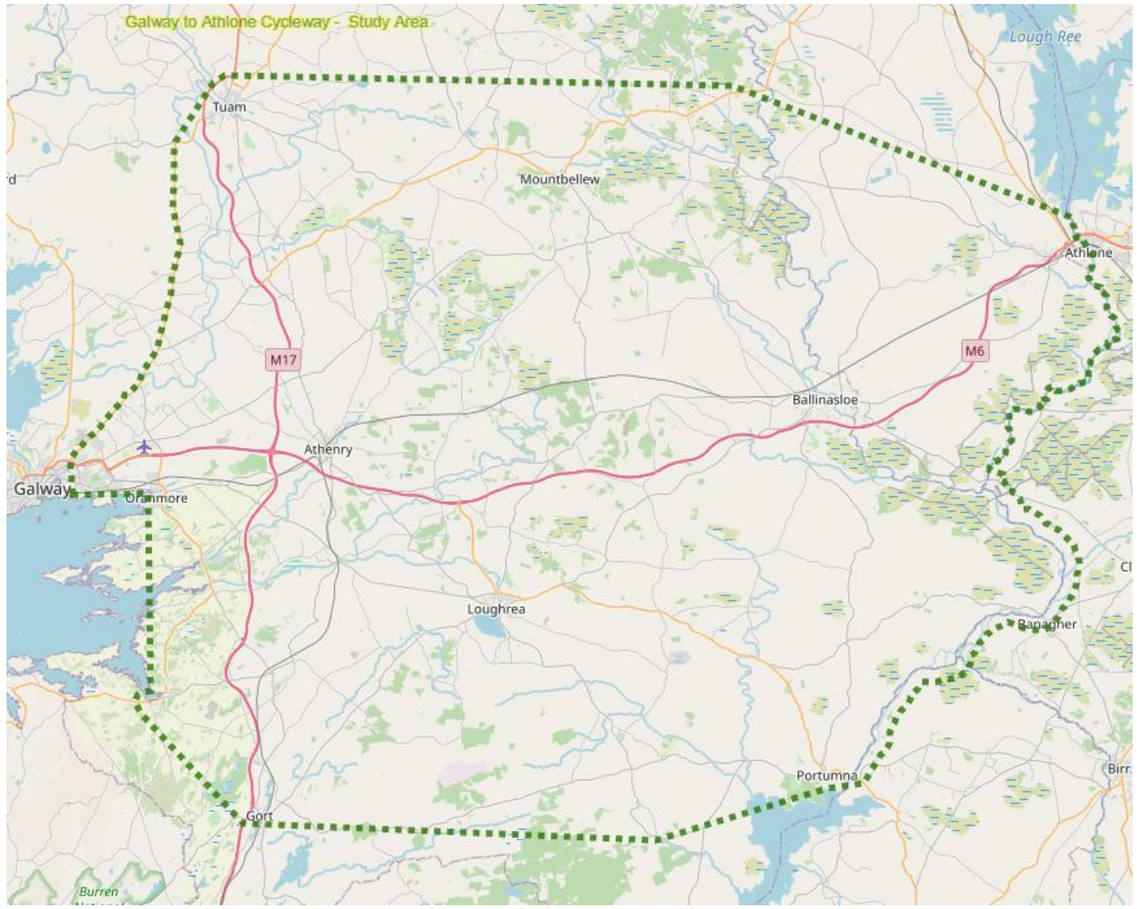

Figure 2-1 – Study Area

Figure 2-2 – Galway to Dublin Cycleway Map

3 ENVIRONMENTAL LEGISLATIVE CONSTRAINTS

Consideration of relevant policy and legal issues at EU, national, regional and local level may influence the progression of the proposed cycleway. This may influence future design and construction processes. It is prudent to consider issues at as early a stage as possible so as not to delay the timely completion of the project. On this basis a list of relevant legal, planning and policy related requirements relative to the proposed cycleway are set out in **Table 3-1.**

Table 3-1: Legislation, Planning and Policy Requirements with Potential to Influence the Galway to Athlone Castle National Cycleway Scheme

Legislation/Plan/Policy	Content Relative to the Proposed Cycleway Scheme
EU Level	
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 2011/92/EU as amended by Directive 2014/52/EU, on the 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)	• Establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater.
Habitats Directive (92/43/EEC)	• All works during the development and operation of the project must aim to maintain/restore the conservation objectives of habitats and species of community interest within the study area. These habitats and species of community interest are identified as; Special Areas of Conservation (SACs), designated under the Habitats Directive and Special Protection Areas (SPAs), designated under the Conservation of Wild Birds Directive 2009/147/EC. The project will be screened for Appropriate Assessment in accordance with Article 6(3) of the Directive • Measures taken pursuant to this Directive shall be designed to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest.
Birds Directive (2009/147/EC)	• The Birds Directive aims to protect all of the 500 wild bird species naturally occurring in the European Union. • All works during the development and operation of the project must aim to maintain/conserve wild bird species occurring in the study area.
EU Sustainable Development Strategy (EU SDS, 2001, reviewed 2009)	• The EU Sustainable Development Strategy, is a framework for a long-term vision of sustainability in which economic growth, social cohesion and environmental protection go hand in hand and are mutually supporting.
National Level	
European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) (as amended)	• Gives effect to the Habitats Directive (92/43/EEC) and the Birds Directive 2009/147/EC transposing the directive into Irish legislation. • Under regulation 42, all public authorities are required to conduct a screening for Appropriate Assessment and, if necessary, an Appropriate Assessment on any plan or project for which it receives an application for consent, or which the local authority itself wishes to undertake or adopt. This obligation derives from Article 6(3) of the Habitats Directive.
European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018	• EIA Directive (Directive 2011/92/EU as amended by Directive 2014/52/EU) transposed into Irish legislation by S.I. No. 296 of 2018.
Planning and Development (P&D) Acts 2000 (as amended)	• Requirements for an Environmental Impact Assessment are outlined under Section 172 of the P&D Act.
Planning and Development Regulations 2001 as amended	• The thresholds for prescribed classes of development requiring Environmental Impact Assessment are set out under the Planning and Development Regulations 2001 Schedule 5. The thresholds for flood relief works are provided under Schedule 5 Part II, Section 10(f)(ii) "*Canalisation and flood relief works, where the immediate contributing sub-catchment of the proposed scheme (i.e. the difference between the contributing catchments at the upper and lower extent of the works) would exceed 1,000 hectares or where more than 20 hectares of wetland would be affected or where the length of river channel on which works are proposed would be greater than 2 kilometres.*"
Fisheries Acts 1959 to 2010	• Provides a wide range of measures to protect fish and the conservation of fish and other species of fauna and flora habitat; biodiversity of inland fisheries and ecosystems
European Communities (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. Planning and Development Acts 2000 as amended	• 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.
Climate Action and Low Carbon Development Act 2015	• The Act provide for the approval of plans by the Government in relation to climate change for the purpose of pursuing the transition to a low carbon, climate resilient and environmentally sustainable economy by 2050.
Ireland 2040 Our Plan National Planning Framework	• The National Planning Framework (NPF) - "Ireland 2040 – Our Plan" sets a new strategic planning and development context for Ireland and all of its regions between to 2040, setting a strategic, high-level framework for the co-ordination of a range of national, regional and local authority policies and activities, planning and investment.
Smarter Travel, A Sustainable Transport Future, 2009 and Irelands National Cycle Policy Framework, 2009 to 2020	• "Smarter Travel – A Sustainable Transport Future" is a policy framework approved by Government in 2009 which sets out how the vision of a sustainable travel and transport system can be achieved and to provide guidance on the incorporation of cycling and walking policies in development plans. • A national cycle policy was announced in 2009. *Ireland's National Cycle Policy Framework*, 2009 to 2020 sets out to create a strong cycling culture in Ireland with a target level of 10% of all trips to be made by bike by 2020. The key to achieving the Government target of 10% commuting by bike by 2020 is threefold; firstly, planning at all levels needs to consider cyclist needs; secondly, transport infrastructure must provide cycle friendly safe direct routes; and finally, education and communication is necessary to foster a cycling culture from a young age.
River Basin Management Plan for Ireland 2018 - 2021	• The River Basin Management Plan (RBMP) for Ireland (2018 – 2021), 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.
Regional Level	
Regional Planning Guidelines for the West 2012 – 2022	**Tourism Policies** **Policy CP20:** Support an inter-regional network of walking and cycling routes. This should take account of visual impacts and other environmental considerations such as impacts on protected habitats and species **Strategic Goals for the West Region**

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Legislation/Plan/Policy	Content Relative to the Proposed Cycleway Scheme
	SG2: To put in place an integrated sustainable transport and access infrastructure that: b. Promotes appropriate public transport services – rail or bus transport and other sustainable modes of travel such as walking and cycling
Regional Spatial and Economic Strategy 2020-2032- Northern and Western Regional Assembly	**RPO 3.6.13** The Assembly supports the delivery of a strategic Greenway Network for the GTS to include National Dublin to Galway Cycleway, Oranmore to Bearna Coastal Greenway and the Galway to Clifden Greenway (S/M).
County Level	
Galway County Development Plan (2015- 2021)	**Objective DS 3 – Integrated Land Use and Sustainable Transportation** Integrate land use planning and sustainable transportation planning, promote the consolidation of development, encourage sustainable travel patterns by reducing the need to travel particularly by private transport, while prioritising walking, cycling and public transport. **Priority Transportation Infrastructure 2015-2021:** Support and develop the *National Cycle Route* between Dublin, Ballinasloe, Galway City and Clifden along a mostly off line route;
Westmeath County Development Plan (2014- 2020)	**Objective O-WC8:** To support the expansion of cycle routes and liaise with Fáilte Ireland in the development of cycling touring routes for the benefit of recreational cyclists and visitors. To implement the relevant policies of the Department of Transport's National Cycle Policy Framework and support the National Cycle Network. To provide better sign posting, lighting and road surfaces and provide separation **Policy P-CS5:** To promote the integration of land use and transportation policy and to prioritise provision for cycling and walking travel modes and the strengthening of public transport **Policy P-ST8:** To reserve where feasible, land adjacent to river banks and lakes for public access and to facilitate the creation of Linear Parks to accommodate walking/cycling routes subject to the requirements of the Habitats Directive and in accordance with Habitat Management Plans for designated sites.
Strategic Flood Risk Assessment to the Mayo County Development Plan 2014-2020	This document outlines the types of flooding and the flood risk of different locations throughout Mayo. The Preliminary Flood Risk Assessment (PRFA) for the Western CFRAM study has identified 11 Areas for Further Assessment (AFAs) in County Mayo, one of which is Ballina town.
County Galway Biodiversity Action Plan 2010-2015	Objective 1 The three key action areas and objectives of the Galway County Biodiversity Action Plan are: • Awareness and participation: To foster a greater awareness and understanding of biodiversity among all sectors of the community, and encourage local people to become actively involved in the promotion, preservation and enhancement of local natural heritage. • Knowledge: To increase knowledge of biodiversity in County Galway through supporting and promoting research in the county and to facilitate the gathering and dissemination of biodiversity information and data. • Conservation: To help conserve the biodiversity of County Galway through direct action and through adopting an ecosystem approach to policy development.
River Basin Management Plan for the Western River Basin District in Ireland 2009 - 2015	River Basin Management Plan for the Western River Basin District in Ireland, issued in December 2009, sets out a number of objectives and measures for all water bodies in the Western Region.

4 CONSULTATIONS

4.1 Stakeholder Consultations

A number of key stakeholders to the project were identified and contacted in writing to inform them of the proposed Galway to Athlone Cycleway. These stakeholders were invited to submit any observations or comments. Error! R eference source not found., lists the stakeholders where a response was received.

Table 4-1 – Stakeholders Consulted during the Constraints Study

Stakeholder	Date Contacted	Response Date	Theme/Comments
Bord Na Móna	14/07/2020	14/07/2020	Very supportive of the project with very large tracts of bog land in the Study Area. From 2020, an accelerated 'Exit from Peat' is planned to involve an extensive Bord na Móna bog rehabilitation program, which will present additional lands for consideration in this scheme. Existing light industrial railway tracks were highlighted across these lands to present an opportunity to accommodate potential Cycleway routes which avoid crossing intact bogs.
Coillte TEO	14/07/2020	14/07/2020	Welcomes the Development of the Cycleway and would support the use of Coillte Forest estates for the cycleway where appropriate.
Cycling Ireland	10/08/2020	21/08/2020	Very supportive of the cycleway and looking forward to updates.
Department of Rural and Community Development	10/08/2020	12/08/2020	Welcomes development of the cycleway. Potential to increase cycling infrastructure in the area with positive local impact. Possible inclusion of existing Trails in East Galway and Roscommon.
European Cyclist Federation	10/08/2020	14/09/2020	Pleased with the development as level of cycling is increasing across Europe. Guidance on route itineraries and rules for certified EuroVelo Routes were provided. Highlighted that at least one point of access to public transport should be provided along route.
Failte Ireland	10/08/2020	10/08/2020	Very supportive of the project and are liaising with the project team to identify key attractions and sites of interest for cycleway users within the Study Area.
Iarnrod Eireann	10/08/2020	02/09/2020	Supportive of cycling schemes in Ireland. IE stated that no surplus land was available within the railway corridor. Raised safety concerns in relation to crossings and fencing.
Irish Farmers Association	10/08/2020	11/08/2020	Submission supporting rights of farmers potentially impacted by the project. Recognises the importance of cycleway projects but opposes the use of CPO. Use of state-owned land to be maximised and routes suggested by farmers should be considered. No farms should be divided by the cycleway. Meaningful consultation with farmers should be prioritised in groups rather than individually unless requested.
Sport Ireland Outdoors	10/08/2020	10/09/2020	Have a keen interest in cycleway projects and have been involved in the Dublin to Galway Cycleway. Encourages outdoor activities promoting physical and mental wellbeing which can be supported by a well-designed cycleway and will also benefit tourism and economy. Important to focus on a traffic free cycleway as this will attract maximum domestic and oversea users as seen from other projects. The consultation process is vital part to gain support from the local communities.
Office of Public Works	10/08/2020	04/09/2020	Welcomes the cycleway and a more detailed proposal so a definitive comment can be made.
Waterways Ireland	10/08/2020	10/08/2020	Thanked for the opportunity to comment and will revert in due course.

4.2 Public Consultations

The first Public Consultation for the Galway to Athlone Castle cycleway project was held in August 2020.

The purpose of the consultation was to present the study area to the public and invite them to give their opinions on the cycleway.

A series of public information events were held in Athlone, Ballinasloe, Athenry, Loughrea and Oranmore between 11am and 8pm during the week of 10th – 14th August, as shown in **Table 4.2** below. Information on the project was also made available at public displays held in local authority venues between the 17th and 21st of August. These events were held in compliance with HSE requirements regarding Covid-19.

The consultation was very well attended with a total 524 people attending the events. Members of the project team were present to discuss the project with the public. There was a strong interest in the project expressed at the events, with very good engagement and many useful discussions held during the events.

Table 4-2 – Public Consultation Events

Location	Date	Time
Shamrock Lodge Hotel Clonown Road, Athlone	Mon 10th August 2020	11am – 8pm
Shearwater Hotel Townparks, Ballinasloe	Tue 11th August 2020	11am – 8pm
Raheen Woods Hotel Raheen, Athenry	Wed 12th August 2020	11am – 8pm
Loughrea Hotel Athenry Road, Loughrea	Thu 13th August 2020	11am – 8pm
Maldron Hotel Carrowmoneash, Oranmore	Fri 14th August 2020	11am – 8pm
Áras an Chontae Prospect Hill, Galway	17th – 21st August 2020	10am – 4pm
Ballinasloe Area Office Civic Offices, Ballinasloe	17th – 21st August 2020	10am – 4pm
Áras an Chontae Roscommon	17th – 21st August 2020	10am – 4pm

After a five year pause the project team emphasised that the project was starting again from a ‘clean slate’, following a previous preferred route presented in 2014, with no routes proposed at this point. It was also emphasized that there would be strong consultation with landowners throughout the project development and that a key project aim would be to progress the project in collaboration with affected landowners.

Following the consultations, over 800 responses were received. Most were individual submissions, with submissions also received from community groups and businesses along with two petitions.

Most respondents were fully in support of an off-road segregated route through the study area. A significant minority were opposed to a route through private lands and would only support a route through public lands or on-road facilities. Submissions were received from all over the study area.

There were a number of key issues that were raised in many submissions. These included:

- The benefits that a cycleway would bring to rural communities and towns;
- A desire from many people to have the cycleway in their locality, especially the towns and villages;
- Use of privately owned land for the project, especially working farms;
- Impacts of a cycleway on farming activities, through severance, loss of land and reduced security;
- The potential use of Compulsory Purchase Order.

One petition was opposed to the use of compulsory purchases and suggested a route along the existing railway from Galway to Athlone. The other large petition was in support of the cycleway coming through Ballinasloe.

The majority of respondents recognised the need for the cycleway. They felt it would increase tourism in the area, benefit the local economy, and provide recreational and health benefits. Many respondents gave comments in relation to a route or part of a possible route.

Comments on attractions, locations, facilities and constraints were mainly in relation to local businesses that could facilitate cycleway users and key locations of heritage and attractions that would benefit the user. Scenery was also highlighted as an important feature to the cycleway. The constraints highlighted were generally in relation to agriculture and protected and conservation areas.

5 POPULATION AND HUMAN HEALTH

5.1 Population

5.1.1 Study Area Characteristics

The Study Area between Galway and Athlone is largely rural in nature with relatively low-lying population density between towns and villages. Generally, rural housing is scattered in the area with ribbon developments common along regional and local routes.

5.1.2 Settlements

The primary towns and villages outside Galway City within the Study Area are listed below in Table 5.1, with population figures obtained from the CSO 2016 Census.

Table 5-1 – Study Area Settlement Populations

Name	Type	Population
Galway City	City	79,934
Athlone	Town	21,349
Tuam	Town	8,767
Ballinasloe	Town	6,662
Loughrea	Town	5,556
Oranmore	Town	4,990
Athenry	Town	4,445
Gort	Town	2,994
Banagher	Town	1,760
Portumna	Town	1,450
Baile Chláir	Town	1,248
Mount Bellew	Village	774
Craughwell	Village	769
Kinvarra	Village	734
Ballygar	Village	687
Corrofin	Village	627
Lackaghbeg	Village	545
Moylough	Village	518
Ballinderreen	Village	483
Clarinbridge	Village	384
Killimor	Village	336
Monivea	Village	308
Abbeyknockmoy	Village	262
Eyrecourt	Village	252
Turloughmore	Village	240
Woodford	Village	239
Ballyforan	Village	200
Annaghdown	Village	198
Ahascragh	Village	195
Shannonbridge	Village	175
Kilcolgan	Village	141

5.1.3 Population Density

Galway City is the largest population centre ahead of Athlone within the Study Area. Tuam and Ballinasloe are the next largest urban centres. The population densities generally decrease as the distance from primary towns increases. Settlements within the area are shown in Figure 2.1 below.

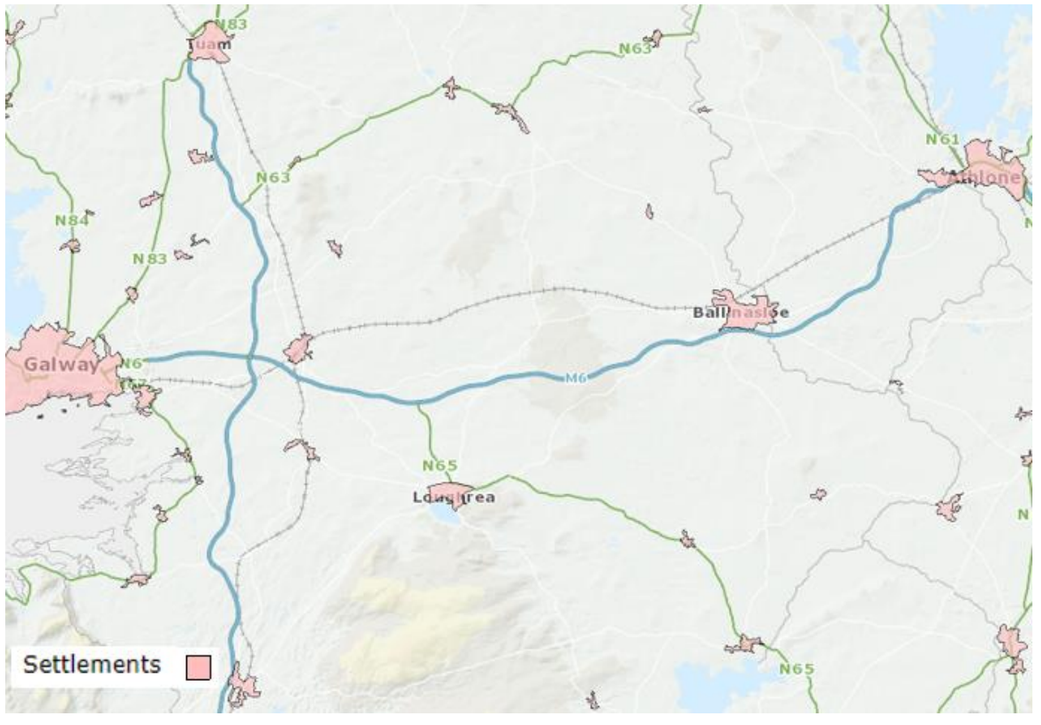

Figure 5-1 – Study Area Settlements (CSO Census 2016 - Population Statistics)

5.2 Human Health

One of the principal health benefits of the project is the provision of an alternative mode of transport for commuters. Increasing the levels of walking and cycling is widely regarded as beneficial because of the improvements in public health. This is as a result of the increased levels of physical activity and because of a modal shift from private motorised forms of transport that reduces congestion and environmental pollution.

From a user's perspective, options which run adjacent to the existing roads could be considered to have a more negative impact in terms health, as it exposes users to more air pollution.

5.3 Identified Constraints

Settlements and population densities have been identified in the Study Area. Potential routes to these towns and villages will be considered as part of the development of the Phase 2 Options Selection process. The settlement distributions across the Study Area have a range of population densities ranging from rural to urban settings.

Cognisance of the health benefits to populated areas is to be taken into account when considering potential Cycleway options that can maximise local use. Route options should be located away from busy existing roads as much as possible to avoid exposure for Cycleway users to traffic pollution.

6 BIODIVERSITY

6.1 Introduction

This section provides an overview of the ecological (including terrestrial and aquatic) constraints within the study area. The overall aim was to identify areas of ecological significance within the study area which may form a constraint to the design and construction of the cycleway.

6.2 Methodology

6.2.1 Desktop Study

The methodology comprised a detailed desk study assessment, walkover surveys and consultation with key stakeholders (including the NPWS, IFI, Birdwatch Ireland etc.) These elements are used to identify, describe and map areas of known or potential ecological value. The material sources consulted as part of the desk study are as follows:

- A review of the National Parks & Wildlife Service (NPWS) natural heritage database for designated areas of ecological interest and sites of nature conservation importance within and adjacent to the study area (https://www.npws.ie/protected-sites);
- A review of the NPWS rare and threatened species database for records of species of conservation interest within the study area;
- Literature review to identify and collate relevant published information on both ecological aspects of the study area and relevant ecological studies conducted in other areas, including the following:
  - New Atlas of the British and Irish Flora (CD-ROM);
  - 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 July 2020;
  - Boundaries for catchments with confirmed or potential Freshwater Pearl Mussel (FWPM) *Margaritifera* populations in GIS format available online from the NPWS;
  - Bat Conservation Ireland's website (http://www.batconservationireland.org);
  - Irish Butterflies website (http://www.irishbutterflies.com);
  - Water Framework Directive website (www.wfdireland.ie);
  - 'The Angler's Guide to Game Fishing in the Western Region' Western Regional Fisheries Board, 2003;
  - Botanical Society of Britain & Ireland Distribution Database accessed online May 2020 (https://database.bsbi.org/);
  - GeoHive online mapping (http://map.geohive.ie/mapviewer.html);
  - Department of Housing, Planning, Community and Local Government – online land-use mapping www.myplan.ie/en/index.html;
  - Environmental Protection Agency (EPA) online interactive mapping tools (https://gis.epa.ie/EPAMaps) and (https://www.catchments.ie/maps/) for water quality data including surface and ground water quality status, and river catchment boundaries;
  - Information on ranges of mobile Qualifying Interest (QI) populations in Volume 1 of NPWS' Status of EU Protected Habitats and Species in Ireland (NPWS, 2019a), and associated digital shapefiles obtained from the NPWS Research Branch;
  - 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);
  - Inland Fisheries Ireland (www.fisheriesireland.ie)and (http://wfdfish.ie/);
  - BirdWatch Ireland (https://birdwatchireland.ie/);
  - Colhoun K. & Cummins, S. 2013 Birds of Conservation Concern in Ireland 2014-19. Irish Birds 9:523-544;
  - Any local surveys of flora, fauna and habitat available using the Heritage Councils mapping website (https://heritagemaps.ie/WebApps/HeritageMaps/index.html);
  - River Basin Management Plan 2018 – 2021: https://www.housing.gov.ie/sites/default/files/publications/files/rbmp_full_reportweb.pdf; and
  - Review of Ordnance Survey maps and of orthophotography.

A review of orthophotography resources of the study area was also carried out. The objective of this review was to identify areas of low ecological value, such as urban areas and areas under arable cultivation or under intensive pasture. Conversely, the review of aerial photographs was also used to identify areas of potentially high ecological value such as woodlands and wetlands. Any sites of potential ecological significance were validated during site walkovers.

6.2.2 Legislation

The methodology followed in relation to this assessment has had regard to the following legislation:

- EIA Directive 2011/92/EU as amended by Directive 2014/52/EU, on the assessment of the effects of certain public and private projects on the environment;
- 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) on the conservation of wild birds (Birds Directive);
- EU Water Framework Directive (2000/60/EC);
- European Communities (Quality of Salmonid Waters) Regulations, 1988 (S.I. No. 84 of 1988);
- Planning and Development Act, 2000 (as amended) (PDA);
- Planning and Development Regulations, 2001 (as amended)(P&D Regs);
- European Communities (Environmental Liability) Regulations, 2008 (S.I. No. 547 of 2008);
- European Communities (Birds and Natural Habitats) Regulations 2011 as amended;
- Flora Protection Order, 2015;
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296/2018);
- Wildlife Acts 1976 to 2018; and
- Recent Irish and European case law on the Habitats Directive.

6.3 Existing Environment

6.3.1 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 2009/147/EC 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 and Licensing Authorities.

A total of 50 European sites and 62 NHA/pNHA sites lie within the study area, see **Appendix B.** There are 4 Nature Reserves within the study area. The Ramsar sites located within the study area include Lough Corrib (Ramsar ID 846), Inner Galway Bay (Ramsar ID 838), Coole Lough & Garryland Wood (Ramsar ID 473) and Mongan Bog (Ramsar ID 473).

SACs and SPAs are a particular constraint to the proposed project as under Article 6(2) of the Habitat Directive and Article 4(4) of the Birds Directive, Member States are required to take appropriate steps to avoid the deterioration of habitats or disturbance of the species, in so far as such disturbance could be significant in relation to the objectives of this Directive.

Therefore, the proposed project must ensure that it will not adversely affect the integrity of European sites.

6.3.2 Protected Flora

A search of National Biodiversity Data Centre (NBDC) online database was conducted for records of vascular plants listed in Annex II, IV and V of the EU Habitats Directive and vascular plants protected under the Flora Protection Order (FPO) within the study area. These are listed in **Appendix B**.

FPO species Narrow-leaved Helloborine (*Cephalanthera longifolia*), Meadow Barley (*Hordeum secalinum*), Irish Fleabane (*Inula salicina*), Mudwort (*Limosella aquatica*) and Wood Bitter-vetch (*Vicia orobus*) were recorded within the study area on NBDC. Fir Clubmoss (*Huperzia selago*), protected under Annex V of the EU Habitats Directive was recorded on NBDC within the study area.

Rare and protected flora are a potential constraint to the project. Potential impacts to these species where they are found within the study area through field surveys or where there is potential to support these species will be assessed in the biodiversity impact assessments for the project.

6.3.3 Habitats

Aerial photography was examined in order to identify areas of particular interest. Habitats were identified and classified according to 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. The Irish Semi-natural Grassland Survey identified a number of different grassland types within the study area, these are listed in **Appendix B**.

Due to the large extent of the study area a large variety of habitats were identified within the study area. These are detailed in **Table 6-1** below.

Table 6-1: Habitat types present within the study area

Fossitt Habitat Code	Habitat Type
BL1	Stone Walls and Other Stonework
BL2	Earth Banks
BL3	Buildings and Artificial Surfaces
ED3	Recolonising Bare Ground
ED2	Spoil and bare ground
ER2	Exposed Calcareous Rock*
EU1	Cave*
FL2	Acid oligotrophic lakes
FL3	Limestone/ marl lakes*
FL4	Mesotrophic lakes
FL6	Turloughs
FS1	Reed and large sedge swamps
FS2	Tall-herb swamps*
FP1	Calcareous spring*
FW1	Eroding/upland rivers
FW2	Depositing/lowland rivers*
FW4	Drainage ditches
GA1	Improved agricultural grassland
GA2	Amenity grassland (Improved)
GM1	Marsh*
GS1	Dry Calcareous and Neutral Grassland*
GS2	Dry meadows and grassy verges*
GS4	Wet grassland*
LR1	Exposed Rocky Shores
LS3	Muddy Sandy Shores*
PB2	Upland blanket bog*
PB3	Lowland blanket bog*
PB4	Cutover bog*
PF1	Rich fen and flush*
WD1	(Mixed) broadleaved woodland
WD2	Mixed broadleaved/conifer woodland
WD4	Conifer plantation
WD5	Scattered trees and parkland
WL1	Hedgerows
WL2	Treelines
WN1	Oak-birch-holly woodland*
WN5	Riparian Woodland*
WN6	Wet willow-alder-ash woodland*
WN7	Bog woodland
WS1	Scrub*
WS1	Scrub*

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

A number of these habitats correspond with Annex I habitat types and may be found within or outside SACs within the study area.

The hydrology and geology have a significant influence on the habitats within the study area. The wetlands and floodplains of the River Shannon and River Suck support seasonally flooded grasslands called 'Callows' and wet woodlands (WN5 and WN6), with raised bogs occupying former lakes and shallow depressions in the landscape.

The geology of the area is varied with a distinctly calcareous (limestone) influence in the midlands and west of the study area with the siliceous influence of the old red sandstone of the Slieve Aughty Mountains to the south.

Limestone derived soils may support the Annex I grassland habitats semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites) [6210], lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) (6510) and *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410].

A total of 2,129 karst features were recorded within the study area comprising enclosed depressions (including sinkholes and dolines), swallow holes, estevells, springs, dry valleys, caves and the Annex I habitats Turloughs [3180]

and Limestone Pavements [8240]. The NPWS undertook a National survey of limestone pavement and associated habitats in 2013[1]. A summary of the distribution of this habitat within the study area is provided in **Appendix B**.

Karst features often provide a supporting hydrological function to Annex I Groundwater Dependent Terrestrial Ecosystems (GWDTE) including Turloughs [3180], Petrifying springs with tufa formation (Cratoneurion) [7220], Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae* [7210], Alkaline fens [7230], Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp. [3140], all of which have been recorded within the study area.

The NBDC was searched for records of ancient or long-established woodlands present within the study area. There were 97 records within the study area, provided in **Appendix B**.

The CORINE Land cover inventory is a Pan-European landcover and landuse mapping programme. It gives an overview of the landcover across Europe and can be used to assess land use change over the years. For the purpose of this constraints study three land cover types were assessed within the study area including broad-leaved forests, mixed forests and coniferous forests. There were 29 records of broad-leaved forest, 95 for coniferous forests and 34 for mixed forest within the study area (see **Appendix B)**.

6.3.4 Invasive species

A search of the NBDC online database was conducted for records of invasive species listed on the Third Schedule to the EC Birds and Natural Habitats Regulations 2011 (SI No. 477/2011), as amended. Under Regulation 49(2) of the 2011 Regulations, it is an offence to plant, disperse, allow or cause to disperse, spread or otherwise cause to grow in any place, any plant included in Part 1 of the Third Schedule without a licence from the Minister for Arts, Heritage and the Gaeltacht.

Invasive species recorded on NBDC within the study area are displayed in **Table 6-2** below.

Table 6-2: SI No. 477/2011 Third Schedule Invasive Species records on NBDC

Common Name	Scientific Name
American mink	*Mustela vison*
Asian river clam	*Corbicula fluminea*
Canada Goose	*Branta canadensis*
Canadian waterweed	*Elodea canadensis*
Eastern Grey Squirrel	*Sciurus carolinensis*
Fallow deer	*Dama dama*
Giant hogweed	*Heracleum mantegazzianum*
Greylag goose	*Anser anser*
Himalayan knotweed	*Persicaria wallichii*
Japanese knotweed	*Fallopia japonica*
Nuttall's waterweed	*Elodea nuttallii*
Rhododendron	*Rhododendron ponticum*
Roach	*Rutilus rutilus*
Ruddy Duck	*Oxyura jamaicensis*
Sea-buckthorn	*Hippophae rhamnoides*
Sika deer	*Cervus nippon*
Spanish bluebell	*Hyacinthoides hispanica*
Three-cornered leek	*Allium triquetrum*
Water fern	*Azolla filiculoides*
Zebra mussel	*Dreissena (Dreissena) polymorpha*

6.3.5 Fauna in the Study Area

6.3.5.1 Mammals

A search of NBDC online database was conducted for records of Annex II and IV species protected under the EU Habitats Directive and other species protected under the Wildlife Act 1976 (as amended). The following species were recorded on NBDC within the study area:

- Short Beaked Common Dolphin (*Delphinus delphis*) and White-sided Dolphin (*Lagenorhynchus acutus*) are protected under the Wildlife Act and Annex IV of the EU Habitats Directive. These species were recorded within Galway Bay. These are marine species and direct impacts are unlikely, however there is potential for indirect impacts from water pollution of the aquatic environment from the construction of a proposed cycleway.
- Harbour seal (*Phoca vitulina*) and Loggerhead Turtle (*Caretta caretta*) are protected under the Wildlife Act and both Annex II and Annex V of the EU Habitats Directive. These species were recorded within Galway Bay. These are marine species and therefore direct impacts are unlikely, however there is potential for indirect impacts from water pollution of the aquatic environment from the proposed cycleway.
- European Otter *(Lutra lutra)* is protected under the Wildlife Act and both Annex II and Annex IV of the EU Habitats Directive. Pine Marten *(Martes martes*) and Irish Hare (*Lepus timidus*) are protected under the Wildlife Act and Annex V of the EU Habitats Directive. A 10m terrestrial buffer along lake shorelines and along river banks is critical for otters (NPWS, 2007), therefore there is potential for direct and indirect impacts to otters arising from the proposed cycleway.
- A number of bat species were also recorded in the study area including Nathusius Pipistrelle (*Pipistrellus nathusii*), Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Brown Long-eared Bat (*Plecotus auritus*), Daubenton's Bat (*Myotis daubentoni*), Whiskered Bat (*Myotis mystacinus*), Natterer's Bat (*Myotis nattereri*), Leisler's Bat (*Nyctalus leisleri*) and Lesser Horseshoe Bat (*Rhinolophus hipposideros*). All bat species are protected under the Wildlife Act and under Annex IV of the EU Habitats Directive. Lesser Horseshoe bat is also protected under Annex IV of the EU Habitats Directive. The bat species recorded within the study area may be found foraging along the banks of rivers or near woodland. These bat species may be found roosting in buildings, bridges, quay walls and mature trees.
- Red Deer (*Cervus elaphus*), Sika Deer (*Cervus nippon*), Fallow Deer (*Dama dama*), West European Hedgehog (*Erinaceus europaeus*), Eurasian Badger (*Meles meles*), Irish Stoat (*Mustela erminea*), Eurasian Red Squirrel (*Sciurus vulgaris*) and Eurasian Pygmy Shrew (*Sorex minutus*) are protected under the Wildlife Act 1976 (as amended).

6.3.5.2 Birds

All bird species are protected under the Wildlife Act 1976 (as amended) and the Birds Directive. BirdWatch Ireland and the RSPB Northern Ireland have produced a list of Birds of Conservation Concern in Ireland (BoCCI). A number of bird species are also categorised as Red or Amber listed Birds of Conservation Concern.

There were a number of bird species recorded within the study area from the NBDC, see **Appendix B**. Recorded Bird Species listed on Annex I of the Birds Directive 2009/147/EC include Common Kingfisher (*Alcedo atthis*), Greenland White-fronted Goose (*Anser albifrons flavirostris*), Short-eared Owl (*Asio flammeus*), Ruff (*Calidris pugnax*), Cory's Shearwater (*Calonectris borealis*), Black Tern (*Chlidonias niger*), Eurasian Marsh Harrier (*Circus aeruginosus*), Hen Harrier (*Circus cyaneus*), Corncrake (*Crex crex*), Bewick's Swan (*Cygnus columbianus bewickii),* Whooper Swan (*Cygnus cygnus*), Little Egret (*Egretta garzetta*), Merlin (*Falco columbarius*), Peregrine (*Falco peregrinus*), Red-footed Falcon (*Falco vespertinus*), Black-throated diver (*Gavia arctica*), Great northern Diver (Gavia immer), Red-throated Diver (Gavia stellata), White-tailed Eagle (*Haliaeetus albicilla*), Mediterranean Gull (*Larus melanocephalus),* Little Gull (*Larus minutus*), Bar-tailed Godwit (*Limosa lapponica),* Smew (*Mergellus albellus),* Ruff *(Philomachus pugnax),* European Golden Plover *(Pluvialis apricaria),* Slavonian Grebe (*Podiceps auratus),* Spotted Crake (*Porzana porzana),* Little Tern (*Sternula albifrons),* Common Tern (*Sterna hirundo),* Arctic Tern (*Sterna paradisaea)* and Sandwich Tern (*Sterna sandvicensis).*

[1] Wilson, S. & Fernández, F. (2013) National survey of limestone pavement and associated habitats in Ireland. Irish Wildlife Manuals, No. 73. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht, Ireland.

There are twelve SPAs within the study area. These sites along with the SCI species which they are designated for are shown in **Table 6-3**.

These species will be critical receptors to the proposed scheme where they are found within the study area through field surveys or where there is habitat potential to support these species. Potential impacts to these species will be assessed in the AA reporting and biodiversity impact assessments for the project.

There are numerous records of Kingfishers within the study area, who are commonly found along streams, canals and rivers (see **Appendix B**). They breed in tunnels dug in vertical banks along streams and rivers. There is potential for this species to occur along rivers and tributaries within the study area. Surveys for suitable nesting habitat may be required.

Table 6-3: SPAs within the Study Area and their SCI Species

Site Name	Site Code	SCI Species
Coole-Garryland SPA	004107	• Whooper Swan (*Cygnus cygnus*) [A038]
Cregganna Marsh SPA	004142	• Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]
Four Roads Turlough SPA	004140	• Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395] • Golden Plover (*Pluvialis apricaria*) [A140]
Inner Galway Bay SPA	004031	• Black-throated Diver (*Gavia arctica*) [A002] • Great Northern Diver (*Gavia immer*) [A003] • Cormorant (*Phalacrocorax carbo*) [A017] • Grey Heron (*Ardea cinerea*) [A028] • Light-bellied Brent Goose (*Branta bernicla hrota*) [A046] • Wigeon (*Anas penelope*) [A050] • Teal (*Anas crecca*) [A052] • Red-breasted Merganser (*Mergus serrator*) [A069] • Ringed Plover (*Charadrius hiaticula*) [A137] • Golden Plover (*Pluvialis apricaria*) [A140] • Lapwing (*Vanellus vanellus*) [A142] • Dunlin (*Calidris alpina*) [A149] • Bar-tailed Godwit (*Limosa lapponica*) [A157] • Curlew (*Numenius arquata*) [A160] • Redshank (*Tringa totanus*) [A162] • Turnstone (*Arenaria interpres*) [A169] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Common Gull (*Larus canus*) [A182] • Sandwich Tern (*Sterna sandvicensis*) [A191] • Common Tern (*Sterna hirundo*) [A193]
Lough Croan Turlough SPA	004139	• Shoveler (*Anas clypeata*) [A056] • Golden Plover (*Pluvialis apricaria*) [A140] • Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]
Lough Derg (Shannon) SPA	004058	• Cormorant (*Phalacrocorax carbo*) [A017] • Tufted Duck (*Aythya fuligula*) [A061] • Goldeneye (*Bucephala clangula*) [A067] • Common Tern (*Sterna hirundo*) [A193]
Lough Rea SPA	004134	• Shoveler (*Anas clypeata*) [A056] • Coot (*Fulica atra*) [A125]
Lough Ree SPA	004064	• Little Grebe (*Tachybaptus ruficollis*) [A004] • Whooper Swan (*Cygnus cygnus*) [A038] • Wigeon (*Anas penelope*) [A050] • Teal (*Anas crecca*) [A052] • Mallard (*Anas platyrhynchos*) [A053] • Shoveler (*Anas clypeata*) [A056] • Tufted Duck (*Aythya fuligula*) [A061] • Common Scoter (*Melanitta nigra*) [A065] • Goldeneye (*Bucephala clangula*) [A067] • Coot (*Fulica atra*) [A125] • Golden Plover (*Pluvialis apricaria*) [A140] • Lapwing (*Vanellus vanellus*) [A142] • Common Tern (*Sterna hirundo*) [A193]
Middle Shannon Callows SPA	004096	• Whooper Swan (*Cygnus cygnus*) [A038] • Wigeon (*Anas penelope*) [A050] • Corncrake (*Crex crex*) [A122] • Golden Plover (*Pluvialis apricaria*) [A140] • Lapwing (*Vanellus vanellus*) [A142] • Black-tailed Godwit (*Limosa limosa*) [A156] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
Rahasane Turlough SPA	004089	• Whooper Swan (*Cygnus cygnus*) [A038] • Wigeon (*Anas penelope*) [A050] • Golden Plover (*Pluvialis apricaria*) [A140] • Black-tailed Godwit (*Limosa limosa*) [A156] • Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]
River Little Brosna Callows SPA	004086	• Whooper Swan (*Cygnus cygnus*) [A038] • Wigeon (*Anas penelope*) [A050] • Teal (*Anas crecca*) [A052] • Pintail (*Anas acuta*) [A054] • Shoveler (*Anas clypeata*) [A056] • Golden Plover (*Pluvialis apricaria*) [A140] • Lapwing (*Vanellus vanellus*) [A142] • Black-tailed Godwit (*Limosa limosa*) [A156] • Black-headed Gull (*Chroicocephalus ridibundus*) [A179] • Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]
River Suck Callows SPA	004097	• Whooper Swan (*Cygnus cygnus*) [A038] • Wigeon (*Anas penelope*) [A050] • Golden Plover (*Pluvialis apricaria*) [A140] • Lapwing (*Vanellus vanellus*) [A142] • Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]
Slieve Aughty Mountains SPA	004168	• Hen Harrier (*Circus cyaneus*) [A082] • Merlin (*Falco columbarius*) [A098]

6.3.5.3 Aquatic Habitats and Species

There are 123 rivers, streams and tributaries within the study area, the most significant of these being the Shannon, Suck, Shiven, Clarin, Dunkellin and Clare rivers. There are also a number of large lakes including Lough Rea and Lough Derg. These waterbodies support habitat for a number of Annex II and Annex IV including White-clawed Crayfish (*Austropotamobius pallipes*), Lamprey species (*Lampetra sp.*), Salmon (*Salmo salar*) and otter. European Eel (*Anguilla Anguilla*) is also recorded from these watercourses which is red listed as critically endangered. There is one record for a Freshwater Pearl Mussel (*Margaritifera margaritifera*) population from the NPWS database, within the study area at the Shannon – Woodford catchment. The current status of this species within the catchment is unknown.

These aquatic species have potential to be indirectly impacted by the proposed cycleway as there are a number of watercourses throughout the study area.

6.3.5.4 Invertebrates

Marsh Fritillary (*Euphydryas aurinia*) is protected under Annex II of the EU Habitats Directive and is red listed as vulnerable. Geyer's Whorl Snail (*Vertigo geyeri*) and Desmoulin's Whorl Snail (*Vertigo moulinsiana*) are protected under the Wildlife Act and Annex II and V of the EU Habitats Directive. Geyer's Whorl Snail is red listed as vulnerable and Desmoulin's Whorl Snail is red listed as endangered.

These species all have potential to be impacted by the proposed cycleway.

6.3.5.5 Reptiles and Amphibians

There are three species of amphibian in Ireland, Common Frog (*Rana temporaria*), Smooth Newt (*Lissotriton vulgaris*) and the Natterjack Toad (*Bufo calamita*). Natterjack Toad only occurs in Co. Kerry and Co. Wexford. There is only one native reptile in Ireland, Common Lizard (*Zootoca vivipara*) and there is one non-native reptile, Slow Worm (*Anguis fragilis*).

Common Frog (*Rana temporaria*), Common Newt (*Triturus vulgaris*) and Common Lizard (*Zootoca vivipara*) are recorded within the study area. They are protected under the Wildlife Act.

Frogs prefer wet and damp habitats that contain shallow edged ponds with plenty of plants and algae surrounding them. Frogs breeding sites include ponds, streams, drains, bog pools and ditches. The land surrounding their pond or breeding site is usually rough with long grass and some scrub to provide cover while foraging. Frogs hibernate in hedgerows, large stones and old logs.

Common Newt prefers habitats including standing waters such as lake margins, ponds and ditches for breeding. However, outside of the breeding season they will use a variety of habitats including parks, farmland, wet heathland, bogs, marshes, gardens and deciduous woodland.

Common Lizard prefers damp habitats such as damp grassland, woodland tracks, peat bogs and heathlands. The lizard is widely distributed throughout Ireland and feeds on small invertebrates.

There are suitable habitats for Common Frog, Common Newt and Common Lizard within the study area and therefore there is potential for these species to be impacted by the proposed cycleway.

6.3.5.6 Bats

All Irish bat species are protected under the Wildlife Act (1976) as amended. Also, the Habitats Directive 92/43/EEC, as transposed, seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken. Lesser Horseshoe Bats are listed under Annex II of the Habitats Directive and all bat species are listed in Annex IV. Across Europe, they are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats. The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries. The Irish government has ratified both these conventions.

Nine of the eleven known Irish bat species have been recorded within the study area (See **Section 6.3.5.1**). Twenty-two lesser horseshoe bat roosts have been recorded within the study area by the NPWS (See **Appendix B**).

There may be potential habitat impacts to foraging and commuting habitat in relation to bat species, the extent of these impacts will be examined through further survey and assessment.

6.4 Biodiversity Identified Constraints

The European sites and designated sites within the study area are a significant constraint on the proposed cycleway. There are 50 European sites and 62 designated sites within the study area. There are also four nature reserves and four Ramsar sites within the study area.

In addition to the habitats and species protected under designated sites, there are numerous records for rare and protected species which will require further assessments for habitats and protected flora species, Wildlife Act species or species listed Annex II/IV/V of the EU Habitats Directive, as well as protected bird species under the Birds Directive and important bird assemblages that are likely to be found within the study area. A number of habitats that correspond with Annex I habitat types may also be found within or outside SACs within the study area.

All designated sites and other features of ecological interest should be considered in full when identifying suitable options for the cycleway. Avoidance of all designated sites and important ecological features should be prioritised where possible. In the event where works located within or in proximity to designated sites and ecological features appropriate mitigation measures should be implemented to avoid or minimise effects.

Non-native invasive species listed on the Third Schedule to the EC Birds and Natural Habitats Regulations 2011, as amended, were recorded within the study area. Further surveys will be required to inform the design and identify potential interactions with the infected sites. A management plan will need to be prepared to ensure compliance with Regulation 49 of the 2011 Regulations.

Water quality impacts to receiving waters in the study area have the potential to significantly impact protected species/habitats which may be present.

Further assessments for habitats, identified protected flora species, Wildlife Act species or Annex II/IV of the EU Habitats Directive species will be required as well as waterbird species assemblages that are likely to be found within the study area.

7 LAND AND SOILS

7.1 Introduction

This 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 the following:

- 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.

7.2 Existing Environment – Land Cover

The CORINE 2018 landcover map shown in Figure 7-1 and on the mapping provided in Appendix E for the study area is dominated by pastures (CORINE 2018 Code 231). There is a dense clustering of mixed forest (CORINE 2018 Code 313), transitional woodland shrub (CORINE 2018 Code 324) and peat bogs (CORINE 2018 Code 412) in the southern section of the study area between Portumna and Gort.

Peat bogs (CORINE 2018 Code 412) are heavily featured within the study area with large peat bogs along the River Shannon and River Suck.

The remainder of the CORINE 2018 landcover for the study area consists of sparse mosaics of land principally occupied by agriculture, with significant areas of natural vegetation (CORINE 2018 Code 243), mixed forest (CORINE 2018 Code 313), coniferous forest (CORINE 2018 Code 312), transitional woodland shrub (CORINE 2018 Code 324), broad-leaved forest (CORINE 2018 Code 311) and discontinuous urban fabric (CORINE 2018 Code 112).

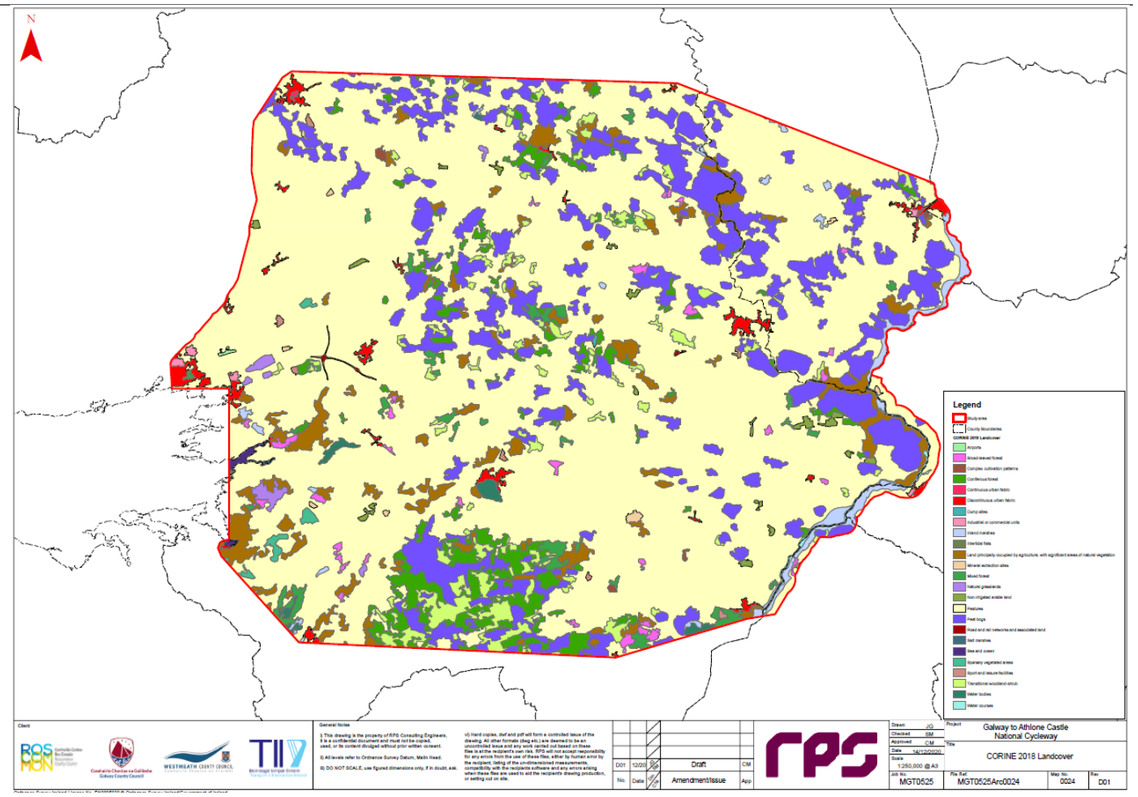

Figure 7-1 – CORINE 2018 Land Cover

7.3 Existing Environment – Soils and Subsoils

Soils and subsoil mapping within the study area are illustrated in Figure 7-2 and Figure 7-3 respectively and in the mapping provided in Appendix E.

The dominant soil within the study area is deep well drained soil derived from mainly basic parent materials (BminDW). There is some large patches of deep poorly drained soil (BminPD) located in the centre of the study area. Scattered pockets of poorly drained soil with peaty topsoil throughout the study area, located mainly near bogs. Deposits of deep poorly drained soil (AminPD) and poorly drained soil with peaty topsoil (AminPDPT) are present in the south of the study area. Pockets of shallow well drained soils are located mainly near Kinvara and Athlone.

The main subsoil within the study area is limestone till (Tls). Deposits of sandstone till (TDSs) are located in the north and south of the study area. Present in scattered pockets west of Athlone are limestone sands and gravels (GLs)

Cutover peat (Cut) is heavily featured within the study area with large bogs along the River Shannon from Athlone to Shannonbridge and on the banks of the River Suck from Shannonbridge to Ballygar. Smaller pockets of cutover peat spreads across the east, mid and northern sections of the study area. There is a large area of Blanket peat (BKtPt) in the south of the study area between Woodford and Gort.

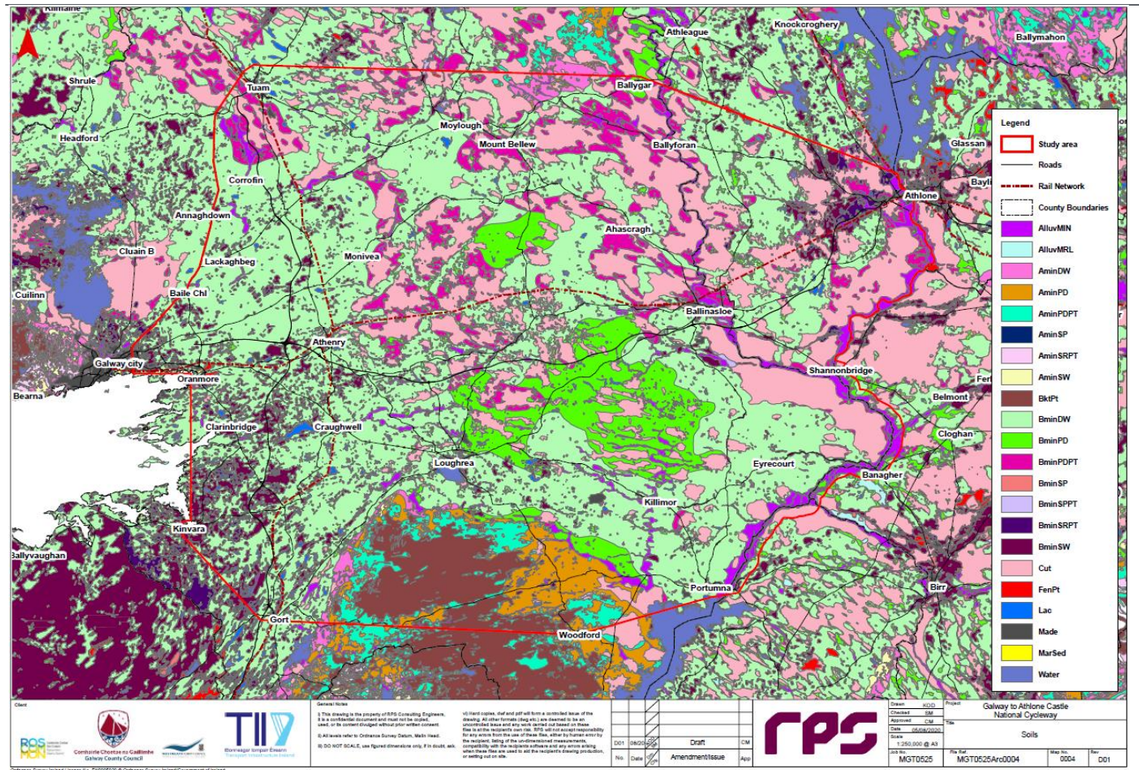

Figure 7-2 – Soils

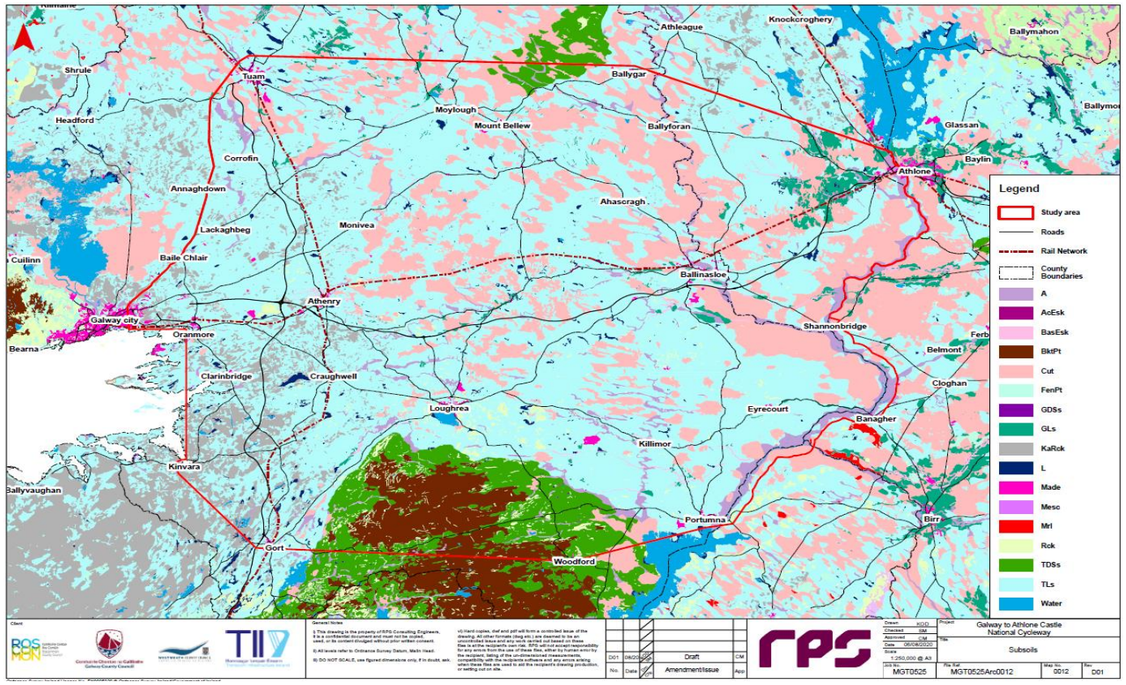

Figure 7-3 – Subsoils

7.4 Existing Environment – Bedrock Geology

The bedrock geology map for the study area is shown in Figure 7-4 and on the mapping provided in Appendix E. The dominant bedrock types in the study area are dark limestone and shale, undifferentiated limestone, massive unbedded lime-mudstone, dark muddy limestone, mudstone, siltstone, conglomerate and peloidal limestone with chert. This section is not discussed in detail as the bedrock is not a constraint for this project.

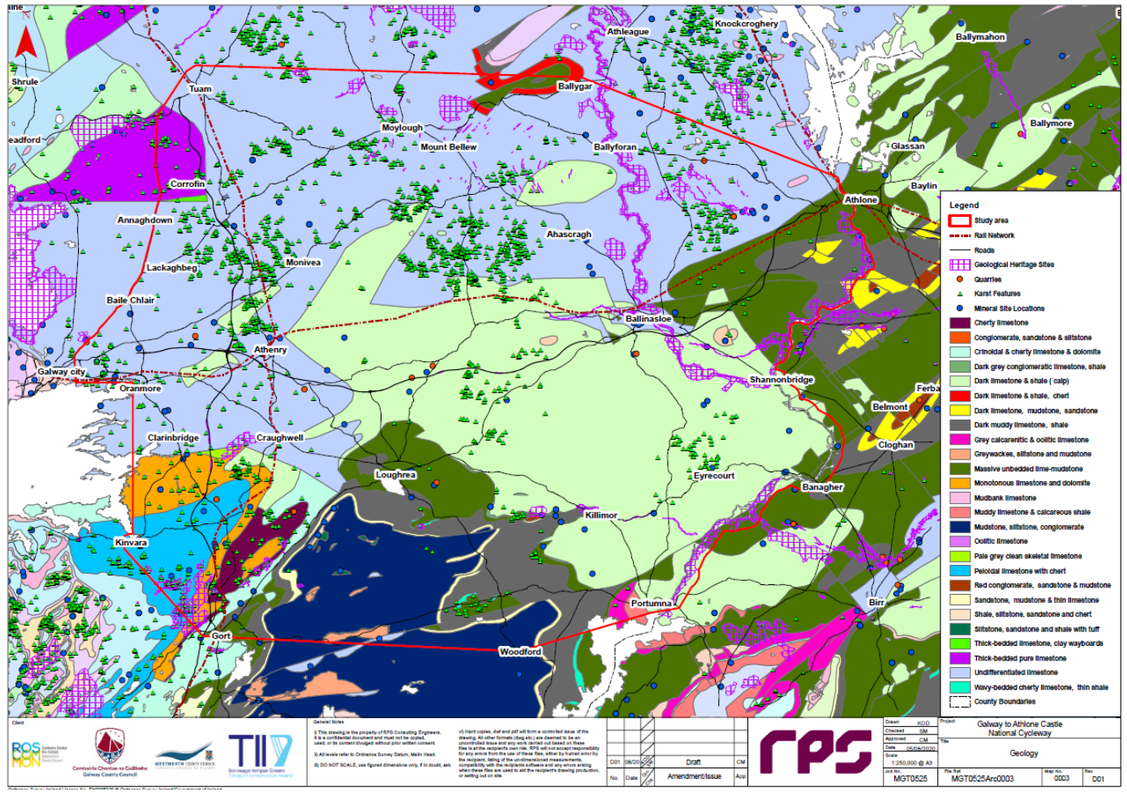

Figure 7-4 – Bedrock Geology

7.5 Existing Environment – Hydrogeology

There are three primary aquifers within the study area. The east and mid sections of the study area are underlain with a locally important aquifer-bedrock which is moderately protective only in local zones, the north and west sections of the study area are comprised of a regionally important aquifer-karstified and a poor aquifer-bedrock which is generally unproductive except for local zones in the south of the study area.

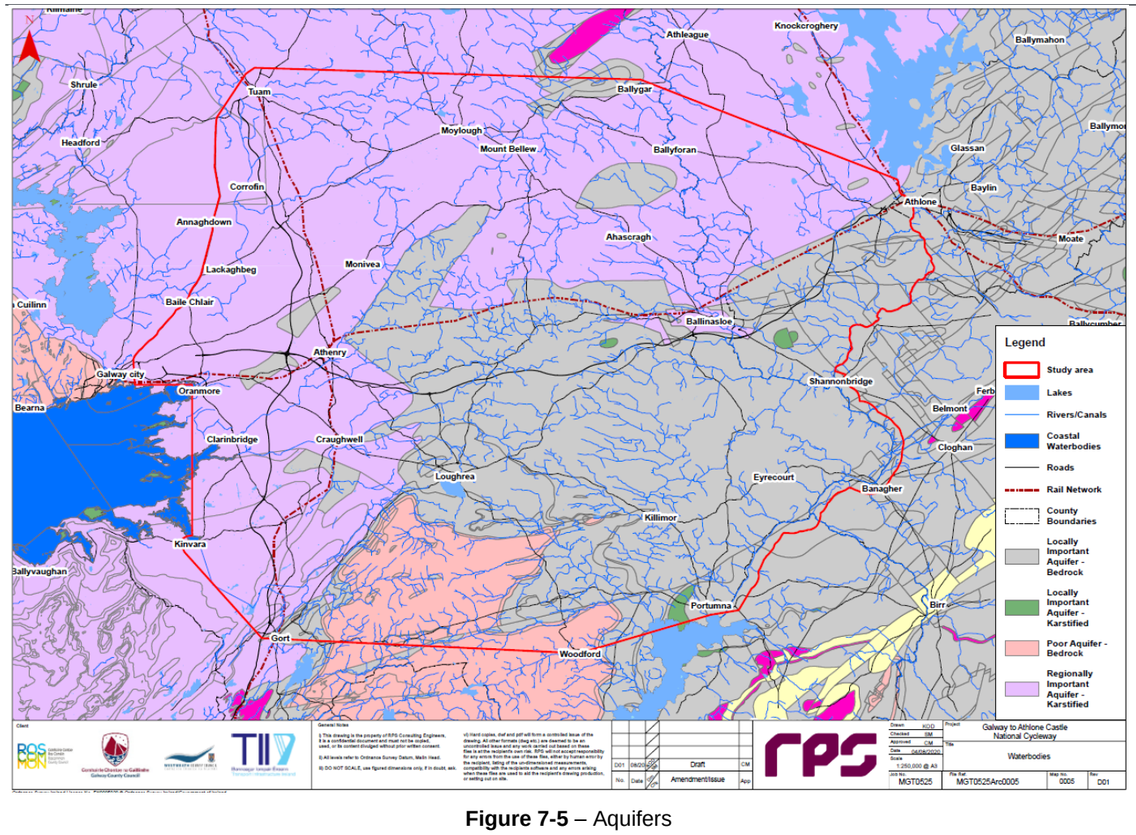

Figure 7-5 – Aquifers

7.6 Mineral Site Locations

There are 86 mineral sites within the study area. These locations are outlined in Table 3-1, they are also shown in Figure 7-4 and on the mapping provided in Appendix E.

Table 7-1 – Mineral Sites List

Location Ref.	Mineral Type	Townland	Note
2,765.00	Clay	Long Island	Blue alluvial clay exposed - same as at Carrickynaughton. Sample tested was found difficult to work but fired to earthenware temperatures. Has potential for manufacture of tiles and pipes.
2,757.00	Clay, Brick	Carricknaughtan	Blue clays underlying 5ft. of white marl by river. Produced bricks of rather poor quality. No longer exposed.
3,011.00	Sand and Gravel	Rooskagh	Active pit interbedded sands and gravels. Limestone clasts predominate. Known as Lennon's Pit. Sand and gravel process at Athlone pit (minlocs 3012).
5,058.00	Limestone	Curraghaleen	Bellanamulla quarry in fine grained crinoidal limestone. PSV 43, AAV 13.2 and ACV 23.
3,015.00	SAGR	Castlesampson	Active (1978) pit in interbedded sands and gravels of Esker. Beds lens out and are faulted. Dominantly limestone
3,012.00	SAGR	Castlesampson	Important pit in bedded sands and gravels. The sands are often cross-laminated,possibly deltaic or lacustrine origin (esker?). Limestone is quarried here also when conditions are dry enough. Also known as Mannion's pit or Athlone Pit
3,013.00	SAGR	Rooskagh	Sand and gravel pit which is worked sporadically by Roadstone. Known as Brook's Pit part of Roadstone's Athlone pit area.
3,014.00	SAGR	Castlesampson	Esker deposit of coarse sands and gravels some boulders (limestones).
3,010.00	SAGR	Knocknanool	Sand and gravel pit which occasionally is active. Known as Harringtons Pit. Sand and gravel processed through Athlone Pit (MINLOCS 3012)
4,858.00	LS	Curraghadoon	Scrap once worked for walling stone. Rock is grey micritic limestone with beds 0.1m to 0.15m thick, flat lying, joints spaced at 0.2m to 0.4m. May have potential as a source of walling stone but nearby housing precludes more development
4,707.00	DIST	Boughil	Small cutting on hill. Site may have potential as stone source. But blocks may be a little small for commercial markets
5,347.00	LSCR	Killuppaun	Fairly massive bedded, grey to dark grey, fine grained crinoidal limestone. The development of an effective working face of about 300ft. in length and approximately 30ft. In height could be established here.
5,348.00	LSCR	Killure Beg	Grey to dark grey beds of crinoidal limestone. Quarry site is on low-lying ground hence the possibility that water might be encountered at shallow depths, which would entail pumping costs during development.
5,346.00	LSCR	Killure Castle	Dark grey, fine grained crinoidal crags of lower limestone. Possibilities for a fairly large sunken quarry however water likely to be encountered here at a shallow depth.
5,100.00	SPHA	Glentaun	Two 2ft mineralised sections noted in borehole drilled by Canadian superior. Mineralization comprises sphalerite and galena with a combined value of 35%.
2,175.00	LS	Dunlo	Quarry in thick-bedded grey, crystalline limestone full of crinoids. Valuable building stone. Site is now used as an amenity ground and is unlikely to be further developed.
3,030.00	LS	Brackernagh	Grey Carboniferous limestone being quarried for building and monumental stone. Known as Top Quarries.
5,345.00	LSCR	Garbally Demesne	Medium grained grey to dark grey, crinoidal limestone. Not much potential for redevelopment due to proximity of College buildings.
2,286.00	SAGR	Kellysgrove	Active pit in esker ridge producing sand, gravel and crushed rock. Quarry name Sheppards.
2,759.00	SAGR	Culliaghbeg	Esker deposit of sand and gravel predominantly limestone clasts. Other fragments include Galway granite. Known as McKeon's Sand and Gravel Pit. AAV 35, CaCo3 94.39%, SiO2 1.31%. DOE Clause 804
2,758.00	SAGR	Curraghagower	Disused flooded quarry in oolitic limestone. Bedding 0.3m to 0.5m, joints 0.5 to 0.75m spacing. Road access difficult. Unlikely to have potential for commercial extraction.
2,527.00	CLBR	Kylemore	Location of black and blue tenaceous clays used for making drainage tiles and bricks locally.
2,526.00	CLPI	Kylemore	Location of tile and drainage pipe factory using local clay.
4,018.00	IGGR	Cloghmore	Coastal section of fine grey granodiorite. Relatively wide joint spacing. Unlikely development potential.
2,525.00	CLBR	Esker	Location of brick pit and kiln noted on old 6in. map.

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Location Ref.	Mineral Type	Townland	Note
2,521.00	CLBR	Kilnaborris	Site of brick kiln.
2,531.00	CLBR	Eyrecourt Demesne	Bricks and drainage tiles formerly manufactured from mud of the Shannon flats here.
4,699.00	DIST	Kilquain	Small quarry used for aggregate production and has in the past been used for walling stone, (still has potential for this use).
2,515.00	CU	Gortanummera	Copper stained boulders of O.R.S. found in gravel pit here.
2,519.00	GALE	Quarryhill	Col. Burke found pieces of galena here in 1843.
2,516.00	CU	Kileen West	Yellow sandstone blocks with specks of copper noted here.
2,522.00	CU	Moneenaveena	Stones stained with copper noted here. A later note on the map suggests there is no evidence to support this.
2,279.00	GALE	Carhoon	Site at Tynagh lead mine. Galena in dolomitic limestone with E-W shear. Many mineralized boulders in drift nearby.
2,517.00	GALE	Lisduff	Boulder of galena noted near the southern boundary of this townland.
5,570.00	ZN	Lisduff (?)	Tynagh lead-zinc mine. Grid reference gives approximate centre of operations only.
2,518.00	HEAM	Garraunnameetagh	Pieces of siliceous haematite occur in the O.R.S. drift here.
4,700.00	LS	Kylbeg	Small isolated outcrops of grey micrite. This site has Comments 2 no potential for source of dimension stone.
2,511.00	FE	Derrybrien East	Occurrence of bog iron ore.
4,698.00	LS	Earlspark	Small disused aggregate quarry, site has potential for the production of dimension stone, but overburden thickness could cause problems.
4,701.00	LS	Knockshangarry	Small working quarry producing aggregate. The site has no potential for dimension stone production.
4,706.00	DIST	Gorteenapheebera	Small quarry of grey micrite, originally used for walling stone. Unlikely to be further developed due to proximity of housing.
1,471.00	QUAR	Kilbeg	Quartz vein 18in. wide with micaceous iron ore and peach (i.e. chlorite).
2,530.00	CLPO	Dunsandle	Coarse pottery made from local clays at this locality (Kinahan 1889).
3,974.00	MARL	Cloonkeenmore	Shelly marl seen in section in Attymon Bog. Extends to a depth of at least 30cms.
2,284.00	SAGR	Brackloonbeg	Inactive pit in an esker ridge producing sand and gravel.
5,462.00	LS	Lackagh	Quarry producing weathered limestone (surface stone) and local boulders of various sizes for rockeries and wall facings.
2,285.00	SAGR	Carraun More	Limestone sand and gravel esker ridge. Natural washed and graded sand, gravel and crushed aggregates. road aggregate
2,540.00	CLBR	Knockavilla	Location of brick kiln noted in NE corner of townland. Brickfields in adjacent townland of Caltraghcreen.
2,535.00	CLAY	Boherbannagh	Location of old brick kiln noted on old 6in. map.
4,713.00	LS	Garra	Four or five small quarries, potential site for ornamental stone, though cottages exist close by.
2,197.00	PB	Oakwood North	A trace of lead was found here and a pit sunk but no lode discovered.
2,169.00	CLAY	Ryehill Demesne	Well drilled in 1969. No water found but a chalky white material was encountered, very soft.
4,718.00	DIST	Parkgarve	Limestone pavement of grey sparry micrite. This site has potential for production of ornamental stone.
2,283.00	SAGR	Brusk	Active sand and gravel pit producing concrete blocks. Quarry name Esker Pit.

Location Ref.	Mineral Type	Townland	Note
2,528.00	CLBR	Caheroyn	Coarse bricks once made at this locality.
2,282.00	SAGR	Ballydavid South	Inactive gravel pit producing graded sand and gravel and concrete products.
4,716.00	DIST	Ballinloughaun	The site is a small disused quarry of dark grey micrite. This site has some potential for walling stone production.
4,717.00	DIST	Lisheenkyle West	Extensive limestone pavement of grey micrite. Potential for production of ornamental blocks.
5,241.00	FLUO	Glennascaul	Patchily dolomitized Burren Limestone contains calcite veins with fluorite. Noted by Tara Exploration and Devt. (1969).
4,705.00	DIST	Cregboy	Disused aggregate quarry of grey micrite. Unlikely to be developed as a source of dimension stone due to blasting damage.
5,365.00	CU	Ballybrit	Tara Exploration and Development Co. Ltd. recorded finely disseminated chalcopyrite and malachite coatings in Burren Limestone bedrock in 1969.
5,217.00	LS	Merlin Park	Disused quarry in black compact marble (Carboniferous limestone) used as dimension stone. Good stone of limited extent in the quarry.
4,702.00	DIST	Curragrean	Disused limestone quarry with an industrial estate behind it which would prevent any further development.
5,238.00	FLUO	Curragrean	Minor fluorite noted in the Burren Limestone here by Tara Exploration and Development Ltd. (1968).
2,288.00	LS	Tonroe	Active limestone quarry producing aggregates and concrete products. This site has no potential for the production of block stone. Quarry name Tonroe.
1,746.00	CALC	killely More	Large vein of calcite, very pure and compact.
5,232.00	CALC	killely More	Calcite vein here within the Burren Limestone Formation.
5,212.00	PB	Muggaunagh	Lead and copper noted in veins in Carboniferous limestone here.
5,211.00	PB	Parkatleva	Lead noted in veins in Carboniferous limestone here.
2,167.00	SAGR	Ballyboy	Sand and gravel pit.
1,482.00	SHAL	Ballycuddy	Trials made for coal - local rocks are grey, black and green shales.
1,424.00	QUAR	Ballygunneen	Quartz strings in grey, black and green shales.
1,479.00	SHAL	Cloghaun/Gortna	Black and grey shales and grits some jasperised.
1,484.00	COAL	Cloghaun	Black coaly vein noted here on old GSI 6in. map.
5,231.00	CALC	Laban	Drill core from a quarry in Burren Limestone indicates 12m of clean white calcite.
1,698.00	AG	Ballymaquiff No'	The main calcite deposit is bowl shaped & measures 30 ft x 170 ft. It carries some galena and probably silver. Quarry now filled in.
1,377.00	CALC	Gregaclare	Quarry opens on E. of road between Lebane and Ardrahan. Exact location unknown. 220ft of drilling was undertaken ranging from 39.0-42.0ft, in white calcite. See site at Ballymaquiff M40.
2,520.00	PB	Crannaagh	A small trial in search of lead was made by Captain Collet. Result was not stated.
2,513.00	CALC	Caherglassaun	Calcite prospect under investigation by Irish Whiting Ltd. 21/3/1974.
2,514.00	GALE	Caherglassaun	Site of mine now disused in cross-cutting calcite lodes containing galena with some copper. Some specks of copper carbonate present.
2,255.00	FLUO	Streamstown	Galena and fluorite bearing calcite veins noted on an exposed pavement of Burren Limestone here.
5,361.00	PB	Cloon	Several occurrences of sphalerite and galena noted in veinlets and vugs with gangue calcite and flourite. Mapped by ASARCO.(1968).

Location Ref.	Mineral Type	Townland	Note
5,362.00	ZN	Rakebin	ASARCO in 1968 reported sphalerite in calcite veinlets and calcite-quartz vugs along with pyrite in the Burren Limestone.
5,240.00	FLUO	Garryland	Noranda Exploration Ltd noted abundant fluorite in calcite veins here in the Burren Limestone.
5,230.00	CALC	Drummina Cloghaun	Thick E-W trending calcite veins and vugs. Also some fluorite present. Noted by Asarco during 1968.

7.7 Landfills

There are three landfill sites within the study area. Carrowbrowne landfill site is located on the Headford road north east of Galway city just inside the study area. East Galway landfill is located in Ballybaun, Ballintober, Ballinasloe near Killconnell. There is a closed landfill site in Pollboy Ballinasloe just south of the town, there is a civic amenity site still in operation at the location.

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 are shown in Table 7-2.

Table 7-2 – Geological Heritage Sites

Location Ref.	Mineral Type	Townland
RO027	River Shannon Callows	The river Shannon callows is a long, flat site which includes the Shannon river floodplain
RO011	Cloonburren Fan	This is a wide, hummocky feature comprised of sand and gravel in south Roscommon
RO003	Ballinasloe-Split Hills-Clonmacnoise-Clara Esker	This is a long, beaded, often high, sinuous esker ridge that extends for almost 70km
RO0020	McKeon's Pit	This is a gravel pit cut into a wide, hummocky sand and gravel feature which partially smothers an esker
RO029	Suck River Callows	The suck callows includes the suck floodplain and extends for 70km from Castlecoote to Shannonbridge
GY127	Suck River Callows	A long, flat site which includes the Suck River floodplain
GY009	Ballinasloe Esker	A large accumulation of sands and gravels deposited under and in front of the ice sheet
RO015	Killeglan Karst Landscape	This site comprises an extensive area of bouldery terrain in southern Roscommon
RO 010	Castlesampson Esker	This esker trends west-northwest to east-southeast in south Roscommon, south of the R363
GY004	Annaghbeg Bog	Annaghbeg Bog comprises an extensive area of peatland in a bowl-shaped, low-lying hollow
GY059	East Galway Moraines	A large accumulation of short, discrete, singular moraine ridges
GY027	Carrownagappul Bog	An extensive area of peatland in a wide, bowl-shaped, interdrumlin hollow
GY128	Summerville Lough	A relatively small, permanent lake, with an associated raised bog and sand and gravel ridges
GY052	Derrynagran Bog and Esker	A number of high, sinuous ridge (esker) segments, as well as an adjacent raised bog
GY130	Toormore M6 Road Cut	A 400 m long road cutting along the M6 motorway, with relatively low cliffs of rock
GY117	Rahally M6 Road Cut	A 500 m long road cutting along the M6 motorway, with both high and low cliffs of rock
GY069	Hill 707	The summit area of an isolated hill, with small rock exposures
GY133	Tynagh Mine	A large abandoned modern mine site partly occupied by a recently-constructed power plant
GY078	Killimor Esker	A moderate-sized ridge comprised of esker sands and gravels, deposited under the ice sheet
GY018	Boleyneendorrish River	A now buried and invisible, low cliff section along a fast-flowing river
GY021	Bullaunagh Sinks	A series of swallow holes and sinking stream along a meandering portion of the Owenahree River
GY028	Castledaly	An overgrown stream section cut into thick glacial till deposits
GY112	Peterswell Turlough	CGS, recommended for Geological NHA
GY094	Lough Coy	A large turlough in the lowlands, on the north western flanks of Slieve Aughty
GY014	Ballylee Hammerhead Sink	The Streamstown River divides at Ballylee into two branches, both of which sink underground
GY037	Coole Cave and Polldeelin	A major rising of the Gort River with an associated cave and vertical sided pothole
GY038	Coole-Garryland Complex	A very large complex of turloughs, risings and sinks in the Gort lowlands
GY025	Caherglassaun Turlough	A large turlough and associated dolines and including an historic silver mine site
GY115	Pollnadirk	A very small well-defined site with a walled boundary
GY105	Moran's Cave	A cave which intersects the underground drainage between Gort and Kinvara
GY080	Kinvara Springs	Very large karstic springs in the intertidal zone between Kinvara harbour and Dunguaire Castle
GY119	Roevehagh M18 Road Cuts	Road cuts excavated through limestone bedrock on the M18 motorway
GY118	Rahasane Turlough	A major turlough on the Dunkellin River, south of Craughwell
GY013	Ballyglunin Cave	A cave consisting of a complex network of passages
GY010	Ballybanagher M17 Road Cut	A 400 m long road cutting along the M17 motorway

7.9 Geohazards

7.9.1 Landslides

A review of the GSI database indicated three landslide events within the study area which are outlined in Table 7-3.

Table 7-3 – Landslide Events

Event ID	Name	Location	Comments/Land Use
GSI_LS03-0026	Kilmore1909	Kilmore	243 Land Principally Occupied By Agriculture, With Significant Areas Of Natural Vegetation. Cutover peat.
GSI_LS08-0015	SonnaghOld2003	Sonnagh Old Toberalatan.	On edge of windfarm site road.312 Coniferous Forest. Displaced sections of original gravel. Blanket peat [BktPt].

Event ID	Name	Location	Comments/Land Use
GSI_LS03-0073	Derrybrien2003	Derrybrien Slieve Aughty Mountains.	The head of the failure was located in the site boundary of Derrybrien Windfarm. Afternoon of the 16/10/03 after more heavy rain the slide was reactivated on the 29th. No Apparent Impact. The failure was in a natural drainage line in a natural shallow valley. 750m rupture length, 270m width and 450000 displaced volume. Blanket peat [BktPt].

The majority of the landscape within the study area is identified on the Geological Survey of Ireland (GSI) Landslide Susceptibility Map as being low-risk for landslides to occur. An area between Loughrea, Gort and Woodford has a cluster of mainly moderately low-risk with some moderately high-risk and a few high-risk areas for landslide.

7.9.2 Karst

The GSI database shows that the study area is in the Western Lowlands karst region and closely borders the Burren Plateau region southwest of the study area. In the southwest of the study area there are scattered pockets of Kartsified limestone bedrock at the surface (KaRck) as shown in Figure 7-3 and limestone pavement shown in Figure 7-6. Figure 7-4 shows the karst features within the study area.

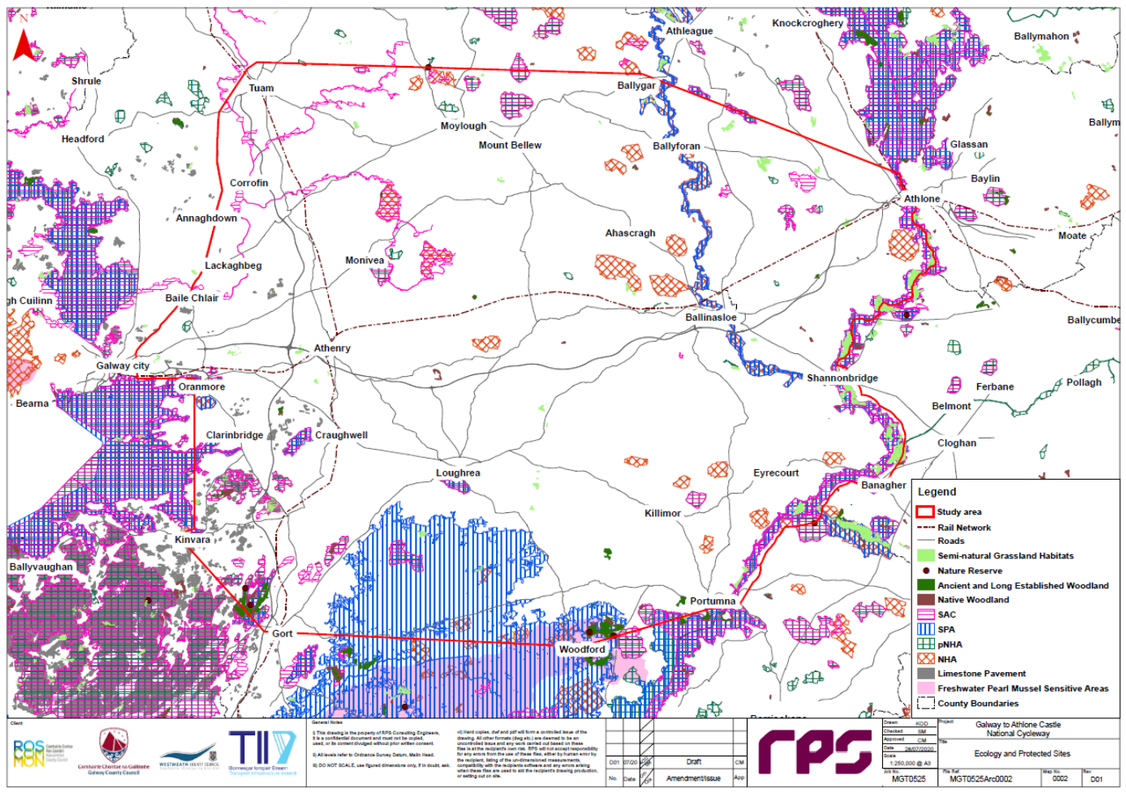

Figure 7-6 – Ecology and Protected Areas

7.10 Land and Soils Identified Constraints

The CORINE 2018 landcover indicates the dominant land use type is Pasture with a significant area of peat bogs (CORINE 2018 Code 412) and clusters of mixed forest (CORINE 2018 Code 313). The use of existing unused railway lines in peat bogs and trails in mixed forest areas may provide diverse landscape for the cycleway without impacting the landscape.

The dominant soil within the study area is deep well drained soil derived from mainly basic parent materials (BminDW). Cutover peat (Cut) is heavily featured within the study area along the River Shannon, River Suck and smaller pockets across the east, mid and northern sections of the study area. There is a large area of Blanket peat (BKtPt) in the south of the study area between Woodford and Gort.

There are 86 mineral sites within the study area, most are minor occurrences and not considered to be a constraint. Tynagh mines located between Loughrea and Portumna was a 115 hectare mining site which closed in 1982. The major minerals extracted were lead, zinc, copper, silver and barium sulphide. A report in 2003 by the EPA suggested that the site was contaminated with heavy metals.

There are three landfill sites within the study area Carrowbrowne landfill, East Galway landfill and a historic landfill in Pollboy Ballinasloe. In the route selection phase these sites will be taken into consideration as they will need to be avoided.

There are 35 Geological heritage sites within the study area. All sites need to be considered during the route selection process. Sites such as the River Shannon Callows and Suck River Callows floodplains need to be avoided. While others could be a feature or connected to along the cycleway route.

The majority of the landscape within the study area is identified as being low-risk for landslides to occur. An area between Loughrea, Gort and Woodford has a cluster of mainly moderately low-risk with some moderately high-risk and a few high-risk areas for landslide. This area has recorded 2 previous landslides due to blanket peat instability.

8 WATER

8.1 Introduction

This section of the constraints study report deals with all existing constrains related to water environment within the project study area. The following aspects of the water environments, as detailed in the "*TII Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Roads*", have been investigated:

- Catchment physical characteristics, drainage systems and flood risk
- Surface Water Resources
- Water Quality of Natural Watercourses

The assessment was carried out in accordance with the above mentioned TII guidelines. The following sources of information were consulted in carrying out this assessment:

- OS survey vector, six inch and 'discovery' series mapping;
- Aerial photography;
- Geological Survey Ireland;
- The Office of Public Works (www.floodmaps.ie & www.floodinfo.ie);
- Environmental Protection Agency (www.epa.ie), and
- Water Framework Directive (WFD) national website and Water Maps viewer; (www.wfdireland.ie).

8.2 Existing Environment – Catchment Characteristics

The subject project study area covers a land area of approximately 3,076 km^2 and extends from the west side of Ballyloughane Strand in Galway City along the coastline of Galway Bay to just west of the natural boundary of the River Shannon in Athlone. The most southern extremity extends to Lough Derg and Coole Park to capture available amenities and recreational facilities offered in Gort and Portumna. The most northern point then extends as far as Tuam.

Numerous surface water bodies (lakes, rivers & streams) are located within the study area as can be seen in Figure 8.1. Large water bodies include Lough Rea, Lough Derg, the Rivers, Clare, Dunkellin, Shannon and Suck, along with a number of other tributaries and rivers that mainly discharge to the marine environment at Oranmore and Clarinbridge. Ireland's longest river the River Shannon forms the border between Galway/Roscommon and Offaly from Athlone to Portumna, before it enters into Lough Derg. The River Suck along the Galway Roscommon border is the Shannon's main tributary. The Dunkellin River rises in the area around Loughrea and flows west before entering the Atlantic Ocean into Galway Bay near Kilcolgan.

The soil types within the study area are predominantly of deep well drained minerals with scattered cutover and blanket peats. Geology is predominantly of limestone type bedrock with a presence of numerous karstic features, suggesting effective interactions between the surface and subsurface waterbodies.

The surface waterbodies identified within the study area are shown in **Error! Reference source not found.** below a nd on mapping provided in Appendix E**.**

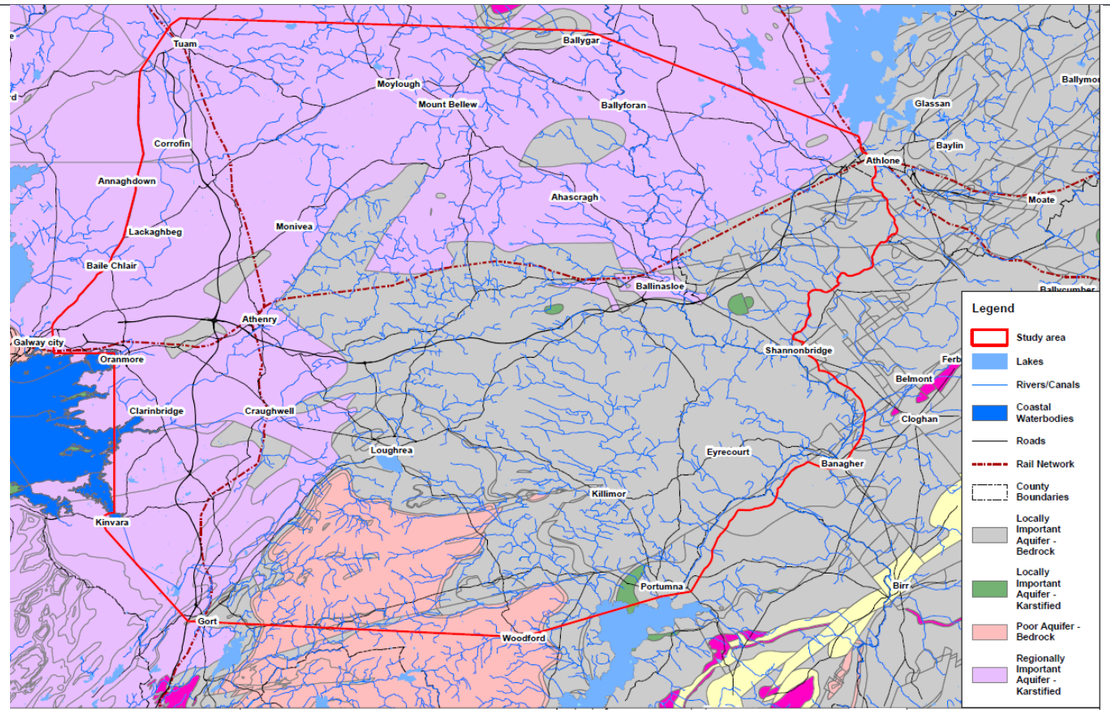

Figure 8-1 – Study Area Waterbodies

8.2 Existing Environment – Flood Risk

The OPW flood maps website (www.floodinfo.ie) show numerous numbers of flood prone areas within the subject study area (see Figure 8.2). The low-lying flood plains of the Rivers, Clare, Suck and Shannon experienced severe flooding in December 1954, winter 1999/2000, November 2009 and winter 2015/2016. Further details of these flood events can be found in the OPW www.floodinfo.ie website. The OSI Historical Mapping dataset was also consulted to investigate any flood prone areas within the study area.

Under the National Preliminary Flood Risk Assessment (PFRA, 2012), Galway, Ballinasloe and Athlone Towns and its low-lying environs were identified as Areas of Further Assessment (AFAs). In 2018 under the National Catchment Flood Risk Assessment and Management (CFRAM) study, a detailed flood study was completed in these areas and a set of flood maps were prepared for all areas predicted to be flooded at some point during the flood events with a number of selected Annual Exceedance Probabilities (AEPs). These probabilities may also be expressed as odds (e.g. 100 to 1) of the event occurring in any given year. Three flood extents were typically shown on these flood extent maps – Low probability (0.1% AEP); Medium Probability (1% AEP fluvial or 0.5% AEP Coastal); and, where appropriate, High probability (10% AEP). Flood maps were developed for the current scenario, and also for two potential future scenarios; the Mid-Range Future Scenario (MRFS) and the High-End Future Scenario (HEFS), taking into account the potential impacts of climate change and other possible future changes. The OPW flood maps website also includes coastal flooding maps (www.floodinfo.ie/map/coastal_map/) providing National Coastal Hazard Mapping 2021 data for present day, mid-range future scenario, and high-end future scenario. This coastal flooding has been considered as part of the constraints study and is captured in Appendix E.

Figure 8.3 shows the CFRAM study predicted flood extents within the study area for the current scenario for the above mentioned AEPs. Flood maps for the future scenarios are included in Appendix E. It can be seen from these maps that floodplains associated with the Rivers, Clare, Suck and Shannon are liable to flooding within the subject study area.

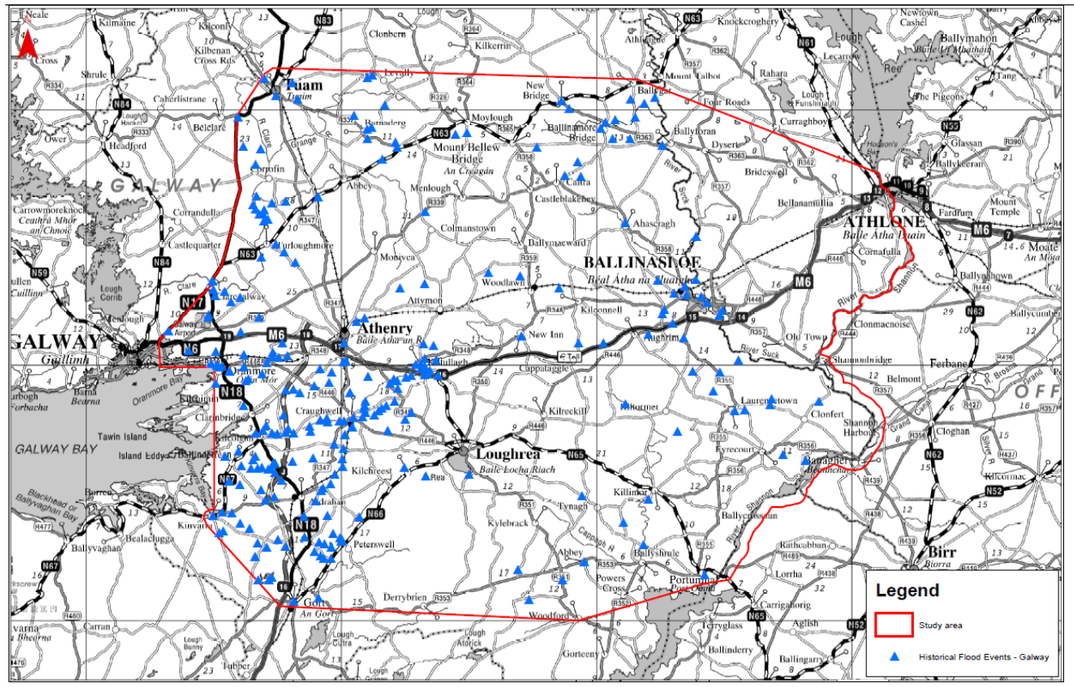

Figure 8.2 – Historical Flood Points

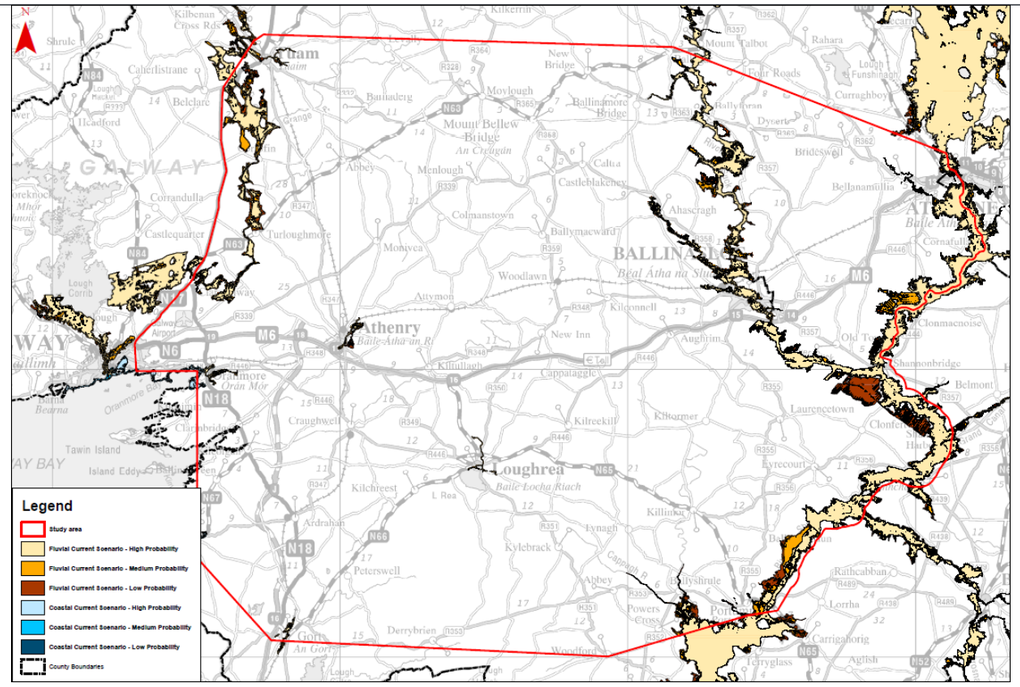

Figure 8.3 – OPW CFRAM Study Predicted Flood Extents (Current Scenario)

Further to the above-mentioned fluvial flooding, the historical and potential future groundwater flooding risks within the study area were also investigated. The winter of 2015/2016 saw the most extensive groundwater flooding ever witnessed in Ireland. Homes were flooded or cut off, roads submerged, and agriculture disrupted by karst derived groundwater flooding, with some affected areas remaining inundated for months. The Geological Survey of Ireland prepared historical and predictive flood maps across Ireland (particularly for the limestone karstic regions) under the GWFlood Project (2016-2019). The predictive groundwater flood map presents the probabilistic flood extents for locations of recurrent karst groundwater flooding. It consists of a series of stacked polygons at each site representing the flood extent for three specific AEP's (10%, 1%, and 0.1% respectively). The map is focussed primarily (but not entirely) on flooding at seasonally inundated wetlands known as turloughs. Figure 8.4 shows the groundwater flood maps for a range of probabilities along with the surface water flooding occurred during the winter 2015/2016 with the subject study area. It can be also seen from this map that the predictive groundwater flooding within the study area is widespread, which can be attributed to the presence of numerous limestone-karstic type geological features within the study area.

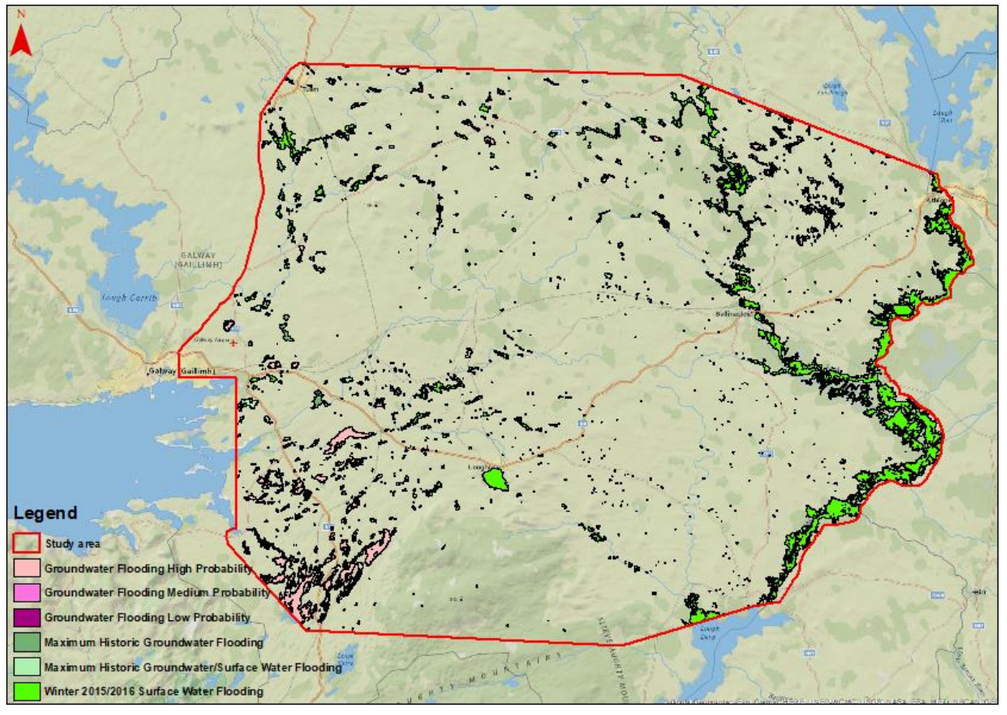

Figure 8.4 – Groundwater Flooding (Historical & Predictive)

8.3 Existing Environment – Water Resources

Many waterbodies, both groundwater and surface water, are currently being used as drinking water sources for private and public water supply within the subject study area. Lough Ree, Lough Derg and Lough Rea are the major surface water sources for public water supply along with a number of groundwater sources for private group water schemes (over 20 Nos.). The Dunkellin and Clarinbridge Rivers are also being used as public water supply. Figure 8.6 shows the locations of these abstraction points along with their associated source protection zones.

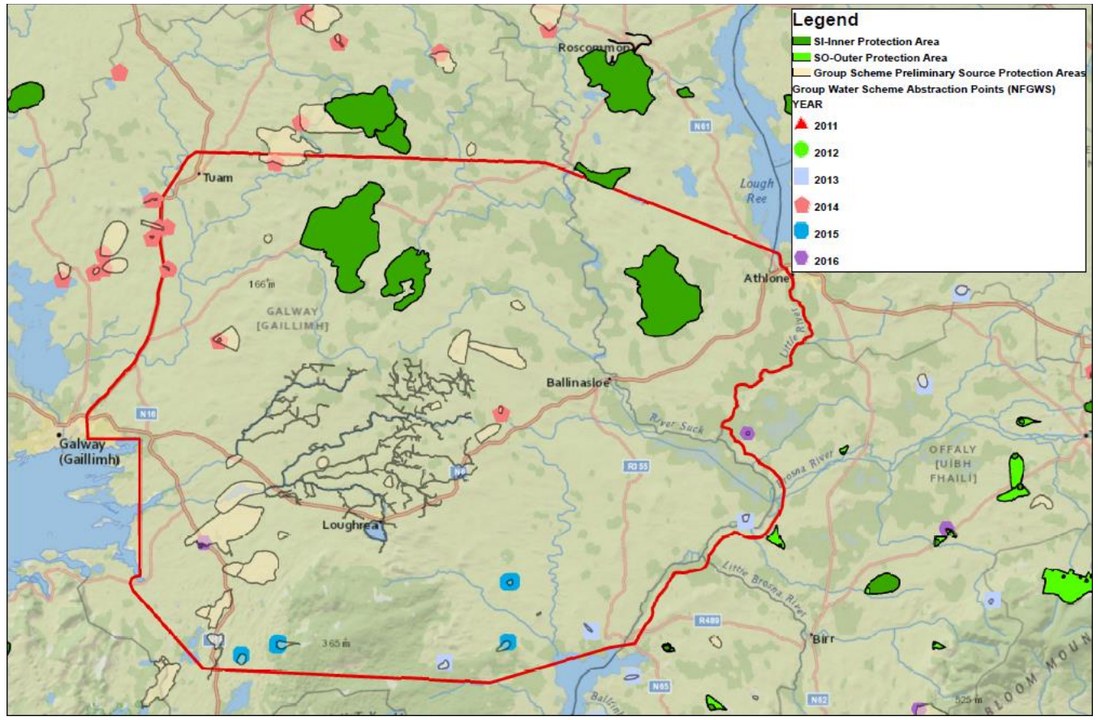

Figure 8.6 Water Supply Abstraction Points and associated Source Protection Areas

8.4 Existing Environment – Water Quality

The rivers within the subject study area are large attractions with the water quality and services they provide. The Shannon is a very important mixed fishery with course angling and game. Many of the Shannon tributaries also hold important nursery habitat, salmonoid and lamprey spawning. Figure 8.5 presents the current water quality status (2013-2018) of all waterbodies located within the study area. The WFD classification scheme for water quality includes five status classes: high, good, moderate, poor and bad. High status' is defined as the biological, chemical and morphological conditions associated with no or very low human pressure. This is also called the 'reference condition' as it is the best status achievable - the benchmark. 'Good status' means 'slight' deviation, 'moderate status' means 'moderate' deviation, and so on. It can be seen from this water quality map that, much of the water courses located within the study area are of moderate to good status with a stretch of Dunkellin River identified as bad status. Lough Ree and Lough Rea are of good status and Lough Derg is of moderate status.

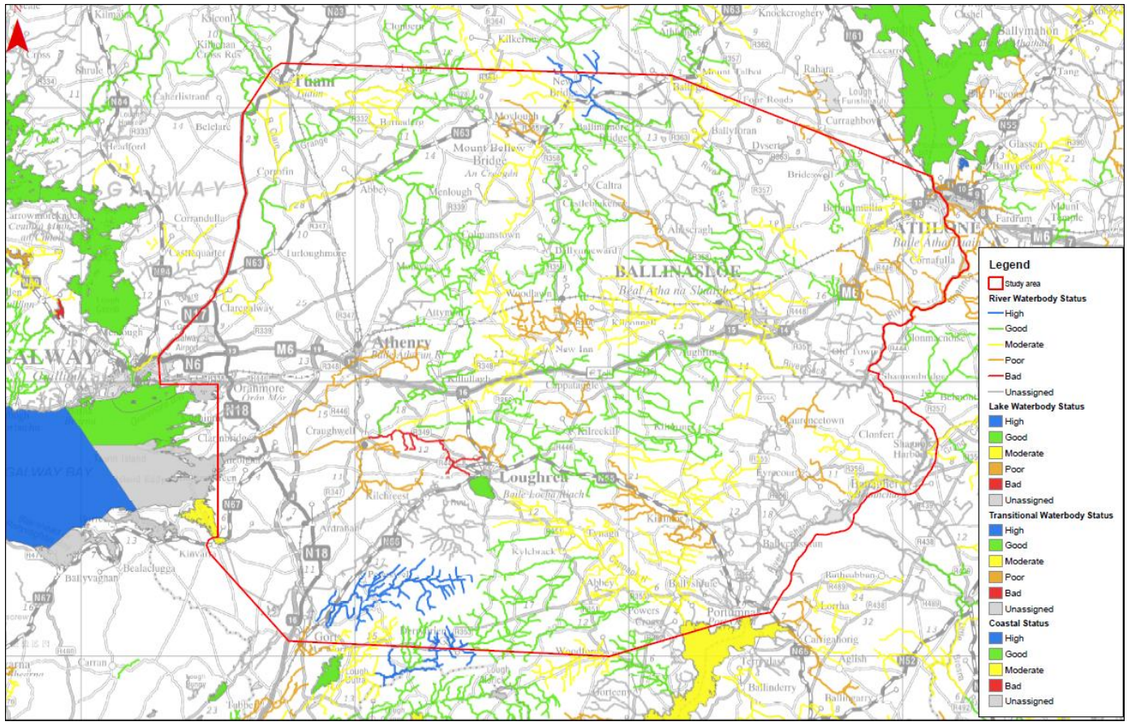

Figure 8.5– WFD Water Quality Status (2013 – 2018)

8.5 Water Identified Constraints

The above sections identified all existing constraints related to water environment within the subject study area. The proposed cycleway route could traverse through the identified flood prone areas and could pose significant impacts on the existing hydrological and hydraulic regimes of these watercourses. It could deteriorate the current water quality status of these watercourses during the construction stage of the project.

During the route selection stage of the cycleway these constraints will be taken into account. If possible, the proposed route will avoid passing through any flood prone areas. If this is not possible, appropriate mitigation measures will be proposed/implemented to minimise any adverse impacts.

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'* has been followed in this process.

9.2 Existing Environment

9.2.1 Air Quality

All Cycleway route options to be considered will have an equally neutral to positive impact on air quality of the surrounding environment due to the implementation of the scheme. All routes serve to increase sustainable transport modes and decrease the use of motorised vehicles.

However, from a user's perspective, options which run adjacent to the existing roads could be considered to have a more negative impact in terms of air quality, as it exposes users to more traffic pollution.

9.2.2 Climate

9.2.2.1 Peat

Bord na Móna own very large tracts of bog land in the Study Area. From 2020, an accelerated 'Exit from Peat' is planned by the government, involving an extensive Bord na Móna bog rehabilitation program. This program will rehabilitate 77,000 hectares of bogs used for harvesting peat for electricity generation to a high standard, which will present additional lands for consideration in this scheme.

Existing light industrial railway tracks and bog roads across these lands present an opportunity to accommodate potential Cycleway routes which avoid crossing intact bogs. Floating platforms or other measures could be considered where potentially crossing intact sensitive bogs.

The Strategic Framework for The Future use of Peatlands (BnM 2016) states that *'Recreation and tourism have long been seen as viable activities with which to diversify the rural economy and to create additional employment. The potential of cutaway peatland as recreation and tourism attractions has been recognised'.*

9.2.2.2 Carbon emissions / Quarries / Tips

All Cycleway route options to be considered will have an equally neutral to positive impact on carbon emissions to the surrounding environment. Route will promote an increase in sustainable transport modes and decrease the use of motorised vehicles for commuters in the area.

9.2.3 Noise

Potential Cycleway route options will all serve to reduce noise impacts due to the reduction in traffic congestion realised by the scheme, as they all equally promote a more sustainable transport mode. Similar to above, options which run adjacent to the existing roads could be considered less favourable in terms of noise quality, as it exposes users of the scheme to more traffic noise. Strategic noise data of the area from TII is shown in Figure 9.1 below.

Rock breaking and large earth moving works are not expected during construction of the cycleway which will not have a significant noise impact to local areas.

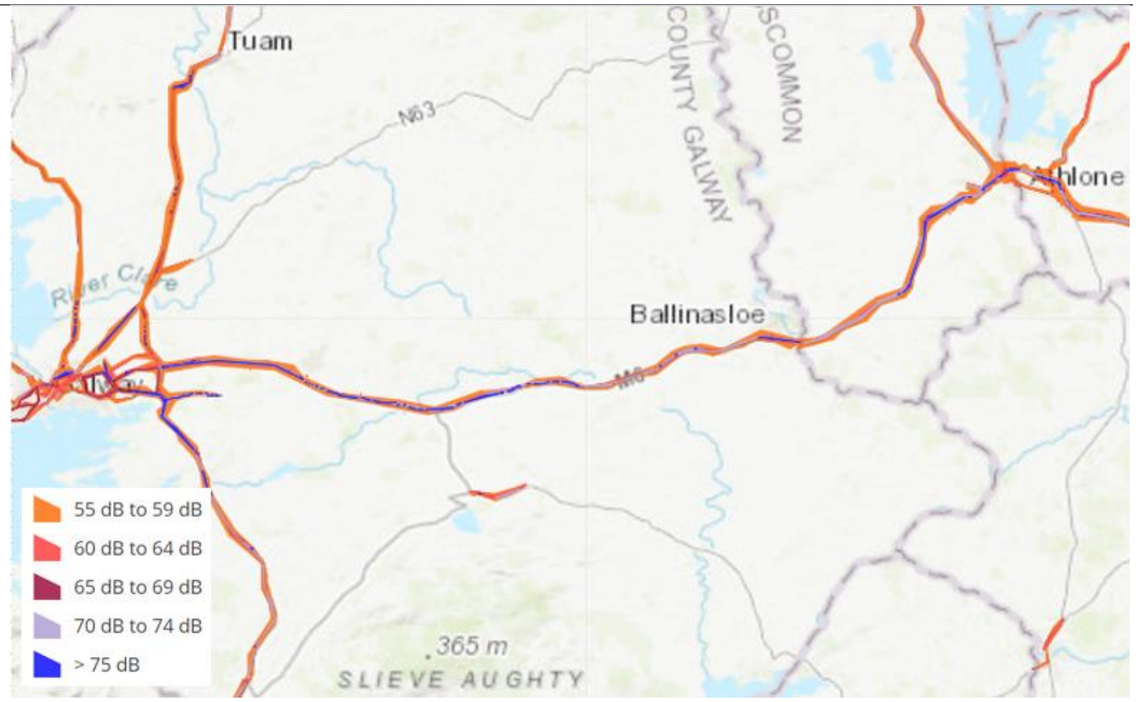

Figure 9-1 – Noise Map (TII Strategic Noise Data)

9.3 Air, Climate and Noise Identified Constraints

The boglands within the Study Area are designated sites which are a form of constraint to the scheme as the bogs must remain intact. However, existing light industrial railways and bog roads of significance offer opportunities to diversify the landscape of the Cycleway corridor without interfering with the sensitive ecosystem.

There will be airborne emissions associated with the project during the construction phase. Vehicle and machinery emissions during this phase will 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, it may be necessary to route potential route corridors away from sources of poor air quality. For Cycleway users and the protection of human health, a suitable buffer may be required from a road within which a sensitive receptor may experience an air quality impact.

The main noise impacts associated with the project will be during the construction phase due to machinery movements. The impacts can be mitigated by avoiding noise sensitive receptors and by using light machinery. Noise during the construction phase is also temporary with minimal potential for noise and vibration to be an issue, particularly for sensitive receptors, where significant earthwork activities and engineering such as rock breaking are very unlikely.

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 cycleway in relation to material assets with particular reference to existing infrastructure, utilities and non-agricultural land use.

10.2 Existing Environment

10.2.1 Publicly Owned Land

The preferred model for future Cycleways is to use lands already available in the undisputed ownership or control of the State, either through Government Agencies, Government Departments or Local Authorities.

The public lands within the Study Area were identified using landownership data obtained from the Property Registration Authority (PRAI). This data was collated and mapped as shown below and in Appendix E to highlight publicly owned land within the Study Area. The main state bodies in the area include Bord Na Mona, Coilte, Iarnroid Eireann and the ESB.

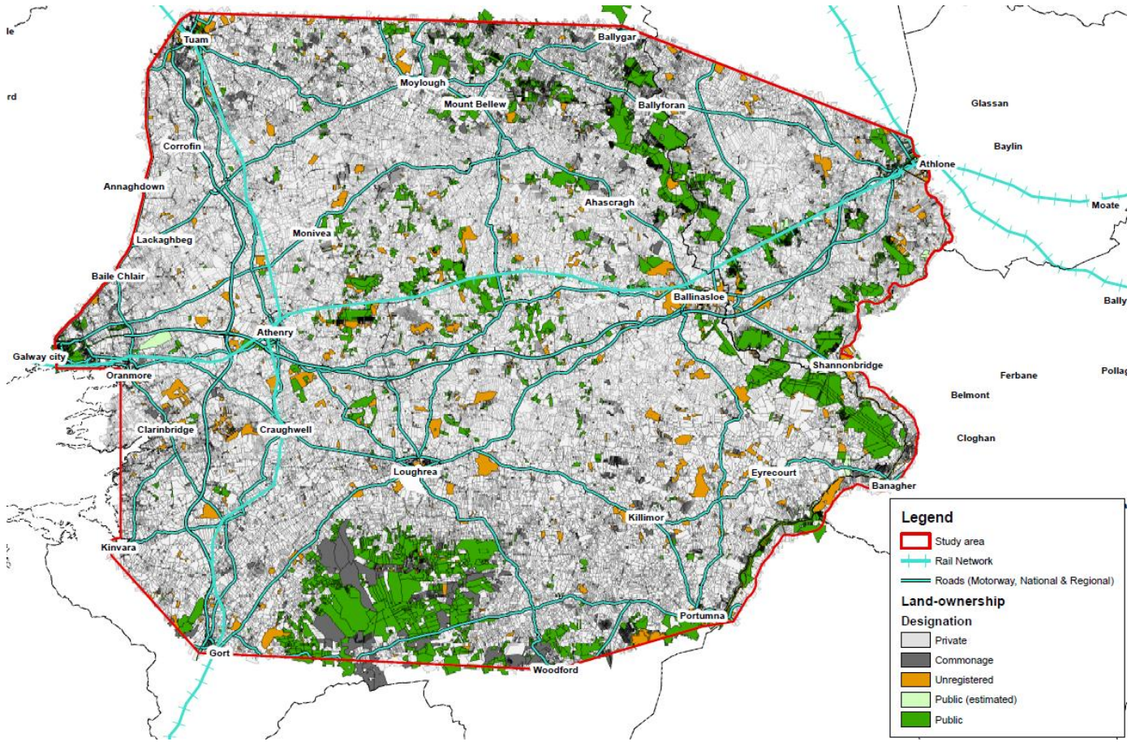

Figure 10-1 – Public Land Map

10.2.2 Tourism and Community Facilities

The Study Area offers a variety of amenities and attractions. These were mapped using information from Fáilte Ireland, the National Inventory of Architectural Heritage, and the Sites and Monuments Records. Fáilte Ireland have developed a number of regional tourism brands, in the Study Area, which present three distinct tourist offerings: Ireland's Ancient East; Ireland's Hidden Heartland; and the Wild Atlantic Way.

These brands are used to promote and market tourism in the regions both nationally and internationally. The brands capitalise on the particular strengths and attractions of the area.

The Galway to Athlone area contains a rich cultural landscape offering a variety of amenities and attractions. Galway City and Athlone are both strong tourist destinations. Their rural hinterland is characterised by attractive if unspectacular scenery, generally small farmsteads, dispersed rural dwellings and historic market towns.

Sites of interest include the Battle of Aughrim Site, Oranmore Castle, Athenry Norman Castle, Coole Park, Portumna Castle, the historic bridge at Shannonbridge, Athlone Castle and the River Shannon. The Shannon system is the principal water body in the area where leisure ferry services could add value to the scheme. The river is a core tourism and recreational asset in the area. All Tourism and Community Facilities in the area can viewed within the Features Map provided in Appendix E of this report.

10.2.3 Road Network

Galway and Athlone are connected by the M6 Motorway and the R446 (formerly the N6) road as can be seen in Figure 10.1. The M18 also connects the M6 to Gort and the M17 to Tuam. There are other Primary, Regional and Local Roads, providing good connectivity to towns and villages in the area such as Oranmore, Clarinbridge, Athenry, Craughwell, Loughrea, Ballinasloe, Tuam, Gort, Kinvara, Mountbellew, Portumna and Shannonbridge.

In terms of integration for the scheme, it is important for users to have the option to access the Cycleway by road and bus transport.

10.2.4 Rail Network

The Galway to Dublin rail line links Galway and Athlone as shown in Figure 10.1. There is also an active railway from Athenry to Limerick and a disused line from Athenry to Tuam. A disassembled line also exists from Attymon to close to Kiltullagh, which formerly travelled south to Loughrea.

Irish rail has committed to the installation of a dual track from Galway to Athenry to expand its services in this area. Intercity rail services could be extended north along the disused Western Rail Corridor from Athenry to Tuam. This is pending an independent review regarding the feasibility of reinstating this rail service.

In terms of integration for the scheme, it is important for users to have the option to access the Cycleway by rail.

10.2.5 Walking and Cycling facilities

The Green Heartlands Cycle Route and Clonmacnoise Cycle Loop are two large existing cycle trails identified in the area. They are not fully segregated from traffic and use the existing Local Road Network. Two attractive walking trails also exist in the vicinity of Shannonbridge that start at the fortification and continue along the banks of the west side of the River Shannon.

Walking and cycling facilities in east Galway City are being improved under the Bus Connect Scheme. Other existing facilities could integrate with the cycleway where constrained. This provides an opportunity to connect with new infrastructure within urban areas.

The Beara-Breifne Way, Ireland's longest national waymarked trail, runs along the banks of the River Shannon from Portumna to Meelick. It then heads north using local roads and some off-road trails along the River Suck as far north as Ballygar within the Study Area. Figure 10.2, shown below highlights the Hymany Way section of the Beara-Breifne Way from Portumna to Ballygar.

Figure 10-2 – Hymany Way (Beara-Breifne Way)

10.2.6 Water Network

The existing water network in the Study Area offer natural severance lines while allowing visitors to experience the natural environment. While this offers an opportunity, there are still constraints associated with these features.

Large water bodies include Lough Rea, Lough Derg, the Rivers, Dunkellin, Shannon and Suck, along with a number of other tributaries and smaller rivers. The Shannon Callows acts as a flood plain when the level of the river rises, which can cover an extensive width of up to 2km. Other rivers in the area also tend to flood when the flood plain extends up tributaries of the River Shannon.

Cruisers and boat transports for cyclists are possible within the Study Area, with public marinas in Athlone, Clonmacnoise, Shannonbridge, Ballinasloe, Shannon Harbour, Banagher, Meelick and Portumna. The mid Shannon region discovery zone is shown in Figure 10.3 below.

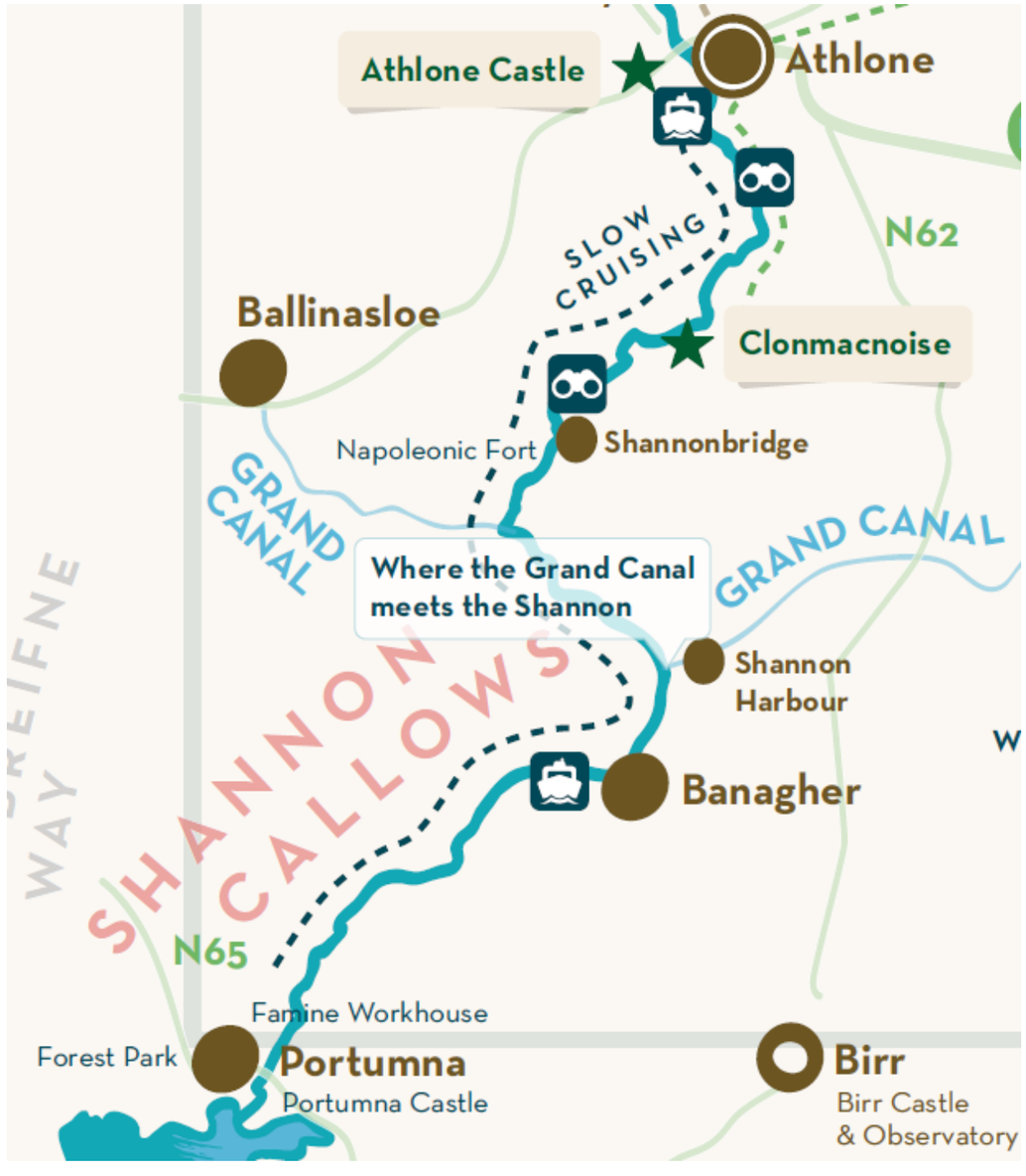

Figure 10-3 – Mid Shannon Region (Shannon Masterplan 2020)

10.2.7 Public Transport

In terms of integration for the scheme, it is important for users to have the option to access the Cycleway by public transport.

The R446 is a bus corridor with a number of inter-regional bus services along with some local and private services also available. Bus services are the most common form of public transport used in the area in particular for small towns and villages. Bus Éireann currently carry bikes free of charge within the luggage compartment, however, guarantee of space is not always available on their services. Having short local links by road to nearby towns and village centres is also of benefit to local communities.

The Galway to Dublin rail service is frequent, with daily stops in the Study Area to Oranmore, Athenry, Attymon, Woodlawn, Ballinasloe and Athlone. The Limerick route also serves Craughwell and Gort with daily stops. Bikes can be transported on these services with up to three bikes per carriage currently permitted. Irish rail has committed to the installation of a dual track from Galway to Athenry to expand its services in this area.

10.2.8 Other Transport Facilities

Galway had a commercial Airport that has been closed since 2011. It may provide an opportunity if re-opened in the future for users accessing the Cycleway and commencing their journey from Galway as a starting point.

10.2.9 Utilities

Utilities providers in the Study Area include Flogas, Bord Gáis Energy, Electric Ireland, Energia, SSE Airtricity, Irish Water, Eir, Virgin Media and Vodafone. A detailed search for utilities is to be conducted through the route selection process by issuing an inquiry via Click Before You Dig and through individual inquiries to service providers.

Any potential interruptions to services are unlikely. A constraint for existing utilities includes the visually unattractive large overhead power lines which may need to be avoided.

10.2.10 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.
- Any 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 waste generated from site clearance and earthworks will generally be vegetation and topsoil. 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.

10.2.11 EPA Licenced Facilities

There are three licensed facilities currently operating in the Study Area, in compliance with the requirements of Section 40(4) of the Wate Management Act, 1996.

A waste transfer station is located in the townland of Carrowmoneash, Oranmore. This facility accepts only non-hazardous wastes (household, commercial and industrial waste) and construction and demolition wastes. These wastes are processed within a waste transfer building with some materials (e.g. metal, wood) being removed and recovered before the residual waste is sent to the Carrowbrowne landfill site.

A landfill is located at Pollboy, Ballinasloe, with a maximum annual allowance of 120,000 tonnes to be disposed of in lined areas of the facility. The facility also provides for the collection of waste at a newly constructed civic waste facility and the composting of waste.

Another landfill is located at a greenfield site at Killagh More, near Kilconnell in East Galway. This facility accepts residual non-hazardous household, commercial and industrial waste. No hazardous waste, liquid waste or sludge may be disposed of here.

The heavy waste processing operations at these sites would not be an attractive feature in the vicinity of the Cycleway. However, the landfill site near Kilconnell is required by the license to maintain a 40m buffer zone, where no waste may be deposited between the landfill footprint and the boundary of the facility. The license then requires a landscaping scheme to be implemented in this buffer area which may screen heavy operations if the Cycleway was to be in the area. It was noted that this facility is also nearing the end of its lifespan.

10.2.12 Telecommunications

A review of the outdoor mobile phone coverage for one of Ireland's leading service providers shows good coverage for the majority of the Study Area. Some areas of poor phone coverage were noted around Clonmacnoise, Brideswell, Ballyforan, Kiltormer, Kilconnell and Monivea along with some very poor to no coverage in small areas of the Slieve Aughty's. It is essential for Cycleway users to have phone coverage in the event of an emergency when using the route. Data from the Commission of Communications Regulation for outdoor phone service is shown in Figure 10.4 below.

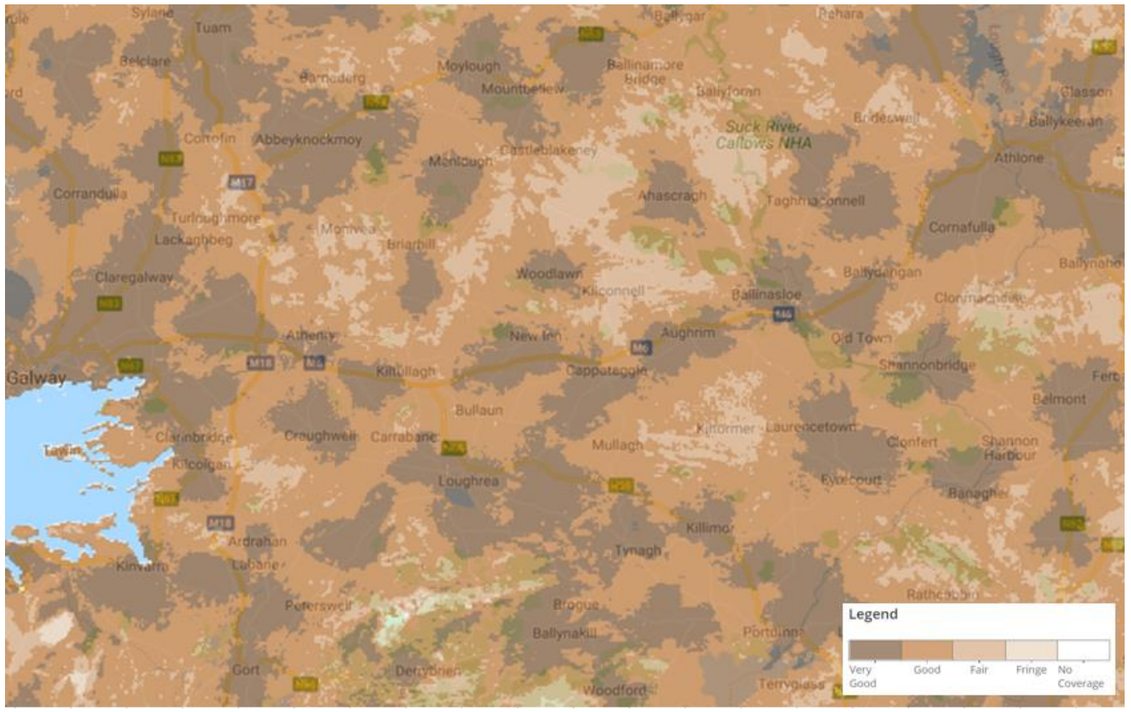

Figure 10-4 – Outdoor Mobile Coverage Map (Commission of Communications)

10.3 Material Assets: Non- agricultural Identified Constraints

Early consideration of how options can integrate with the existing material assets in the area is essential. The advantage of public land corridors includes certainty of permanent unrestricted access, clarity in relation to liability for any insurance claims and certainty of responsibility for maintenance and upkeep.

While the network of rivers offers core tourism and recreational opportunities to the scheme, they also provide a constraint in terms of flooding which will have to carefully mitigated (see Section 8). Any proposed route will have to cross either the River Shannon or Suck. Any new crossing points will need careful consideration in the areas least prone to flooding. While some level of infrequent flooding on the Cycleway may be acceptable, it will have to remain predominantly free from extensive flooding. Consideration will also have to be given towards livestock relying on access to the rivers and streams.

Towns that offer good transport links in the area include Athenry, Ballinasloe, Gort, Craughwell, Loughrea and Oranmore. However, based on the current public transport options in the area, groups of cyclists would find services such as bus and trains difficult to use as a means of connecting to sections of the Cycleway. This is due to the current limitations of transporting bikes on train carriages and luggage compartments of buses.

Active landfills and large overhead utilities should be avoided for the Cycleway to be an attractive route. The disused Western Rail corridor could present an opportunity for the scheme pending an independent review of the feasibility of reinstating this rail service. Mobile service blackspots in the Slieve Aughty's will have to be avoided for safety reasons in the event of an emergency for cycleway users on the route.

11 MATERIAL ASSETS: AGRICULTURAL

11.1 Introduction

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

- Census of Agriculture, 2010;
- CORINE (Co-Ordinated Information on the Environment) Landcover 2018;
- Google Earth;
- Property Registration Authority of Ireland land folios; and
- Teagasc EPA Soil & Subsoil Mapping.

11.2 Existing Environment

Agricultural practices within the study area are typical of the Border, Midlands and West (BMW) region as a whole. The majority of the study area is located within County Galway, while the north-east corner is intersected by County Roscommon and a small portion of County Westmeath is intersected at the proposed cycleway termination point (Athlone Castle). Agriculture in Galway is typified by mountainous land in the western part of the county (outside the study area) which is more suited to mountain sheep farming. East of Galway City, the topography and soils allow for a greater variety of agricultural enterprises to be practiced such as drystock, dairy, pig, poultry and equine stock. The majority of the study area is characterised by this type of agricultural land, with the exception of the Slieve Aughty mountains, towards the southern extent of the study area.

The Census of Agriculture (2010) figures recorded 9,343 farms within the study area. The total area of farmed land excluding commonage was approximately 267,176 hectares, with an average farm size of approximately 28.6 hectares. The estimated size of the study area is 307,612 hectares, therefore approximately 86% of the study area is in agricultural use.

Figures presented in **Table 11-1** below have been extracted from the Census of Agriculture (2010) data. The data were obtained at Electoral Division (ED) level for each ED within the study area. Cumulative data from each ED within the study area have been collected to give an approximation of farming practices. In total, grassland for pastural grazing and silage/hay is by far the dominant land use at 89.7% of the total farmed area. These grasslands are abundant right across the study area. Pastural grazing land for drystock is the primary agricultural land use in the area, which is generally more suited to the region's damp climate than crop growing.

Table 11-1 - Farming Practices within the Study Area (2010 Census of Agriculture)

Land Use	Size (Hectares)	Percentage of Total (%)
Pasture	156,818	58.7
Hay	12,402	4.6
Silage	70,455	26.4
Total Crops	5,062	1.9
Potatoes	150	0.1
Total Cereal	3,629	1.4
Rough Grazing	18,660	7.0
Total	267,176	100.0

These land use patterns are also evident from the CORINE 2018 database. 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 2018 (Referred to in this report as CORINE 2018). Drawing No. MGT0525Arc0024 illustrates the CORINE (2018) land cover distributions across the study areas. These areas correlated well with the aerial photography and with the available soil mapping.

The identification of possible farming practices can be 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 stales; 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 Census of Agriculture (2010) data indicate that there were approximately 802,318 head of livestock within the study area. This total is made up of cattle, sheep and horses, which represent the vast majority of farming in the region and in Ireland. Of this total, 412,538 were sheep (51.4%), 379,982 were cattle (47.4%) and 9,798 were horses and ponies (1.2%). See **Figure 11-1** below.

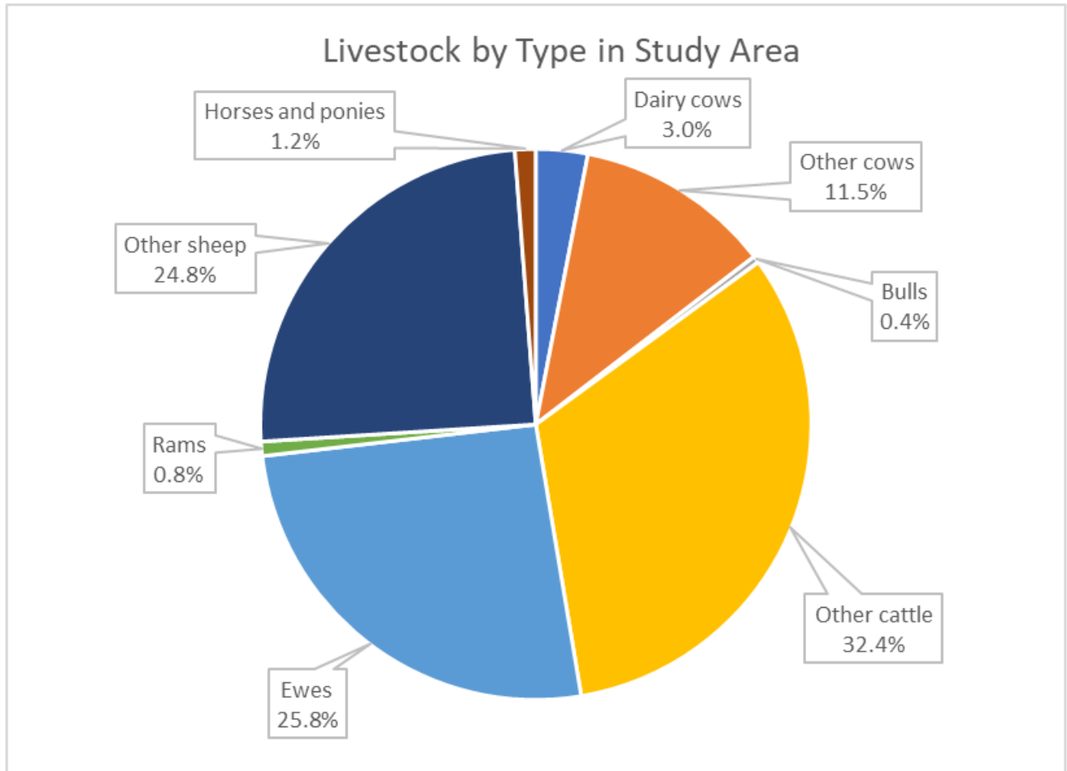

Figure 11-1 - Livestock Types within the Study Area (Census of Agriculture 2010)

These data correlate well with the land use breakdown in **Table 11-1**. The principle land use (pasture – 58.7%) would primarily support the number of cattle within the study area. Sheep would also be heavily dependent upon pastural grazing, but mountainous breeds would also be accustomed to rough grazing (7% of agricultural land use). Equine stock would also rely on pastural grazing, but given the nature of the equestrian industry, horses and ponies are largely kept in equestrian centres, stables, stud farms and other specialist farm types, where their diets would be supplemented with other food sources.

Data used for completing the agricultural maps have been downloaded from Ireland's open data website which specifically refer to the 2010 Census of Agriculture. This data allowed agriculture to be analysed at each Electoral Division (ED) in the study area. Some EDs do not have published agriculture statistics due to small number of farms, which could potentially be identified at ED level. These EDs have been excluded from the analysis and, are shown on the maps as blank areas with "no data" labels included in the legend.

Agriculture themes used for this study include average farm size, livestock/tillage type, average land use and livestock density. Livestock units (LUs) have been estimated based on the available data to allow the aggregation of numbers of livestock across different categories for comparison purposes. These units of measurements are referred to as coefficients. The coefficients used in this study are taken from EU Regulation No. 1166/2008 covering the 2010 Census of Agriculture.

At this stage of the project there is an understanding of the average farm size, as shown on drawing MGT0525Arc0019, which helps. Farm sizes can also be observed from the aerial photography from and from information available on the Property Registration Authority web site. These together were combined to give a greater understanding, from a high level, of agricultural practices and the intensity at which they may be farmed, as shown on drawing MGT0525Arc0022 & 23. Further consideration of these features will be undertaken during the Phase 2 Option Selection process.

More than half of all farm holders in the area in 2010 were aged 55 years or older. In 2000, just 39.5% of farm holders were aged 55 or older. The number of holders aged less than 35 years also more than halved in the ten-year period between 2000 and 2010, now representing just 5% of all holders now in the area. See **Figure 11-1** below.

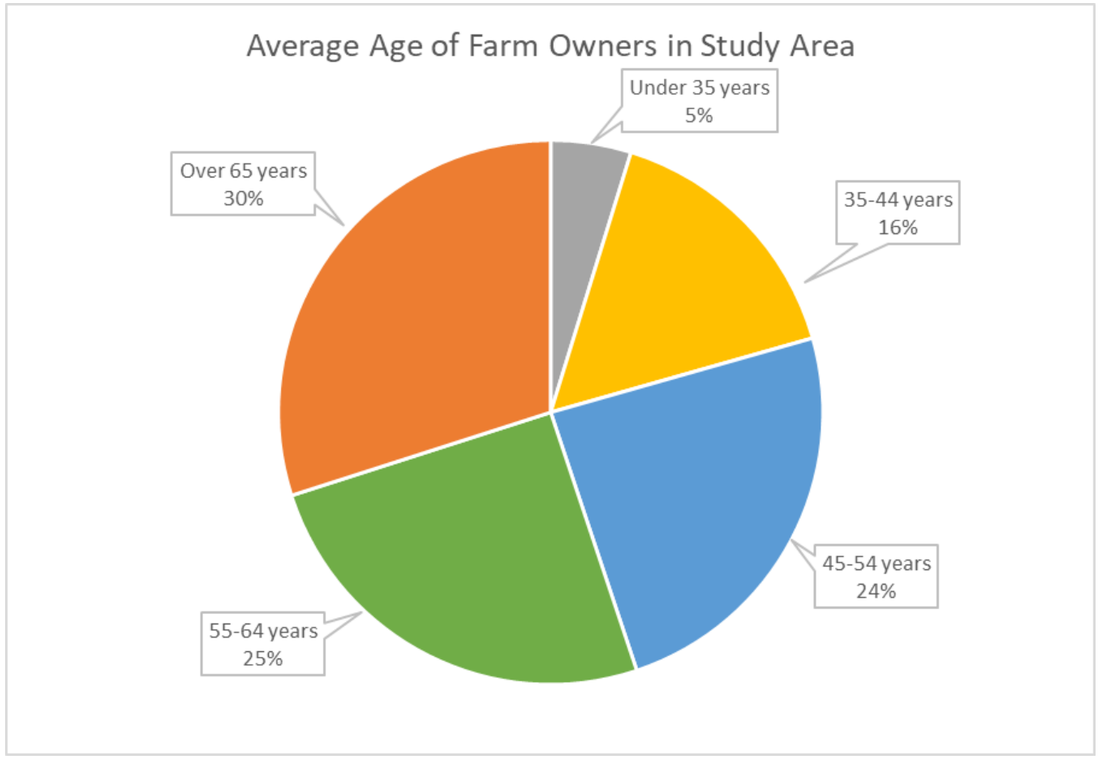

Figure 11-2 – Average Age of Farm Owners within the Study Area (Census of Agriculture 2010)

Consideration was also taken of the soils within the study area by reviewing the Teagasc EPA Soil & Subsoil Mapping included in Appendix E (refer to **MGT0525Arc0004** and **MGT0525Arc0012** respectively). From this mapping the dominant soil within the study area is deep well drained soil derived from mainly basic parent materials (BminDW). There is some large patches of deep poorly drained soil (BminPD) located in the centre of the study area. Scattered pockets of poorly drained soil with peaty topsoil throughout the study area, located mainly near bogs. Deposits of deep poorly drained soil (AminPD) and poorly drained soil with peaty topsoil (AminPDPT) are present in the south of the study area. Pockets of shallow well drained soils are located mainly near Kinvara and Athlone.

Cutover peat (Cut) is heavily featured within the study area with large bogs along the River Shannon from Athlone to Shannonbridge and on the banks of the River Suck from Shannonbridge to Ballygar. Smaller pockets of cutover peat spreads across the east, mid and northern sections of the study area. There is a large area of Blanket peat (BKtPt) in the south of the study area between Woodford and Gort.

The well-drained soil would be considered the better soils in the region and coincide well with tillage and good grassland seen in the aerial photography. Bogs and soils in the centre of the study area would be considered the poorer quality land, with impaired drainage, and coincide with the smaller field patterns, forestry and poor grassland/scrub seen in the CORINE 2018 mapping and aerial photography.

11.3 Assessment

The development of any new cycleway in Ireland has the potential to impact agriculture as this is the most common land use. The level of impact 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 (and facilities) severed;
- Farm enterprises;
- Intensity of farming practices; and
- Current management systems.
- .

At this early stage of the project the area of private lands required is not known. Therefore, only a high-level examination of agriculture practices was undertaken in the study area to identify aspects of agriculture that could represent a constraint to the development of a new cycleway within these areas.

The following are the farming practices considered in this constraints study and the unique aspects of these practices that can potentially be impacted:

- Dairy Farming – This is one of the more profitable farming enterprises. 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 may be affected by a cycleway, will cause some inconvenience on these holdings. Where possible dairy farms, particularly the paddocks used by the dairy herd for daily grazing, should be avoided if possible. 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 from pedestrians and cyclists, which may arise from the close proximity of the cycleway to the grazing area. 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 footprint 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 should be avoided entirely if identified in the study area.
- Drystock – Enterprises such as beef and sheep are generally less affected than dairy farms. Stock on these farms are 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 developments.
- 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. However, it is unlikely the cycleway will impact significantly on the size of the remaining which should remain suited to operate large machinery and therefore avoid any 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 is not likely.

Removing the outer trees from a forestry block or exposing inner trees can considerably increase the effects of wind blow and should be avoided.

- Farm Buildings – Severance of farm buildings may cause some impact on the day-to-day management of a farm and in the case of dairy farms may make the operation of the enterprise difficult.

11.4 Material Assets: Agriculture Identified Constraints

The current greenway strategy outlines utilising state-owned lands where possible. Despite best efforts that will be made in routing decisions to avoid the necessity of purchasing land to complete the network, arrangements with private landowners will be required.

Based on this high-level assessment, a good understanding of the farming practises and profiles has been obtained. The various farming practises in the study area each have unique aspects that can potentially be impacted and will require careful consideration. Early consideration of how options can integrate with the existing agricultural practises in the area will be essential and will be fully explored.

Based on feedback from the first consultation, landowner opinion is divided, with some open to accommodating the cycleway in return for compensation, while other were less positive. . While we recognise the concerns over possible landtake and severance, and the impacts on farming production, every effort will be made to minimise the effects. . It should be noted that the local authorities will take full ownership and responsibility of the greenway and will fully indemnify the landowners affected.

Similarly, many farmers are concerned about the impacts of recreationalists in relation to nuisance and crime. While there may be genuine issues relating to these concerns, so far residents and farmers in proximity to opened greenways have generally been favourably disposed to the developments. Further outreach and early engagement with the farming community about the Route Corridor Options and concrete steps to help assuage their concerns could reduce opposition significantly.

12 CULTURAL HERITAGE

12.1 Introduction

UNESCO define the term 'Cultural Heritage' as encompassing several aspects of tangible assets (*immovable:* archaeological sites and monuments, architectural heritage buildings; *movable*: artefacts; and *underwater*: shipwrecks and ruins) and intangible assets (e.g. folklore, oral tradition and language). Broadly, 'Cultural Heritage' includes the designated and non-designated heritage categories of (i) archaeology (known and unknown), (ii) architectural (built) heritage and (iii) history and folklore.

A desk-based identification of all recorded archaeological monuments, architectural heritage structures, surveyed gardens/demesnes and significant cultural heritage features within the Constraints Study Area (CSA), and the legal status of same is presented below. Summarised archaeological and historical overview of the CSA is provided, along with discussion of key significant constraints and identifiable areas of heritage note.

12.2 Legal Framework

There are a number of mechanisms under the *National Monument Act 1930* (as amended), the *Heritage Act 1995* and relevant provisions of the *National Cultural Institutions Act 1997*, that are applied to secure the protection of archaeological remains, which are held to include all man-made structures of whatever form or date except buildings habitually used for ecclesiastical purposes.

The *National Monuments Act 1930* (as amended) secures designation of sites of national significance as National Monuments, enters archaeological sites onto the Register of Historic Monuments (RHM) and the Sites and Monuments Record (SMR); and includes sites in the Record of Monuments and Places (RMP). All RMP sites receive statutory protection under the Act. The Act also allows for the placing of Preservation Orders and Temporary Preservation Orders on endangered sites, which secures designation protection as that for National Monuments. There is a total of 8,089 No. SMR sites located within the CSA, 46 of which are National Monuments (Appendix C).

Section 3 of the *National Monuments (Amendment) Act 1987* as amended by the Section 18 of the *National Monuments (Amendment) Act 1994* makes specific provision for underwater archaeological objects, including that a person shall not dive on, damage, or generally interfere with, any wreck or archaeological object, except in accordance with a licence issued by the Minister of DCHG under Section 3 (5) of the Act.

Protection of the architectural heritage in Ireland is provided for through a range of legal instruments that include the *Heritage Act 1995*, the *Architectural Heritage (National Inventory) and National Monuments (Misc. Provisions) Act 1999*, and the *Planning and Development Act 2000*. Under the *Planning and Development Act 2000* all Planning Authorities are obliged to keep a 'Record of Protected Structures' (RPS) of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest. The relevant development plans pertaining to the CSA at the time of writing are the *Galway County Development Plan 2015-2021, Roscommon County Development Plan 2014-2020* and the *Draft Westmeath County Development Plan 2021-2027*. There are 1080 No. RPS structures located within the CSA.

The National Inventory of Architectural Heritage (NIAH) was established to record architectural heritage structures within the State and to advise local authorities in relation to structures of architectural heritage significance within their administrative areas. There are 1131 No. NIAH structures located within the CSA.

In December 2015 Ireland ratified the 2003 UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage. Ireland's obligations under the 2003 Convention include establishing a National Inventory for Intangible Cultural Heritage (NIICH) to protect, promote and celebrate Irish living cultural heritage practices, customs, crafts and traditions. There are no intangible cultural heritage elements on the NIICH specific to the CSA, however, in general terms, Uilleann Piping, Hurling, Irish Harping, Irish Traditional Music, Falconry, Dry Stone Walling and Floating Heritage have relevance.

12.3 Methodology

This study has been compiled based on the *Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes* and *Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes* as published (2005) by Transport Infrastructure Ireland (TII) together with due cognisance of the Code of Practice for Archaeology agreed between the Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs and Transport Infrastructure Ireland (TII) (2017). 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 CSA including the legal status, if any, of these features. Ultimately this shall serve to inform the Design Team of all relevant heritage constraints, including sites vulnerable to impact.

A desk-top study of recorded heritage datasets and documentary survey records was undertaken in order to identify all recorded archaeological, architectural and local historical heritage sites within the CSA. The collated information shall provide a cursory insight into the historical development of the CSA over time and shall assist in an overall evaluation of potential presence of hitherto unrecorded cultural heritage sites.

12.4 Data Sources

Detailed below are relevant data sources utilised for this Cultural Heritage Constraints Report:

- Sites and Monuments Record (SMR) and Record of Monuments and Places (RMP) for counties Sligo and Mayo, as published by the Archaeological Survey of Ireland (SMR dataset exports from Historic Environment Viewer[2] and a review of published (1995/1996) RMP inventories).
- *Archaeological Inventory of County Galway (Vol. 1 & 2).*
- Record of Protected Structures (RPS) for Co. Galway, Co. Roscommon and Co. Westmeath per relevant current County Development Plans: *Galway County Development Plan 2015-2021, Roscommon County Development Plan 2014-2020* and the *Draft Westmeath County Development Plan 2021-2027*.
- National Inventory of Architectural Heritage (NIAH) Buildings Survey for Co. Galway, Co. Roscommon and Co. Westmeath per dataset downloads from Historic Environment Viewer[3].

In addition, historical documentation relating to previous Cultural Heritage assessments carried out for proposed road schemes within the CSA were reviewed including:

- *The Quiet Landscape Archaeological investigations on the M6 Galway to Ballinasloe national road scheme*.
- *In the Lowlands of South Galway: Archaeological Excavations on the N18 Oranmore to Gort National Road Scheme*.
- Numerous articles from the NRA Monographs Series.

12.5 Topography and Landscape Character

The Constraints Study Area (CSA) encompasses a large portion of east and south County Galway, as well as adjacent portions of County Roscommon and County Westmeath. The dominant topographical features of the CSA are the Rivers Shannon and Suck to the east, the Slieve Aughty Mountains to the south and Galway Bay (Atlantic Ocean) to the west. The CSA is bisected by the M6 Motorway, which cuts through the central portion of this landscape from west to east. Much of the CSA including east County Galway and the portion of Counties Roscommon and Westmeath between the Rivers Shannon and Suck are set on limestone bedrock. This is generally an undulating landscape of low hills and ridges formed by glacial action. More broadly, the CSA is comprised of a number of Landscape Character

[2] Available at: https://webgis.archaeology.ie/historicenvironment/

[3] See Ref. 2 above

Areas as documented in the *Landscape and Landscape Character Assessment for Galway County* within the *Galway County Development Plan 2015-2021*, the *Landscape Character Assessment of County Roscommon* within the *Roscommon County Development Plan 2014-2020* and the *Landscape Character Assessment of County Westmeath* within the *Draft Westmeath County Development Plan 2021-2027*.

The majority of the CSA is within the area covered by the *Landscape and Landscape Character Assessment for Galway County,* including the following: Northeast Galway (Tuam environs), East Galway Bay (Oranmore to Kinvarra Bay and inland to the N18 road), East Central Galway (Athenry, Ballinasloe to Portumna), Shannon and Suck River Valleys (between Portumna and Ballinasloe), Northwest Lough Derg, Slieve Aughty Mountains and Southeast Galway (Clarinbridge to Gort). These Landscape Character Areas provide Landscape Value Ratings in terms of Cultural, Socio-economic and Environmental values for each of the areas.

The *Landscape Character Maps of Galway County* depict the overall CSA in more general terms as agricultural land (a situation that has prevailed for several centuries at least), with patches of peat bog, particularly to the east and south, moor and heather and forest to the south around the Slieve Aughty Mountains. With the exception of the area around the Slieve Aughty Mountains, the landscape is generally characterised as flat with some areas gently undulating.

The *Landscape Character Maps of Galway County* also show the location of recorded archaeological monuments in the county. Concentrations of monuments are notable to the west and east of Loughrea, north and southwest of Tuam and around the settlements of Athenry, Kilconnell, Ahascragh, etc. The lowest density of monuments is recorded around the Slieve Aughty Mountains. The central portion of the CSA, the landscape immediately surrounding M6 Motorway, has been described in archaeological terms as a 'quiet landscape' of historic market towns and dispersed settlement with low-lying pastureland (McKeown & O'Sullivan 2014).

The *Landscape Character Assessment of County Roscommon* within the *Roscommon County Development Plan 2014-2020* sets this portion of the CSA within the following Landscape Character Areas: *Lower Lough Ree and Athlone Environs* (LCA 8), *Cloonown and Shannon Callows* (LCA 9), *Athleague and Lower Suck Valley* (LCA 12) *Suck Callows* (LCA 13), *Lough Funshinagh, Stone Wall Grasslands and Esker Ridges* (LCA 34), *Brideswell Esker Belt* (LCA 35) and *Ballydangan Pastures* (LCA 36).

The County Roscommon portion of the CSA is characterised as mainly dry grassland with areas containing eskers, raised bog/fen and heath with occasional patches of wet grassland and forest. In terms of Landscape Character Types, the east, west and south areas of the County Roscommon portion of the CSA (including *Lower Lough Ree and Athlone Environs* (LCA 8), *Cloonown and Shannon Callows* (LCA 9), *Athleague and Lower Suck Valley* (LCA 12) *Suck Callows* (LCA 13)) are designated as *River Corridor* (for the Shannon and Suck rivers), while the central and norther areas (including *Lough Funshinagh, Stone Wall Grasslands and Esker Ridges* (LCA 34), *Brideswell Esker Belt* (LCA 35) and *Ballydangan Pastures* (LCA 36)) are designated as dry farmland and bog and farmland complex (*Landscape Character Assessment of County Roscommon*).

The *Draft Westmeath County Development Plan 2021-2027* contains a study of Landscape Character Areas for which Athlone is within the *Lough Ree & Shannon Corridor LCA*. This is similar in character to the adjacent *Lower Lough Ree and Athlone Environs* (LCA 8) in Roscommon.

12.6 Archaeological Heritage

There is a total of 8089 No. archaeological site RMP/SMR records located within the CSA (Appendix C). Of this total 754 No., or 9.3%, are redundant records. Of the various classifications of monuments represented within the overall data some may represent a variety of periods from prehistoric to the present and could not be easily assigned to the general periods presented below (*i.e.* prehistoric, early medieval and late and post-medieval).

The prehistoric period is represented by 3.8% (307 No.) of sites (megalithic tombs, standing stones, barrows, boulder burials, henges, hillforts, hilltop enclosures, pit burials, lithic scatters, stone circles, burial cairns, cists and *fulachta fiadh*). This may not represent the whole prehistoric dataset, as it does not include sites that may date to this period or later as detailed below.

Of the total number of sites, 40.9% (3314 No.) possibly date to the early medieval period (ringforts, cross slabs, souterrains, crannogs, ecclesiastical enclosures, church and bullauns), 1850 No. of these representing ringforts alone. It must be noted that some of the sites assigned to the late/post-medieval period may also date to this period, which would raise numbers significantly.

Of the remaining dataset, approximately 25% (2023 No.) sites are broadly dated to the late/post-medieval period and consist of a wide variety of sites. The most numerous of these included castles (195 No.), children's burial grounds (276 No.), ritual sites (129 No.), houses (232 No.), graveyards (154 No.), graveslabs (123 No.), designed landscapes (297 No.), religious houses (41 No.), architectural fragments (41 No.), bawns (35 No.), boundary mounds (64 No.), Chapels (40 No.), country house (98 No.), mills (No. 57), and wells (73 No.).

Some sites recorded within the CSA could not be assigned to the three general periods outlined above, these include settlement clusters (15 No.), mines (3 No.), fords (5 No.), field boundaries (16 No.), quarries (477 No.), houses – indeterminate date (183 No.), anomalous stone group (8 No.), buildings (40 No.), burials (24 No.), cairns (clearance, radial, unclassified) (29 No.), toghers/roads (124 No.), structures (48 No.), large enclosures (26 No.), mounds (31 No.), middens (2 No.), inauguration sites (3 No.), earthworks (74 No.), field systems (104 No.) and hut sites (20 No.).

There is a total of 46 No. National Monuments located within the CSA (Appendix C & Appendix E). Several of these represent a number of individual monuments within one site.

12.7 Architectural Heritage

There are a total of 1080 No. Record of Protected Structures (RPS) sites and a total of 1131 No. sites listed on the National Inventory of Architectural Heritage (NIAH) located within the CSA. 603 No. of these sites are recorded on both the NIAH and RPS. This represents a high number of architectural heritage sites for a mostly rural study area (**Appendix E**).

Both the NIAH and RPS sites are generally dispersed along the road network throughout the CSA, with high concentrations in and around the towns and villages.

12.8 Multiple Designation Sites

Initial examination of the extensive cultural heritage datasets pertaining to the CSA indicate that there are a number of key sites of notable extant (above ground) remains and of multiple (statutory and non-statutory) designation (RMP status, RPS designation and/or NIAH record). These sites that retain multiple cross-designations (e.g. RMP, RPS and NIAH) can be primary indicators of overall heritage value, importance and significance of the site type and its inherent qualities therein and as such have been identified as notable key sites within the CSA. There is a total of 904 No. multiple designation sites within the CSA (Appendix C), 603 No. of which are recorded on both the NIAH and RPS, 39 No. are recorded on both the SMR and NIAH and 52 No. are recorded on the SMR and RPS. In addition, there is 210 No. sites that are recorded on the SMR, NIAH and RPS. The 210 No. sites that are recorded on all three heritage designations are of particular note.

Distribution mapping of identified multiple designation sites within the CSA is presented in on Appendix C & Appendix E.

12.9 Conclusions

The CSA contains a rich historic environment of archaeological and built heritage sites. This includes a wide variety of monuments and structures covering all periods of settlement from the Mesolithic right down to the modern day. The vast number of Cultural Heritage sites (9185 No. in total) throughout the CSA shows a wide pattern of distribution, particularly with regard to archaeological monuments, which make up 88.1% of the overall dataset. The architectural heritage sites show clear clustering within and around the towns and villages within the CSA. Although having a much

denser rural distribution that the architectural heritage sites, the archaeological monuments too are often found in clusters in the towns, such as Athlone, Ballinasloe, Loughrea, Athenry and Tuam. A few patches of low density of archaeological monuments are visible around the Slieve Aughty Mountains and to the east of Ballinasloe. The maps showing the distribution of SMR sites show that there is little direct geographical association between SMR sites and sections of the River Suck, Killyclogher River and sections of other rivers within the CSA. This suggests that these rivers had extensive flood plains that were not conducive to past settlement.

In terms of location and distribution, the majority of National Monuments within the CSA are located to the south of the M6 Motorway and north of the Slieve Aughty Mountains. There are notable small clusters of National Monuments at a small number of locations, including:

- Portumna: Portumna Friary (National Monument No. 461) and Portumna Castle (National Monument No. 515).
- Athenry: Athenry Castle (National Monument No. 406) and Athenry Abbey (National Monument No. 164).
- Near Loughrea: settlement cluster at Tonaroasty (National Monument No. 643), stone circle at Monamore East (National Monument No. 498) and ringforts (2 No.) at Masonbrook (National Monument No. 499).
- Near Aughrim: ringforts (2 No.) and redundant record (1 No.) at Attidermot (National Monument No. 371).
- Near Kilcolgan: Early ecclesiastical site and associated monuments at Drumacoo (12 No. sites) (National Monument No. 254).

The distribution of multiple designation sites is quite wide, however, there are lower densities to the east of Tuam. Immediately west and southwest of Athlone and around the Slieve Aughty Mountains. As with the National Monuments, notable clusters are discernible. With the exception of Tuam, the clusters are located mainly in the southern half of the CSA, including around Ballinasloe, Eyrecourt, Portumna, Loughrea, Athenry and Oranmore.

Although there is a considerable time-depth represented in the data relating to the historic environment of the CSA, some periods demonstrate a much greater density of features than others. A cursory scan of the breakdown of the numbers of archaeological monument by site type shows that ringforts (1850 No.) are by far the most numerous monument type in the CSA. Making up approximately 23% of the total, there are more than twice as many ringforts recorded in the SMR than all of the discernible prehistoric sites combined. There may be myriad of reasons for the preponderance of extant ringforts, including the undulating nature of the landscape which lends itself to ringfort construction, the type of farming practiced and the folklore associations with ringforts. Ní Cheallaigh (2012) recognised that ringforts were as much part of the symbolic landscape as the physical landscape and that folk traditions associated with fairies, established long after the ringforts were abandoned, may account for their survival in some areas. The succeeding periods (late and post-medieval, modern) also contain a large number and variety of monuments and structures. Perhaps the more recent the feature the better the chance of survival. The proportionately low number of prehistoric sites to later site is mirrored in the adjacent and analogous areas of West Galway and North Galway (see Gosling 1993 & Alcock *et al* 1999). As has been proved during archaeological works associated with road schemes within the CSA, hitherto unknown prehistoric sites (and later sites), including very extensive settlement and ritual sites exist sub-surface across the landscape.

Any option corridor evaluation process and subsequent environmental impact assessment, which will involve a desk study and field walkover inspection, will ensure that known and extant cultural heritage sites and features are identified, and any potential likely impacts are measured, with mitigation measures detailed for same, as appropriate.

12.10 Consulted Sources

Alcock et al 1999. Archaeological Inventory of County Galway Vol. 2 – North Galway. Dublin: Government Publications.

Gosling, P. 1993. Archaeological Inventory of County Galway Vol. 1 – West Galway. Dublin: Government Publications.

McKeown, J. & O'Sullivan, J. 2014. *The Quiet Landscape Archaeological investigations on the M6 Galway to Ballinasloe national road scheme*. NRA Scheme Monograph 15. Dublin: Nartional Roads Authority.

Ní Cheallaigh, M. 2012. Ringforts or Fairy Homes: Oral Understandings and the Practice of Archaeology in Nineteenth- and Early Twentieth-Century Ireland. International Journal of Historical Archaeology, Vol. 16, 367–384.

Galway County Development Plan 2015-2021

Roscommon County Development Plan 2014-2020

Draft Westmeath County Development Plan 2021-2027.

Transport Infrastructure Ireland (TII) (2005a) *Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes.*

Transport Infrastructure Ireland (TII) (2005b) *Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes.*

13 LANDSCAPE

13.1 Introduction

This section of the report presents the constraints and opportunities pertaining to landscape and visual amenity that are relevant to the proposed Galway Athlone Cycleway.

The approach to the reporting of constraints was guided by the following:

- Landscape Institute and Institute of Environmental management and Assessment, Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, (2013);
- TII, Landscape character assessment (LCA) and landscape and visual impact assessment (LVIA) of proposed national roads: Standards Document, PE-ENV-01105, Draft January 2019; and
- TII, Landscape character assessment (LCA) and landscape and visual impact assessment (LVIA) for Specified Linear Infrastructure Projects: Overarching Technical Document, PE-ENV-01104, Draft January 2019.

The constraints study and comparative assessment was informed by the following data sources:

- Galway County Development Plan (CDP) 2015 -2021;
- Roscommon County Development Plan (CDP) 2014-2020;
- Ordnance survey maps at varying scales; and
- OS Maps and Aerial photography.

13.2 Study Area

A Study Area was identified for the constraints and opportunities study across all environment disciplines and this area includes the eastern part of Galway County as well as part of County Roscommon. The study area comprises an extensive landscape in which, a range of landscape elements and features are located, and which require consideration in regard to developing a route that is scenic without undue effects on sensitive receptors.

13.3 Policy Landscape and Visual Amenity

13.3.1 Galway County Development Plan (CDP) 2015-2021

Policies and objectives of relevance to this project in the current County Development Plan (CDP) are as follows.

Objective NHB 11 – Trees, Parkland/Woodland, Stonewalls and Hedgerows

"*a) Protect important trees, tree clusters and hedgerows within the County and ensure that development proposals take cognisance of significant trees/tree stands. Ensure that all planting schemes use suitable native variety of trees of Irish provenance;*

b) Seek to retain natural boundaries, including stonewalls, hedgerows and tree boundaries, wherever possible and replace with a boundary type similar to the existing boundary where removal is unavoidable. Discourage the felling of mature trees to facilitate development and encourage tree surgery rather than felling where possible. All works to be carried out in accordance with the provisions of the Forestry Act, 1946."

13.3.1.1 Landscape Character

The published county landscape character assessment identifies 25 landscape character areas of which 12 of these occur within the study area. Each landscape character area is assigned a ranking in the range of 1 to 5 in terms of value. The CDP refers to value as pertaining to the *"responses of the perceptions that communities have of the landscape they inhabit. The perceptions arise from intrinsic attributes such as visual beauty, ecology, archaeology, social history, religious sites, mythology and traditional settlement patterns and community values."*

The CDP also refers to Landscape Sensitivity as *"a measure of the ability of the landscape to accommodate change or intervention without suffering unacceptable effects to its character and values."*

Sensitivity rankings in the range of 1 to 5 are assigned to the individual LCAs as follows:

- Class 1 – Low sensitivity
- Class 2 – Moderate sensitivity
- Class 3 – High sensitivity
- Class 4 – Special
- Class 5 – Unique

Policies and objectives pertaining to landscape character are set out below as follows.

Policy LCM 1 – Preservation of Landscape Character states *"Preserve and enhance the character of the landscape where, and to the extent that, in the opinion of the Planning Authority, the proper planning and sustainable development of the area requires it, including the preservation and enhancement, where possible of views and prospects and the amenities of places and features of natural beauty or interest."*

Objective LCM 1 – Landscape Sensitivity Classification states *"The Planning Authority shall have regard to the landscape sensitivity classification of sites in the consideration of any significant development proposals and, where necessary, require a Landscape/ Visual Impact Assessment to accompany such proposals. This shall be balanced against the need to develop key strategic infrastructure to meet the strategic aims of the plan, and having regard to the zoning objectives of serviced development land within the Galway Metropolitan Areas."*

Objective LCM 2 – Landscape Sensitivity Ratings states *"Consideration of landscape sensitivity ratings shall be an important factor in determining development uses in areas of the County. In areas of high landscape sensitivity, the design and the choice of location of proposed development in the landscape will also be critical considerations."*

Objective LCM 3 – Open/Unfenced Landscape states *"Preserve the status of traditionally open/unfenced landscape. The merits of each case will be considered in light of landscape sensitivity ratings and views of amenity importance."*

13.3.1.2 Focal Points and Views

Objective FPV 1 – Development Management relates to focal points and views and states *"Preserve the focal points and views as listed in Map FPV1 from development that in the view of the Planning Authority would negatively impact on said focal points and views. This shall be balanced against the need to develop key infrastructure to meet the strategic aims of the plan and have regard to the zoning objectives of serviced development land within the Galway Metropolitan Area."*

13.3.2 Roscommon County Development Plan (CDP) 2014-2020

Policies and objectives of relevance to this project in the current County Development Plan (CDP) are outlined below.

Nature conservation objectives in the CDP are of some relevance to landscape. In this regard, Objective 7.9 states "*Retain where feasible and enhance important landscape features, such as lakes, rivers, wetlands, stonewalls, hedgerows etc, which form wildlife corridors and link habitats, where they provide, stepping stones necessary for wildlife to flourish."*

13.3.2.1 Landscape Character

The published county landscape character assessment identifies 36 landscape character areas of which 7 of these occur within the study area. Each landscape character area is assigned a ranking in terms of value in accordance with four classes, these being Exceptional Value, Very High Value, High Value and Moderate Value.

The Shannon System running along the eastern boundary of the county has been classified as of Very High Value, along with Boyle and Curlew Mountains (LCA 17) and the Arigna Mountains (LCA 14) and Lough Meelagh Drumlins (LCA 15) located in the northeast. The Shannon System is of high aesthetic and ecological quality and the other upland areas provide important scenic amenities.

All of the remaining landscape character areas have been classified as of Moderate Value. None of the landscape character areas are of Low Value.

Policy objective 7.37 concerns landscape value and states *"Seek to minimize visual impacts on areas categorized within the Co. Roscommon Landscape Character Assessment including "moderate value"," high value", "very high value" and with special emphasis on areas classified as "exceptional value" and where deemed necessary, require the use of visual impact assessment where proposed development may have significant effect on such designated areas."*

13.3.2.2 Views

Objective 7.40 in the CDP pertains to views and states *"Seek to protect important views and prospects in the rural landscape and visual linkage between established landmarks, landscape features and views in urban areas."*

13.4 Constraints and Opportunities

13.4.1 Landscape Value and Sensitivity rankings - Galway

The landscape character areas within Galway that occur within the study area are tabulated in Table 13-1 below, together with the value and sensitivity rankings as documented in the published landscape character assessment.

The published landscape character assessment provides further detail in regard to landscape value and landscape sensitivity as follows.

"Landscape values - Landscape values were derived for each landscape character area by consideration of environmental and cultural benefits e.g. aesthetics, ecological, historical, socio-economic, religious, mythological etc. The values were given a score ranging from low, medium, high to outstanding. Landscape values combining all environmental and cultural benefits were decided through liaison with Galway County Council Forward Planning Dept."

"Landscape sensitivity - The sensitivity of a landscape to development and therefore to change will vary according to its character and to the importance which is attached to any combination of landscape values. The sensitivity of the character areas was derived by consideration of designations such as Special Protection Areas, Natural Heritage Areas, National Parks, by information such as tourist maps, guidebooks, brochures and by evaluation of indicators such as uniqueness, popularity, distinctiveness and quality of the elements of the area."

Table 13-1 - Galway Landscape Character Areas within the Study Area

Galway Landscape Character Areas within the Study Area		
Landscape Character Area	**Landscape Value**	**Landscape Sensitivity**
Area 1-North east Galway (Balinasloe to Ballymoe).	Low	Class 1-Low with pockets of Class 2-Moderate
Area 2-Shannon and Suck River Valley between Portumna and Ballinasloe.	Medium	Class 4-Special
Area 3-East central Galway (Athenry, Ballinasloe to Portumna).	Low	Class 1-Low with pockets of Class 2-Moderate
Area 4-Southeast Galway. (Clarinbridge to Gort)	Medium	Class 2-Moderate with pockets of Class 3-High
Area 5-Northeast Galway (Tuam environs).	Low	Class 1-Low with pockets of Class 2-Moderate
Area 6-Slieve Aughty Mountains.	Medium	Class 3-High
Area 7-Northwest Lough Derg.	Medium	Class 4-Special
Area 8-Lower Burren (Co. Galway portion).	Outstanding and medium	Class 4-Special with pockets of Class 2-Moderate
Area 9-Inveran to Galway City coastline.	High	Class 3-High with a parallel strip of Class 4-Special
Area 11-Lough Corrib and environs.	Outstanding	Class 5-Unique with pockets of classes 3-High and 4- Special
Area 13-East Galway Bay (Oranmore to Kinvarra Bay and inland to N18 road).	High	Class 3-High with a coastal edge of Class 4-Special
Area 25-Lough Rea.	High	Class 4 - Special

13.4.2 Landscape Character - Galway

Relevant descriptive data from the published landscape character assessment is presented below for each Landscape Character Area (LCA) within the study area. This is followed by a review of the published recommendations in regard to landscape management and future development in section 3 of the landscape character assessment report and the implications of same regarding the proposed cycleway.

13.4.2.1 Area 1-North east Galway (Ballinasloe to Ballymoe).

The landscape is described as *"flat to undulating open pastoral land bound by field hedgerows, with small scattered coniferous plantations of 1-6 km² in size. There are no areas of particular scenic value. This area is primarily rural and includes the settlements of Ballinasloe, Mountbellew Bridge, Glennamaddy, Ballymoe and Dumore."*

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-2 - Area 1. Northeast Galway (Ballinasloe to Ballymoe) Landscape sensitivity principally class 1-low with areas of class 2-moderate

Area 1. Northeast Galway (Ballinasloe to Ballymoe)	
Published Recommendations	**Implications for the Proposed Cycleway**
"Development is prohibited in the areas (primarily bogs) that carry a nature designation. Generally, the landscape is flat to undulating in this area. Height restrictions should apply to build development in the flatter areas to avoid long distant visual intrusion or obstruction of the many focal points identified in the landscape character analysis. Development of all scales in this class 1 area should be either set close to one of the existing large blocks of forestry or screened by either new commercial forestry or existing mixed deciduous woodland.	Nature designations (primarily bogs) to be avoided however cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. Cycleway Route to be routed for the visual enjoyment of broad leaf woodland including seasonal autumn colour.
Due to the rural nature of the area scattered development in the class 1 area which cannot be screened by forestry should be of natural stone or rendered finish of a soft colour that is sympathetic to the colours in the landscape generally. New development should be surrounded by hedgerow to reinstate sections lost during construction and to continue the ecological corridor effect."	Cycleway route to allow user to attain long range views and enjoyment of the many focal points Areas of commercial coniferous forestry are least desirable in terms of viewer interest and cyclists' enjoyment of the surrounding landscape.

13.4.2.2 Area 2-Shannon and Suck River Valley between Portumna and Ballinasloe.

The landscape is described as *"flat bordered by deciduous trees and wateredge planting. Also, along the riverbank are recreational facilities for fishing, bird watching and boating. There are local scenic views along the river and to the local heritage sites. Long distant views are to the Aughty Mountains."*

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-3 - Area 2. Shannon and Suck River Valley between Portumna and Ballinasloe Landscape sensitivity class 4-special

Area 2-Shannon and Suck River Valley between Portumna and Ballinasloe	
Published Recommendations	**Implications for the Proposed Cycleway**
"Development should not be of a nature, which would damage the sensitive ecological habitats of the river corridor. Development should be located within pockets of existing vegetation to assist screening. Buildings should be clustered together to avoid ribboned development along the river edge. This will maintain long distant views out to the countryside beyond.	Nature designations (especially those associated with the rivers) to be avoided however cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. Cycleway route to have regard for protection of riparian habitats.

Suitable developments should be in keeping with an intimate water edge environment. Residential developments should be stonework or rendered in white or soft colours (sympathetic to the landscape setting), or timber clad. Paths should be *timber decking adjacent to the water edge, or a natural 'soft' finish i.e. crushed stone surfacing. Street furniture i.e. seats, fencing, litter bins should be of timber to reflect the rural natural setting of the river corridor. Large conspicuous, brightly coloured signs will cause visual intrusion within the natural water edge setting and should be replaced with low-key timber signage (excluding road or safety signs)."*	Cycleway route to facilitate varied visual experience from enclosed intimate wooded areas to open landscapes with available long-range views. Cycleway Route to allow user to attain views of the Slieve Aughty Mountains, River corridors and points of heritage interest.

13.4.2.3 Area 3-East central Galway (Athenry, Ballinasloe to Portumna).

The landscape is described as *"flat, coarse grassland, occasional clumps of coniferous forestry between 1- 3 km² in size, fields defined principally by stone walls. There are no areas of particular scenic value although the stone walls are quite distinct."*

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-4 - Area 3. East central Galway (Athenry, Ballinasloe to Portumna) Landscape sensitivity principally class 1-low with areas of class 2- moderate.

Area 3. East central Galway (Athenry, Ballinasloe to Portumna)	
Published Recommendations	**Implications for the Proposed Cycleway**
"The landscape is flat therefore height restrictions should apply to build development to avoid long distant visual intrusion. *Development is prohibited in the areas (primarily bogs) that carry a nature designation. Development in the class 1 area should be either set close to existing medium sized blocks of forestry or screened by either new commercial forestry or* *mixed deciduous woodland, both of which are present in this area.* *Due to the rural nature of the area scattered development which cannot be screened by forestry should be of natural stone or rendered finish of a colour that is sympathetic to the colours of the landscape. Stonewalls are a distinct element of the character of this area and should be constructed to match traditional style around new development."*	Nature designations (primarily bogs) to be avoided however any proposed cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. The route of the cycleway will avail of long-range views of the landscape and traditional field pattern with stone wall enclosure. The route will take the cyclist through and near deciduous woodland for appreciation of same. Areas of commercial coniferous forestry are least desirable in terms of viewer interest and cyclists' enjoyment of the surrounding landscape.

13.4.2.4 Area 4-Southeast Galway. (Clarinbridge to Gort)

The landscape is described as *"undulating scrubby grassland, bound by field hedgerows without mature trees. The landscape is scenic without being remarkable and there are long distance views of the Slieve Aughty Mountains to the east."*

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-5 - Area 4. Southeast Galway (Clarinbridge to Gort) Landscape sensitivity principally class 2-moderate with areas of class 3-high

Area 4. Southeast Galway (Clarinbridge to Gort)	
Published Recommendations	**Implications for the Proposed Cycleway**
"Development is prohibited in the areas that carry a nature designation. Development is permitted in the class 2 area. Due to the undulating nature of the landscape, development of small-scale buildings will be easily accommodated and naturally screened in the natural hollows. Larger development may require earthworks (cut and fill) and the associated flattening of areas may alter the intimate character in existence. *There is little coniferous or deciduous forestry in this area therefore large-scale screening by forestry is not appropriate, screening should be achieved using the natural topography. Development should not block important long distant views of the Burren or Slieve Aughty Mountains or local focal points as these views are of regional landscape value.* *New development should be surrounded by hedgerow to reinstate sections lost during construction and to continue the ecological corridor effect."*	The route of the proposed cycleway will have regard for the protection of areas that carry a nature designation. The routeing of a cycleway in this LCA will take advantage of areas where the cyclist can attain views of the Slieve Aughty Mountains.

13.4.2.5 Area 5-Northeast Galway (Tuam environs).

The landscape is described as *"flat, fertile pastoral land bound with field hedgerows. There is little or no coniferous forestry or deciduous woodland. There are no areas of particular scenic value."*

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-6 - Area 5. Northeast Galway (Tuam environs). Landscape sensitivity principally class 1-low with areas of class 2- moderate

Area 5. Northeast Galway (Tuam environs)	
Published Recommendations	**Implications for the Proposed Cycleway**
"Development is prohibited in the areas (primarily bogs) that carry a nature designation. *In the class 1 area, the landscape is generally flat therefore height restrictions should apply to build development in to avoid long distant visual intrusion. This area has very little woodland or forestry present and owing to the low scenic value of the area may be suitable for commercial forestry development. Large-scale development should be screened by either new commercial forestry or mixed deciduous woodland.* *Due to the rural nature of this class 1 area, scattered development which cannot be screened by forestry should be of natural stone or render with colour finish to be sympathetic to the colours of the existing landscape.* *New development should be surrounded by hedgerow to reinstate sections lost during construction and to continue the ecological corridor effect."*	Nature designations (primarily bogs) to be avoided however any proposed cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. This LCA is noted for its relatively low scenic value and therefore does not necessarily present the best opportunities for routeing a cycleway.

13.4.2.6 Area 6-Slieve Aughty Mountains.

The landscape is described as *"mountainous with areas of both coniferous and deciduous woodland. The landscape is wild, natural and scenic. Long distant glimpse views are available through the trees towards the lower ground in the surrounding areas."*

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-7 - Area 6. Slieve Aughty Mountains Landscape sensitivity principally class 3-high

Area 6. Slieve Aughty Mountains	
Published Recommendations	**Implications for the Proposed Cycleway**
"Development of additional forestry is suitable in this class 3 area. However, the softening of the coniferous edge with native deciduous planting is recommended where the area joins sensitive sites to the north (Lough Rea) and the east (Lough Derg). *New recreational facilities associated with the forestry should be developed using natural materials i.e. fencing, street furniture and shelters should be of timber.* *Lighting of amenity areas is not appropriate within the rural setting and from elevated hillsides. Carparking should be set within existing tree canopy where it will not cause visual intrusion from viewpoints."*	Nature designations to be avoided however cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. The published landscape character data indicate that this LCA presents opportunities for routeing the cycleway through areas of considerable scenic quality associated with the mountains. A cycleway route in this LCA will have regard for the local character of the area. Any potential cycle route would need to take account of sensitive areas where introduction of lighting is not recommended.

13.4.2.7 Area 7-Northwest Lough Derg.

The landscape is described as *"an enclosed, intimate landscape surrounding the northwestern portion of the Lough. The northern and western water edge within County Galway includes many recreational facilities including forest walks, golf, access to heritage sites and picnic areas. The area is scenic and semi natural."*

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-8 - Area 7. Northwest Lough Derg. Landscape sensitivity class 4-special

Area 7. Northwest Lough Derg	
Published Recommendations	**Implications for the Proposed Cycleway**
"The attractive waterside edge setting is open and flat and is therefore highly sensitive to development. In general, small-scale development should be located adjacent to existing settlements. Development at the water edge is inappropriate, as it would be exposed to view. *Recreational activities could be encouraged nearer to the water edge and already include camping and caravan sites. There is scope to create opportunities for fishing and walking."*	Nature designations (for example those associated with Lough Derg) to be avoided however cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. Any potential cycleway route would have regard for the sensitive parts of this landscape. The LCA presents opportunities for routeing a cycleway through landscapes of some considerable scenic quality.

13.4.2.8 Area 8-Lower Burren (Co. Galway portion).

The landscape is described as *"flat to undulating, with poor quality grassland around an abundance of stones and large rocks. The land is open with no hedgerows or trees or built elements and is quite barren yet scenic in a wild natural sense."*

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-9 -: Area 8-Lower Burren (Co. Galway portion). Landscape sensitivity class 4-special and an area of class 2-moderate.

Area 8-Lower Burren (Co. Galway portion)	
Published Recommendations	**Implications for the Proposed Cycleway**
"Development is prohibited in the limestone pavement area to the west (indicated as class 4 on the landscape sensitivity map) which carries landscape and ecological designations and is therefore deemed highly sensitive. *The eastern section of this area (indicated as class 2 on the landscape sensitivity map) is considerably less sensitive to development. The flat open aspect however implies the need for height restrictions on development in order to minimise visual intrusion on the limestone area.* *Small-scale development may be appropriate in the eastern section of this area but should be low in height and set within the natural hollows of the landscape or adjacent to the existing planting to avoid visual intrusion of the western area from the nearby roads including the N67."*	Any potential cycle route will avail of the outlook towards the Burren landscape. Although this is a highly sensitive area, the visual enjoyment of same would contribute to the experience of the route. This is a visually open landscape overall and is sensitive to development of a larger scale. The routeing of a cycleway, on existing tracks with minimal vegetation loss could be accommodated if designed in a sensitive manner. .

13.4.2.9 Area 9-Inverin to Galway City coastline.

The landscape is described as *"flat, comprising rocks and sand merging with natural grassland towards the R336. The coastline commands striking views of County Clare and the Aran Islands. Further inland from the R336 route, there are residential and some light industrial developments which have lowered the scenic value in this area."*

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-10 - Area 9. Inverin to Galway City coastline Landscape sensitivity class 3-high with a parallel strip of class 4-special

Area 9. Inverin to Galway City coastline	
Published Recommendations	**Implications for the Proposed Cycleway**
"The coast along this area is scenic and flat with rocks and sand merging with natural grassland. However, views of Galway Bay, North Clare coast and the Aran Islands from the coastal road (R336) have been obscured in many places by mixed *development. There are pockets of this landscape which command striking seaward views, hence development of all kinds should be prohibited* *Further development within this area should be grouped in clusters, close to existing settlements and should avoid the seaward side of the R336 road to avoid further visual obstruction of the scenic coastline.* *Development within the immediate coastal area such as improved visitor access and parking near to the coast should be sunken and surrounded by natural coastal vegetation for screening. Finishes should be sympathetic to coastal environment i.e. crushed stone and sand."*	The development guidelines at the coast refer to the need to conceal proposals within sunken areas and to avail of screening by existing vegetation. Any proposals for a cycleway route to avail of the coastline and coastal scenery in this area could, however, be incorporated without undue adverse consequences for the seascape and coastal baseline. The proposed route could be aligned with existing coastal footpaths or minor roads where available and also along and parallel to existing low cut or wind pruned hedgerows to maintain the cyclist's views of the coast.

13.4.2.10 Area 11-Lough Corrib and environs.

The landscape is described as *"a wide, dramatic expanse of water including many islands supporting deciduous woodland. The land around the northern part of the Lough is undulating heath, bog and coniferous forestry whereas*

the land surrounding the southern section is flat, open grassland. The landscape of the Lough and its surrounds is highly scenic and includes many facilities for visitors."

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-11 - Area 11. Lough Corrib and environs. Landscape sensitivity class 5-unique with pockets of class 4-special and class 3-high.

Area 11. Lough Corrib and environs	
Published Recommendations	**Implications for the Proposed Cycleway**
"The land around the northern part of the Lough is undulating heath, bog and coniferous forestry; it is highly scenic and includes many facilities for visitors. The landscape of this portion of the area is more natural and undeveloped than in the south and is close to the scenic mountainous areas of Connemara. Development in this area will be visible from the hillside walks of Joyce Country and should where possible be located within existing forestry and natural hollows or finished in materials sympathetic to the surrounding landscape to minimise visual intrusion. Bright, bold or reflective colours should be avoided on a large scale within this expansive natural setting.Suitable materials such as stone and finishes in an earth tone colour are appropriate. *In the south where the land is relatively flat and expansive, elevated views are not available. No further development except that associated with essential housing needs is recommended near to the water edge at Lough Corrib. In the flat open areas (generally class 4), buildings should be low in height and set within clusters, which can be screened by woodland planting. Development should not be of a nature, which would pollute the sensitive waters of the Lough or the water edge environment.* *Residential developments should be stonework or rendered in white or other colours that blend sensitively with the rural setting. Any existing paths or parking places for scenic views should be maintained and surfaced using natural materials e.g. timber or crushed stone. Street furniture i.e. seats, fencing, litter bins should be of timber to reflect the rural natural setting of the Lough. Large conspicuous, brightly coloured signs will cause visual intrusion and should be replaced with low-key timber signage."*	Nature designations (such as bogs and that associated with the Lough) to be avoided however cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. The part of this landscape located closest to the study area boundary is relatively remote and tranquil with a high degree of scenic quality attached to the lake. Some tracks are indicated (OS map) which, apart from seasonal flooding could be the basis of a highly scenic loop taking in the southern part of Lough Corrib. Provision for cyclists would have to be designed in a very sensitive manner taking into account the character of the Lakeland landscape and related habitats.

13.4.2.11 Area 13-East Galway Bay (Oranmore to Kinvarra Bay and inland to N18 road).

The landscape is described as *"intimate and sinuous with many sheltered inlets. The coast is scenic and relatively undeveloped. The landscape adjacent to the coast comprises pastureland in large fields bordered by mature hedgerows. The existing vegetation screens the coastline from roads and properties inland of the N18 road."*

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-12 - Area 13. East Galway Bay (Oranmore to Kinvarra Bay and inland to N18/N67 road). Landscape sensitivity class 3-high with the coastal strip class 4-special

Area 13. East Galway Bay (Oranmore to Kinvarra Bay and inland to N18/N67 road)	
Published Recommendations	**Implications for the Proposed Cycleway**
"The sinuous coastline is scenic and is relatively undeveloped. It is therefore highly sensitive. Future development should therefore be located further inland in order to protect this coastline and the panoramic views to be gained from it. *In general, groups of dwellings or holiday homes should be located further inland within the area indicated as class 3 on the landscape sensitivity map. These developments are to be located close to existing settlements. As in other areas, advantage is to be taken of both landform and existing vegetation to carefully concealthese developments from view."*	The published landscape character assessment in the CDP is generally discouraging of development in this area. This is in recognition of the scenic quality at the coast. The routeing of a proposed cycleway is feasible however without adverse effects on the baseline. Any proposed route would be aligned along minor roads and the cyclist's interest in terms of available views of the coast and coastal landscape of ladder fields with low wind pruned hedgerows.

13.4.2.12 Area 25-Lough Rea.

The landscape is described as *"flat, enclosed and intimate. The Lough is screened to the north and the northeast by the town of the same name and to the south by the wooded slopes of the Slieve Aughty Mountains. There are many small vegetated islands in the Lough which add to its high scenic value. Around the banks of the Lough are many recreational facilities including boating, parking and picnic areas, which sit sensitively within the landscape and do not detract from the intimate landscape setting."*

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-13 - Area 25. Lough Rea Landscape sensitivity class 4 Special

Area 25. Lough Rea	
Published Recommendations	**Implications for the Proposed Cycleway**
"The landscape surrounding Lough Rea is flat; vegetation encloses the water body and has created an intimate setting. Development should be small scale and either set within clumps of existing vegetation or screened by proposed broadleaf planting. *Development on the waterfront associated with tourism should not intrude upon views from the other side of the Lough and should be screened by earth banks with water edge planting.* *Street furniture i.e. seats, fencing, litter bins should be of timber to reflect the rural natural setting. Large conspicuous, brightly coloured signs will cause visual intrusion within the natural wateredge setting and should be replaced with low-key timber signage."*	Nature designations (in particular that associated with Lough Rea) to be avoided however cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. The proposed cycle route could extend alongside the Lough margin without adverse effects on views over the lough generally. This could be achieved by the use of existing roads and tracks where available. The routeing of the proposed cycleway could pass through more elevated farmland where views over the lake are available thereby adding interest to the experience.

13.4.3 Landscape Value and Sensitivity rankings – Roscommon

The landscape character areas within Roscommon that occur within the study area are tabulated in Table 13-14 below, together with the value rankings as documented the published landscape character assessment.

Table 13-14 - Roscommon Landscape Character Areas within the Study Area

Roscommon Landscape Character Areas within the Study Area	Value
Landscape Character Area	**Landscape Value**
8. Lower Lough Ree and Athlone Environs	Very High
9. Cloonown and Shannon Callows	Very High
12. Athleague and Lower Suck Valley	High
13. Suck Callows	High
34. Lough Funshinagh, Stone Wall Grasslands and Esker Ridges	Moderate Value
35. Brideswell Esker Belt	Moderate Value

36. Ballydangan Pastures	Moderate Value

13.4.4 Landscape Character - Roscommon

Relevant descriptive data from the published landscape character assessment is presented below for each Landscape Character Area (LCA) within the study area. This is followed by a review of the published recommendations in regard to landscape management and future development and the implications of same regarding the proposed cycleway.

13.4.4.1 Area 8. Lower Lough Ree and Athlone Environs.

The landscape is described as follows:

"The Lower Lough Ree and Athlone Environs character area stretches southwards from Hodson Bay to north of the village of Cornafulla. The western boundary is delineated by the zone of visibility from the River Shannon. This low-lying area is predominantly made up of dry grassland and raised bog, most of which is reclaimed, as well smaller pockets of wet grassland and wetland. There is a large coniferous plantation just west of Athlone Town. Two esker ridges run through the area, one running in a northerly direction towards the Hudson's Bay peninsula, the other running in a westerly direction from just outside of Athlone Town, part of which is currently a mineral extraction site. The former esker remains in a very intact form whereas the latter has been substantially altered due to encroachment of development. Although this character area is adjacent to Athlone Town (in neighbouring Westmeath) the amount of road infrastructure is quite low with the N61 running diagonally northward linking Athlone with Roscommon Town and the N6 heading southwest towards Ballinasloe in County Galway. The main development pressure from Athlone spreads westward along the R362. The overall image of the Lower Lough Ree and Athlone Environs character area is of a peri-urban lakeshore area experiencing increasing development pressure."

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-15 - **Area 8. Lower Lough Ree and Athlone Environs – Very High Value LCA.**

Area 8. Lower Lough Ree and Athlone Environs	
Published Recommendations	**Implications for the Proposed Cycleway**
"It should be an objective of the council that development along the shores Lough Ree and the River Shannon south of Athlone should be prohibited in order to protect the visual amenity and the natural habitats of the water corridor."	Nature designations (primarily bogs) to be avoided however cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. Although the shores of Lough Ree are deemed highly sensitive, the routeing of a cycleway is possible without adverse consequences for the baseline. A route along and existing track on an esker ridge could be developed as a scenic route with available views of the lough. Areas of commercial coniferous forestry are least desirable in terms of viewer interest and cyclists' enjoyment of the surrounding landscape.

13.4.4.2 Area 9. Cloonown and Shannon Callows.

The landscape is described as follows:

"This landscape character area is located on the southern tip of County Roscommon and is the flattest character area in the county. It is made up of mostly raised bog, a lot of which is a mix of reclaimed and cutover bog, as well as dry grassland along the shoreline with small patches of wet grassland in places. The western boundary is defined by the location where the River Suck and River Shannon join at Shannonbridge and by the only major road in the area (the R357). There is a very loose network of regional roads leading down into the Callows (grassland flooded in winter). Many of the smaller roads leading into the raised bog were built to remain above the water level in times of flooding, creating a causeway effect in winter months. In places an increasing number of dwellings backing onto the River Shannon is evident. Land along the banks of the River Shannon is protected by a number of nature designations. An esker ridge runs in an east west direction through Cornaveagh. A number of Scenic Views provide extended vistas across the River Shannon into adjoining counties. One view is of a particularly high esker in County Offaly, at Clonmacnoise."

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-16 - **Area 9. Cloonown and Shannon Callows– Very High Value LCA.**

Area 9. Cloonown and Shannon Callows	
Published Recommendations	**Implications for the Proposed Cycleway**
"It should be an objective of the council to prohibit further development in low lying areas of the callows in order to protect the water quality and habitats of this very sensitive landscape."	Nature designations (primarily bogs) to be avoided however cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. A potential cycle route could be aligned to take advantage of views of the Shannon River, Shannon Callows and River Suck in locations where minor roads or tracks are in place.

13.4.4.3 Area 12. Athleague and Lower Suck Valley.

The landscape is described as follows:

"The western edge of the Athleague and Lower Suck Valley character area is bounded by the River Suck while its eastern boundary is delineated by an elevated ridge line as far east as Skrine Hill. It is the longest character area in the county extending from the village of Castlecoote in the north to the N6 in the south. The landform gently undulates from the north to south petering into flat low land where it meets the flood plains of the Suck Callows east of Ballinasloe in County Galway. Dry grassland dominates the elevated regions in the north, while raised bog and reclaimed bog, as well as wet grassland, occur in the lowlands in the south. There is a proposed Scenic View just south of Castlecoote with extended views overlooking the Suck River and farmland valley. There are nature designations all along the Suck River. The R357 and R363 are the main regional roads, and although built development is generally evenly spread in the area there is an increase in concentration along these roads leading into Athleague and the villages of Ballyforan, Dysert and Taghmaconnell (north of Ballinasloe). The overall image of this character area is of a gently undulating dry grassland farmland with the River Suck winding its way through creating a subtle valley."

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-17 - **Area 12. Athleague and Lower Suck Valley–High Value LCA.**

Area 12. Athleague and Lower Suck Valley	
Published Recommendations	**Implications for the Proposed Cycleway**
"Where any applications arise for development, they should be assessed against this rural character with a view to protecting landscape values."	Nature designations (primarily bogs) to be avoided however cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. Cycleway route to allow user to attain long range views and enjoyment of the River Suck landscape. Areas of commercial coniferous forestry are least desirable in terms of viewer interest and cyclists' enjoyment of the surrounding landscape.

13.4.4.4 Area 13. Suck Callows.

The landscape is described as follows:

"The Suck Callows character area is in the very southwestern tip of the county. Dry grassland in the north drains southward into large areas of raised bog and reclaimed raised bog and into the southern boundary of the River Suck. This southern boundary becomes a floodplain in the wetter months known as the Suck Callows. An esker ridgeline running in an east west direction forms a border between the dry grassland and the wetter areas of raised bog. There are very few roads and no major settlement in the LCA, however the R357 cuts through diagonally linking Ballinasloe in County Galway with Shannonbridge in County Offaly and it is along this route that ribbon development is evident. Large tracks of the Callows are designated as an NHA and SPA. The overall image of the Suck Callows character area is of a farming and bogland landscape, a significant portion of which is flooded in winter months."

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-18 - **Area 13. Suck Callows–High Value LCA.**

Area 13. Suck Callows	
Published Recommendations	**Implications for the Proposed Cycleway**
"It should be an objective of the council to protect the designated areas along the River Suck and the callows from inappropriate development."	Nature designations (primarily bogs) to be avoided however cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. Cycleway route to allow user to attain long range views and enjoyment of the River Suck landscape Areas of commercial coniferous forestry are least desirable in terms of viewer interest and cyclists' enjoyment of the surrounding landscape.

13.4.4.5 Area 34. Lough Funshinagh, Stone Wall Grasslands and Esker Ridges.

The landscape is described as follows:

"This LCA is located south of the centre of County Roscommon and is one of the largest areas identified in the study. The landform rolls from north to south and is primarily dry grassland farmland. There is an area of low-lying dry grassland in the south where eskers run in a northeast to southwest direction and make a significant contribution towards the overall character and quality of the landscape. Lough Funshinagh is the main landscape feature in the north east. Stone walls evolved as the system of enclosure throughout this area and in places the field sizes are particularly small contributing significantly to the landscape character and sense of place. There are no major settlements in this area and the roads in the area are generally third class. The overall image of this LCA is of a rolling stonewalled grassland landscape with a distinctive esker area to the south."

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-19 - **Area 34. Lough Funshinagh, Stone Wall Grasslands and Esker Ridges– Moderate Value LCA.**

Area 34. Lough Funshinagh, Stone Wall Grasslands and Esker Ridges	
Published Recommendations	**Implications for the Proposed Cycleway**
"It is recommended that applications for single rural dwellings located between public roads and Lough Funshinagh be accompanied by a Visual Impact Statement. *It should be an objective of the council to give special recognition to the esker area in LCA 34 and the inter-related geo-morphological landscape of archaeological significance.*	Nature designations (primarily bogs) to be avoided however cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. Cycleway Route to be routed for the visual enjoyment of Lough Funshinagh.
In assessing planning applications for quarrying the Council will have regard to the Department of the Environment, Heritage and Local Government Quarries and ancillary activities Guidelines 2004."	

13.4.4.6 Area 35. Brideswell Esker Belt.

The landscape is described as follows:

"This landscape character area is located in the south of the county and has been defined to the north and south primarily on the basis of land cover and to the east and west primarily on the basis of subtle enclosure by landform. The area is predominantly low lying and flat with just a few low hills located to the west and east. The flatness of terrain has had a significant impact on drainage of the LCA, creating extensive areas of raised bog and reclaimed raised bog throughout. The predominance of bogland tends to dissipate towards the east of the LCA, being replaced by dry grassland, reclaimed raised bog and some patches of wet grassland. In contrast to the planar bogs, there are a series of ridges located in the northeastern end of the LCA. These eskers fan out from the Athlone environs to the north and west. Land cover in the northeastern corner is complex, combining a mix of both wet and dry environments. There are three regional roads which pass through this LCA and the Dublin to Galway railway line also passes through this LCA running in a straight line from east to west. The overall image of this landscape is one of bogs and eskers experiencing localised development pressure from nearby urban area."

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-20 - **Area 35. Brideswell Esker Belt – Moderate Value LCA.**

Area 35. Brideswell Esker Belt	
Published Recommendations	**Implications for the Proposed Cycleway**
"It should be an objective of the council to give special recognition to the esker area in LCA 35and the inter-related geo-morphological landscape of archaeological significance. *In assessing planning applications for quarrying the Council will have regard to the Department of the Environment, Heritage and Local Government Quarries and ancillary activities Guidelines 2004* *It is recommended that a study of the eskers in County Roscommon be undertaken to identify those which are most sensitive to development and to thereafter prioritise those which warrant protection from development."*	Nature designations (primarily bogs) to be avoided however cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. Cycleway Route to be routed for the visual enjoyment where the user can attain long range views of the open landscape, bogs, eskers and areas of broad leaf woodland including seasonal autumn colour.

13.4.4.7 Area 36. Ballydangan Pastures.

The landscape is described as follows:

"This landscape character area is located close to the southern tip of the County, defined on the basis of land cover comprising of well drained farmland and contrasting strongly with surrounding LCAs which tend to be largely dominated by extensive areas of bog. This LCA is gently undulating, sloping very slightly from northwest to southeast in the direction of the River Shannon. The quality of farmland here is quite good, with just small patches of wet grassland located in the southwest alongside reclaimed bogland. The landscape is quite open with loose hedgerows of broadleaf species. The N4 passes in a southwesterly direction through this LCA. The status of roads is otherwise local. There are no large settlements in this LCA with crossroads settlements and scattered single rural dwellings located throughout."

Error! Reference source not found. below sets out the recommendations for future development and management o f relevance to the proposed cycleway and the implications of same.

Table 13-21 - **Area 36. Ballydangan Pastures–Moderate Value LCA.**

Area 36. Ballydangan Pastures	
Published Recommendations	**Implications for the Proposed Cycleway**

"Applications for development in this region should comply with all the usual planning objectives with particular attention to design guidelines."	Nature designations (primarily bogs) to be avoided however cycle route could follow existing minor roads where this takes the cyclist through habitat or landscape of interest. Cycleway Route to be routed for the visual enjoyment of the open landscape including areas of bog and broad leaf woodland including seasonal autumn colour. Cycleway route to be ideally located away from major road routes such as the N4.	

14 EXTERNAL PARAMETERS

14.1 Funding and Scope

The National Galway to Dublin Cycleway project commenced in 2013, when TII provided funding for the planning and design of the section between Galway and Maynooth. Westmeath County Council is the lead local authority working in partnership with Galway City, Galway, Roscommon, Meath and Kildare local authorities.

The Galway to Athlone section extends from Ballyloughane in Galway City to Athlone Castle. The geographical Study Area for examination is large enough to include all reasonable route options for consideration, as highlighted in Section 2 of this report. This project 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 current Feasibility Working Cost for the scheme is approximately €85M, including land, construction, planning and design costs. This is considered to be a rough estimate only at this stage, based on an estimated length of 120km. This does not include operation and maintenance costs over a 30-year period. Should the length of the selected route be significantly different, the costs will clearly change.

14.2 Required Quality of Service

The Quality of Service for cyclists is defined in the National Cycle Manual and is a measurement of the degree to which the attributes and needs of the cyclist (Pavement condition, Number of adjacent cyclists, Number of conflicts per 100m of route, Journey time delay, HGV influence) are met.

There are five levels of Quality of Service (A+, A, B, C, D) and the range of values of the five needs of the cyclist that correspond with each level of service. This is developed taking into account current international best practice and provides an optimal balance of provision between the various competing transport modes along the corridor and at junctions, whilst ensuring that the users' experience is safe, comfortable and reasonably free flowing. The five needs of cyclists are summarised under the five headings below.

14.2.1 Safety

Cycle networks need to be safe with a good quality surface and adequate segregation in place to avoid any conflicts. Any perception of a lack of safety for users could act as a deterrent to cyclists.

14.2.2 Coherence

Cycle networks should be logical and continuous with links to main destination centres. Continuity of the route is important on existing infrastructure through junctions, with clear and obvious layouts for cyclists.

14.2.3 Directness

Cycle networks for commuters need to be as direct as possible with minimal delays or detours. A positive advantage in terms of journey times should be clear when compared to other modes of transport. For leisure cyclists, this is much less important.

14.2.4 Attractiveness

The environment along a cycle route should be interesting and attractive for both commuter and leisure cyclists. Ancillary facilities such as shelters are important to avoid over exposure to the elements for cyclists. Litter control and continual maintenance to ensure the route is fully clear of debris along with adequate lighting (where needed) are also important factors in providing an attractive route for cyclists.

14.2.5 Comfort

Anything that causes discomfort, or a disproportionate amount of effort is likely to result in a cycle facility not being used. Sufficient cycling comfort is achieved through providing effective widths, gradients, drainage and a smooth surface that has minimal interaction with motorists.

14.3 Technical Standards

TII Rural Cycleway Design (DN-GEO-03047) Standard and the NTA National Cycle Manual outline design standards for cycle facilities that need to be considered for both rural and urban areas. The main principles within the TII and NTA standards are in line with the Eurovelo standards in relation to the provision of safe, coherent, direct, convenient, comfortable, attractive and accessible facilitates. The scheme is to adhere to these standards when determining parameters such as Cycleway widths, gradients and design speeds. However, carefully judged deviations may be permitted, particularly in constrained areas, where it is judged that the performance of the Cycleway would not be reduced.

The TII Project Appraisal Guidelines will also be used to guide Cycleway 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.

14.4 Access Control

The scheme has potential to create positive benefits for accessibility within the area. The Galway to Athlone Cycleway will provide key linkage to various communities, giving access for vulnerable road users and locals alike. Access control measures will be required to prevent access to the Cycleway by any motorised or other unpermitted users. Access control measures will be key to provide a safe environment for both cyclists and pedestrians.

14.5 Policy Document

This scheme is well supported by policies at all levels. Tourism is strongly emphasised as a source for economic development in the region. Internationally there is now an ever growing need to support more sustainable forms of transport and tourism, that contribute to the reduction of emissions and combat climate change.

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 policies including the National Planning Framework, National Cycle Framework, Eurovelo policy, Governments Strategy for the Future Development of National and Regional Greenways, Galway County Development Plan (2015-2021), Roscommon County Development Plan (2014-2020), Westmeath County Development Plan (2014-2020) and other relevant local area plans. Further details of how the proposed project meets the objectives of these plans and policies is outlined in the Project Brief (Appendix D).

14.5.1 Local Area Plans

There are a number of Local Area Plans which set out strategies and frameworks for future developments within the study area. The strategic goals and policies of the LAPs offer an opportunity for the cycleway to support the vision of these urban plans.

14.5.1.1 Ardaun LAP (2018-2024)

Ardaun is a gateway point into Galway City from the east. The bank of greenfield lands in this area has been designated as suitable for development in the City Development Plan.

The strategic goal supports the development of a connected, walkable, pedestrian and cycle friendly urban village with good connectivity to the existing transport network. The outline design and layout of the urban village with pedestrian links and cycle bridges is shown in Figure 14.1 below.

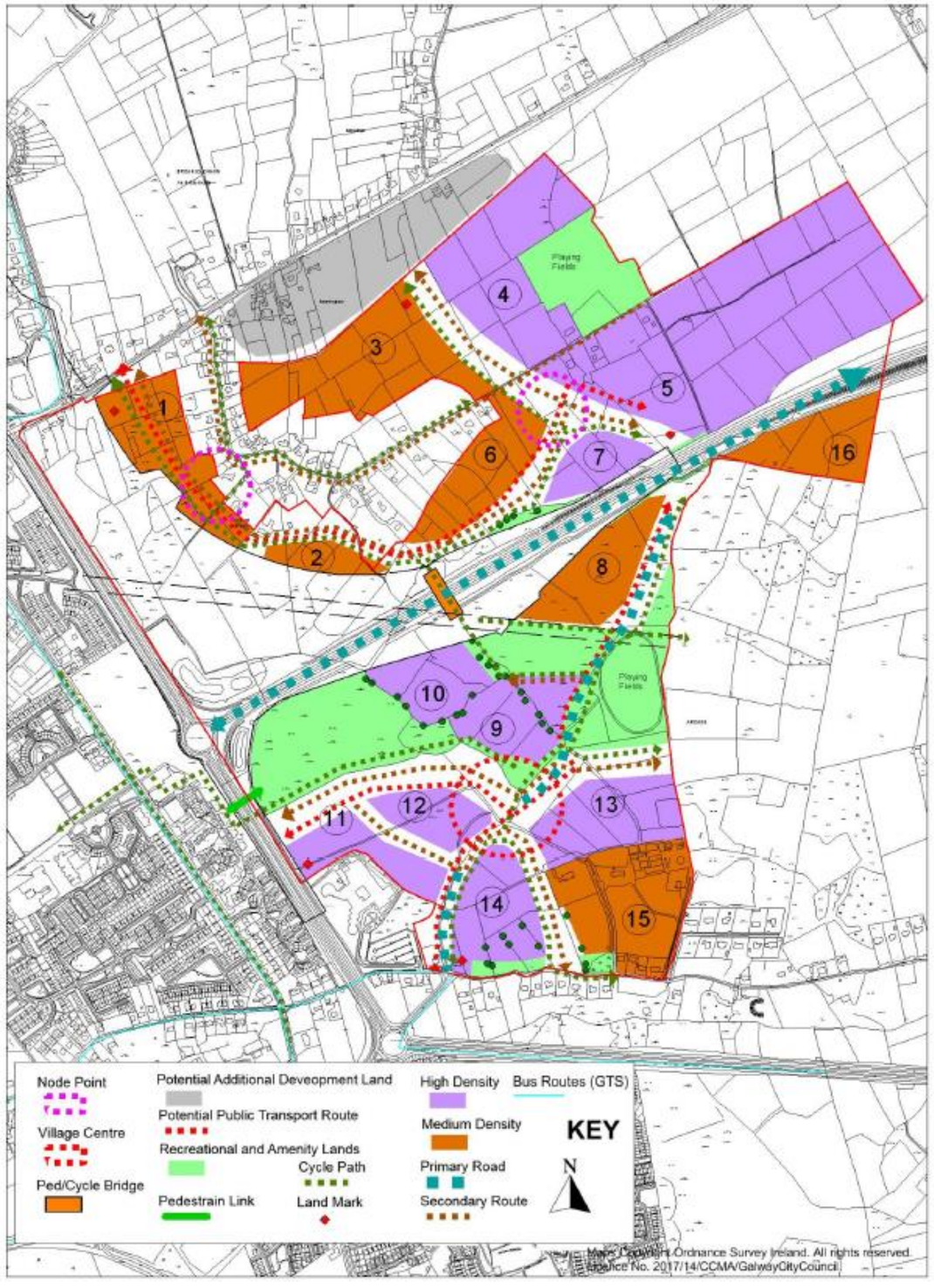

Figure 14-1 – Ardaun LAP

14.5.1.2 Athenry LAP (2012-2022)

Athenry is strategically located east of the Galway Gateway and is easily accessible by rail and the motorway network.

The strategic vision of this plan is for Athenry to be a key town which protects and enhances its attractive medieval character. This plan has objectives to improve the cycling network so that it is safe and accessible with secure bicycle parking facilities. A 3m wide cycleway is expected to be provided as part of the Athenry Relief Road as shown below.

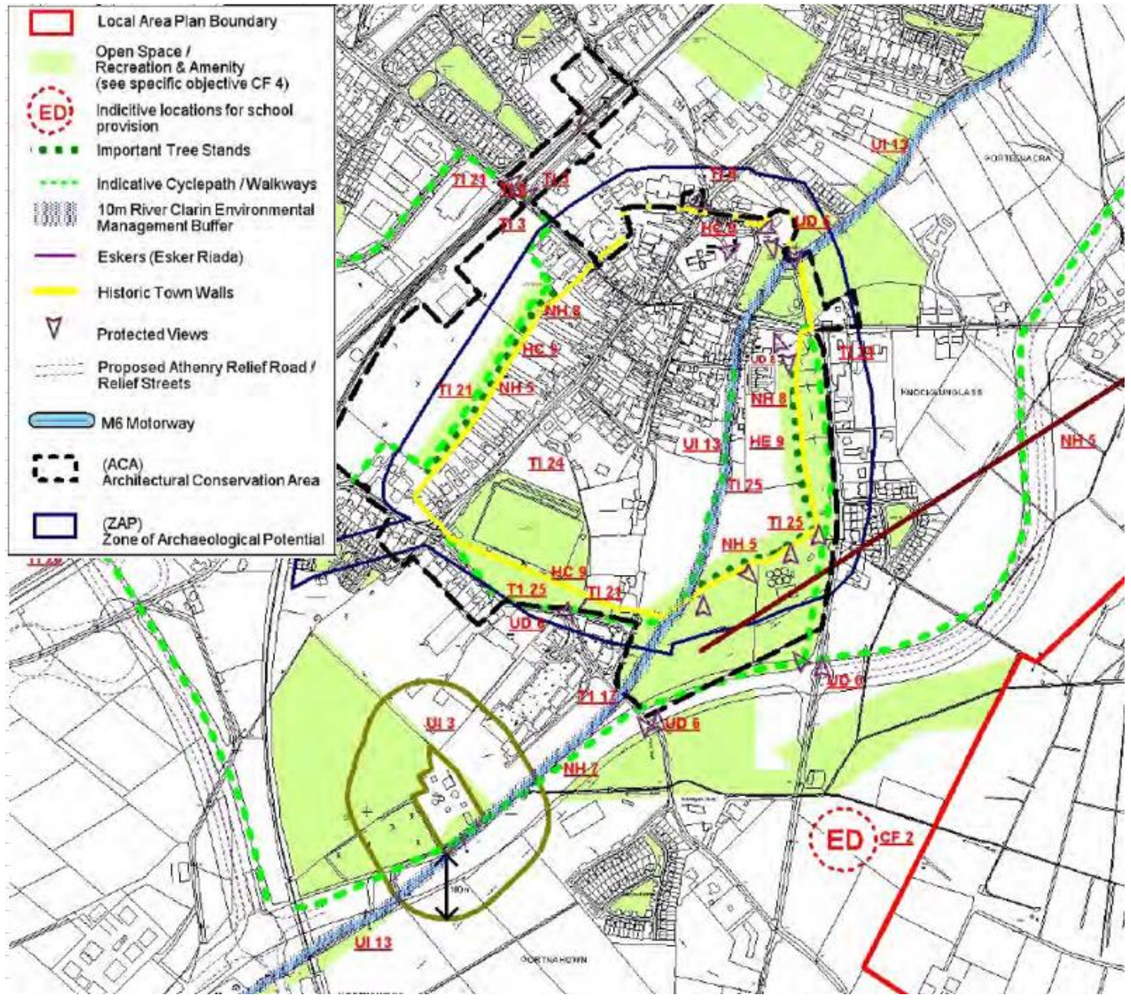

Figure 14-2 – Athenry LAP

14.5.1.3 Ballinasloe LAP (2015-2021)

Ballinasloe occupies a strategic location adjacent to the M6 National Primary route linking Dublin and Galway and is one of the principle ‘Gateways to the West’.

This plan has objectives that encourage and support the development of a series of cycle and pedestrian routes in the Ballinasloe area and in accordance with the Galway to Dublin Cycle Route. A cycling/pedestrian route along the Townspark Relief Road, linking with the 2014 preferred route option within the LAP area, is shown in the figure below.

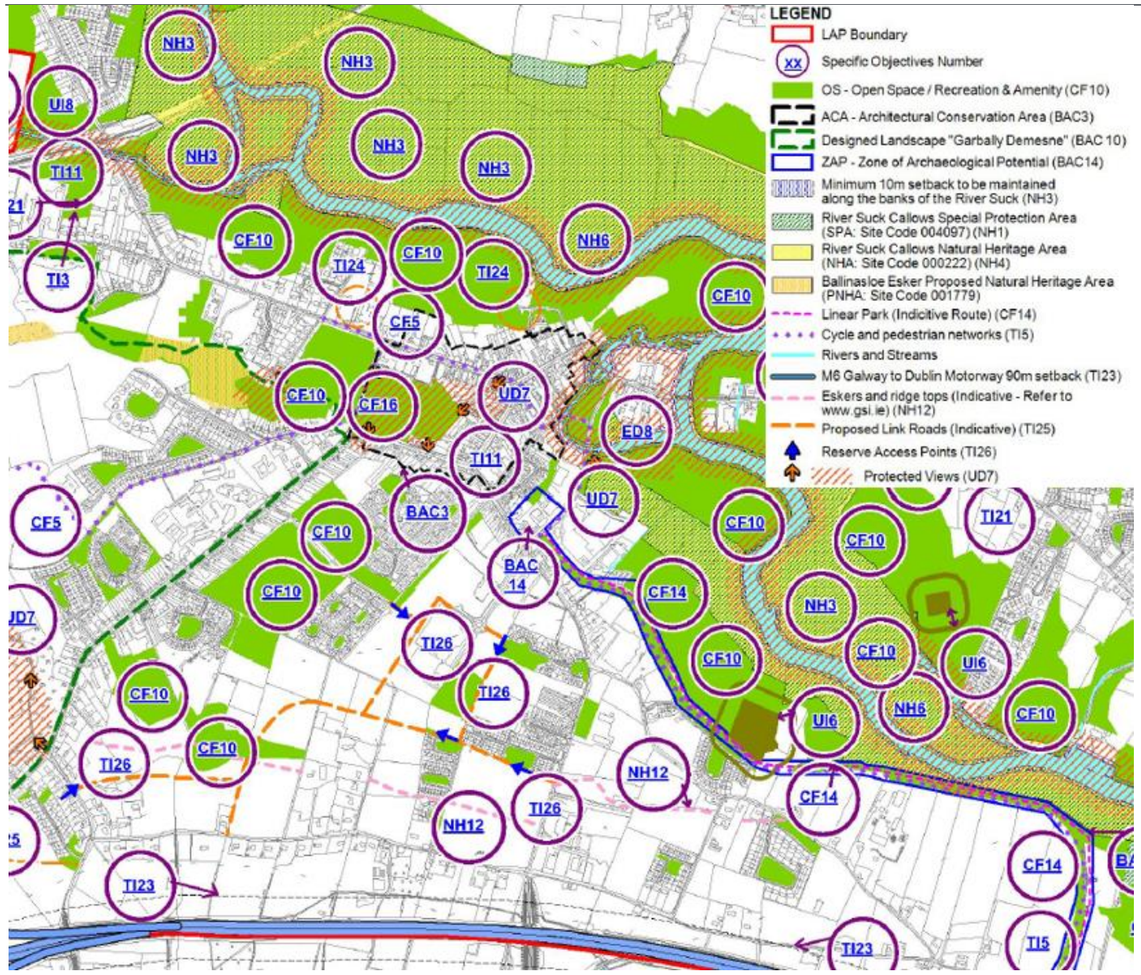

Figure 14-3 – Ballinasloe LAP

14.5.1.4 Gort LAP (2013-2019)

The strategic geographical location of Gort makes it accessible to most major towns and tourist attractions in Connaught. Gort is close to the Burren with significant tourist attractions nearby such as Coole Park and Thoor Ballylee.

This plan supports the preparation of a Walking and Cycling Strategy and the implementation of any specified objectives for the town of Gort and its environs as resources permit, such as the provision of a walkway/cycleway from the town centre to Coole Park. An amenity corridor and open recreational space within the Gort LAP is shown in the figure below.

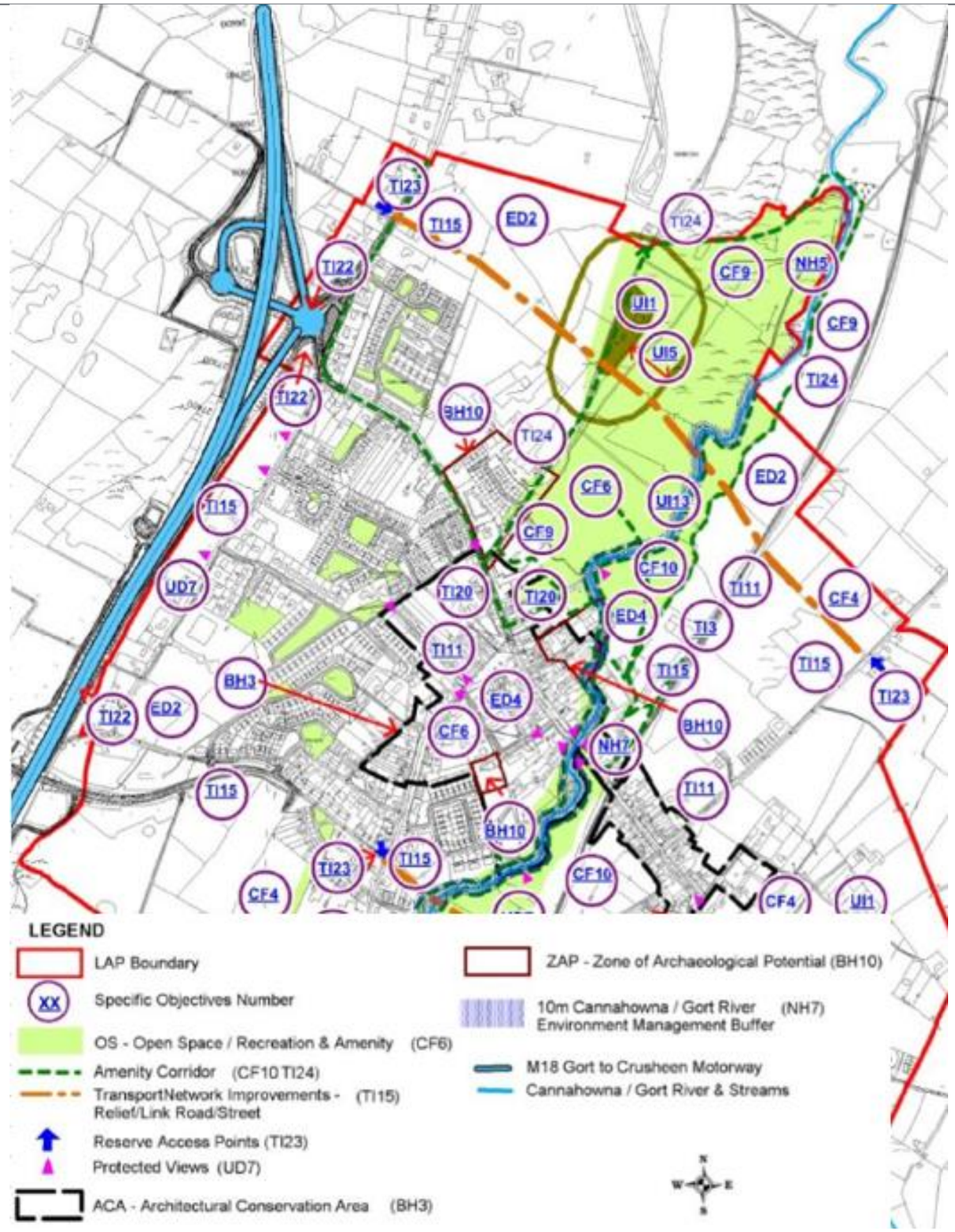

Figure 14-4 – Gort LAP

14.5.1.5 Loughrea LAP (2012-2018)

Loughrea is located on the confluence of a number of significant national and regional routes along the northern shore of the attractive Lough Rea.

This plan has objectives to improve the cycling network so that it is safe and accessible with secure bicycle parking facilities. An amenity corridor is shown along north of the lake which extends to the long point as shown below.

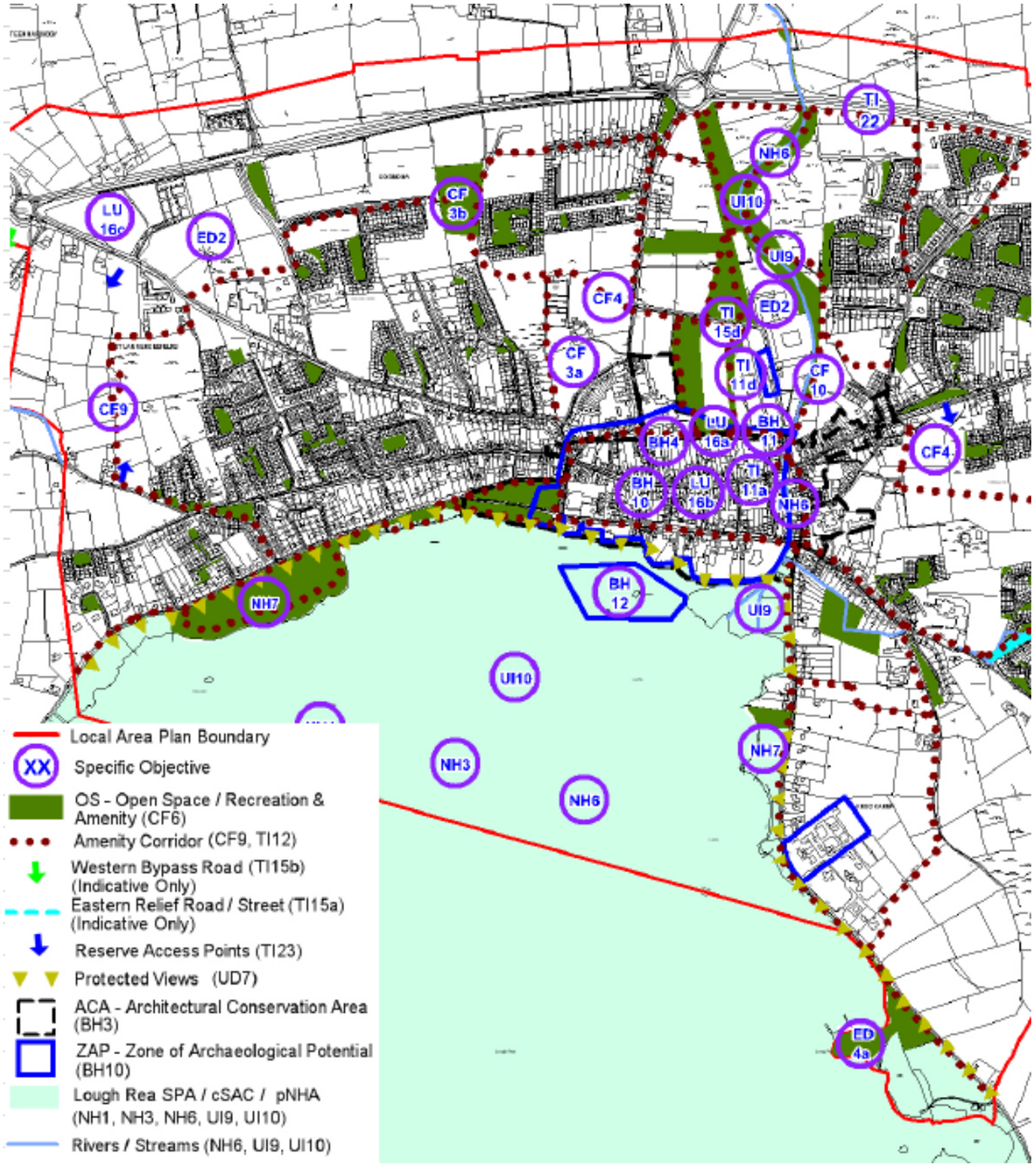

Figure 14-5 – Loughrea LAP

14.5.1.6 Oranmore LAP (2012-2022)

Oranmore is located on the attractive inner shoreline of Galway Bay to the east of Galway City.

This plan has objectives to facilitate the development of a coastal amenity walkway/cycle route along Galway Bay that will link to the town centre. It also aims to protect the landscape character and sea views over the coastal landscape from the main public spaces as shown in the figure below.

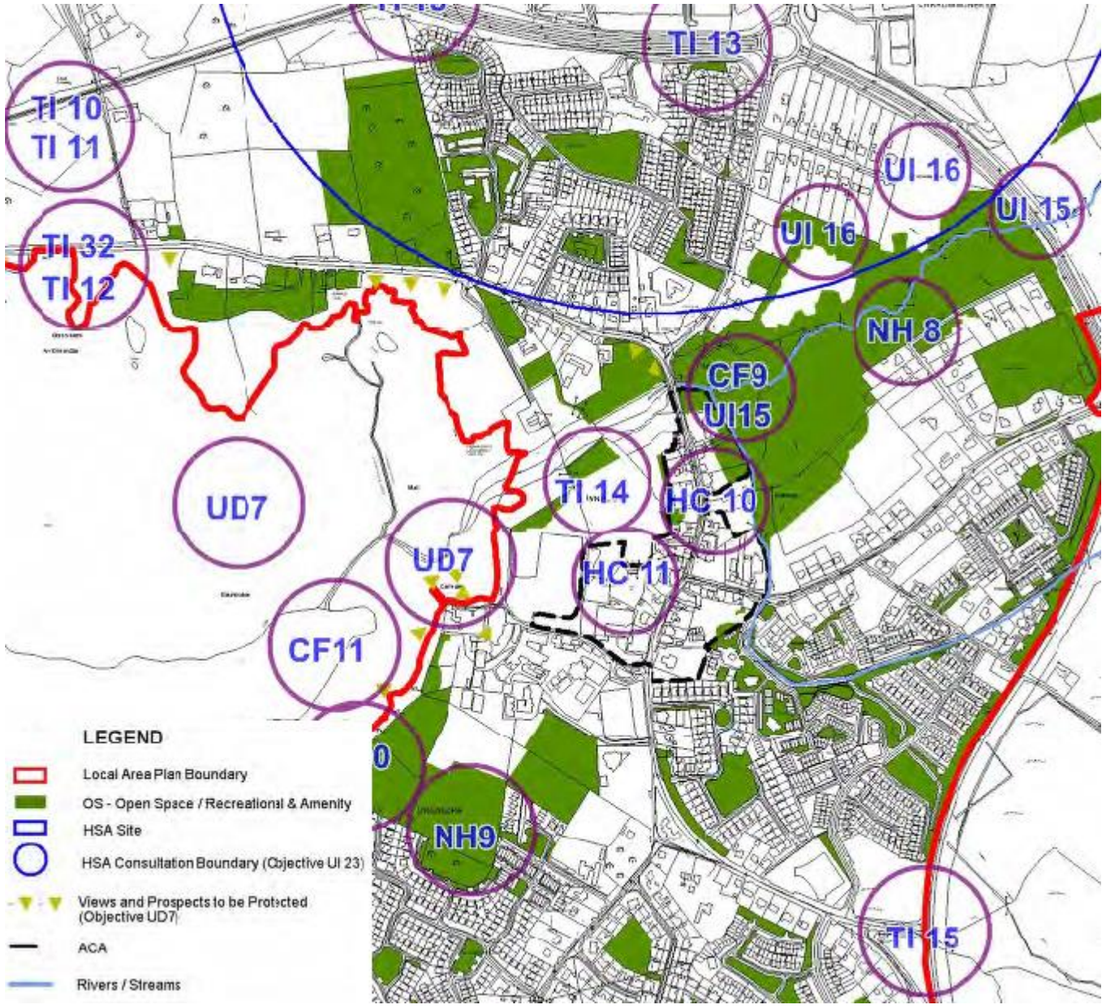

Figure 14-6 – Oranmore LAP

14.5.1.7 Portumna LAP (2016-2022)

Portumna is recognised as the principle urban setting in the south-east of County Galway on the border with Tipperary, bounded by the River Shannon and the attractive Lough Derg.

This plan has objectives to encourage and support the sustainable development of walkways and cycleways in the local area plan. It aims to promote Portumnna Forest Park and the family friendly trails for both cycling and walking. Portumna also facilitates the Hymany Way that continues north along the banks of the River Shannon.

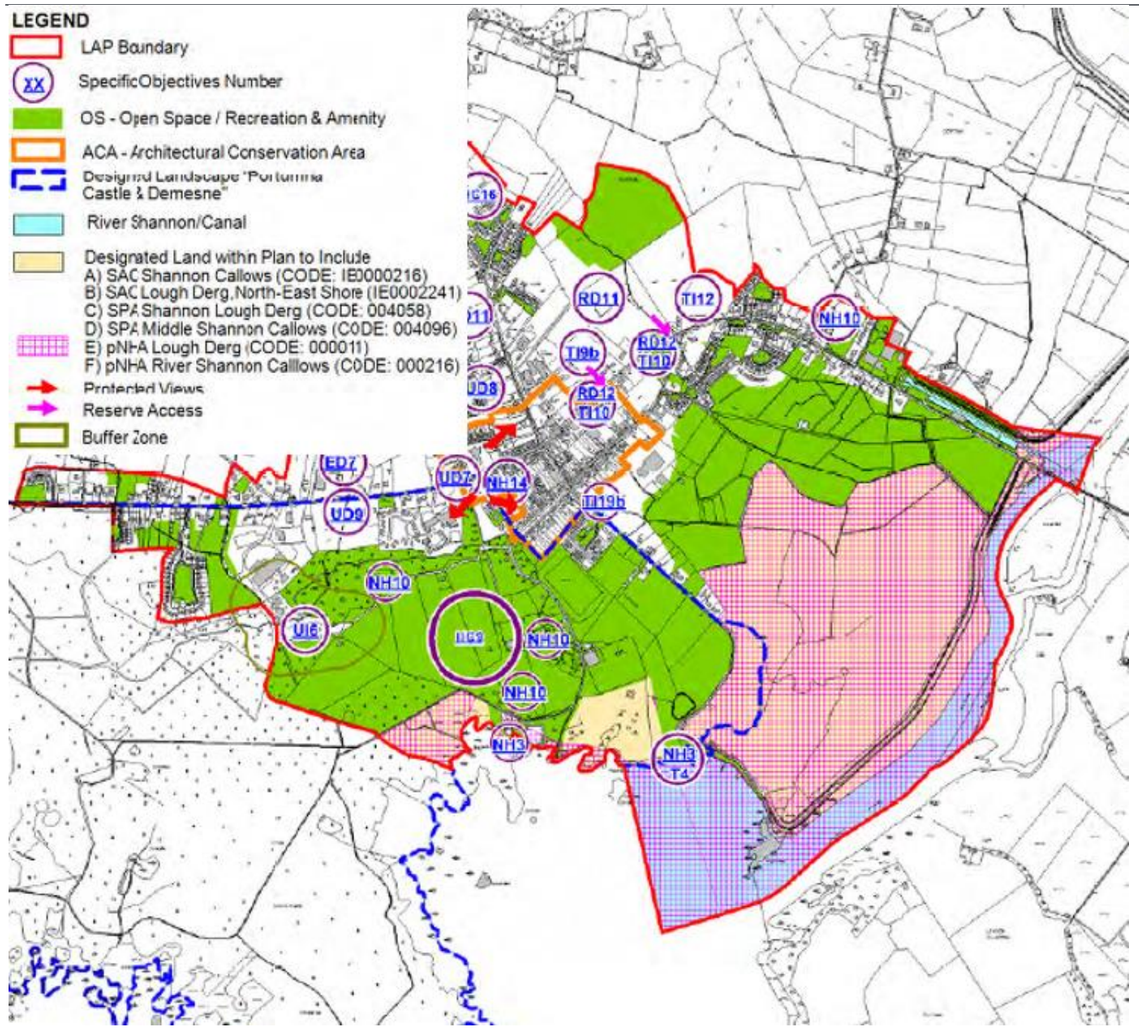

Figure 14-7 – Portumna LAP

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 Cycleway 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.

14.5.1.8 Tuam LAP (2018-2024)

Tuam is located on an expanse of a low-lying flat area surrounded by good agricultural land to the north east of Galway City.

This plan has objectives to improve the cycling network so that it is safe and accessible with secure bicycle parking facilities. It aims to facilitate any initiative that will improve sustainable transportation options such as public bike schemes and rail freight.

15 NEXT STEPS

The Galway to Athlone Castle National Cycleway aims to develop a world class cycle and walking trail, that is safe and accessible for all users, completing the Galway to Dublin route. It will be of a scale and with a unique character that will allow Ireland to tap into the growing tourism market for cycling. It will be scenic, sustainable, be a strategic link, with lots to see and do, be substantially segregated from motor traffic and welcome a wide variety of users. It will be developed in co-operation with local communities and offer real benefits to them.

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. The subsequent study and the Cycleway corridor options will be determined and assessed against the framework of constraints outlined in this report.