SEA Environmental Report

Non-Technical Summary

FOR THE

Draft Monaghan County Development Plan 2019-2025

for: **Monaghan County Council**

County Offices

The Glen

County Monaghan

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Section 1 Introduction and Terms of Reference

This is the Non-Technical Summary of the Environmental Report for the Draft Monaghan County Development Plan 2019-2025. The purpose of the Environmental Report is to provide a clear understanding of the likely environmental consequences of decisions regarding the future accommodation of growth in County Monaghan.

What is an SEA?

SEA is a systematic process of predicting and evaluating the likely environmental effects of implementing a proposed plan, or other strategic action, in order to ensure that these effects are appropriately addressed at the earliest appropriate stage of decision-making on a par with economic, social and other considerations.

Why is it needed?

The SEA is being carried out in order to comply with the provisions of the SEA Regulations and in order to maintain high standards in environmental management and planning within County Monaghan. The output of the process is an Environmental Report which should be read in conjunction with the County Development Plan.

How does it work?

All of the main environmental issues in County Monaghan are assembled and presented to the team who prepared the Plan. This helped them to devise a Plan that protects whatever is sensitive in the environment. It also helped to identify wherever there are environmental problems in the area and ideally the Plan tries to improve these.

To decide how best to make a Plan that protects the environment as much as possible the planners examined alternative versions of the Plan. This helped to highlight the type of Plans that are least likely to harm the environment.

No significant difficulties have been encountered during the undertaking of the assessment to date.

What is included in the Environmental Report that accompanies the Plan?

The Environmental Report contains the following information:

- A description of the environment and the key environmental issues;
- A description and assessment of alternatives for the Plan;
- An assessment of the Plan objectives; and,
- Mitigation measures which set out to aid compliance with important environmental protection legislation - e.g. the Water Framework Directive, the Habitats Directive - and which will avoid/reduce the environmental effects of implementing the Plan.

What happens at the end of the process?

On the making of the Plan, a document, referred to as the SEA Statement, will be made public.

The SEA Statement includes information on how environmental considerations were integrated into the Plan and why the preferred alternative was chosen for the Plan in light of the other alternatives.

Section 2 The Plan

2.1 Introduction and Content of the Plan

The Monaghan County Development Plan 2019-2025 provides an overall strategy for the proper planning and sustainable development of County Monaghan over the timescale of the Plan. Spatial planning through the development plan policies endeavours to achieve balance between the common good and the interests of those individuals.

The CDP consists of a written statement and plans that indicate the development objectives for County Monaghan.

Volume 1 contains the written statement which is made up of a number of Sections. Section 1 of the County Development Plan 2019-2025 sets out the current trends and identifies the emerging issues to be dealt with in the new Plan. Section 2 of the Plan introduces the Vision for the County and the Core Development Strategy to be put in place to achieve this vision. It develops the Core Development Strategy through the following sections:

- Housing Policy
- Social Infrastructure Strategy
- Economic Development
- Infrastructure
- Heritage Policy
- Development Standards

Volume 2 contains the settlement strategy for the County and contains zoning and settlement Plans.

Accompanying Documents include:

- Strategic Environmental Assessment (SEA) Environmental Report
- Appropriate Assessment (AA)
- Strategic Flood Risk Assessment (SFRA)

Far in advance of both the submission of the Plan to the Elected Members for approval and the placing of the Plan (and associated SEA, AA and SFRA documents) on public display, Monaghan County Council undertook various works in order to inform the preparation of the Plan.

The findings of this strategic work have been integrated into the Plan and will contribute towards both environmental protection and management and sustainable development within the County.

Strategic work undertaken by the Council includes background work in relation to Plan Strategies and other provisions for a variety of sectors including: Housing, Economic Development, Community, Heritage, Transport and Infrastructure and Environment.

In addition, the undertaking of this SEA process as well as the preparation of an Appropriate Assessment and Strategic Flood Risk Assessment were part of this strategic work and contributed towards the integration of environmental considerations into individual Plan provisions as summarised in Section 5 of this report.

2.2 Relationship with other relevant Plans and Programmes

The CDP sits within a hierarchy of strategic action such as plans and programmes and is subject to a number of high level environmental protection policies and objectives with which it must comply. As required by the Act, the CDP is consistent, in so far as is practicable, with such national plans, policies

and strategies. The CDP may, in turn, guide lower level strategic actions. Examples of relevant plans and programmes include the following:

Regional Planning Guidelines
The Regional Planning Guidelines for the Border Region provide a long-term strategic planning framework for the development of the Midlands. The RPGs aim to give regional effect to the National Spatial Strategy and Guide the Development Plans and lower tier plans of planning authorities.

River Basin Management Plan and Programme of Measures
Local Authorities, including Monaghan County Council, have prepared the Neagh-Bann IRBD and the North-Western Basin Management Plans, both of which are being implemented through, inter alia, the County Development Plan, in order to help protect and improve waters in the County and wider RBDs. The Management Plans provide specific policies for individual river basins in order to implement the requirements of the WFD.

Catchment Flood Risk Assessment and Management Studies
The national Catchment Flood Risk Assessment and Management (CFRAM) programme commenced in Ireland in 2011 and is being overseen by the Office of Public Works. The CFRAM Programme is intended to deliver on core components of the National Flood Policy, adopted in 2004, and on the requirements of the EU Floods Directive. CFRAM Studies are being undertaken for all River Basin Districts. The studies are focusing on areas known to have experienced flooding in the past and areas that may be subject to flooding in the future either due to development pressures or climate change. Flood Risk and Hazard mapping, including Flood Extent Mapping, was finalised in 2017. The final output from the studies will be CFRAM Plans, to be finalised in 2018. The Plans will define the current and future flood risk in the River Basin Districts and set out how this risk can be managed.

Smarter Travel 2009
"Smarter Travel, A Sustainable Transport Future, A New Transport Policy for Ireland 2009 - 2020" is the Government's action plan to free towns and cities from traffic congestion, substantially cut CO2 emissions, encourage car-based commuters to leave their cars at home, and encourage a shift toward walking, cycling and greater public transport usage.

Connacht-Ulster Waste Region Waste Management Plan
The Waste Plan sets out to manage our waste in a safe and compliant manner, a clear strategy, policies and actions are required. The Waste Management Plan for the Connacht Ulster Region is the framework for the prevention and management of wastes in a safe and sustainable manner. The scope of the Waste Plan is broad and ultimately it needs to provide policy direction setting out what we want to achieve and a roadmap of actions to get us there

Environmental Protection Objectives
The Plan is subject to a number of high level environmental protection policies and objectives with which it must comply, including those which have been identified as Strategic Environmental Objectives in Section 3.13. An example of an Environmental Protection Objective is the aim of the EU Habitats Directive - which is to contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora in the European territory of Member States.

Section 3 The Environmental Baseline

3.1 Introduction

Reflecting the specifications in the SEA Directive, the relevant aspects (those which have the greatest potential to be affected by implementation of the Plan) of the current state of the environment for various environmental components is summarised in this section.

3.2 Likely Evolution of the Environment in the Absence of the Plan

In the absence of a new Plan it is uncertain how permission for new development would be applied for and considered.

The 2013-2019 Plan has contributed towards environmental protection within County Monaghan. If the 2013-2019 Plan was to expire and not be replaced by a new 2019-2025 Plan, this would result in a deterioration of the County's planning and environmental protection framework. Although higher level environmental protection objectives – such as those of various EU Directives and transposing Irish Regulations – would still apply, the deterioration of this framework would mean that new development would be less coordinated and controlled. Such development could result in an increase in the occurrence of adverse effects on all environmental components, especially those arising cumulatively. Cumulative effects occur as a result of the addition of many small impacts to create one larger, more significant, impact.

Such adverse effects could include:

- Arising from both construction and operation of development and associated infrastructure: loss of/damage to biodiversity in designated sites (including European Sites and Wildlife Sites) and Annexed habitats and species, listed specs, ecological connectivity and non-designated habitats; and disturbance to biodiversity and flora and fauna;
- Habitat loss, fragmentation and deterioration, including patch size and edge effects;
- Disturbance (e.g. due to noise and lighting along transport corridors) and displacement of protected species;
- Potential interactions if effects upon environmental vectors such as water and air are not mitigated;
- Damage to the hydrogeological and ecological function of the soil resource;
- Adverse impacts upon the status of water bodies arising from changes in quality, flow and/or morphology;
- Increase in the risk of flooding;
- Failure to provide adequate and appropriate waste water treatment (water services infrastructure and capacity is needed to ensure the mitigation of potential conflicts)[1];
- Failure to comply with drinking water regulations and serve new development with adequate drinking water that is both wholesome and clean (water services infrastructure and capacity is needed to ensure the mitigation of potential conflicts);
- Increases in waste levels;
- Interactions between agricultural waste and soil, water, biodiversity and human health – including as a result of emissions of ammonia from agricultural activities (e.g. manure handling, storage and spreading) and the production of secondary inorganic particulate matter;
- Emissions to air including greenhouse gas emissions and other emissions;
- Potential effects on protected and unknown archaeology and protected architecture arising from construction and operation activities; and

[1] Irish Water is responsible for strategic water services.

- Occurrence of adverse visual impacts and conflicts with the appropriate protection of designations relating to the landscape.

3.3 Biodiversity and Flora and Fauna

Ecologically rich areas in Monaghan include hedgerows, woodlands, wetlands, rivers and lakes. These habitats support a variety of species and ecosystems that contribute to the unique biodiversity of Monaghan. Many of these areas are coming under pressure as development intensifies the demand for land. It is imperative that measures are put in place to respond to these pressures and that any development will not have a detrimental effect on the natural environment.
Ecological designations include:

- Special Protection Areas[2];
- Special Areas of Conservation[3];
- Natural Heritage Areas and Proposed Natural Heritage Areas[4];
- Nature Reserves[5];
- Freshwater Pearl Mussel catchments[6]
- Certain entries to the Water Framework Directive Register of Protected Areas[7]
- Freshwater Pearl Mussel catchments[8];
- Wildfowl Sanctuaries (see S.I. 192 of 1979)[9];
- Tree Preservation Orders (TPOs)[10]; and
- RAMSAR sites[11].

Relevant ecological designations in Northern Ireland include:

- European Sites (see description above);
- Areas of Special Scientific Interest;
- Nature Reserves; and
- Ramsar Sites (see description above).

[2] SPAs have been selected for protection under the 1979 European Council Directive on the Conservation of Wild Birds (79/409/EEC) - referred to as the Birds Directive - by the DECLG due to their conservation value for birds of importance in the European Union.

[3] Special Areas of Conservation (SACs) have been selected for protection under the European Council Directive on the conservation of natural habitats and of wild fauna and flora (92/43/EEC) - referred to as the Habitats Directive - by the DEHLG due to their conservation value for habitats and species of importance in the European Union.

[4] NHAs are designated due to their national conservation value for ecological and/or geological/geomorphological heritage. They cover nationally important semi-natural and natural habitats, landforms or geomorphological features, wildlife plant and animal species or a diversity of these natural attributes. NHAs are designated under the Wildlife (Amendment) Act 2000. Proposed NHAs were published on a non-statutory basis in 1995, but have not since been statutorily proposed or designated. These sites are of significance for wildlife and habitats.

[5] A Nature Reserve is an area of importance to wildlife, which is protected under Ministerial order. There are currently 78 Statutory Nature Reserves. Most are owned by the State but some are owned by organisations or private landowners.

[6] Freshwater pearl mussel is a globally threatened, long-lived and extremely sensitive species that can be impacted by many forms of pollution, particularly sediment and nutrient pollution and by hydrological and morphological changes, which may arise from developments, activities or changes in any part of the catchment.

[7] In response to the requirements of the Water Framework Directive a number of water bodies or parts of water bodies which must have extra controls on their quality by virtue of how their waters are used by wildlife have been listed on Registers of Protected Areas (RPAs). RPAs include those for Protected Habitats or Species, Shellfish, Salmonid, Nutrient Sensitive Areas, Recreational Waters and Drinking Water

[8] Freshwater pearl mussel is a globally threatened, long-lived and extremely sensitive species that can be impacted by many forms of pollution, particularly sediment and nutrient pollution and by hydrological and morphological changes, which may arise from developments, activities or changes in any part of the catchment.

[9] Wildfowl Sanctuaries are areas that have been excluded from the 'Open Season Order' so that game birds can rest and feed undisturbed. There are 68 sanctuaries in the State. Shooting of game birds is not allowed in these sanctuaries.

[10] TPOs are a planning mechanism whereby individual trees or groups of trees can be identified as important and protected by a TPO.

[11] The Convention of Wetlands of International Importance, especially as Water Fowl Habitat, was established at Ramsar in 1971 and ratified by Ireland in 1984. The main aim of the Convention is to secure the designation by each contracting state of wetlands in its territory for inclusion in a list of wetlands of international importance for waterfowl. This entails the commitment of each contracting state to a policy of protection and management of the designated wetlands, and of formulating and implementing planning so as to promote the conservation of designated wetlands and, as far as possible, the wise use of wetlands in its territory. Ireland presently has 45 sites designated as Wetlands of International Importance, with surface areas of 66,994 hectares.

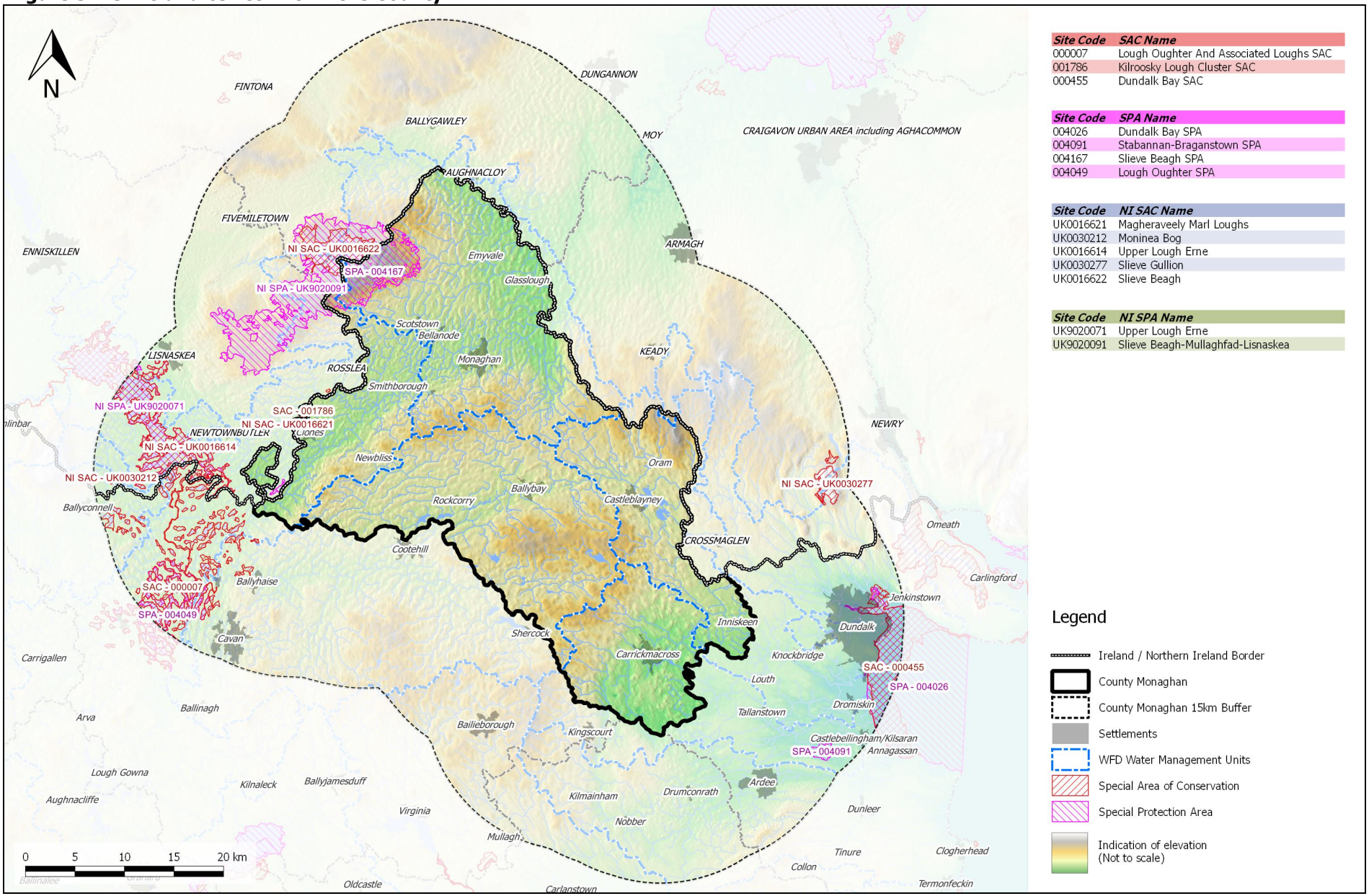
There is one SAC located within County Monaghan, Kilroosky Lough Cluster. There are two SACs located within and at the County Border with Northern Ireland, Magheraveely Marl Loughs and Slieve Beagh.

There is one SPA located within County Monaghan, Slieve Beagh. There are two SPAs located within and at the County Border with Northern Ireland, Upper Lough Erne and Slieve Beagh-Mullaghfad-Lisnaskea.

There is one Natural Heritage Area in Monaghan, Eshbrack Bog.

Ecological networks are important in connecting areas of local biodiversity with each other and with nearby designated sites so as to prevent islands of habitat from being isolated entities. They are composed of linear features, such as treelines, hedgerows and rivers/streams, which provide corridors or stepping stones for wildlife species moving within their normal range. They are important for the migration, dispersal and genetic exchange of species of flora and fauna particularly for mammals, especially for bats and small birds and facilitate linkages both between and within designated ecological sites, the non-designated surrounding countryside and the more urban areas of the County.

Figure 3.1 SPAs and cSACs within the County



3.4 Population and Human Health

Population
The Census 2016 results show that Monaghan's population has grown by 891 persons since Census 2011, to 61,386 persons. This represents an increase of 1.5% over the intercensal period, an annual increase of 0.3% against a state average of 0.74%. These figures follow continuous population growth rates in Monaghan since the 1996 Census.

Given the change in economic trends nationally over the last ten years, along with a strong focus on emigration, the population growth within County Monaghan is considered reasonable. However, within the border counties Monaghan's population growth is relatively low to other counties over the last ten years.

Having regard to national economic conditions which impacted on population change over the 2011-2016 period, trends considered over a longer-term period demonstrate more measured and sustainable growth patterns. Taking a longer-term view of County Monaghan over the period 1991 to 2016 (25 years), the population of the County has increased by almost 10,093 persons demonstrating positive growth patterns, notwithstanding cycles of economic and population decline within this period.

In addition, positive population growth over the last ten years is also recorded at a rate of 1% per annum. Census figures indicate that there is a natural population increase and a decline in migration figures, and this is a trend which is likely to continue with anticipated continued economic growth.

Human Health
The impact of implementing the Plan on human health is determined by the impacts which the Plan will have upon environmental vectors. Environmental vectors are environmental components, such as air, water or soil, through which contaminants or pollutants, which have the potential to cause harm, can be transported so that they come into contact with human beings. Hazards or nuisances to human health can arise as a result of exposure to these vectors arising from incompatible adjacent land uses for example. These factors have been considered with regard to the description of: the baseline of each environmental component; and the identification and evaluation of the likely significant environmental effects of implementing the Plan.

Emission limits for discharges to air, soil and water are set with regards to internationally recognised exposure limit values. These are generally set to be many times the safe exposure limit - in order to provide protection. In the event that a land-use plan began to have adverse health effects on surrounding populations it is likely that it would have been identified as being in breach of such emission standards at a very early stage - and long before the manifestation of any adverse health effects in the population.

Existing Problems
There is historic and predictive evidence of flooding in various locations across the County (see information on Strategic Flood Risk Assessment at Section 3.6) All recommendations made by the SFRA in relation to flood risk management have been integrated into the Plan.

Information on the status of groundwaters and surface waters is provided under section 3.6.

3.5 Soil

County Geological Sites

The Irish Geological Heritage Programme co-ordinated by the Geological Survey of Ireland (GSI) conducted an audit of geological sites in County Monaghan following a study in 2013. The audit did not identify any nationally important sites in the County however 20[12] locally important geological sites have been classified as County Geological Sites (CGS). The identification of such sites was an objective of the Monaghan County Development Plan 2013-2019 which has been realised.

Contaminated Soil
In the absence if mitigation, contaminated materials have the potential to adversely impact upon human health, water quality and habitats and species.

As is the case with other urban and semi-urban areas across the country, there is potential for contamination at sites within County Monaghan, especially where land uses occurred in the past in the past in the absence of environmental protection legislation.

3.6 Water

Potential Pressures on Water Quality
Human activities, if not properly managed, can cause deterioration in water quality. Pressures exerted by human activities include the following: sewage and other effluents discharged to waters from point sources, e.g. pipes from treatment plants; discharges arising from diffuse or dispersed activities on land; abstractions from waters; and structural alterations to water bodies. Since 2000, Water Management in the EU has been directed by the Water Framework Directive 2000/60/EC (WFD). The WFD requires that all Member States implement the necessary measures to prevent deterioration of the status of all waters - surface, ground, estuarine and coastal - and protect, enhance and restore all waters with the aim of achieving "good status". All public bodies are required to coordinate their policies and operations so as to maintain the good status of water bodies which are currently unpolluted and improve polluted water bodies to good status. Monaghan falls within two International River Basin Districts for the purpose of implementation of the Water Framework Directive; the North Western International RBD and Neagh Bann International RBD.

WFD Surface Water Status

Water quality status for surface water bodies across the County and surrounding areas is indicated on Figure 3.2. In the Republic of Ireland water status is shown by the individual water body whereas in Northern Ireland it is shown by the catchment area.

[12] These sites comprise Alphuca Cave (Fin Mc Cools Cave), Ballyloughan, Turloughs, Calliagh, Carrickatee Hill, Clontibret Stream, Creevy Cave, Donaghmoyne Rising, Fin Mc Cool's Chair and Killmactrasna Cave, Hope Mine Knocknacran Gypsum Mine, Drumlin, Lemgare, Leeg, Morkeeran Quarry, Moylan Lough, Rockorry-Cootehill ribbed moraine, Scotshouse- Redhills crosscutting ribbed, moraines, Tamlat, Tassan, Tiragarvan and Tullyvaragh.

WFD Groundwater Status
For groundwater bodies, the approach to classification is different to that for surface water. For each body of groundwater, both the chemical status and the quantitative must be determined. Both have to be classed as either *good* or *poor*.

The EPA has classified groundwater status in County Monaghan as generally being of 'good' status. There is an area around a waste facility (Scotch Corner Landfill) to the north east of Ballybay that is classified as being of 'poor' status.

Flooding
Flooding is an environmental phenomenon which can have adverse impacts upon human health, the economy and our society. The existence of flood risk within County Monaghan can be illustrated by historical information on the locations and/or extents of known flooding events. A Strategic Flood Risk Assessment (SFRA) has been prepared alongside the preparation of the Draft Plan in response to requirements contained in *The Planning System and Flood Risk Management Guidelines for Planning Authorities* (DEHLG/OPW, 2009). The SFRA has facilitated the integration of flood risk management considerations into both the land use zoning and written provisions contained within the Plan. Flood risk within County Monaghan arises from various sources including fluvial (from rivers/streams throughout the County), pluvial (from rainwater as it falls and accumulates at locations across the County), groundwater (at a number of locations to the north and south of Carrickmacross) and surface drainage systems.

Existing Problems
Subject to exemptions provided for by Article 4 of the WFD[13], based on available data on the status of waters within the County, most surface water bodies and one groundwater body (underlying Scotch Corner Landfill) within the County will need improvement in order to comply with the objectives of the WFD. Further details are provided in the subsections above.

The Draft Plan includes provisions that will contribute towards improvements in the status of waters.

There is historic and predictive evidence of flooding in various locations across the County. Recommendations made by the SFRA in relation to flooding risk management have been integrated into the Plan.

[13] Article 4 of the WFD sets out various exemptions for deterioration in status caused as a result of certain physical modifications to water bodies. This is provided: all practicable mitigation measures are taken; there are reasons of overriding public interest or the benefits to human health, safety or sustainable development outweigh the benefits in achieving the WFD objective; there are no better alternatives; and the reasons for the physical modification are explained in the relevant river basin management plan.

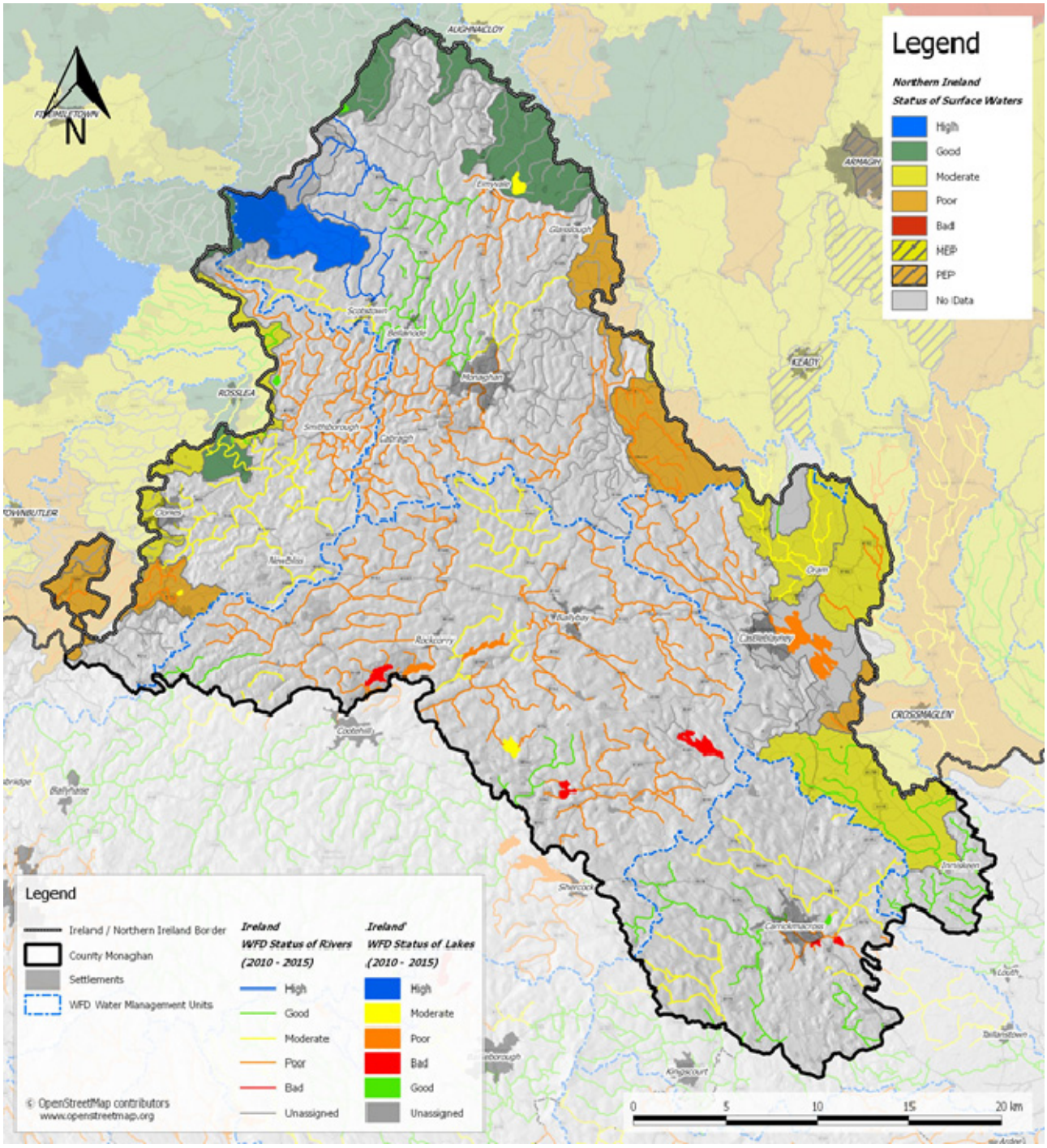


Figure 3.2 WFD Status of Rivers 2010-2015
Source: EPA (2015)

3.7 Air and Climatic Factors

Ambient Air Quality
In order to protect human health, vegetation and ecosystems, EU Directives set down air quality standards in Ireland and the other Member States for a wide variety of pollutants. These pollutants are generated through fuel combustion, in space heating, traffic, electricity generation and industry and, in sufficient amounts, could affect the well-being of the areas inhabitants. The EU Directives include details regarding how ambient air quality should be monitored, assessed and managed.

In order to comply with the directives mentioned above, the EPA measures the levels of a number of atmospheric pollutants. For the purposes of monitoring in Ireland, four zones are defined in the Air Quality Standards Regulations 2002 (SI No. 271 of 2002). All of County Monaghan is located within Zone D.

The Kilkitt air quality monitoring site is located within the Plan area. The current air quality at this site is identified by the EPA as being *good*[14].

Climatic Factors
The key issue involving the assessment of the effects of implementing the plan on climatic factors relates to greenhouse gas emissions arising from transport. Climatic factors also interact with flooding.

The Plan facilitates improvements in sustainable mobility, thereby facilitating reductions in and limiting increases of greenhouse gas emissions. Such emissions would occur otherwise with higher levels of motorised transport and associated traffic.

Ireland's emissions profile has changed considerably since 1990, with the contribution from transport more than doubling and the share from agriculture reducing since 1998. Travel is a source of:

1. Noise;
2. Air emissions; and
3. Energy use (42.2% of Total Final Energy Consumption in Ireland in 2015 was taken up by transport, the largest take up of any sector)[15].

Over the period 1990 to 2015, the biggest shift in the transport market has been from petrol to diesel. While consumption of both fuels increased, consumption of diesel increased by 305% compared with just a 14% increase for petrol. Diesel's overall market share grew from 33% in 1990 to 57% in 2015.

Transport energy use peaked in 2007 and fell each year thereafter until 2013. As the economy started to expand again transport energy use grew in 2013, 2014 and 2015, by 4.2%, 4.0% and 5.9% respectively, to 4,789 ktoe. Transport energy in 2015 was 16% below the peak in 2007, or back to 2004 levels.

The EPA 2017 publication *Ireland's Greenhouse Gas Emission Projections 2016-2035*, identifies that:

- For 2016, total national greenhouse gas emissions are estimated to be 61.19 million tonnes carbon dioxide equivalent (Mt CO_2eq), 3.5% higher than emissions in 2015 and similar to 2009 levels.
- In the last 2 years, national total emissions have increased by 7.3%. In the same period, emissions in the ETS[16] sector have increased by 11.2% and in the non-ETS sector by 5.8%.

[14] 08/12/17 (http://www.epa.ie/air/quality/)
[15] Sustainable Energy Ireland (2016) *Energy in Ireland 1990 – 2015*
[16] The EU emissions trading system (EU ETS) was launched in 2005 as the world's first international company-level 'cap-and trade' system for reducing emissions of greenhouse gases cost-effectively. The cap makes sure that CO2 becomes a product and, thus, CO2 is valued at a price, which is determined by the supply and demand at the (trading) market.

- Agriculture emissions increased by 2.7% in 2016 (driven by higher dairy cow numbers and increases in milk production)
- Greenhouse gas emissions from the Transport sector increased by 3.7% in 2016. This is the fourth successive year of increases in transport emissions.
- Agriculture and Transport accounted for 73.3% of total non-ETS emissions in 2016.
- Emissions in the Energy Industries sector show an increase of 6.1% which is attributable to an increase in natural gas use for electricity generation by 27.7% and reductions of 6.5% and 15.6% respectively for electricity generated from wind and hydro renewables. This is reflected in a 3.8% increase in the emissions intensity of power generation in 2016 compared with 2015. Renewables now account for 25.6% of electricity generated in 2016 (down from 27.3% in 2015). Ireland exported 2.4% of electricity generated in 2016.
- Emissions from the Manufacturing Combustion[17] sector decreased by 0.4% in 2016.
- The Industrial Processes sector emissions increased by 7.1%, mainly from increased cement production. Cement process emissions increased by 8.6% in 2016.
- Greenhouse gas emissions from the Residential sector remained almost unchanged with a small increase of 0.1%.
- Emissions from the Waste sector decreased by 1.2% in 2016.

In 2015, Northern Ireland's greenhouse gas emissions were estimated to be 20.7 million tonnes of carbon dioxide equivalent. This was an increase of 0.6% compared to 2014. The longer-term trend shows a decrease of 17% compared to the base year of 1990. The largest sectors in terms of emissions in 2015 were agriculture (29%), transport (21%) and energy supply (19%). Most sectors showed a decreasing trend since the base year. The largest decreases, in terms of tonnes of carbon dioxide equivalent, were in the energy supply, residential and waste sectors. They were driven by improvements in energy efficiency, fuel switching from coal to natural gas, which became available in the late 1990s, and the introduction of methane capture and oxidation systems in landfill management. Northern Ireland accounted for 4.2% of UK greenhouse gas emissions in 2015. Northern Ireland's latest greenhouse gas projection estimates that emissions in 2030 will total 17.3 million tonnes of carbon dioxide equivalent. This would mean a 31.2% decrease in emissions between 1990 and 2030.

Maximising sustainable mobility will help Ireland meet its emission target for greenhouse gases under the 2020 EU Effort Sharing target which commits Ireland to reducing emissions from those sectors that are not covered by the Emissions Trading Scheme (e.g. transport, agriculture, residential) to 20% below 2005 levels. Subsequently, by 2030, Ireland is required to reduce its carbon emissions by up to 30% compared to 2005 levels.

Land-use planning contributes to the number and the extent of which journeys occur. By addressing journey time through land use planning and providing more sustainable modes and levels of mobility (as is provided for by the Plan), noise and other emissions to air and energy use can be minimised. Furthermore, by concentrating populations, greenfield development - and its associated impacts - can be minimised and the cost of service provision can be reduced.

Provisions in relation to climate change such as a commitment to prepare a Climate Change Adaptation Strategy have been integrated into the Plan.

Provisions in relation to green infrastructure have also been integrated into the Plan. Green infrastructure has the potential to achieve objectives and synergies with regard to the following:

- Provision of open space amenities;
- Sustainable management of water;
- Protection and management of biodiversity;
- Protection of cultural heritage; and
- Protection of protected landscape sensitivities.

[17] Manufacturing Combustion; includes combustion of fuels in Industry and Construction, both in ETS and non-ETS

3.8 Material Assets

Introduction
Since January 2014, Irish Water is the State body responsible for the delivery, integration and implementation of strategic water and waste water projects and infrastructural improvements. Monaghan County Council no longer has a direct role in this area, however the Council works with Irish Water to help to ensure that the land use plans and water services investment plans align.

Waste Water
Monaghan County Council operates 26 waste water treatment plants in the County. These vary in size from Monaghan Town Waste Water Treatment Works (WWTW) which has a design capacity of 44,000 population equivalent[18] to plants such as Drum WWTW which has a design population equivalent of 150. Annual Environmental Reports on identified issues, associated mitigation and the status of implementation at 14[19] of plants are available and detailed in the SEA Environmental Report. Issues that are being addressed include orthophosphate levels from Ballybay and Environs WWTW, orthophosphate levels from Clones and Environs, Phosphorus and Ammonia levels from Castleblayney WWTW, absence of a standby pump from Carrickmacross and ruptured diffusers in the aeration tank in the Monaghan WWTW.

Drinking Water
Irish Water being the Water Services body for the state and County Monaghan is responsible for providing and maintaining adequate public water supply infrastructure. Compliance with the drinking water requirements is determined by comparing the results of analyses submitted by water suppliers to the standard for 48 parameters specified in the European Communities (Drinking Water) Regulations (No. 2), 2007. To ensure that these standards are met, each water supply must be monitored on a regular basis.

The most recent drinking water report from the EPA 'Drinking Water Report 2017' (EPA, 2017) identifies that:

- There are 10 public water supplies in County Monaghan serving a population of 28,526;
- Microbiological parameter compliance for the year was 100%;
- Chemical parameter compliance for the year was 98.2%;
- No boil notices were issued in 2016; and
- No water restrictions occurred.

The EPA publishes their results in annual reports which are supported by Remedial Action Lists (RALs). The RAL identifies water supplies which are not in compliance with the Regulations mentioned above. The most recent EPA Remedial Action List (Q3 of 2017) lists one water supply in County Monaghan, Lough Egish. This supply has elevated levels of THMs above the standard in the Drinking Water Regulations. To address this issue, the RAL identifies that the Proposed Action Programme is to upgrade the water treatment plant at Lough Egish.

Waste
The Connacht Ulster Waste Management Plan 2015-2021 provides the framework for solid waste management in the region and sets out a range of policies and actions to meet specified mandatory and performance based targets. The Plan seeks to assist and support resource efficiency and waste prevention initiatives. A key Plan target includes a 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan.

This plan will set out a framework of policies to deliver an improvement of the existing transport system and facilities in the County over the Plan period.

[18] Population equivalent is defined in the Regulations as 'a measurement of organic biodegradable load and a population equivalent of 1 (1 p.e.) means the organic biodegradable load having a five-day biochemical oxygen demand (BOD5) of 60g of oxygen per day'.
[19] Scotstown, Smithborough, Knockaconny, Newbliss, Rockcorry, Ballinode, Inniskeen, Glaslough, Emyvale, Ballybay and Environs, Clones and Environs, Castleblayney, Carrickmacross and Monaghan.

Agriculture
County Monaghan is noted for its intensive agricultural activities and it benefits significantly from its successful poultry and mushroom industries. However, the intensive nature of these sectors also presents challenges for disease minimisation and environmental protection.

Existing Problems
There are a number of challenges with respect to the provision of infrastructure as referred to above.

The provisions of the new Plan will contribute towards protection of the environment with regard to impacts arising from material assets

3.9 Cultural Heritage

Archaeological Heritage
Monaghan County's rich archaeological heritage includes a collection of ring forts, cairns, crannogs, burial grounds, headstones as well as industrial archaeology including mills, the dismantled Great Northern Railway and the Ulster Canal. Heritage features extending beyond the County border include:

- Black Pigs Dyke, a collection of a dozen individual linear earthworks, extends across the north midlands and south Ulster;
- The Ulster Canal extends from the River Bann/Lough Neagh in Northern Ireland to Lough Erne in the Republic of Ireland, passing through Monaghan along the way; and
- The Great Northern Railway extends from Belfast to various locations within the County including Glaslough, Monaghan and Clones.

The Record of Monuments and Places (RMP) was established under Section 12 of the National Monuments (Amendment) Act 1994 and structures, features, objects or sites listed in this Record are known as Recorded Monuments.

There are approximately 1383 known Recorded Monuments in the County at present. In addition, there are 7 National Monuments in state control.

Archaeological heritage designations in areas adjacent to the County in Northern Ireland include entries to the Northern Ireland Sites and Monuments Record and Areas of Significant Archaeological Interest and Archaeological Potential.

Figure 3.3 shows the spatial distribution of entries to the RMP in County Monaghan. These monuments are found throughout the County with clusters occurring in the County's towns and lower concentrations occurring in rural areas.

Architectural Heritage
County Monaghan has 712 Protected Structures on record. Architectural heritage designations in areas adjacent to the County in Northern Ireland include Listed Buildings and Historical Parks and Gardens. Figure 3.3 shows the spatial distribution of architectural heritage designations within and adjacent to County Monaghan.

Part IV of the Planning & Development Act requires every development plan to include a record of protected structures (RPS). A 'protected structure' is a structure or a specific feature of the structure as may be specified that a Planning Authority considers to be of special interest from an architectural, historical, archaeological, artistic, cultural, scientific, social or technical point of view.

To date in County Monaghan there has been 76 additions to the RPS from the NIAH. These include post boxes, stone bridges, water pumps, religious buildings, industrial buildings/structures and houses.

Figure 3.5 maps the location of entries to the Record of Protected Structures within County Monaghan. Also mapped on Figure 3.5 are entries to the National Inventory of Architectural Heritage (NIAH) (these provide the basis for the recommendations of the Minister for Arts, Heritage and the Gaeltacht for the inclusion of particular structures into the RPS). Concentrations of protected architectural structures are found within existing settlements.

Existing Problems

The context of archaeological and architectural heritage has changed over time within County Monaghan however no existing conflicts with legislative objectives governing archaeological and architectural heritage have been identified.

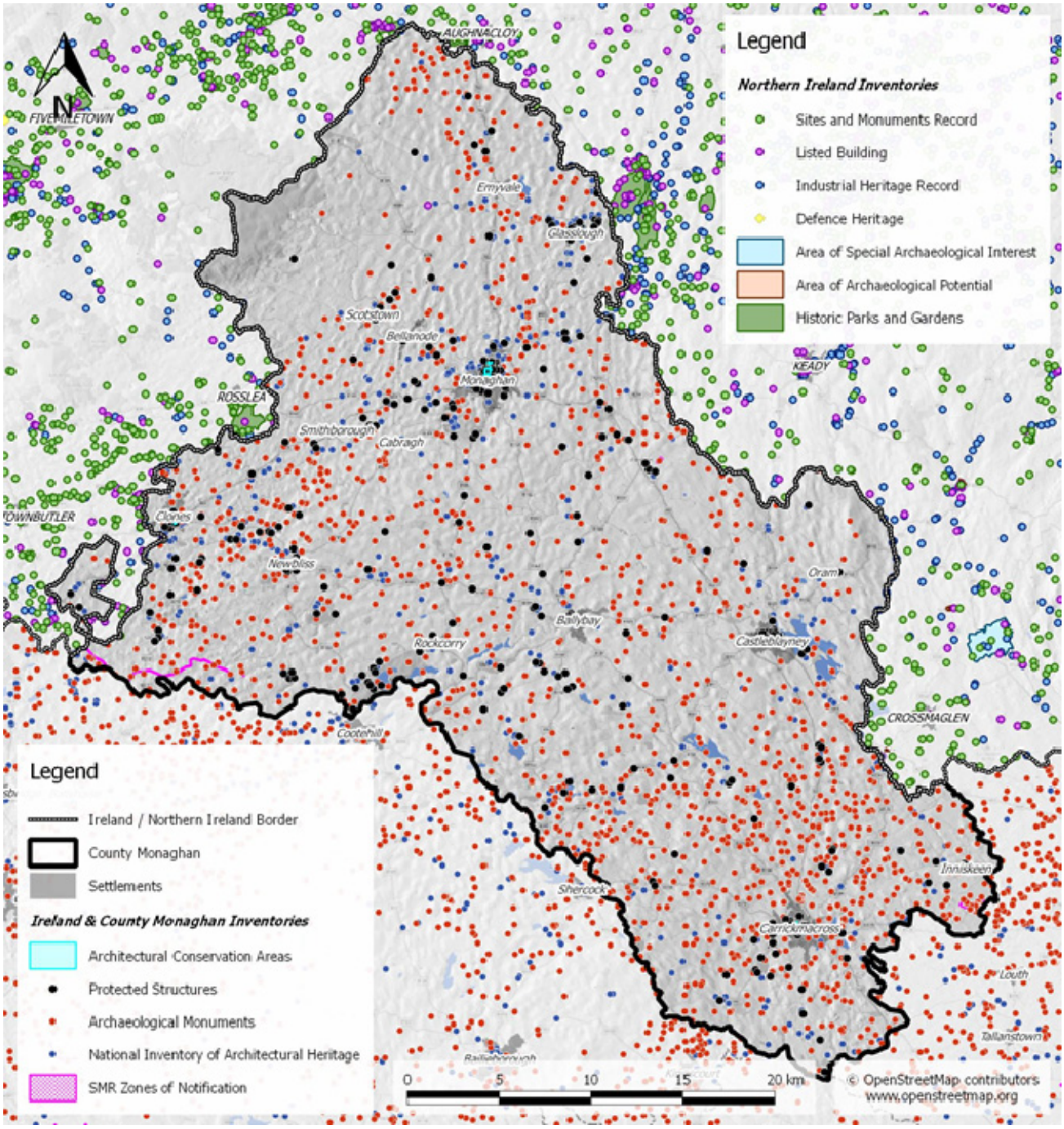


Figure 3.3 Archaeological and Architectural Heritage
Source: Monaghan County Council (Unknown)

3.10 Landscape

The European Landscape Convention was ratified in Ireland in 2002, this required EU Member States to adopt national measures to promote landscape, planning, protection and management

In recognition of this Monaghan commissioned the preparation of a landscape character assessment of the County in 2008. This study was carried out in accordance with the Department of the Environment, Community and Local Government Guidelines. The purpose of landscape character assessment is to provide the foundation for policy formulation and decision making for landscape management. The landscape character assessment identified nine landscape character areas[20] in County Monaghan.

The following three Northern Ireland Regional Character Areas share their border with the County Monaghan/Northern Ireland border:

- Clogher Valley and Slieve Beagh Regional Character Area, located to the immediate north west of County Monaghan
- Southern Drumlins and Orchards, located to the immediate north east of County Monaghan
- Slieve Gullion and South Armagh Hills, located to the immediate east of County Monaghan.

These areas are mapped on Figure 3.6.

County Monaghan has two principle areas of outstanding landscape quality which require protection from insensitive and inappropriate development. These areas are termed Areas of Primary Amenity and comprise Lough Muckno and Environs and Sliabh Beagh and Bragan Mountain.

In addition to the areas of primary amenity, there are a number of other scenic and amenity areas[21] that require protection from inappropriate and insensitive development.

[20] Sliabh Beagh Uplands; Blackwater Valley & Drumlin Farmland; Smithborough Hills; Clones River Valley & Farmed Uplands; Monaghan Drumlin Uplands, Mullyash Uplands; Ballybay/Castleblaney Lakeland's; Drumlin and Upland Farmland of South Monaghan; Carrickmacross Drumlin; and Lowland Farmland.

[21] Emy Lough and Environs (SA1); Blackwater River Valley (SA2); Mountain Water River Valley (SA3); Mullyash Mountain (SA3);Ulster Canal and Environs (SA4); Rossmore Park and Environs (SA5); Castleshane Woods and Environs (SA6); Billy Fox Memorial Park and Environs (SA7); Annaghmackerrig Lake, Woodland and Environs (SA8); Dartrey Demense and Environs (SA9); Dromore River and Lake Systems (SA10); Lough Major and Environs (SA11); Hollywood Lake (SA12); Lisanisk Lake (SA13); Lough Naglack (SA14); and Rahans Lake (SA15).

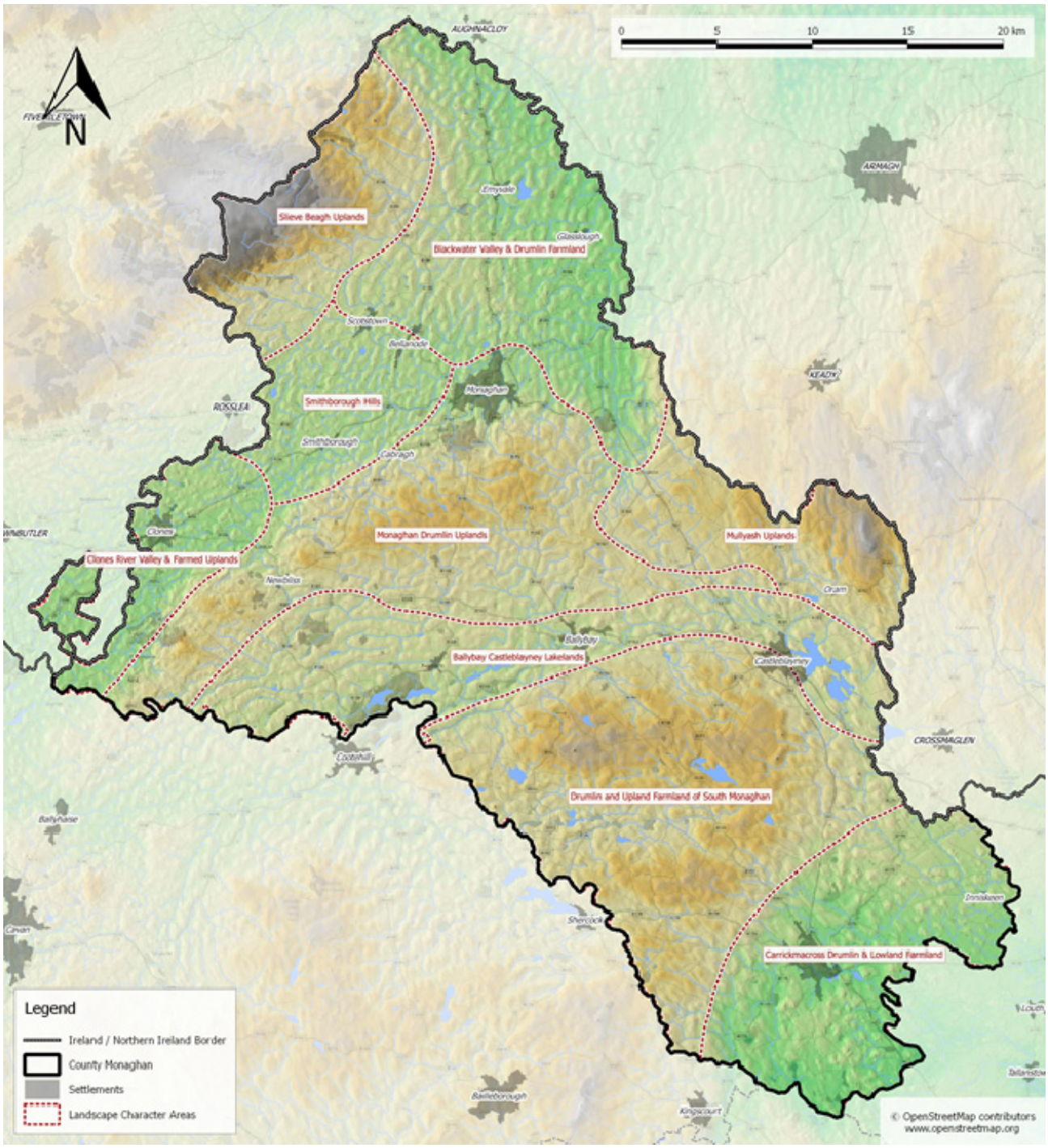


Figure 3.4 Landscape Character Areas
Source: Monaghan County Council (2017)

3.11 Overlay of Environmental Sensitivity Mapping

In order to identify where most sensitivities within the County occur, a number of the environmental sensitivities described above were weighted and mapped overlapping each other.

Figure 3.5 provides an Overlay of Environmental Sensitivities in the County. Environmental sensitivities are indicated by colours which range from extreme sensitivity (red/pink colour gradients) to high sensitivity (pink/peach colour gradients) to moderate sensitivity (yellow colour gradients) to low sensitivity (green colour gradients). Where the mapping shows a concentration of environmental sensitivities there is an increased likelihood that development will conflict with these sensitivities and cause environmental deterioration.

The occurrence of environmental sensitivities does not preclude development; rather it flags at a strategic level that the mitigation measures - which have already been integrated into the Plan - will need to be complied with in order to ensure that the implementation of the Plan contributes towards environmental protection.

Most of the Plan area is identified as being of low to moderate sensitivity. Greater areas of moderate sensitivity are found in the southern half of the County, owing much to elevated levels of groundwater vulnerability.

Rivers and lakes identified on the map as areas of high or extreme sensitivity include the River Proules Upper (through Carrickmacross), the River Proules Lower and Monalty Lough (downstream of Carrickmacross), the River Blackwater (downstream of Monaghan Town) and Lough Muckno (downstream of Castleblaney).

The largest area of extreme and high sensitivity is located in the north west of the County, close to Slieve Beagh and at Eshbrack Bog, along the border with Northern Ireland.

3.11.1 Methodology

A weighting system applied through Geographical Information System (GIS) software was used in order to calculate the vulnerability of all areas in the County. A slight differentiation was made in certain environmental layers including those discussed under the various environmental components above.

The scale of sensitivity for each area of the County corresponds to the sensitivity factors: 5 points corresponds to one sensitivity factor; 10 points corresponds to two sensitivity factors; 20 points corresponds to four sensitivity factors and so on. The scores for each area are added together in order to determine overall vulnerability as is shown on
Table **3.1** below

Table 3.1 Overall Vulnerability Classes

Score	Vulnerability Class
5-15	**Low**
20-25	**Moderate**
30-45	**High**
>50	**Extreme**

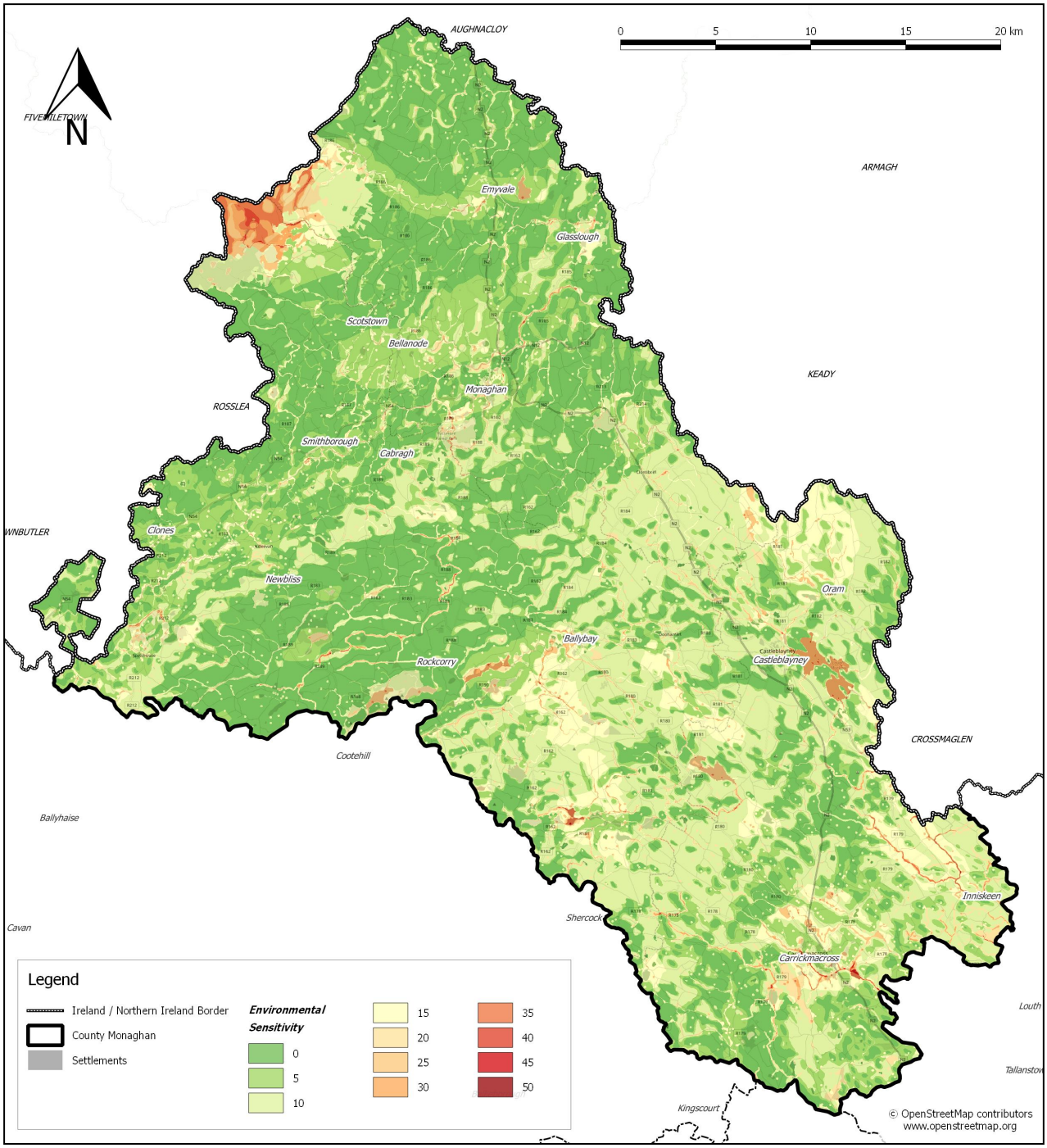


Figure 3.5 Overlay Mapping of Environmental Sensitivities
Source: CAAS (2017)

3.12 Appropriate Assessment and Strategic Flood Risk Assessment

Stage 2 Appropriate Assessment (AA) and Strategic Flood Risk Assessment (SFRA) have both been undertaken alongside the preparation of the Draft Plan. The requirement for AA is provided under the EU Habitats Directive (Directive 1992/43/EEC). The requirement for SFRA is provided under 'The Planning System and Flood Risk Management Guidelines for Planning Authorities' (DECLG, 2009). The emerging conclusion of the AA is that the Plan will not affect the integrity of the Natura 2000 network[22]. Various policies and objectives have been integrated into the Plan through the SEA, SFRA and AA processes. The preparation of the Plan, SEA, AA and SFRA has taken place concurrently and the findings of the AA and SFRA have informed both the Plan and the SEA.

3.13 Strategic Environmental Objectives

Strategic Environmental Objectives (SEOs) are methodological measures against which the environmental effects of the Plan can be tested. If complied with in full, SEOs would result in an environmentally neutral impact from implementation of the Plan. The SEOs are set out under a range of topics and are used as standards against which the provisions of the Plan can be evaluated in order to help identify areas in which potential adverse impacts may occur. SEOs are distinct from the objectives of the Plan and are developed from international and national policies which generally govern environmental protection objectives. SEOs used in the assessment are as follows:

- B1: To ensure compliance with the Habitats and Birds Directives with regard to the protection of Natura 2000 Sites and Annexed habitats and species
- B2: To ensure compliance with Article 10 of the Habitats Directive with regard to the management of features of the landscape which - by virtue of their linear and continuous structure or their function act as stepping stones (designated or not) - are of major importance for wild fauna and flora and essential for the migration, dispersal and genetic exchange of wild species
- B3: To avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources in designated sites including Wildlife Sites and Area of Special Scientific Interest and to ensure the appropriate protection of listed species
- B4: To sustain existing sustainable rural management practices - and the communities who support them - to ensure the continuation of long established managed landscapes and the flora and fauna that they contain
- PHH1: To protect populations and human health from exposure to incompatible landuses
- S1: To avoid damage to the hydrogeological and ecological function of the soil resource
- W1: To maintain and improve, where possible, the quality and status of surface waters
- W2P: To prevent pollution and contamination of ground water
- W3: To comply as appropriate with the provisions of the Planning System and Flood Risk Management: Guidelines for Planning Authorities (DEHLG and OPW, 2009)
- M1: To serve new development with adequate and appropriate waste water treatment
- M2: To serve new development with adequate drinking water that is both wholesome and clean
- M3: To reduce waste volumes, minimise waste to landfill and increase recycling and reuse
- C1: To reduce travel related emissions to air and to encourage modal change from car to more sustainable forms of transport
- CH1: To protect archaeological heritage including entries to the Record of Monuments and Places, the Northern Ireland Sites and Monuments Record (NISMR) and/or their context
- CH2: To protect architectural heritage including entries to the Record of Protected Structures, Architectural Conservation Areas, listed buildings and conservation areas (Northern Ireland) and their context
- L1: To minimise significant adverse visual impacts within and adjacent to the County, especially with regard to landscape and amenity designations included in Land Use Plans

[22] Except as provided for in Section 6(4) of the Habitats Directive, viz. There must be:
(a) no alternative solution available;
(b) imperative reasons of overriding public interest for the plan/programme/project to proceed; and
(c) adequate compensatory measures in place.

Section 4 Summary of Description and Evaluation of Alternatives and the Plan

4.1 Summary of Description of Alternative Scenarios

One of the critical roles of the SEA is to facilitate an evaluation of the likely environmental consequences of a range of alternative scenarios for accommodating future growth in County Monaghan. Three tiers of alternatives are examined as follows:

Tier 1: Alternatives for Allocation of Population

The following alternatives for an urban to rural population split were considered by the Council:

A. Continue Existing
37% Urban, 63% Rural

B. Increase Rural
33% Urban, 67% Rural

C. Increase Urban
41% Urban, 59% Rural

Tier 2: Consideration of Policy for Rural Areas under Strong Urban Influence

These two alternatives both provide for urban and rural growth in the County, however they have different approaches to managing development in areas surrounding urban settlements:

A. One includes a "Rural Areas under Strong Urban Influence" policy that restricts development in areas surrounding urban settlements; and

B. The other does not include a "Rural Areas under Strong Urban Influence" policy that restricts development in these areas.

Tier 3: Alternatives for Larger Towns

Three alternatives for each of the five settlements (Ballybay, Carrickmacross, Castleblaney, Clones and Monaghan) that are provided with land use zoning by the County Plan were considered as follows:

A. Even Development
- Required population split achieved;
- The infrastructure required to be in place to achieve the growth targets is already in place;
- New development within the lifetime of the plan generally to take place on expansion lands as indicated on maps, unless a comprehensive justification is provided for alternative residential lands;
- Community development facilities to be developed in tandem with the targeted growth of settlements;
- Village Centre developments would be developed in a planned and coordinated manner;

- Sufficient zoning of undeveloped lands is provided for in order to cater for projected growth of settlements.
- Open Space and Recreational Lands would be preserved.

B. Sporadic Development
- Required population split achieved;
- Additional infrastructure would be required to accommodate sporadic development, more than would be required for Scenario 1 'Even Development';
- New development within the lifetime of the plan generally to take place on expansion lands as indicated on maps, unless a comprehensive justification is provided for alternative residential lands;
- Village centre development would be sporadic and uncoordinated around the village centre zonings;
- More than sufficient zoning of undeveloped lands is provided for in order to cater for projected growth of settlements. This zoning is spread across more areas than is the case under "Alternative A Even Development".

C. Haphazard Development
- Required population split achieved;
- Additional infrastructure would be required to accommodate sporadic development, more than would be required for Alternative 1 'Even Development' or Alternative 2 'Sporadic Development', development would have to be serviced by private wastewater treatment systems which would have to be properly maintained;
- Development would occur on a piecemeal and haphazard basis within settlements;
- Ribbon and backland development would be a dominant feature within settlements;
- Village centre development would be permitted on a number of different zonings and not concentrated on the village centre;
- No zoning provided for with a laissez faire attitude in relation to development – with each application considered on its own merits.

4.2 Summary of Evaluation of Alternative Scenarios

Significant Positive Effects common to all Alternatives

By providing for development within existing development boundaries and facilitating the use of existing utilities and brownfield sites, all alternatives would be likely to contribute towards a reduced need to develop more sensitive, undeveloped areas elsewhere in wider rural areas that are further from established settlements and less well serviced. This, in the context of normal proper planning and sustainable development provisions, would be likely to result in significant positive environmental effects on environmental components as indicated on Table 4.1.

Table 4.1 Significant Positive Effects common to all Alternatives

Environmental Component	Significant Positive Effect, likely to occur
Biodiversity and Flora and Fauna	• Contributes towards protection of ecology (including designated sites, ecological connectivity, habitats) – due to increased utilisation of lands within existing development boundaries and use of existing utilities and brownfield sites. • Contributes towards protection of ecology with respect to the provision of water services. • Contributes towards protection of ecology as a result of contributing towards the protection of environmental vectors, including air and water. • Sustains existing sustainable rural management practices - and the communities who support them - to ensure the continuation of long established managed landscapes and the flora and fauna that they contain
Population and Human Health	• Contributes towards protection of human health with respect to the provision of water services and the provision of transport infrastructure integrated with land use planning – and associated interactions with sustainable mobility, emissions and energy usage. • Contributes towards protection of human health as a result of contributing towards the protection of environmental vectors, including air and water.
Soil	• Contributes towards protection of soil – due to increased utilisation of lands within existing development boundaries and use of existing utilities and brownfield sites. • Contributes towards protection of soil with respect to the provision of water services.
Water	• Contributes towards protection and management of ground and surface waters, including coastal waters downstream, due to facilitating development within established and serviced settlement centres.
Material Assets	• Allows for use of planned infrastructure including water services, transport and drainage infrastructure. • Makes use of existing water services, transport and drainage infrastructure.
Air and Climatic Factors	• Facilitates contribution towards a shift from car to more sustainable and non-motorised transport modes. • Facilitates contribution towards reducing congestion and associated adverse effects on air quality. • Facilitates contribution towards reductions in travel related greenhouse gas and other emissions to air.
Cultural Heritage	• Contributes towards protection of cultural heritage in wider region by facilitating development within existing settlements.
Landscape	• Contributes towards protection of wider landscape and landscape designations by facilitating development within existing settlements.

Although significant positive environmental effects would occur under each of the alternatives, the extent to which they would occur varies across each of the alternatives and this is addressed under the evaluation of each of the alternatives provided in the subsections below.

Potentially Significant Adverse Effects Common to all Alternatives

All of the alternatives provide for development. Such development would have the potential to conflict with environmental components – to different degrees. Potentially significant adverse environmental effects arising from this conflict are common to all alternatives and are described on Table 4.2. For implementation of the Plan, these effects will be mitigated by provisions integrated into the Plan relating to environmental protection and management (please refer to Section 5).

Although potentially significant adverse environmental effects would occur under each of the alternatives, the extent to which they would occur varies across each of the alternatives and this is addressed under the evaluation of each of the alternatives provided in the subsections below.

Table 4.2 Potentially Significant Adverse Environmental Effects, if unmitigated, common to all alternatives

Environmental Component	Potentially Significant Adverse Environmental Effects, if unmitigated
Biodiversity and Flora and Fauna	Arising from both construction and operation of development and associated infrastructure: ○ Loss of/damage to biodiversity in designated sites (including European Sites and Wildlife Sites) and Annexed habitats and species, listed species, ecological connectivity and non-designated habitats; and disturbance to biodiversity and flora and fauna; ○ Habitat loss, fragmentation and deterioration, including patch size and edge effects; and ○ Disturbance (e.g. due to noise and lighting along transport corridors) and displacement of protected species.
Population and Human Health	○ Potential interactions if effects upon environmental vectors such as water and air are not mitigated.
Soil	○ Damage to the hydrogeological and ecological function of the soil resource.
Water	○ Adverse impacts upon the status of water bodies arising from changes in quality, flow and/or morphology. ○ Increase in the risk of flooding.
Material Assets	○ Failure to provide adequate and appropriate waste water treatment (water services infrastructure and capacity is needed to ensure the mitigation of potential conflicts) [23]. ○ Failure to comply with drinking water regulations and serve new development with adequate drinking water that is both wholesome and clean (water services infrastructure and capacity is needed to ensure the mitigation of potential conflicts). ○ Increases in waste levels. ○ Interactions between agricultural waste and soil, water, biodiversity and human health – including as a result of emissions of ammonia from agricultural activities (e.g. manure handling, storage and spreading) and the production of secondary inorganic particulate matter
Air and Climatic Factors	○ Emissions to air including greenhouse gas emissions and other emissions.
Cultural Heritage	○ Potential effects on protected and unknown archaeology and protected architecture arising from construction and operation activities.
Landscape	○ Occurrence of adverse visual impacts and conflicts with the appropriate protection of designations relating to the landscape

Tier 1: Alternatives for Allocation of Population

The following alternatives for an urban to rural population split were considered by the Council as follows:

A. Continue Existing
37% Urban, 63% Rural
B. Increase Rural
33% Urban, 67% Rural
C. Increase Urban
41% Urban, 59% Rural

All of these alternatives would help to sustain existing sustainable rural management practices - and the communities who support them – in order to ensure the continuation of long established managed landscapes and the flora and fauna that they contain. Increasing the urban population in the County ("C. Increase Urban") would improve the status of the environment the most, with the least amount of potential conflicts. Increasing the rural population in the County ("B. Increase Rural") would improve the status of the environment the least, with the most amount of potential conflicts. Increasing the urban population in the County ("A. Continue Existing") would improve the status of the environment to a moderate degree, with a moderate amount of potential conflicts.

[23] Irish Water is responsible for strategic water services.

Tier 2: Consideration of Policy for Rural Areas under Strong Urban Influence

These two alternatives both provide for urban and rural growth in the County, however they have different approaches to managing development in areas surrounding urban settlements:

A. One includes a "Rural Areas under Strong Urban Influence" policy that restricts development in areas surrounding urban settlements.

Restricting development in rural areas that are under strong urban influence would positively impact upon the protection and management of the environment and sustainable development. The restrictions would help to both reduce levels of greenfield development in areas immediately surrounding existing centres and encourage brownfield development within existing centres.

Rural development would be directed towards appropriate rural areas and urban development would be directed towards established settlements. This alternative would prevent low density urban sprawl and associated adverse effects upon sustainable mobility and environmental components.

B. The other does not include a "Rural Areas under Strong Urban Influence" policy that restricts development in these areas.

Not restricting development in rural areas that are under strong urban influence would adversely impact upon the protection and management of the environment and sustainable development. The absence of restrictions would result in increased levels of greenfield development in areas immediately surrounding existing centres and less demand for brownfield development within existing centres.

Urban generated development would occur within rural areas outside of established settlements. This alternative would result in low density urban sprawl and associated adverse effects upon sustainable mobility and environmental components.

Both alternatives would help to sustain existing sustainable rural management practices - and the communities who support them – in order to ensure the continuation of long established managed landscapes and the flora and fauna that they contain.

Tier 3: Alternatives for Larger Towns

By:

- Concentrating Village Centre/Mixed Uses/Brownfield Development within and around existing village centres and
- Providing for new development over a relatively small number of sites that are already or most easily served by infrastructure and could serve demand for new development

Alternative A 'Even Development' would result in the greatest degree of significant positive effects (see Table 4.1) and least degree of potential conflicts (see Table 4.2). Development would be most likely to occur within or closest to existing settlement centres on serviced sites.

By:

- Concentrating Village Centre/Mixed Uses/Brownfield Development within and around existing village centres and
- Providing for new development over a greater number of sites that could serve demand for new development

Alternative B 'Sporadic Development' would result in a relatively moderate degree of significant positive effects (see Table 4.1) and a relatively moderate degree of potential conflicts (see Table 4.2). In comparison to Alternative A, development would be spread out over a greater number of sites, some not currently serviced and some further from settlement centres. Additional infrastructure would be required to accommodate sporadic development, more than would be required for Alternative A 'Even Development'.

By:

- Not identifying opportunity sites; and
- Following a 'laissez faire' approach in relation to development, with each application considered on its own merits and no land use zoning would be provided for

Alternative C 'Haphazard Development' would result in the least degree of significant positive effects (see Table 4.1) and greatest degree of potential conflicts (see Table 4.2). Development would be spread out over the entire area associated with each settlement with ribbon development a dominant feature within the settlements. Although existing Plan provisions – including those relating to environmental protection/management and sustainable development – would have to be complied with, the potential for cumulative adverse effects would be significantly higher with this alternative.

All of the alternatives are consistent with approach provided by the existing Plan, to sustain existing sustainable rural management practices - and the communities who support them - to ensure the continuation of long established managed landscapes and the flora and fauna that they contain.

Selected Alternatives

Selected alternatives for the Plan from each of the three tiers of alternatives that emerged from the planning/SEA process are indicated on Table 4.3 below.

These alternatives have been selected and developed by the Planning Team and placed on public display by the Council having regard to both:

1. The environmental effects which were identified by the SEA and are detailed above; and
2. Planning - including social and economic - effects that also were considered by the Council.

Table 4.3 Selected Alternatives for the Draft Plan

Tier	Alternatives Considered	Selected Alternative
1. Alternatives for Allocation of Population	A. Continue Existing	**C. Increase Urban**
	B. Increase Rural	
	C. Increase Urban	
2. Consideration of Policy for Rural Areas under Strong Urban Influence	A. Policy for Rural Areas under Strong Urban Influence	**A. Policy for Rural Areas under Strong Urban Influence**
	B. No Policy for Rural Areas under Strong Urban Influence	
3. Alternatives for Larger Towns	A. 'Even Development'	**A. 'Even Development'**
	B. 'Sporadic Development'	
	C. 'Haphazard Development'	

4.3 Overall Evaluation for Draft Plan (including Transboundary)

Monaghan County Council have integrated all recommendations arising from the SEA, AA and SFRA processes into the Draft Plan (see Section 5). Table 4.4 provides a detailed overall evaluation of the environmental effects arising from the Plan. The effects encompass all in-combination/cumulative effects arising from implementation of the Plan. The potentially significant adverse environmental effects (if unmitigated) arising from implementation of the Plan are detailed as are residual effects, taking into account mitigation through both provisions integrated into the Plan – see Section 5.

The significant environmental effects likely to arise from implementation of the Plan encompass all in-combination/cumulative effects arising from implementation of the Plan. Environmental impacts which occur will be determined by the nature and extent of multiple or individual projects and site specific environmental factors.

The scope of the assessment (including description of baseline, the relationship to other plans and programmes and the evaluation of effects) has considered the environment of both Ireland and Northern Ireland. Taking into account, inter alia, the detailed mitigation which has been integrated into the Plan (including that which is referenced at Section 5) it has been determined that significant residual adverse environmental effects will not occur in either Ireland or Northern Ireland. Relevant Plans and Programmes in both Ireland and Northern Ireland are required to comply with environmental legislation including the SEA and Habitats Directives. In order to be permitted, proposals for development in both Ireland and Northern Ireland are required to comply with environmental protection legislation and relevant higher tier Plans and Programmes.

Table 4.4 Overall Findings – Effects arising from the combination of Selected Alternatives and Draft Plan Provisions

Environmental Component	Significant Positive Effect, likely to occur	Potentially Significant Adverse Environmental Effects, if unmitigated	Residual Adverse Non-Significant Effects
Biodiversity and Flora and Fauna	• Contributes towards protection of ecology (including designated sites, ecological connectivity, habitats) – due to increased utilisation of lands within existing development boundaries and use of existing utilities and brownfield sites. • Contributes towards protection of ecology with respect to the provision of water services. • Contributes towards protection of ecology as a result of contributing towards the protection of environmental vectors, including air and water. • Sustains existing sustainable rural management practices - and the communities who support them - to ensure the continuation of long established managed landscapes and the flora and fauna that they contain	Arising from both construction and operation of development and associated infrastructure: • Loss of/damage to biodiversity in designated sites (including European Sites and Wildlife Sites) and Annexed habitats and species, listed species, ecological connectivity and non-designated habitats; and disturbance to biodiversity and flora and fauna; • Habitat loss, fragmentation and deterioration, including patch size and edge effects; and • Disturbance (e.g. due to noise and lighting along transport corridors) and displacement of protected species.	• Loss of an extent of non-protected habitats and species arising from the replacement of semi-natural land covers with artificial surfaces. • Losses or damage to ecology (these would be in compliance with relevant legislation).
Population and Human Health	• Contributes towards protection of human health with respect to the provision of water services and the provision of transport infrastructure integrated with land use planning – and associated interactions with sustainable mobility, emissions and energy usage. • Contributes towards protection of human health as a result of contributing towards the protection of environmental vectors, including air and water.	• Potential interactions if effects upon environmental vectors such as water and air are not mitigated.	• Potential interactions with residual effects on environmental vectors. This has been mitigated by provisions which have been integrated into the Plan, including those relating to sustainable mobility, flood risk management and infrastructural provision.
Soil	• Contributes towards protection of soil – due to increased utilisation of lands within existing development boundaries and use of existing utilities and brownfield sites. • Contributes towards protection of soil with respect to the provision of water services.	• Damage to the hydrogeological and ecological function of the soil resource.	• Loss of an extent of soil function arising from the replacement of semi-natural land covers with artificial surfaces.
Water	• Contributes towards protection and management of ground and surface waters, including coastal waters downstream, due to facilitating development within established and serviced settlement centres.	• Adverse impacts upon the status of water bodies arising from changes in quality, flow and/or morphology. • Increase in the risk of flooding.	• Increased loadings as a result of development to be in compliance with River Basin Management Plan. • Flood related risks remain due to uncertainty with regard to extreme weather events.

Environmental Component	Significant Positive Effect, likely to occur	Potentially Significant Adverse Environmental Effects, if unmitigated	Residual Adverse Non-Significant Effects
Material Assets	• Allows for use of planned infrastructure including water services, transport and drainage infrastructure. • Makes use of existing water services, transport and drainage infrastructure.	• Failure to provide adequate and appropriate waste water treatment (water services infrastructure and capacity is needed to ensure the mitigation of potential conflicts) [24]. • Failure to comply with drinking water regulations and serve new development with adequate drinking water that is both wholesome and clean (water services infrastructure and capacity is needed to ensure the mitigation of potential conflicts). • Increases in waste levels. • Interactions between agricultural waste and soil, water, biodiversity and human health – including as a result of emissions of ammonia from agricultural activities (e.g. manure handling, storage and spreading) and the production of secondary inorganic particulate matter	• Residual wastes to be disposed of in line with higher level waste management policies.
Air and Climatic Factors	• Facilitates contribution towards a shift from car to more sustainable and non-motorised transport modes. • Facilitates contribution towards reducing congestion and associated adverse effects on air quality. • Facilitates contribution towards reductions in travel related greenhouse gas and other emissions to air.	• Emissions to air including greenhouse gas emissions and other emissions.	• An extent of travel related greenhouse gas and other emissions to air. This has been mitigated by provisions which have been integrated into the Plan, including those relating to sustainable mobility.
Cultural Heritage	• Contributes towards protection of cultural heritage in wider region by facilitating development within existing settlements.	• Potential effects on protected and unknown archaeology and protected architecture arising from construction and operation activities.	• Potential alteration to the context and setting of architectural heritage however these will occur in compliance with legislation. • Potential alteration to the context and setting of archaeological heritage however this will occur in compliance with legislation. • Potential loss of unknown archaeology however this loss will be mitigated by measures integrated into the Plan.
Landscape	• Contributes towards protection of wider landscape and landscape designations by facilitating development within existing settlements.	• Occurrence of adverse visual impacts and conflicts with the appropriate protection of designations relating to the landscape	• The Plan as varied contributes towards the protection of landscape designations and the landscape. Landscapes will change overtime as a result of natural changes in vegetation cover combined with new developments.

[24] Irish Water is responsible for strategic water services.

Section 5 Mitigation and Monitoring Measures[25]

5.1 Mitigation

5.1.1 Introduction

Mitigation measures are measures envisaged to prevent, reduce and, as fully as possible, offset any significant adverse impacts on the environment of implementing the Plan. Various environmental sensitivities and issues have been communicated to the Council through the SEA, Appropriate Assessment (AA) and Strategic Flood Risk Assessment (SFRA) processes. By integrating all related recommendations into the Plan, the Council have ensured that both the beneficial environmental effects of implementing the Plan have been and will be maximised and that potential adverse effects have been and will be avoided, reduced or offset.

Mitigation was achieved through the:

- Strategic work undertaken by the Council to ensure contribution towards environmental protection and sustainable development;
- Integration of individual SEA, AA and SFRA provisions into the text of the Plan; and
- Integration of environmental considerations into zoning provisions of the Plan.

5.1.2 Strategic work undertaken by the Council to ensure contribution towards environmental protection and sustainable development

Far in advance of both the submission of the pre-Draft Plan to the Elected Members for approval and the placing of the Draft Plan (and associated SEA, AA and SFRA documents) on public display, Monaghan County Council undertook various works in order to inform the preparation of the Plan.

The findings of this strategic work have been integrated into the Plan and will contribute towards both environmental protection and management and sustainable development within the County.

Strategic work undertaken by the Council includes background work in relation to Plan Strategies and other provisions for a variety of sectors including: Housing; Economic Development; Community; Heritage; Transport and Infrastructure; and Environment.

5.1.3 Integration of individual SEA, AA and SFRA provisions into the text of the Plan

Various provisions have been integrated into the text of the Plan through the Plan-preparation and SEA, SFRA and AA processes. Both the Planning and the assessment teams contributed towards the mitigation which was developed over multiple iterations and was informed by, inter alia, various communications through the SEA, AA and SFRA processes.

Table 5.1 links key mitigation measure(s) - which have been integrated into the Plan - to the likely significant effects of implementing the Plan, if unmitigated, as well as showing monitoring measures.

[25] For more details relating to the key Mitigation and Monitoring Measures, please refer to Table 9.1 and Table 10.1 in the main body of the Environmental Report.

The measures generally benefit multiple environmental components i.e. a measure providing for the protection of biodiversity, flora and fauna could beneficially impact upon the minimisation of flood risk and the protection of human health, for example.

The reference codes are those which accompany the relevant measures in Section 8 of the main Environmental Report and in the Plan.

5.1.4 Integration of environmental considerations into Zoning of the Plan

Environmental considerations were integrated into the Plan's zoning through an interdisciplinary approach.

The detailed Plan preparation process undertaken by the Planning Department combined with specialist input from the SFRA process facilitated zoning that avoids inappropriate development being permitted in areas of high flood risk. Various provisions have been inserted into the Plan which provide for flood risk management at project level.

Also taken into account were other environmental considerations including sustainable mobility and sensitivities relating to cultural heritage, landscape and water, as well as the overlay mapping of environmental sensitivities.

5.2 Monitoring

The SEA Directive requires that the significant environmental effects of the implementation of plans and programmes are monitored. The Environmental Report contains proposals for monitoring the Plan which are adopted alongside the Plan. Monitoring enables, at an early stage, the identification of unforeseen adverse effects and the undertaking of appropriate remedial action.

The Environmental Report identifies indicators - which allow quantitative measures of trends and progress in the environment over time. Measurements for indicators generally come from existing monitoring sources or from an internal monitoring of the environmental effects of grants of permission in the Council.

A stand-alone Monitoring Report on the significant environmental effects of implementing the Plan will be prepared before in advance of beginning the review of the Plan. This report will address the indicators that are set out on Table 5.1.

Table 5.1 SEA Summary Table: Likely Significant Effects (if unmitigated), Mitigation Measures and Indicators for Monitoring

Environmental Component	Potentially Significant Adverse Effects, if unmitigated	Mitigating Measures, including	Indicators for Monitoring
All	All	Regulatory framework for environmental protection and management HLP14 Corridor and Route Selection Process Section 7.15 Construction and Environmental Management Plan Section 15.30 Policy CEMP1	All
Biodiversity and Flora and Fauna	Arising from both construction and operation of development and associated infrastructure: • Loss of/damage to biodiversity in designated sites (including European Sites and Wildlife Sites) and Annexed habitats and species, listed species, ecological connectivity and non-designated habitats; and disturbance to biodiversity and flora and fauna; • Habitat loss, fragmentation and deterioration, including patch size and edge effects; and • Disturbance (e.g. due to noise and lighting along transport corridors) and displacement of protected species.	Also see measures under soil, water and material assets below. Appropriate Assessment Section 15.29 National Parks and Wildlife Service and Integrated Management Plans Section 6.8 Biodiversity Action Plan HLP2 Designated Sites Legislation HLP3 Protection of European Sites HLP4 Ecological Corridors GIP6 Green Infrastructure GIP7 Protection of Riparian Zone and Waterbodies and Watercourses WPP16 Drainage or Reclamation of Wetlands WLP3 Light Sensitive Species LP3 Non-designated habitats and biological diversity HLP5 Non-native invasive species ISP2 National Peatlands Strategy HLP6 Increases in Visitor Numbers to Semi-Natural Areas Policy TMP15	B1: Conservation status of habitats and species as assessed under Article 17 of the Habitats Directive B2: Percentage loss of functional connectivity without remediation resulting from development provided for by the Plan B3i: Number of significant impacts on relevant habitats, species, environmental features or other sustaining resources in designated sites including Wildlife Sites and Area of Special Scientific Interest resulting from development provided for by the Plan B3ii: Number of significant impacts on the protection of listed species B4: Population of the county involved in land management
Population and Human Health	• Potential interactions if effects upon environmental vectors such as water and air are not mitigated.	Also see measures under soil, water and material assets below. Human Health DM2 Major Accidents Directive WMP 10 Radon Policy CEMP2	PHH1: Occurrence (any) of a spatially concentrated deterioration in human health arising from environmental factors resulting from development provided for by the Plan, as identified by the Health Service Executive, Environmental Protection Agency, Department of Health (Northern Ireland) and Northern Ireland Environment Agency
Soil	• Damage to the hydrogeological and ecological function of the soil resource.	Also see measures under water below. Geological Interest GEP1 GEP2 GEP3 GEP4 Contamination and Remediation Section 8.29 Waste Management Regulations and Closed Landfills WMP8	S1: Soil extent and hydraulic connectivity
Water	• Adverse impacts upon the status of water bodies arising from changes in quality, flow and/or morphology. • Increase in the risk of flooding.	Also see measures under soil above and material assets below. Water Framework Directive and associated legislation WPP18 River Basin Management Plan WPP17 Catchment-sensitive farming practices WPP19 Surface Water Drainage and Sustainable Drainage Systems (SuDs) SDP2	W1: Classification of Overall Status (comprised of ecological and chemical status) under the Water Framework Directive W2: Groundwater Quality Standards and Threshold Values under Directive 2006/118/EC

Environmental Component	Potentially Significant Adverse Effects, if unmitigated	Mitigating Measures, including	Indicators for Monitoring
	• Increase in flood risk	As integrated through Strategic Flood Risk Assessment: WPP16 CCP4 FMP1 FMP2 FMP3 FMP4 FMP5 SDP1 SDP2 SDP3 SDP4 SDP5 FLP1 FLP2 FLP3	W3: Number of incompatible developments granted permission on lands which pose - or are likely to pose in the future - a significant flood risk
Material Assets	• Failure to provide adequate and appropriate waste water treatment (water services infrastructure and capacity is needed to ensure the mitigation of potential conflicts) [26]. • Failure to comply with drinking water regulations and serve new development with adequate drinking water that is both wholesome and clean (water services infrastructure and capacity is needed to ensure the mitigation of potential conflicts).	Also see measures under soil above and material assets below. Irish Water / Water Services Provisions WWP1 WWP2 WWP3 WWP4 WWP5 WWP6 WWP7	M1: Number of new developments granted permission which can be adequately and appropriately served with waste water treatment over the lifetime of the Plan M2: Number of non-compliances with the 48 parameters identified in the European Communities (Drinking Water) Regulations (No. 2) 2007 which present a potential danger to human health as a result of implementing the Plan
	• Increases in waste levels.	Construction and Demolition WMP4 Waste Hierarchy WMP7 Waste Management Regulations WMP8 Contaminated Material WMP9	M3i: Total collected and brought household waste M3ii: Packaging recovered (t) by self-complying packagers
	• Interactions between agricultural waste and soil, water, biodiversity and human health – including as a result of emissions of ammonia from agricultural activities (e.g. manure handling, storage and spreading) and the production of secondary inorganic particulate matter	AGP2 Specific Intensive Agriculture /Poultry & Pig Farming	See indicators for soil, water, biodiversity and human health
Air and Climatic Factors	• Emissions to air including greenhouse gas emissions and other emissions.	Air Quality AQP1 Air Quality, Greenhouse Gases, Noise and Energy AQP2 Climate Adaptation and Mitigation CCP10 Green Infrastructure GIP7	C1: Percentage of population travelling to work, school or college by public transport or non-mechanical means
Cultural Heritage	• Potential effects on protected and unknown archaeology and protected architecture arising from construction and operation	Archaeological Heritage BHP2 Protection of Archaeological Sites, including Underwater Archaeological Sites PMP6 Consultation PMP7	CH1: Percentage of entries to the Record of Monuments and Places, the Northern Ireland Sites and Monuments Record and the context these entries

[26] Irish Water is responsible for strategic water services.

Environmental Component	Potentially Significant Adverse Effects, if unmitigated	Mitigating Measures, including	Indicators for Monitoring
	activities.	Architectural Heritage BHP3	within the surrounding landscape where relevant-protected from adverse effects resulting from development which is granted permissions under the Plan CH2: Percentage of entries to the Record of Protected Structures, Architectural Conservation Areas, listed buildings and conservation areas (Northern Ireland) and their context protected from significant adverse effects arising from new development granted permission under the Plan
Landscape	• Occurrence of adverse visual impacts and conflicts with the appropriate protection of designations relating to the landscape	Landscape Designations HLP6 National Landscape Strategy HLP7	L1: Number of complaints received from statutory consultees regarding avoidable adverse visual impacts on the landscape, especially with regard to landscape and amenity designations included in Land Use Plans, resulting from development which is granted permission under the Plan